

# The Shadow Owners Club



## Newsletter December 1998

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# The Shadow Owners Club Newsletter – December 1998

## Editors Comments

Another year has almost passed and once again it is time for a newsletter. I am pleased that we have several contributions from members, and from CFM Aircraft Limited.

After many years of service to the Shadow Owners Club, Barry Birchall has decided to hand over the job of Treasurer to Tim Harvey. On behalf of the members of the Club, I would like to thank Barry very much for all the hard work he has put in. Barry even produced the newsletter by hand when a previous editor was unable to continue. I am sure that we will still see Barry from time to time, and I know he will still appreciate hearing from Shadow owners.

During this year I have received a great number of emails from the USA asking where they can get support for building Streak Shadows. Unfortunately Laron Aviation Technologies have gone out of business and there is currently nobody in the US supporting the Shadow aircraft and builders. I understand that CFM Aircraft Limited are in negotiations with at least two parties in the US with regards to taking on the product. It has come at a particularly bad time as there has been a great deal of interest in the Streak from the USA following its feature on the Discovery program Flightline earlier this year. One of the presenters Celia Kench of Flightline put the Streak through its paces. All was well apart from the landing, which wasn't done by Celia, whereby the pilot managed to drag the tailskid along the tarmac at Framlingham. Apparently the company doing the filming were not prepared to film another, more orthodox landing.

This year is probably the first in the history of the Shadow series aircraft in that the CAA issued a mandatory modification in respect of a possible failure of the rudder fin post. By now all Shadow owners should have received details from CFM Aircraft detailing the requirements on a pre-flight inspection prior to the modification being carried out, and the requirement that the modification must be carried out before the next annual inspection.

For those who may not have received the modification, a copy is included with this newsletter.

As I was present when the failure was discovered, and knowing some of the background, I think it is worth telling the story as there is a lesson to be learned for all aircraft owners.

On 21<sup>st</sup> June 98, Fathers Day in England, I flew with two colleagues to the PFA Strut fly-in at Priory Farm. After enjoying the excellent Barbecue we decided,

along with three other Shadows, to invade Sutton Meadows. The trip was uneventful with us skirting the Thetford danger area. When parked at Sutton Meadows it became evident that one Shadow was sitting at a rather peculiar angle on its rudder fin post. On closer inspection it was found that the rudder fin post had cracked and the post had parted company leaving a stub in the boom tube. The very fortunate thing in the case of this aircraft was that the rudder fin post had a sleeve inside which prevented it dropping away. A modification which was later said to have been illegal! The pilot said that he did experience some handling problems requiring an abnormal amount of rudder and stick input to keep the aircraft straight on the approach to Sutton Meadows.

The matter was reported to our local PFA/BMAA inspector, and the rest as they say, is history.

It was to later emerge that this was not the first occurrence of the rudder fin post breaking. There had been other instances, which had fortunately occurred whilst on the ground. What was different in this case was that the failure was reported.

The pilot of the aircraft concerned counts himself very lucky. If the aircraft had not had the "illegal" sleeve modification, this might have been the first fatality in a Shadow aircraft.

There are still some unanswered questions, especially surrounding the "illegal" sleeve modification. It is claimed that the modification on the aircraft in question was an unapproved modification however the present owner certainly did not install it. It has since been found that other Shadows of the same vintage as this aircraft also had a sleeve in the rudder fin post. One even appears to have a factory part number on it!

We must take a lesson from this incident. If a failure occurs, which is by definition a notifiable failure, or simply a failure or design problem which it would be of interest to other aircraft owners, it is the pilot or owners duty and responsibility to report it through the official channels e.g. the BMAA or PFA. It just might save someone's life one day. I just wonder what the owners of aircraft which had previously had rudder fin post failures would be feeling had the events on 21<sup>st</sup> June 98 had a more tragic consequence.

## From the New Treasurer

Hi, I'm Tim Harvey, and I've just taken over from Barry Birchall as the new Club Treasurer.

I'd like to start by thanking Barry for the good work he's done over the years.

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Firstly, a little about me. I built my bright blue Streak Shadow (K177 SA-1) over a two and a half-year period, finishing it at the beginning of 1994. David Cook did the first flights for me, and the first permit arrived in February 1994. Since then I've been fortunate enough to find a farm strip on which to keep it, where it lives, permanently rigged, in its own individual hangar. I'm lucky enough to be able to fly around 60-65 hours a year.

That's more than enough about me.

In order to reduce the administrative burden the Club has decided to realign the membership year so that all renewals fall at the end of the year. In this way it will be easier to keep track of who has renewed their membership, and who hasn't.

The membership fee is once again remaining at £15 per year. For any member who renewed their membership after the end of June this year we've decided to extend their membership until the end of 1999. New members will pay pro rata, depending on when they join throughout the year.

Lastly, I'd like to welcome our newest member, Peter Sarfas, from Basildon, and I look forward to meeting as many of you as possible at the fly-ins next year. You can't miss me; I'm the wally with the flying suit!

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## News from CFM Aircraft

Anthony Preston joins CFM Aircraft

Leiston, Friday 17 July 1998 - CFM Aircraft Limited are pleased to announce, as part of their expanding operations, the appointment of Anthony Preston to the staff at the Leiston Works.

"The increasing recognition of the Shadow as an ideal training machine, in addition to its established role as a high performance and economical fun aircraft with unparalleled safety record," said David Moore, Managing Director of CFM Aircraft, "has necessitated a review of the workforce. I am delighted to have Anthony bring to CFM his experience of light aviation, his managerial and flying skills and engineering background.

