

FFLYPAPER

(2006—our 27th year)



Don't forget to get your BMFA subs to Bob Cutter. NO BMFA MEMBERSHIP—NO FLYING

Special points of interest:

- That smells nice.....
- Hooked beef.....
- Silicone slivers



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Journal of Felbridge Flyers Radio Model Flying Club

Chairman's Chatter (or disconnected ramblings)

A prosperous new year to all our readers from the Club Committee. As this is being written the post Christmas/New year normality is returning, roll on Spring which is getting nearer by the day. I am always glad when the Winter solstice is past as the days start to get longer.

Congratulations to Phil Keyes, our overseas member in the Isle of Man, who got married to Avril recently. See picture, complete with ball and chain.....

The stove we used at the BBQ has been moved to near the shed and is lit up most Sundays to give a bit of much needed warmth, thanks Clive for the loan.

Stuart Willis flew his new Rutan long EZ scale model on 20th November which was a bright, sunny, calm but cold day. Calm enough for Chris Searle to also fly his Doug McHard small electric SE5a featured in a previous Fflypaper (and shown left).

Subsequent investigation showed that a long term fuel leak in the tank bay had caused the joints to fail. The model was second hand so it must have happened in it's first "life". All was repaired by 2nd January when it flew again.

Dave Pask was unable to fly on 2nd January as his Tx battery was low. He had given it a brief top up charge of a couple of hours the night before but it was still virtually flat. You need to be careful about nicads as they lose charge over time (about 10% a week, more in cold weather) and Dave last fully charged them over a month previously. It is a good idea to fully cycle batteries every few months at least so they don't lose capacity or develop a memory. Dave was not too worried about not flying as he recently gave up smoking so was a bit "twitchy".

We have been using buddy boxes for the training which is just great but is causing Keith some problems as the rates on the slave don't work (as there are none) and the throws are greater than on the master, keeps him on his toes.....

The 4th December was also calm and very bright. Keith Pepper and Dave Pask are getting on well with their training doing circuits, figure 8s, climbs and descents.



I have recently discovered the Smallfield Aviation Society, they run talks on the first Tuesday of every month. The talk on 6th December was by Eric "winkle" Brown the test pilot who was test flying from 1940 and has flown over 400 types of aircraft including many German

WW2 fighters (including the ME 163 and 262). The illustrated talk was enthralling and explained how the sound barrier was approached and exceeded.

Keith did have a problem a few weeks later on 18th December. One of the approaches was looking good so at my suggestion he went on to land. Now I won't say this was the most light of touchdowns but by no means too hard. We were both amazed when the engine, complete with bulkhead, **fell off!!!!!!**

The speed of sound varies with temperature and is known as Mach 1 (after the Austrian physicist **Ernst Mach**. At sea level around 740mph)). During test flying of German fighters it was found

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that their tactical Mach number was around .75 (the maximum speed they could manoeuvre) and that of the Spitfire around .8. The American P47 and P38 aircraft fared badly in combat with the German fighters in the early 40s so were withdrawn from this role, their tactical Mach numbers were below .75 so hence their lack of success in these roles.

He mentioned a Spitfire that was being tested towards Mach 1 from great height in a dive. The prop oversped and departed the aircraft, complete with the reduction gear. In consequence the C of G also migrated towards the tail. The pilot managed to glide into land but had subjected himself and the airframe to 11g and pulled the leading edge of both wings away from the fuselage by 3 inches on both sides; the first swept wing Spitfire....

He also did some investigations into why the DH108 tailless jet crashed. When Geoffrey DeHaviland was killed he was doing high speed tests at low altitudes and Eric was asked to simulate these conditions. As he flew lower and lower he encountered no problems. As DeHaviland was flying in quite turbulent conditions Eric was asked to simulate this by a short, sharp elevator input. Wrong move—this set up a 3 cycle per second oscillation that went from +4g/-3g, closing the throttle stopped the oscillation in about 5 seconds. The cockpit camera captured Eric's violent forward and backward head movements that had obviously broken DeHaviland's neck.

He was also involved with the Miles M52 that was being developed to break the sound barrier. This plane was subsequently cancelled but the wing (known as the Gillett Wing due to its sharp leading and trailing edges and 4% thickness at the tip) was installed on a Miles Falcon (piston powered) to test the low speed handling. This also incorporated the all flying tail developed for the M52. The all flying tail was a major contributory factor in subsequently breaking the sound barrier (not invented in the USA as Chuck Yeager seems to insist!!!!).

To prove that the M52 would have broken the sound barrier a model was built and launched westwards over the Atlantic. As Eric said "it was last seen, doing in excess of Mach 1.4 towards the USA...". Talks are held on the first Tuesday of each month at the Smallfield Parish Hall starting at 7pm, there is a £2 on the door charge for non members, which includes tea/coffee & biscuits.

