Newsletter

May 2014

I have been flying electric models for many years now. I like it because the motors are quiet but powerful, they always start just by a simple plug connection and a flick of my throttle stick. The model remains clean with no oily mess being needed to wiped off after each flight.

There's just one criticism - the length of time it takes to recharge all those LiPo's when you get home. Nothing is perfect! Now that I'm doing so much indoor flying - I get 4 hours of indoor every week, I find that I am using on average 6 LiPo's per hour. Each LiPo takes around 1 hour to re-charge. I am therefore charging for some 24 hours per week!! Now that's just the indoor stuff - if I then go to the field and fly my 'normal' models, I have even more re-charging to consider.

It is time for change. I so need one of those multi chargers. Hobby King sell one which, by the time you've paid for the postage etc will set you back just over £80. Just think, the luxury of being able to charge 4 LiPo's all at once. My ultimate aim would be to have not just one multi charger but two - just imagine being able to charge 8 cells in just one hour.

Utopia restored - YES.

My current heart's desire.

May 2014

The Aerobatic Competition

The weather was fine but all the pilots told me that the wind was just a bit tricky which made smooth flying difficult. It was Jim Sheldon who bravely volunteered for the first flight with his SebArt Wind S. Even with this model you could see that he was needing to fight all the time to keep things smooth.

It's a pretty model - all so state of the art. This was his landing approach.

You will notice in all the pictures that I did not attempt to take the models actually performing the aerobatics. The models were very understandably flown at a great height - very sensible especially considering the conditions.

I therefore only took the take offs and landings so that I could reasonably fill the frame. The only mishap was to Chris Vernon's Sukhoi which lost half of it's stabiliser and elevator. This was again a SebArt model - it went into the ground vertically and at high speed, there was that nasty thud followed by blue smoke whilst it's 6S LiPo caught fire.

The Competitors

May 2014

Spot your Model

The Winners

Workshop of the Month

For this month, I met up with Phil Leech. Phil as you already know is a highly enthusiastic and accomplished flyer. This club seems to have more than it's fair share of excellent flyers - it just seems to attract them. When I met up with him at his home just outside Preston, I found that we had talked about very many things other than model aircraft.

Phil is one of those guys who bubbles over with enthusiasm for life and the enjoyment that it brings. He loves motorcycles - he owns and regularly rides one. He loves classic sports car - again he owns one and really uses it for continental runs.

He spends a lot of time with his caravan touring around France. Model aircraft are only one of his hobbies. He came up the same way that most of us did - a diet of mainly Keil Kraft, Veron, Frog etc. He managed to get his first free flight

Workshop of the Month

to fly nicely but it flew so well that he lost it on it's first real flight. He did the usual control line and competed in combat.

Phil's CD200 Benly

He took up radio control and got into the F3A aerobatics. When you watch him fly, you can see how disciplined his control of the aircraft is. Yes, he's a very good RC pilot.

He's done loads for the club and is of course our current secretary. He is also our BMFA examiner. I asked him about his working life - he is a chartered electrical engineer - university qualified and has only recently retired.

Just some of Phil's models - he loves the JEN range of motors which many of these models use.

This is Phil's 3 Phase Lathe - some machine!!

The Multiplex TX converted to 2.4

A VIEW FROM THE HEDGE. (By Will Sparrow)

As regular readers will know, I take great delight in watching you modellers airing your creations (or should that be airing your latest purchases?). I love to see the models twisting, turning and enjoying the sky. What I do not like is seeing models crash. We have had a couple of crashes lately, one was totally unexplained, and the other looked, from this twig, like good, old-fashioned finger trouble. The first case concerned a model on its first flight after its long winter hibernation; one minute it was flying along in a straight line, doing no harm to a soul, the next it turned into a wild beast and ploughed into the unyielding earth. I flew over to the hut roof, in order to get a closer look, just as the recovery party was returning with the wreckage. The radio bits were all plugged in for testing – you can guess the next bit – yes, you're right, everything worked perfectly. The wise old owl later reckoned that since the model did not go into failsafe (I saw them checking that the failsafe was correctly set) the power supply must have become momentarily interrupted. Such things are way beyond the understanding of us sparrows, but that owl is rarely wrong. The second crash was brought about when the model, recovering from an (intentional) spin, seemed to flick the other way and head-butted the planet. The model was a complete mess and the modeller, understandably, distraught. I suppose that if you fly model aeroplanes you have to be philosophical over their occasional demise but crashes are always a saddening experience.