It's good to know that the same team, under production manager and PFA/BMAA inspector Steve Emmerson, is still there at Leiston turning out the new Series D Shadow, Streaks and Star Streaks. Steve

started right at the beginning, some sixteen years ago, and Jane, Steve, Mick and Tim began with CFM in the mid-Eighties. It says a lot for the team and their belief in the Shadow product that they've stayed so long together, through thick and thin. Tim Moy assists Steve in Unit 2C, the fuselage construction and final assembly area. His speciality lies in the engine department. No Rotax, from 447 to 912 fails to respond to his magic touch. Tim's recreation is as an aero modeller and, yes, he's made a model Shadow or two. In Unit 2B Steve Hambling is in charge of the wings, making the difficult and crucial job of assembling D-boxes look easy. Kit builders might envy him the speed and skill with which he constructs complete wings. A builder would be wise to spend an hour or so watching each of the major stages in wing construction here at the factory before trying it at home. It could save some time.

Mick Lockwood can turn his hand to almost any task required: machining, cutting, shaping, smoothing (you name it). He produces a wide variety of components and the quality of workmanship continues to be of the highest order. Sheila Churchyard not only looks after the fabric covering of wings, control surfaces and tailplane/fin assembly in Unit 2A, but she also has responsibility for the stores which are currently located in Unit 2B.

Andy Taylor joined the company recently as a CAD draughtsman. Having worked for some twelve years in the Royal Air Force, he brings to the job the kind of thorough, meticulous approach you'd expect from someone with that background. More recently still, in October, two new employees joined the workforce at Leiston: George Whiting and Mark Calver. George, like Tim, is also an aero modeller, and has taken well to work on the real thing. He is primarily helping in the final assembly area, with Steve and Tim, at the same time learning the ropes. Mark, who arrives at work on a motorcycle that looks as if it's escaped from Brands Hatch, has started in the wing construction area and gives Sheila a hand with the stores. There is a good overlap of skills permitting a smooth transition by each member of staff from one discipline to another. Keeping all of the above under control is Jane. Jane Simpson (described by Mark Hayward as: "...It.'s Jane 'she could run this place by herself' Simpson.") is the efficient office administrator with an amazing memory. She knows every number of every project, aeroplane, and component. Quicker than a computer, she'll tell you what something's number is and where to find it - no need for keyboard or mouse. You could maybe understand it if she were some middle-aged battleaxe with no other interest in life, but in the case of Jane you'd think she'd only just left school.

CFM Aircraft is fortunate in having the expert skills and knowledge of John Wighton for engineering design and development. John has a distinguished reputation in his field and brings the practical experience of being a pilot to the complexities of aeronautical theory.

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Design and development projects in the factory centre on the 450kg changes, with alternative power units being assessed like the Jabiru 4 cylinder, 4-stroke and other aircraft modifications to carry the design into the next millennium.

Managing Director, David Moore, has recently gained his PPL A (M) licence GFT (*congratulations David – ed.*). CFM has negotiated with the landlord of Parham Aerodrome (Framlingham on the chart) for a lease for a hangar which is large enough to accommodate 3 fully rigged aircraft, along with stored wings and fuselages temporarily transferred there to alleviate the space problem at the Leiston factory site. The company's demonstrator will be kept at Parham fully rigged ready for demo flights.

Recent orders have included three Shadow Series DD, each for Shadow training schools: The most recent of these is from Deepak Mahajan for his MSA (Microlight Sport Aviation) Chatteris operation. This will have registration G-DMWW. The DM isn't difficult to work out (although CFM Aircraft's MD might proprietarily think otherwise), but the WW? You'll need to ask Deepak. One leaving the factory next week on schedule is for Phil James at Cloudbase Aviation, Redhill Aerodrome, and the other went to Southern Light Flyers run by Keith Mitchell at Shoreham Airport. He now has one C and one D. He can be contacted on 01273 844810.

Currently in the fuselage construction area can be seen the unusual fuselage shell of a Shadow being built for a successful graduate of the APT, Graeme Linskey.

Exhibited at the Flyer International Flight Training Exhibition, held in the Novotel Hammersmith on Saturday 4<sup>th</sup> October, was the Chatteris based DD G-MZOM sprayed in a real eye catching daffodil yellow. Our most recent customer G-PBEL has specified the same colour scheme for his DD. If William Wordsworth were still around he'd surely forget his loneliness on seeing the daffodils and the clouds getting so close together.

Orders for kits are down on average, which, at first sight, is not that surprising given the continuing saga of the 450kgs. People are naturally going to think that building now they're going to end up with an obsolete aircraft. They're wrong of course. Start the build now and be ready for the extra goodies when they're allowed. Otherwise they could end up waiting forever!

*CFM Aircraft would like to make the following offer to Shadow owners. Encourage friends, relations or perfect strangers to build a Shadow over the winter months? What better project could there be? CFM Aircraft will reward members with a bonus for the Christmas stocking - for every introduction leading to the sale of a kit we will pay £200 (This is subject to one*

*bonus per kit sold and verification by an impartial assessor.*

## Personal Profile



### Anthony Preston

Anthony is married with three children. His wife, Miranda (Mandy) is American, born in Philadelphia, and her father, Sam Hynes, was a US Marine pilot during the war. Hynes, Professor of English at Princeton university, has written several books on the nature of war and his autobiographical account of learning to fly and of combat, *Flights of Passage*, makes compulsive reading for anyone interested in flying. A chapter in the Time-Life MHQ (Military History Quarterly) is devoted to an account of the WW2 battlefields as viewed today from the air. The flight, in a Piper Warrior, over France and Belgium, had Anthony as pilot and Sam as navigator and scribe.