Interesting Club night in November, David Slaughter came along to give us an update on the Pietenpol Air Camper he is building. He had to move out of his purpose build workshop and the aircraft is in his home (in the lounge) but nearly finished. It is now at the covering stage and will use a sort of super Solartex type material. This needs to be stitched to the ribs every 2 inches so is quite a laborious job and will cost around

£2000 with painting. This just leaves the engine to sort out, he has a Continental C90 but he is not sure how best to overhaul it. David's craftsmanship is exquisite and the build has taken many years (this was his 3rd update to us at Clubnights), The end result I am sure will be superb.

Sad to hear that Ray Hanna died in early December. Founder of the Old Flying Machine Company and former leader of the Red Arrows. Ray's flying of MH434 (OFMC Spitfire) was superb, he displayed the aircraft

superbly and was flying it at an airshow only 7 days before he died.



I vividly remember his display on the first day of the inaugural Goodwood Revival meeting about 6 years ago.

At the end of his display he turned and flew along the start/finish straight below the level of the grandstands (pictured in a Ffypaper at the time) on full noise—awesome.

Norman

Fuel run

Fuel supplies are dwindling in our sheds so we will be sorting out a "Fuel Run" to Southern Modelcraft in early February. Come along to the January meeting to give us your orders or e-mail our webmaster from the web site.

Southern Modelcraft do not have a web site but if you go to: <http://www.justengines.unseen.org/fuels.htm> their fuel range is listed. Prices are much lower than in the shops and you only have to pick it up from us at the Club.

ANY IDEAS FOR A CLUB WINTER VENUE?

The room we use at the moment is inexpensive but not very welcoming. If anyone can suggest an alternative, have a word with one of the Committee - it may be a reason for low turnouts to Club nights

Useful web site

www.gasco.org.uk

This is an aviation safety site but has a weekly listing of all aircraft related TV programmes, for the square eyed.

B Test - Part 2 the manoeuvres

(In this second part Max goes through the actual manoeuvres and actions themselves)

A Carry out pre-flight checks as required by the BMFA Safety Codes.

This should be second nature to all. However remember to be 'SMART' and its good practice to only run your engine at idle speed whilst at your pit position. Full throttle engine testing should be done where you are not inline with other people in the pits, e.g. move forward to the area between pits and the flight line.

B Take off and complete a left or right hand circuit and overfly the take off area.

As mentioned lowering the rudder rate can make ground run steering easier. Once off the ground climb steadily without hauling it off at a steep angle. A modest 25-30 degrees is enough and shows you are in control.

C Fly a 'figure of eight' course with cross over in front of the pilot height to be constant. The examiners will expect this manoeuvre to be flown more accurately than the similar manoeuvre in the A test.

First agree with your examiner the interpretation of this manoeuvre, start, finish shape etc it is easily mis-understood. This will require practice due the higher standard required to get the circles close to each other in diameter, centred correctly and with the alignment to the runway heading.

D Fly into wind and complete one inside loop. Should be fairly easy but if your model is badly set up, i.e. when you pull up it yaws left/right or rolls left/right it will be harder to do. Entry and exit height need to be close so practice this and reference to say a tree line. You can compensate on the second half of the loop on the way down as by then you will be at idle power won't you? Do not make the loop too small you may incur the displeasure of the boss. Remember you model will yaw left or right when pulling up if there is a crosswind!

E Fly downwind and complete on outside loop downwards from the top i.e. a bunt.

Same basic model setup issues as for D above, when you push it should not induce yaw or roll. If it does then fix it or learn how to control it. Make sure you engine will function under negative G, from the bottom of the bunt upwards. I found that full power here was not necessary and partial power an advantage as the engine ran at a more than adequate power and did not sag as it might do if full power applied leading to an embarrassing 3/4 bunt.

F Complete two consecutive rolls into wind.

CLUB NIGHTS

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WINTER CLUB NIGHTS ARE HELD IN THE FOREMAN INSTITUTE IN BLINDLEY HEATH STARTING AT 8PM:

WEDNESDAY 25TH JANUARY - THERE WILL BE A "TEACH IN" ON HOW TO GET THE BEST OUT OF THE CLUB FORUM AND A DISCUSSION ABOUT A MORE FORMAL TRAINING PROCESS. PLUS OF COURSE A NOGGIN & NATTER.

WEDNESDAY 22ND FEBRUARY - BRING A MODEL EVENING (ELLE MCPHERSON WOULD BE GOOD BUT NOT THAT TYPE OF MODEL UNLESS YOU HAVE ONE!!!!). LETS SEE WHAT YOU WILL BE FLYING IN THE SUMMER.