One thing that struck me from observing the results of these crashes was just how totally the models were destroyed. At one time a crash meant a broken tailplane or a cracked fuselage, now it seems to be total destruction or nothing. Models these days seem to be constructed in such a way that they will withstand the flight loads - and nothing more. If you crash it you'll have to buy another one! Now I know of lots of sparrows who have had flying accidents (crashes?). One daft hen flew into a window last year and I, myself, will own up to having once had a mid-air. We were all the wiser for our experiences but we did all recover in short order. It's a good job that sparrows are more durable than today's models, eh?

One other incident was not a crash but an accident. On the day in question I was jolted from my mid-day doze by a loud bang from the pits. A modeller had just

A View from the Hedge Continued/....

started up a 4-stroke engine and was moving away when the vengeful engine back-fired and threw its prop, hitting the poor member on the hand. There was blood everywhere and the injury looked, to my distinctly un-medical eye, to be beyond trivial. Luckily, help was at hand (sorry!) and the patient was soon expertly first-aided. I'm sure that we'll see him back on the field in no time. Please, you modellers, be extra careful. This sparrow, for one, hates the sight of blood! Accidents, by their very definition, are unforeseen so you do need to be prepared for the unexpected: I haven't checked recently, but your wise committee had the foresight to display a notice, visible from the outside of the hut, giving the site's location, map reference and GPS coordinates – just what you'll need to summon the air ambulance as you stagger up the hut steps with that propeller embedded in your skull!

You know that I have been looking forward to your aerobatics event for weeks now so you can guess how excited I was when the weekend of the event dawned bright and clear with good weather in the offing. The Saturday was a lovely day, sunny and with a light westerly breeze – perfect conditions for a spot of practice. Quite a few modellers grasped the opportunity and it wasn't long before the schedule was being tackled with gusto. There were models of all sizes having a bash; their owners determined to hone their manoeuvres to perfection. One large electric model, having flown a couple of schedules, was having a rest from the pattern fliers' discipline and was flying the sort of manoeuvres that we hedge-folk regard as more interesting. The model, slow-flying and gentle as it was, had just completed half an outside loop and was in the process of performing a one-and-a-half negative flick roll to bring it back to upright when I thought I heard a cry from the model. It sounded like "eject, eject" – I can't be sure. The cry was immediately followed by a loud noise and bits of debris filling the sky around the plane. I thought, at first, that there had been a bird-strike, but a quick scan of the hedge revealed no missing members and no cries of anguish. It transpired that the battery pack had had enough of the model's cavorting and had "banged-out" through the canopy! The little plastic pilot, now with no motor power to hand, bravely landed the model. He was lucky; the model had a separate power supply for the radio and the heavy battery pack was located near to the model's CG. Of the battery pack there was no trace.

A View from the Hedge Continued/....

The hedge was also treated to the first flight of a very nice BAe Hawk jet. This was one of those painted-in-the-mould, expensive creations that I'd heard tell of but had never before seen in the plastic. (There was a rumour, in the hedge, that the owner had had to sell ***both*** his kidneys to fund this model!). The young lad who lined the model up for the maiden flight showed steely determination and not an ounce (30 grams) of trepidation, whilst his father just rubbed the small of his back. What a good job he made of the first flight too. Ah! The talent of youth…

Sunday: the day of the competition. If Saturday was a perfect day for flying aerobatics then Sunday was not! The day was warm and the sun shone but there was a strong southerly cross-wind which made keeping on track next to impossible; a loop, started over the strip, could well be seen finishing halfway to Staining! Modellers, however, are made of stern stuff, and all battled manfully with the conditions. The name of the game is enjoyment and all the participants did indeed seem to enjoy the experience (as did we hedge-folk). The only fly in the ointment was when an electric model suffered a tailplane failure and crashed in the rough on the far side of the strip. To add insult to injury it then caught fire. It's not often that I've seen modellers run, but run they did as they dashed towards the stricken model which, by this time, was giving off lots of white smoke and was hissing like a bad-tempered viper. The model was a total wreck, but the owner again seemed philosophical. Aye, modellers are made of stern stuff, indeed they are…

WS

Aerodynamics for Model Flyers - Introduction

By Brian Holdsworth

Aerodynamics is one of those areas where some seem determined to quote exact values for parameters, when all the evidence suggests that this is not practicable. It is probable that Formula 1 racing cars have had more money and effort expended on predicting their performance than for all aviation combined; the underlying characteristics are easier to define for a car on a race track than for an aircraft moving in three dimensions through varying conditions and it is practicable to use a full-size wind tunnel, but results have been very mixed. This is largely due to the difficulties in predicting the nature of airflow over a surface where tiny changes can result in major effects - Chaos Theory in action! Equations are available to derive some aircraft performance parameters under restricted conditions and can give useful results, but usage outside those restrictions can be very misleading. These equations are derived empirically (fitting a curve, and hence an equation, to experimental measurements). Model flying simulators use these equations and can give some useful results but are very approximate - in particular, scale effect and the effects of wind are largely ignored, though these can be of great significance to the model flyer.