Mandy Preston is a Senior Lecturer at the Chichester Institute of Higher Education, a part of Southampton University, and is a contributor to educational journals and author of books on Special Needs (dyslexia and autism). She and Anthony, early in their marriage, flew a Cessna 206 from Topcroft airfield in Norfolk to Senna in Sudan where Anthony flew Grumman AgCat and the C-206 for crop-spraying company Mindacre. Mandy's job was to fold the maps and keep the reserve fuel system working during the long night. She was not a great success with the maps.

The C-206 had insufficient *range* on its wing tanks for the longer legs, like Egypt to Wadi Halfa, so a system had been installed using an old, under-belly hopper. This had a flexible hose fitted to the front with Araldite, strapped to the starboard strut, and entering the flight compartment through the air vent scoop in front of the starboard door. From there it went down to an electric pump under Mandy's seat. The delivery transparent hose was fed up the side of the cockpit and out through the wing root vent cylinder thing (all Cessna's

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have them) along inside the wing leading edge, out through the air vent inlet and up and over into the starboard filler. All very fine you might think.

What we had overlooked was the arrangements failure to provide a head on the pump. It needed a foot valve or non-return valve (n.r.v). The discovery was made the day before we were due to leave, crack of dawn. A desperate search through the back streets of Norwich produced nothing better than a bronze non-return valve for water applications.

It didn't look all that professional strapped with sellotape to the strut but it *seemed* to work. During the flight the n.r.v. proved itself to be a s.r.v. (slow return valve) and it was Mandy's job to watch the meniscus make its inexorable way down the plastic tube. At a point where it threatened to disappear under her seat she prodded the pump switch to resume the cycle. I was perhaps thankful for the distraction during a rather miserable flight one day from Egypt to Luxor when we met up with the *ITCZ*.

Believe you me, the *ITCZ* is evil in the desert. What it does is to scoop up the sand and make an orange and highly abrasive pea souper. Hour after hour; as Mandy watched the tube, part fixated by now, I watched the prop - couldn't see any further than the prop - expecting to observe it slowly reduce in diameter till we were left with a cheerfully spinning hub and a tacho off the scale. I didn't like to think what might be making its way through the air inlet filters into the engine. Imagination outstripped reality and on the apron at Luxor later there was little *evidence* other than highly polished leading edges to the blades. Mandy never really took to aviation. Maybe she overdosed on it from her husband. None of the children are that keen either, for the same reason, maybe.

The two younger children, Sam and Lucy are at school near Anthony's hometown of Worthing in Sussex. Sam flies about the streets of Worthing and Chichester on roller blades, followed closely by Lucy. The older son, Alex, has recently started at Hertford College, Oxford, doing English. His first fight was in Tiger Moth G-ACDC. Anthony joined the tiger Club in 1982. Alex has been up with his dad in Stampes WEF, TKC and SHS, but somehow it never seemed cool enough for him, though he does enjoy inverted flight.

In the first year of the British Aerobatic Association, when the *committee* included Neil Williams, Manx Kelly, John Blake and James Black, Anthony produced its monthly newsletter. He was an *occasional* competitor in a Stampe at intermediate level and also flew Zlin 526 and *Stampe* in aerobatic displays and competitions in France and Italy. He has held a pilot's licence uninterrupted for over 40 years and has been an instructor for many of them. First *trained* on Tiger Moth and Auster at Ipswich *Airport*, Nacton, he entered the Royal Air Force in 1956, Flying

Training Command, flying piston Provost and Vampire.

In 1963 Anthony moved to Central Africa, living first in Salisbury, Rhodesia (Harare, Zimbabwe) and then Ndola in Zambia, where he instructed on J-3 Cub, Tiger Moth, Tripacer, Colt, Mooney Super 21, Cessna 172 and 182, and Cherokee 140. He provided the crazy flying display (as it was somewhat inappropriately called) at the Mashonaland Flying Club's Air Days at Mount Hampden (now Charles Prince) Airport. He demonstrated the first Mooney in Kenya and flew himself regularly on business trips in the Rhodesias (Zimbabwe, Zambia), Nyasaland (Malawi), Tanganyika (Tanzania), Kenya and Uganda.

Returning to England in 1970. Anthony continued to fly with the Tiger Club at Redhill and also gave aerobatic instruction *with* Mike Riley at Booker on CAP 10 and SV-4C Stampe. He has given aerobatic instruction on Citabria (in the USA where he got his FAA *CPL*) and a Chipmunk. From 1994 to 1998 Anthony was General Manager of the Popular Flying Association based at Shoreham.

## Aviation for Paraplegics and Tetraplegics Trust

The Aviation for Paraplegics and Tetraplegics Trust was founded in 1994. The aim of the trust is to provide specially adapted aircraft for paraplegics and tetraplegics to help them obtain the Microlight Private Pilot Licence.

This is a tremendous feat for the most able bodied pilots let alone those whose disabilities dictate that some of the controls have to be activated by head and body movements! During this time, and through the generosity of a private sponsor, the charity has bought outright two specially adapted Shadow aircraft along with two adapted mobile homes to enable students to stay on the site for extended periods. The trust also has a custom built hoist to allow access to the aircraft for the more severely disabled people.

The APT together with the training school, the Shadow Flight Centre Ltd. provide a unique opportunity to people whose lives have been savagely interrupted, it restores dignity, self esteem and offers a challenge that only a few years ago would have been unthinkable.