TRY TO GET ALONG TO CATCH UP ON WHAT MAY BE HAPPENING. ATTENDANCE HAS BEEN POOR AT SOME EVENTS SO DO TRY TO GET ALONG.

This is probably the trickiest part. Practice and more practice will improve it no end. Reduce elevator and ailerons to suit. Practice the timing of the rolls to be mid-point with the model in front of you. I also found it easier for me to do the two right rolls from right to left and the two left rolls from left to right. See what suits you as the B test leaves this up to the pilot.

G Complete two consecutive rolls downwind using the opposite direction of roll rotation to that used in F.

See F above.

H Complete a stall turn either left or right.

Practice these to left and right as you will probably have to demonstrate both. Common mistake is the exit height is much higher than the entry height. Allow the model to descend vertically enough after the stall turn to the correct exit altitude.

I Gain height and perform a three turn spin.

Know how your model enters/exits a spin. My Acrowot was not consistent on exit leading to a bit of guesswork. Luckily I got it right on the test. See also the BMFA guidance on spin entry. You have to exit within 15 degrees of entry heading.

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J Fly a rectangular landing approach and overshoot from below 10 ft.

Should be easy enough.

K Fly a rectangular circuit in the opposite direction to that in (J) at a constant height of not more than 40 feet. Should be easy enough

L Fly a rectangular landing approach and landing (wheels to touch within a pre designated 30 metre boundary).

Should also be easy enough. Remember a 30 metre boundary from the centre of the Newchapel strip is effectively anywhere on the strip !

M Complete post flight checks as required by the BMFA safety codes.

This should be second nature. If you taxi back after landing remember to keep yourself between your model and other people. Be prepared to answer questions on BMFA safety code and FF club rules.

Max Woodhead

Airfoil accuracy—an insight by John Chew—part 2 (the conclusion)

(Here is the concluding part of John's article about the wing sections we use in our models. They follow on from comparisons he has run through his "DesignFOIL Pro" virtual wind tunnel software looking at the effects of minor surface imperfections on wing sections)

The conclusions are: -

1. If you are using a built up wing, then there isn't a hope that you can reproduce a "proper" aerofoil with enough accuracy to gain full benefit from its design. Your model's performance will be governed by its lift vs. angle of attack characteristics, and those depend on "large scale" choices like camber, thickness and location of maximum thickness. If you can get a combination of *those factors* that serve you well by wielding a french curve, then do so. Choosing a "proper" aerofoil section will gain you little or nothing over a "french curve special". Alternatively choose any aerofoil of appropriate thickness, thickness location and camber (regardless of who designed it) because you won't notice much difference one from another.

(As a little aside, there are some *really* dodgy aerofoils about, such as the "thickened Aquila" sections used on some commercially built trainers, that really have little to recommend

them at all. I would tend to avoid those even with a built up wing)

2. If you are using an *accurately cut and skinned* foam wing, then you may, just about, be accurate enough to start seeing the benefits of using a "proper" aerofoil. Its still going to be very borderline, but might *just* be there. Even so it would be infinitely better to use a "french curve special" of the *right* thickness and camber than a "proper" aerofoil of the wrong one.

Yet even if you happen to produce the "perfect" wing, absolutely accurate in every way, will you actually notice the difference? Probably not. If the aspect ratio is below about six, if the model isn't an out-and-out racer or a competition sailplane, then the only difference is likely to be a two or three miles per hour on top speed and a shade more throttle needed in cruise. Big deal.

Overall, then, while I am rather proud of my EP series aerofoils, and will doubtless use them on anything I design, I will make no performance claims for them at all. If you need an aerofoil with 2% camber and 15% thickness then you won't go far wrong with an EP34-152. Or an NACA 2415. Or any one of three dozen others that have those same basic parameters.

You might see differences in stalling characteristics perhaps (due to different nose radii, mainly) but that's about it.

Have fun!

John Chew

(Ed's note: This probably explains why almost any wing seems to work with our models, we don't need to be too concerned about efficiency, stall performance is perhaps more important)

Whale Oil Beef Hooked- by Max Woodhead

Nooooow hear this, noooooow hear this! 'There's a red Cavalier on fire in the car-park' will play 'Whale oil beef hooked' on lane 5.

Thus spoke the rasping tones of the legend Joe Vanderkar over the P.A. each summer at the

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Horley Skittles tournament. Teams would enter from miles around and many would concoct interesting team names knowing Joe would read them out loudly without batting an eyelid or getting the Pheasant Pluckers juxtaposed. Ah happy days.