There are two main approaches to analysing complex problems such as this. The usual quantitative analysis has to define all the parameters and relationships to derive equations so allowing results to be calculated; all too often, approximations have to be made where parameters are poorly defined and, unless carefully used, can give wildly inaccurate results. Qualitative analysis, on the other hand, does not attempt to calculate exact results but, over a limited range, produces approximate values, ratios and interactions; this approach will be used in this series and, while some general values will be quoted as examples and some parameter relationships will be identified, mathematics will be avoided but the effects of controls, wing loading, wind etc. on model performance will be identified in a useful and usable form (hopefully)! If the forces on a body are unbalanced, that body will experience acceleration away from the resultant force. Over time, this results in a change in velocity which, over time, results in movement. For example, if a body is held above the ground, gravity exerts a downward force balanced by the upward supporting force. When released, the supporting force is removed so that gravity remains,

Aerodynamics for Model Flyers - Introduction Continued/.....

accelerating the body towards the ground with increasing velocity so that its distance from the point of release increases at an increasing rate. This would continue indefinitely if the forces remain unchanged. However, as the velocity increases, air resistance generates a force in the form of drag opposing the motion. The body reaches its maximum (terminal) velocity when drag equals gravity and the forces become balanced; drag is independent of mass but the gravitational force is proportional to the mass, so that terminal velocity increases with increasing mass. Given the derivation of drag from the characteristics of the body, the Laws of Motion would allow all these parameters to be calculated; however, drag is a very complex parameter and, in practice, can only be approximated. Another change in forces would occur when the body reaches the ground and a large force is generated stopping further motion by reducing the velocity to zero; in the context of aircraft this is a crash and, being undesirable, will not be considered further!

For convenience, the various forces and motions of a body such as an aircraft are resolved into three linear axes (fore and aft, side to side, up and down) and three rotational axes (pitch, roll and yaw); these are often considered in isolation and then combined as required. In the context of aircraft, unbalanced forces result in accelerated flight as against steady flight when the forces are balanced. It should be noted that climbing or diving flight may be balanced if the aircraft velocity is steady; turning flight is always accelerated since a force is needed to change the velocities.

There are several significant differences between flying full-size and model aircraft.

A pilot sitting in an aircraft in flight may sense, through the seat, accelerations in the various axes, and can see changes in attitude by reference to the horizon with instruments available to indicate heading, airspeed, height etc. A model flyer can determine attitude and relative position by observation against the horizon; linear and rotational velocities may be deduced by seeing the changes over time but with poor accuracy and sensitivity; accelerations are undetectable until they produce sufficient movement to be visible so that it may be assumed that acceleration must have occurred; distance from the flyer, height and

Aerodynamics for Model Flyers - Introduction Continued/.....

groundspeed are difficult to estimate and airspeed is not possible to determine. The model flyer finds it relatively easy to fly full-size aircraft since the intent and effect of the controls is understood, and it is obvious that the main source of model flying information (visual) is not available; the full-size pilot, however, often finds flying models difficult because the effect of the controls is not so obvious and much of the feedback from the full-size aircraft is instinctive so that its absence is not immediately apparent.

The effect of wind is proportional to the ratio of wind speed to aircraft speed and so is much greater for models due to their lower flying speed (typically about 40 to 50mph); even light aircraft cruise at 100 mph or more. A wind speed of 15 mph results in a speed of about 20 mph at flying height, but maybe only 5 mph at landing height (a few inches above the ground); this is due to the wind gradient caused by the friction of the wind against the ground; considerable turbulence can also be generated by hedges, trees, uneven ground etc. A full-size aircraft with airspeed of 100 mph would have a ground speed of 80 mph into wind and 120 mph downwind; a model with airspeed of 40 mph would have a ground speed of 20 mph into wind and 60 mph downwind which is a noticeable difference! This wind gradient can cause problems when landing where, for example, an approach at 30 mph airspeed, with a small margin (5 mph) above stall speed (25 mph), would become only 15 mph airspeed at touchdown which is somewhat below stall speed; the result is a rapid sink onto the ground with elevator unable to slow the descent as the aircraft stability tries to maintain flying speed by converting height into ground speed. Another common problem is slowing the aircraft downwind to reduce its assumed excess speed so that it stalls and flicks into the ground when turning into wind for the final approach. This is why, on a windy day, it is desirable to fly the landing approach at apparently high speed so that the airspeed can remain above stall speed until touchdown.