Since 1994 some 65 disabled people have flown in the APT's Shadow microlights with the Shadow Flight Centre at their base at Old Sarum Airfield. To date 5 students have gone on to obtain their unrestricted PPL (A) Microlight licence.

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Last year the APT's principle sponsor was forced by personal difficulties to withdraw his financial support. As a result of recent press and television coverage funding has been secured to allow the trust to operate for another 12 months and more importantly, breathing space to develop new fund raising programs.

For further information on the APT contact:

Jack Simpson at the APT - phone 01722 410744 or, fax 01722 410678

For training information contact:

The Shadow Flight: Centre Ltd. - phone 01722 410567 or, fax 01722 410678

## THE STREAK SHADOW A FUN FLYING MACHINE

Typical instructor', mutters Steve as I close the throttle at 1500 feet a mile from Draycott Farm and invite him to PFL our Streak Shadow on to the airstrip. We are on our way back from Cranfield '98 and it's been a cracking flying day with just a hint of haze reducing the visibility but otherwise 'epic' with lightish winds and not much cloud. He hasn't completely lost his touch since he's been flying blocks of flats around the sky, and sprints over the threshold at 85 knots, floating the Streak halfway down the strip to drop full flap at 55 knots and touch down gently on the upslope section of the 2000 foot grass runway. 'Not bad for a bloke with no hair', I think to myself, but I'm not going to tell him. It might encourage him. It's the end of another Cranfield Rally and another excellent day's flying

It's now two and a half years and nearly 500 flying hours since Streak Shadow G-MEOW first took to the air on New Year's Day 1994. During that time it's travelled fairly widely throughout England and Wales, with longer trips seriously thought about but on hold until young families grow older. G-MEOW, so registered to give the aircraft something of an identity, (but mostly because Tim's wife happens to be a cat lover), is owned by Steve Hicks and Tim Nicholas. Steve is a First Officer on 747s, where the long haul routine proved well suited to providing time at home to build the Streak from its kit basis, although that's not necessarily quite how his wife and three children saw it. Before joining the airlines Steve flew Jaguars and then Harriers with the Air Force and just in case he lost touch with aviation, did a bit of aeromodelling in his spare time, a skill that was to prove useful when building the Streak. Tim is an ex Navy pilot, now working for a company at RAF Shawbury where he is employed in a newly set up contract teaching military pilots to fly helicopters. Both Tim and Steve have been involved with popular flying since the seventies and have had a go at just about everything from conventional gliding through the early days of hang

gliding and microlighting to paragliding and now Group A flying. To date, the line has been drawn firmly at parachuting.

In that period many days waiting for the right conditions to then enjoy about ten seconds of fun was the norm, and it eventually became evident that something with power and reasonable performance and weather capability was the only way to go. Steve, needless to say, wanted a Harrier substitute, (though preferably without the running costs). Any aircraft would do provided he could have his head an inch from the canopy (on both sides) and only enough room in the cockpit for a neatly folded map and a small pencil. Tim, being used to a side by side cockpit arrangement wasn't quite so particular, but after looking at and test flying a number of possibilities in the relevant price range, it was clear that only the Shadow series had the performance and track record they were looking for. The kit was purchased in 1991 and a mere two and a half years and sixteen hundred build hours later was ready for flight. Without going into lengthy details on the construction it should be said that Steve's build technique was perfectionist in every way, a fact which paid dividends at Cranfield '94 when his meticulous workmanship earned him Best Kit Built Aircraft and runner-up in the Concours D'Elegance. It should be added that virtually throughout the build period Tim had been conveniently appointed to an exchange job flying helicopters in Australia, leaving Steve exclusively in charge of the build. However, even those distances didn't stop him spending Tim's money.

Finally, on an ideal cold and clear test day on the 1st of January 1994, G-MEOW completed a successful and thankfully uneventful maiden flight. Since then, things haven't really looked back and the aircraft has been used at a rate of some 100 hours a year. G-MEOW is based either at Draycott Farm near Swindon, close to Steve's home or at RAF Shawbury where at present it is the only resident operational fixed wing aircraft.

So what makes the Streak fun? I believe there are three criteria you need to make an aircraft fun. It must have two seats (minimum), a reasonable performance and be relatively cheap to operate (cheap being a very relative term in connection with aviation). The running costs to date have worked out at about £30 an hour of which fuel and oil account for about £10, the rest being insurance and maintenance.

By aviation standards these costs are not too bad and do make it possible to fly for the pure fun of it. Certainly, not having to worry about whether you can afford to get airborne is a big plus.

Nearly one hundred different passengers have now flown in G-MEOW and without doubt sharing the fun of flying has made it a lot more enjoyable for both of us, whether taking someone on an airfield visit, or just

showing a friend round the local area. So far, the youngest passenger has been four years old and the oldest seventy-four. For one sixty-eight year old it was her first ever flight in any type of aeroplane. Needless to say, she loved it. Touch wood, so far there have been no unhappy passengers nor any air sickness. That must be down to Steve and Tim's smooth and balanced flying... or maybe it's just a good aeroplane to be a passenger in.