By now I am certain you have realised that this verbiage is all about oil and model aeroplane IC engines or to be more specific to use after run oil or not. Recently the OS 70 four stroke in my Acrowot, 'Bewilderbeest' started to sound very creaky when turned over by hand also it was not running too well either. After taking it to pieces I discovered the camshaft had lost its chrome plating and was in a sorry state. The main crankshaft bearing looked rusty and had a definite rumble.

A fairly obvious case of fuel corrosion? Being a lazy git I had never used after run oil on any of my engines, just used and abused them. I seem to recall the chap from Southern Model Craft saying at a club night that he never uses after run oil and never had any corrosion. Maybe he would say that - he sells fuel.

Serves me right you would probably say, correctly so. However what puzzled me was this engine is my newest one, only 3-4 years old.

The OS48 four stroke in my Pup is 16 years old and runs sweetly. Both engines get the same use/abuse, same fuel etc so why does one suffer and not the other?

I decide to strip the Pup engine just to be sure and find all the internals are in great condition. Moving on to the OS91 in my Mustang, that too is fine internally. Whale oil beef hooked I said to myself. What can it be?

I compare the three engines. The only significant difference I can see is the failing engine does not have the same crankcase breather set up of the other two. The two good engines have a regular breather nipple between the bearings at the bottom of the crankcase. The failed engine has a breather nipple at the camshaft box with a short piece of tube connecting it to the inlet manifold.

So could the crankcase ventilation and

scavenging be less effective with this breather system and perhaps compounded by an inverted installation? I do not know and if you have any theories lets hear them.

I do know that I am now converted to the use of after run oil.

Regards *Max*.

PS. If you have not worked out the title of this splurge yet, then say it quicker.

(There is an aside to this one, Max was taking the Pup out for it's first post engine rebuild flight and a member was heard to say "That smells nice" , presumably referring to the oil smell not his aftershave..... Ed)

Fuel blockages

Stuart Willis was having some problems with the Saito in his Acro Wot, it would just not run with any reliability. He had cleaned the fuel system and checked the engine mechanically, still no improvement.

He finally striped down the carburettor and using a magnifying glass discovered some tiny scraps of silicone in the idle jet. Removing these has restored the engine to full health. Stuart was surprised that the filter he has in the fuel line did not pick up these bits so he had a closer look. It only had a bit of wire gauze that would not stop the small particles that blocked the idle jet—totally useless.

These tiny bits of silicone fuel tube can be "shaved" off of fuel lines when filling if the connectors have any sharp edges (as many do—be wary of using brass tube as this is the worst culprit). Try to find filler connectors that have rounded edges or smooth out ones you use with a fine file, making sure you flush out any metal fragments. Older ST carburettors (as fitted to Laser engines) are particularly prone to this type of blockage.

We need your articles— It is always a bit of a struggle to get enough content for the newsletter so articles are always welcome from members. It does not have to be long or complex and you will be surprised how easy it is to do. Your English does not even need to be up to much (just look at mine—I took 3 tries to barely get a pass at GCS "O" level—I know, it shows). Choose your own topic (aircraft related please) and get it to the Editor any way you can from handwriting to publisher (address/e-mail on final page), I can cope with them all.

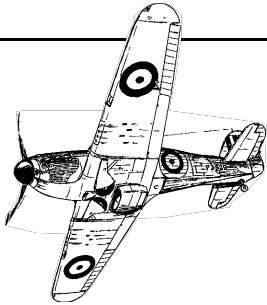


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Field Report

Imberhorne - this site can now be used on Saturdays and Sundays until around the end of March as we can only use the site for 28 days in any year. **YOU MUST FLY HERE WITH A COMMITTEE MEMBER** on the first occasion as there are some important briefing points to be aware of. This site is normally used if the conditions at Newchapel become too boggy but the open area here is good for new models due to the lack of trees close to the flight paths. A call to Chris Searle would be a good starting point if you wish to fly from here.

Newchapel - Holding up pretty well but the winter so far has not been too wet (well, pretty dry in reality). The land drains are working well so that is obviously helping. The car parking area by the field gate is very firm but can get a bit crowded on Sunday afternoons but **don't be tempted to drive across, even with a 4 wheel drive**. You will get over but churn up the track which will make it unusable when concrete hardened in the summer!

If you can bring along some kindling wood for the stove (and stack it in the shed) that would be useful for the stove. An unknown member has delivered many sacks of dry wood off cuts so thanks for that, this main fuel will keep us going beyond the winter.

We planted some daffodil bulbs around the shed so it should look nice come the spring.

KEEP YOUR SITE



WITH QUIET FLIGHT
BRITISH MODEL FLYING ASSOCIATION
AND LOW RPM'S