Scale effect has a significant influence on the aerodynamic performance of a model compared with its full-size equivalent. In particular, drag is relatively greater requiring much higher power-weight ratios; relative lift is reduced resulting in lower wing loadings. Reynolds Number (Re) is a measure of scale factor and is proportional to the wing chord and airspeed so that a tapered

Aerodynamics for Model Flyers - Introduction Continued/.....

wing operates with different Re values at root and tip. In itself, Re is not very useful although Re values over about ten million approximate to full size performance with gradual degradation down to Re of about a million and significant degradation below the critical Re, typically a few hundred thousand; some specialised glider wing sections are optimised to reduce this critical Re to about a hundred thousand. For example, a 26" chord wing at 50 mph airspeed has a Re of about 1,000,000, while 8" chord at 16 mph has a Re of about 100,000. Fortunately, all is not negative and stall behaviour is generally less sudden at model sizes and "flat plate" wing sections can be effective even at very low Re numbers, which is how indoor models can fly well with small wing chord and low speed, provided they are very light.

Full-size aircraft generally fly straight and level and only occasionally turn, climb or dive. Model aircraft, by their nature, can only fly straight and level for a short time before needing to turn and so stay within visual range; they, therefore, spend much more time in accelerated flight which is why performance prediction is more complex (and more interesting!) than some claims would suggest.

Brian Holdsworth

May 2014

A Message from Steve aka 'The PropGuy'

Dear Modeller and Fellow Member,

Most of you in the immediate Blackpool area are faced with travelling to Lancaster or internet for fuel and other modelling requirements, whereas I am here in **Blackpool at Unit 4N Moorpark Industrial Estate. Bispham**

Many of you will know I stock the **Falcon** range of Beech and Carbon props also now have the largest UK stocks WW1 and WW2 props from **Xoar**.

I also carry the **Optifuel** brand of glow fuel and their other products like **Protect** the oil for petrol engines etc. as well the range of the well respected petrol **EME engines** which range from 35-120cc some of which have an autostart facility.

This year will see the addition many new items, but only those that are tried and tested and of exception quality and value, like the range of **'Warbird Pilots'** just in.

Additionally from stock I have flight batteries, servo extension leads and many more everyday type items as well as a selection of ready built models from trainers up. I can also provide most modelling requirements, even kits with a few days. I am not aiming to be a model shop however but provide a service to the local modeller.

My website is **Propguy.co.uk** currently in the process of being updated so if it isn't there don't worry.

Callers are welcome but as the show season is with us I may well be away at the weekends so please call ahead to avoid disappointment, evenings until… no problem! 07949-274274

Happy Landings!

Steve

The Cleveleys Classic Car Show

May 2014

We, the B&FRCMS, are putting on a static show at the Cleveleys Classic Car Show. I understand that many of you will be there to try to encourage new members to join our club. We will be sporting our new Club banner.

This is on Sunday 8th June. The show has got better and better each year and well worth the visit. The best bit is that it is entirely free. Bring your models - contact Paul Cusworth or John Prothero for any details.

Apologies

Sorry about the 'cockups' in last month's newsletter. When you make a mistake, you never notice it yourself. It was of course Lee Conner who won the indoor glider competition not Mark Conlin as I said.

Dave Swarbrick has kindly offered to check it over in future for which I am very grateful.

The other apology is that this month the newsletter has been delayed - I did a wedding (photography) on Saturday for a friend of mine and took over 800 photos. These had to be processed so I've had to 'fit' this newsletter in. In fact I'm cutting it short because I have an excellent article from John Smith which I am holding back till next month's issue.

Coming back to the photography, I hired a professional lens to do the wedding - it weighed nearly 2 lbs - massive great thing. It costs £1,250! It was interesting that the results I got were virtually indistinguishable from the stuff I get from my 'kit' lens. The big difference was that the professional lens was weather and dustproof.

Shows/Events for 2014

This is not a definitive list of every show in the country - I've kept it to relatively local areas only. If you know of any other shows/events which you feel would be of interest to the membership, please let me know.

LMA

RAF Cosford 19th - 20th July

Elvington - 9th - 10th August

Much Marcle - 6th - 7th September

Other Events/Shows

Weston Park Model Aircraft Show 13th, 14th & 15th June

BMFA North West Area Scale Fly in RAF Shawbury - 9th September

Weston Park Model Show - 13th - 15th June

In Conclusion

I've assembled my MXS 3D model. HobbyKing do give you a lot for your money - it cost me about £63 for the kit including postage. Still haven't flown it and the only worry I have is that the wheels will probably be a bit too small for the grass strip.

Once again, thanks to all you gentlemen who have so kindly contributed to this newsletter - you really have been great and make it all so interesting. Happy and safe flying.