Finally, the performance aspect. With some of the hot and hazy days we've had this summer, there's nothing better than climbing up into the cool, clear, smooth air above the haze to get away from the polluted stickiness below, especially if there are a few fluffy cumulus tops pushing through the inversion to go and play with. (Maintaining VFR of course!) As so many passengers have commented it is genuinely 'another world' up there. The good thing about the Streak is that it doesn't take too long to get up there. Full power gives a rate of climb approaching 1000 feet per minute, so 15 minutes to 10,000 feet is quite feasible even without maximum power. 'You go up to 10,000 in that', ask incredulous colleagues. 'Why not', I say. So far I've only managed to get the outside air temperature down to minus 13degC, though even that's a problem as breathing tends to produce instant freezing on the inside of the canopy. Height climbs aren't the only thing to do just because it can be done. The Streak really comes into its own with its slow speed performance, making it ideal for short farm strips, provided that they are smooth and well prepared to cater for the aircraft's small wheels and limited propeller clearance. It's quite possible it hold the stick fully back against the airframe stop and with a little power the aircraft will hold straight and level at around 40 knots. Even with power off it won't stall. Ideal for a helicopter pilot, and very nice to know in case you ever get caught out in poor visibility and need to bring the speed back.

At the other end of the scale, G-MEOW can just about reach 90 knots flat out straight and level, but 65 is a realistic cruise speed and although at times it would be nice to go faster generally its very pleasant just to potter along and enjoy the view. Having obtained a display authorisation, Tim demonstrated the Streak at RAF Shawbury's annual Families Day and impressed many with its manoeuvrability and performance for a so-called 'microlight'.

It can't be all good so what are the drawbacks. Well, it is small. Two people, a map and a toothbrush is about the maximum for the aircraft,(although a toothbrush each can be squeezed in at a pinch). It's not particularly quick, despite the name and the fact that various people have flown to Australia, China etc, and it is limited to reasonably well prepared landing surfaces. But for all that, its good value for money and for an aircraft that's only a short development from the microlight version it does a lot. For my money,(and most of it was), it's excellent value and I believe the

best in its class. At the end of the day, it's got a stick instead of a steering wheel, responsive controls and good performance. I only had to look at the smile on the Hungarian Mig pilots face as he sat in the Streak at Cranfield this year to see that the aircraft is obviously a closet jet jockey's dream. I mean, who'd buy an aircraft with a steering wheel instead of a stick and expect to enjoy it...

## YOU CAN'T RE-BOOT A CESSNA

We keep complaining that the performance of the aircraft we *fly* and the engines that powers them have changed but little since the 1930s. The only major progress in light aviation seems to have been in avionics and electronic gadgetry. But perhaps that is just as well. Microsoft's Bill Gates allegedly claims that "if the car industry had kept up with technology like the computer industry has, we could now be driving \$25 cars that get 1,000 mpg," The riposte from the motor industry is, "Okay Mr Gates, but how would you like to own a car that crashed at least once every couple of days?" This analogy has been taken farther on various Internet sites and expanding it into GA one could say that if an aircraft really was as technically advanced as a PC:

Its resale value would drop 75 per cent the day it was bought and would dwindle to zero within two years.

Every new aeroplane you bought would have a bigger engine but wouldn't fly any faster. It would also be fitted *with* lots of extra new features that are of no possible use to 99 per cent of pilots.

If you complained about a fault (high fuel consumption, *leaking* cabin seals, poor climb performance or whatever) you *would* have to ring a phone help line, select the touch tone number for the fault involved, listen to several renditions of Vivaldi's *Autumn* and then follow an automated voice's *instructions* about how to fix the plane yourself. And when the repair didn't work the voice would suggest you should get in touch with your avionics manufacturer or avgas supplier.

The *engine* would frequently stop in mid-air for no *obvious* reason when you were performing a perfectly *normal* manoeuvre. Once you got it running again, you would usually be required to return to your airfield of departure and start your trip over again.

Occasionally when you tried to switch on the transponder you would be told power supply was critical and you would have to turn off the radios, ADF, VOR or pitot heat before you *could* use it.

All warning lights, enunciators and dials would be incorporated into one device. This would flash the simple message *Land at once; something is wrong*. And after you got down you would still not know what

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the fault had been, if it was still there or whether it was safe to take off again.

Simply installing a new item such as a GPS or even new *upholstery* could be enough to cause the entire aircraft to refuse to function any more,

All in all, it does appear we should be quite grateful that our aircraft are not quite as technologically advanced as *PCs*. *James Allan*.

## TECHNICAL TOPICS

### Rudder Cable Bracket

The rudder cables emerge from the teleflex in the nose cone and are connected to the rudder pedals by an alloy bracket. The pedal is then fastened to the floor by means of a hinge. It was recently pointed out to me on the annual permit inspection that half of the right-hand hinge pin was missing.

On further investigation it was found that the hinge pin does in fact comprise of two halves pushed into the hinge from the two outer edges where it is an interference fit. The outer half of the pin was missing in my case and has not been found. There is just enough space between the outer end of the pin and the inside of the nose cone for the pin to come out and fall into the depths of the unknown.

After much cursing and attempts at doing yoga for a whole day I finally replaced the offending hinge with a new one. I rigged to check that all was well and whilst I was facing down hill and holding it on the brakes there was a sudden bang under my left foot and I found myself going round in ever decreasing right-hand circles! To my horror I found that the rudder cable bracket at the pedal had snapped in half. Boy, am I glad I was on the ground.

Further investigation revealed that this bracket should be free to spin on the pedal so that the bracket can be pulled in line with the cable no matter what the pedal position is. The right bracket was indeed free to spin but the left one was done up tight on the bolt.

It seems that whilst I was replacing the right hinge, I inadvertently moved the left bracket out of line of the cable and when I operated the left rudder pedal, the cable pulled on the bracket which broke instead of swivelling. It took remarkably little pressure to snap this bracket which was duly replaced, making sure that it was free to spin!

I have been told that these faults are unheard of but the proof is in the pudding, so beware.

Source: John Anderson

### GPS Software

Anyone who uses the Garmin software will know that the package is somewhat limited, as well as being on the pricey side. The Garmin software for example does not fully support the symbols which are now available on Garmin models GPS12XL, GPSII, GPSIII, GPSIII Pilot etc.

Over the past months I have been looking at several GPS software packages. It has to be said that whilst most will support the standard Garmin models, and are generally better than Garmin's own software, only one is capable of utilising the features available on the aviation models such as the Garmin 89, 90, 92, and GPSIII Pilot.

Heinrich Pfeifer in Germany has developed Gartrip. It is fully compatible with the aviation models and allows routes that can include airports, VORs, intersections etc. to be downloaded to the PC. New waypoints can be entered and existing ones modified and symbols assigned. On the mapping side it allows the track to be plotted together with the display of times and distances along the track. If like me you use more than one model of GPS, Gartrip allows the parameters of the GPS to be stored as a profile, which can be selected when connecting the GPS to the PC.

Gartrip can be downloaded from either of the two web sites below and the registration fee is a mere \$30.00. Without registering waypoints can be downloaded and uploaded to the GPS but it is not possible to save anything on the PC. An unlock code is supplied when the program is registered, from which time the save option works.

For those who have a PC and Internet access the program can be downloaded from:

In Canada / USA, English version:

<http://vancouver-webpages.com/pub/peter/gart114e.zip>

In Europe, English version:

<ftp://ftp-i2.informatik.rwth-aachen.de/pub/arn/GPS/peter/gart114e.zip>

For anyone who has a PC who is interested but does not have Internet access, give me a call on (UK) 0973 202078, and I will arrange to send you an unregistered copy to try out.

John Lord

## LETTERS & EMAILS

### Email from Houston.



See what happens when a Scottish pilot hangs out at NASA's Johnson Space Center too long!

Greetings from Houston, Texas to all Shadow pilots around the world!

Don't wait for the documentary...Stay tuned here, and on our soon to be announced WebPages, for the unfolding details of an adventure involving your beloved Shadow. You wouldn't think a little 400 lb. aeroplane would even get the attention of people, who on a daily basis, think about Mars, deep space and beyond.

Over the coming months I'll tell you a story of what a bunch of Lockheed-Martin Sr. Mechanical Technicians, NASA engineers, Hyperbaic specialists, mission controllers, and aviation professionals do in their spare time in Texas. I tell you how this whole crazy thing got started, where it's going, and I'll let you know when it gets there, and oh yes, I'll give you date of time when the documentary airs next year.

If you find pre-breathing oxygen for two hours before a three hour flight, 80 degrees below zero, crossing a jet stream that will probably be "smokin" by next January, and your canopy flash freezing the instant you hit the warmer (very moist Texas air) upon descent, then you're as crazy as we are. Adios for now!

We'd love to hear from you so write us at:

**[Wings Air Foundation](#)**

**963 Buoy**

**Houston, Tx. 77062**

**USA**

Or

E-mail to...[Wingsair1@sprynet.com](mailto:Wingsair1@sprynet.com)

### Email from Africa

Dear John,

As you may recall, I became a member of Shadow Owners Club a couple of years back, whilst building a Streak. While enjoying your web page as well as your often long awaited Mag in darkest Africa, I thought it time to drop my fellow Pom's a line. I have recently installed a Jabiru four stroke on my wide-body Streak - unfortunately, without the sparkling performance one would expect. I understand there are a number of Streaks in the UK flying with the same installation, and

am curious to find out if anyone has shared the same teething problems.

The two major problem areas were thrust and propeller noise. After changing from the Arplast ecoprop broad chord prop, which I think measured 130mm, to the eco 104mm, the takeoff thrust was vastly improved. (Incidentally, prop diameter still remains 52 inches). However, prop noise inside the cockpit is still extremely high, even with very efficient soundproofing. Varying propeller pitch makes no difference to this loud drone.

After careful measurement, I have discovered that the propeller tip to underside of wing distance measures 19mm. I recall that on my previous Rotax installation, this was 45mm. Could this limited area of compression cause all or part of the problem, i.e. drumming the under-surface of the wing, possibly indicating the installation is slightly too high? I have installed a conical fairing above the motor, which airfoils the area where previous Rotax motor was fitted. This, indeed, has helped improve glide ratio and cruise performance.

I would really appreciate any comments, suggestions, ideas, etc. from any of your technically informed members, possibly Danny Crosby?

On a lighter note, the flying over here has been wonderful - and is, all year round. Haven't received a newsletter for a while, and look forward to receiving another one soon. It might be a good idea to print names, fax numbers, E-mail addresses of existing members, to also allow direct contact. You never know, someone might like to come to darkest Africa for their holidays.

Regards,

Flynn Elliott

## 1998 Fly-Ins

During 1998 the Shadow Owners Club held four fly-ins exclusive to Shadow owners, as well as attending several others organised by the PFA and BMAA.

On 10<sup>th</sup> May some members braved the weather conditions and visited Old Warden, home of the Shuttleworth collection, and hopefully to become the home of the PFA. Shadow members are always made welcome at Old Warden and this year was no exception. It is possible to fly to Old Warden on other occasions, but it is strictly PPR.

Danny Crosbie's strip was to be the venue a fly-in on 31<sup>st</sup> May 98, and unlike last year, this year the weather was kind being a nice warm day with light winds. The barbecue was excellent as ever with Danny's friend Ross taking on the role as Chef. The event was well attended with a total of 18 aircraft, which included one

weightshift and one Sluka. It was an excellent day, however one problem was to later arise through the mindless act of one pilot in a light aircraft who took it upon himself to buzz the strip at low level. This resulted in two complaints being received by the council regarding flying from the strip. One complainant was almost 2 miles away and the other approximately 1 mile. The council was informed that the aircraft had not visited Danny's strip and as the registration letters of the aircraft were not recorded there was little chance of tracing the pilot. It is hoped that the matter is now over although it has brought attention to Danny's strip.

On 28<sup>th</sup> June, Derrick Brunt played host to a fly-in, which also included a barbecue. There is no truth in the rumour that with the second highest concentration of Shadows in one location anywhere in the world, that Derrick made all pilots based at his strip who wanted to attend the barbecue fly off and then come back again. The event was well attended, and the weather was excellent. Our thanks go to both Danny and Derrick for allowing use of their strips and for hosting excellent barbecues.

The fly-in to Duxford was held on August 18<sup>th</sup> and despite good weather only five Shadows made the trip which included Deepak with David Moore from CFM Aircraft, the latter getting valuable cross country experience as part of his training.

We are not sure as to why so few Shadows visit Duxford, so some investigation will be made before deciding whether to arrange a fly-in there next year. It may have something to do with the date, being in the harvesting and traditional holiday period, in which case we will look to arranging it for a different time of the year.

Several members also joined in with fly-ins organised by PFA Struts. This normally involved looking at the weather and then telephoning other members the night before. The Fathers Day fly-in at Priory Farm, Tibbenham was one such occasion, as was Horsey Island near Walton-on-the-Naze. In both cases some eight Shadows attended. It is hoped that this style of event can be developed for next year giving even more opportunities for Shadow Owners to meet up. It is quite impressive to see some six or more Shadows in the circuit at the same time.

Details of the fly-ins for 1999 will be notified during March 1999.

## Crosbie's Corner

Hello Everybody,

I hope you've had a good summer flying, and a special thanks to all those who came to our fly-in and barbecue. Eighteen aircraft in on the day – great! I hope to see you at the next one in the summer.

So what's been happening? We are currently painting John Pearson's aircraft, which should be flying in

February. I think John has built a beautiful aircraft, which incorporates additional fibreglass bodywork from Cloudbase Enterprises as well as some of John's own ideas on the radiator positioning and cooling. The engine is fully enclosed which must clean up the airflow around the rear of the aircraft. Hopefully we will be able to persuade John to do some tests, with and without, the rear bodywork to see what difference it makes. There is a saying that if it looks good it must be good, and John's aircraft certainly looks good (CFM take note). The colour scheme is brilliant, John's design I hasten to add.

Footwells are going well with 10 retrofits completed so far, plus the CFM factory built machines which are using my design. A number of folding wing systems have also been supplied, some of which are on new factory aircraft.

Accidents – If you are unfortunate enough to bend your aircraft, we are now able to carry out insurance repairs with the blessings of the BMAA and insurance companies etc.

A tip for homebuilders - When doping new fabric sometimes if the dope is too thin or you brush it in too much, a sag will appear under the fabric when you paint or white dope it, which appears as a run. A trick to get rid of it, is to clean the area around with dope thinners making the fabric porous. This in itself will not remove the run as it is under the fabric. Beg, steal or borrow the wife's vacuum cleaner, switch on and place the hose on the porous area of the fabric and using a ½" brush and acetone, in a small container, wet out the run with the brush. Leave for a few seconds and move the suction hose over the run sucking up the acetone. Keep doing this and the run will get smaller and eventually disappear. Caution – Don't brush acetone too close to the bond lines of the fabric, as acetone will break down the Bostik adhesive. I have not investigated what the acetone does to the vacuum cleaner, but at least it gets rid of the runs!

I was disappointed not to see Motavia at the recent exhibition at Telford. It seems they had an excellent product in the 4-stroke engine. I would be interested to hear from anyone who is planning to put a Motavia engine on their Shadow to get some feedback.

Finally, can anyone throw any light on the reason my aircraft is being called "The Slug"? I would like you to be straight and level with me! I think this is a slanderous accusation, which has originated from around the M25/M10/M1 area.

Merry Christmas to you all, and a happy and prosperous New Year.

Danny

**Answers to last years wrap around quiz**

C	R	O	S	B	I	E	N	G	I	N	E
L	I	P	I	L	C	I	R	T	C	E	L
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I	T	A	R	T	S	I	G	E	R	E	D
O	N	E	E	D	L	E	S	K	Y	A	R
A	U	G	N	I	W	O	D	A	H	S	D
G	E	S	T	R	E	A	K	N	O	T	S
I	L	Y	A	D	N	A	L	I	O	L	O
G	H	T	E	M	P	E	R	A	T	U	R
W	O	L	L	E	W	T	O	O	F	L	E

**This years competition.**

Please write a caption on your membership application form for this picture, taken at the PFA Rally at Cranfield in July 98'. The winner will get free membership for 1999.



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Call Mr. Deepak Mahajan (CFI) on 0181 325 0197 for details. We will be pleased to send you an information pack and brochure. Alternatively, [email us](#).

# Two in a barn will go!

Those who have to rig their aircraft look with envy at those who are able to keep their aircraft fully rigged, and those who own a Streak or Shadow know only too well, that without an accomplice, the aircraft is virtually impossible to rig. One solution is the Crosbie folding wing which certainly allows single handed rigging, but it is still no substitute for an aircraft kept fully rigged.

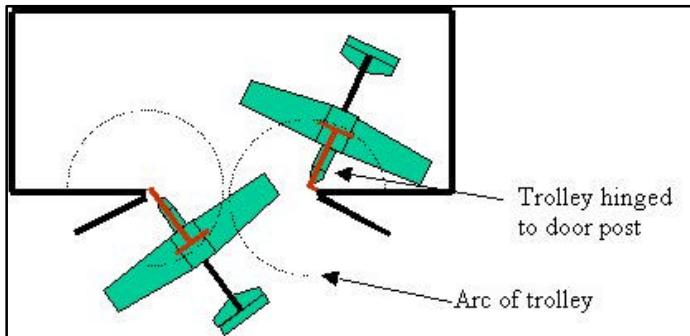


My Streak was kept in its trailer in a small barn on a farm strip whilst the owners Shadow was fully rigged and could be moved in and out by means of a trolley. During last winter the trolley broke which was to be the start of an ingenious system which allowed both aircraft to be housed within the barn fully rigged.

It is unlikely that there will be another barn of similar dimensions to the one at our strip, however the principle adopted could easily be adapted to other buildings. The barn measures approximately 60 feet long x 25 feet wide with a doorway measuring some 24

feet along one side. Clearly with a door of such dimensions it is not possible to get a Shadow

in straight, however a Shadow would go in sideways. The old trolley had three wheels and a mind of its own with hangar rash occurring on more than one occasion. The aim therefore was to develop a trolley that would follow the exact same tracks every time. Various designs were considered with the aid of a plan view cutout of a Shadow and a scale drawing of



the barn.

The winning formula was to use a T shaped trolley which could be lowered to allow the aircraft on and off, and raised to allow the trolley to run on its two wheels. An ingenious mechanism was devised whereby the wheel and axle are offset.



By inserting a lever into a bar, which is attached to the axle, it is possible with fairly little effort to raise the trolley on which the aircraft sits. A pin is then inserted when in the raised position to hold the trolley up. Doing this to both wheels allows the trolley to move. To ensure the trolley followed the same line, the main bar of the trolley is hinged to the



door pillar.

As there is a slight bit of overlap with the wings of the two aircraft as one is rolled out with the other in the barn, the Shadow is stored with one wing cocked up, whilst the Streak is moved off the trolley once inside the barn.

So, quite simply the procedure is as follows to get my Streak out. Remove the wing and fuselage covers – birds love barns, particularly a Little Owl! Move the Streak onto the trolley



and fasten the nose wheel to the car jack at the front with a bungee. A 56lb weight is left in the nose of the aircraft to ensure it sits on all three wheels rather than the tailskid. Lower the wheels thereby lighting the trolley, and then raise the car jack such that the tailskid is a couple of inches from the ground. This is necessary to allow the tail to pass under wing of the other aircraft. This procedure is not necessary if the other aircraft is already out of the barn. Attach a rope to the trolley which allows the trolley to be

pulled round without stressing the aircraft, whilst I walk round with it near the tail, to ensure it passes under the wing the other machine. When the Streak is sideways in the doorway the car jack is lowered, raising the tail of the Streak to ensure it does not catch on the ground as it goes out of the door. The trolley is then pulled outside, the bungee removed, the wheels on

## Two in a barn will go!

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the trolley raised lowering the trolley and the aircraft pulled off. Total time taken 5 minutes, and guaranteed no hangar rash.



My thanks go to Frank Claydon and Gordon Sargent for engineering this masterpiece. It even has the admiration of that master of ingenuity – Danny Crosbie.

John Lord

## The Crosbie Folding Wing – A Practical Solution

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I own a Shadow C, G-MWYD and fly from Plaistows Farm at St.Albans where I have a de-mountable lorry box as a hanger. As everyone knows, the restriction with rigging a Shadow is that it is a two-handed job, so I went to see Danny Crosbie and his folding wing system. I was very impressed with the demonstration he gave me. The system is so simple, yet so effective and there is positive control of the wings at all times.

Danny subsequently fitted the system to my Shadow and I have adapted my lorry box to accept the height of the folded wings. As can be seen from the photographs, I have cut some of the framework away from around the barn doors, to accommodate the leading edges. I have also fitted wheel guides to the floor so that the aircraft goes in and out of the box exactly the same every time, which alleviates the danger of expensive collisions.

Danny is very lucky with his immaculate facilities, including a flat rigging area. Most other people are not so fortunate and have undulating ground to contend with. That includes me and whilst it is no criticism of Danny, I have had to minor mod his framework. I suppose he has never had to consider one wing being two feet higher than the other when rigging and rolling over ground that is any rougher than concrete, so he is excused!



I started by adding a brace between the two boom tube carriers to make the triangle solid, which prevents the frame tilting from the vertical axis. I then changed the small castoring wheels to four inch aircraft wheels mounted just forward of the frame. These are fixed in one position which helps to keep the whole rig straight as it

is wheeled in and out of the box and are more suitable for the uneven ground. The smaller wheels in the photograph allow the frame to be tilted away from the boom without the frame digging in the ground when rigging and de-rigging. The only mod, which is left to do, is to extend the telescopic wing tip support so that it reaches the wing on the high wing side!



Having made these mods, the system copes admirably with the rough ground and I can easily rig and de-rig on my own without any worries. A terrific system to be recommended.

The paperwork was a snip too! Danny had done all the hard work and an application to the BMAA resulted in the speedy response of a flight release. Very painless.

John Anderson.