

Newsletter

January 2019

Winter is firmly here and the older I have become, the more I hate these 3 months of misery. Today, I decided to get some exercise and jumped on my electric bike with the intention of cycling to Cleveleys and back. I just didn't realise how cold it was. I gave up just before I got to Rossall School after cycling into stinging freezing fine rain - I was soaked and pushing against a nasty wind. Cycling, even with an electric bike ceases to be fun in those conditions - I turned back for home and enjoyed a long hot shower.

I think we've all enjoyed some really good Social evenings and of course the AGM which was well attended. I really should have taken my camera to get pictures of the Trophy awards but I was very kindly sent these:-



John receiving the Scale Trophy



Jason receiving the AetroShow trophy

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Andy Moore receives the Most Improved Flyer Award



I love this one - Archie was awarded this trophy for breaking the most props on his indoor models.

Last but not least, Jake was awarded the Jet Trophy in his absence. Congratulations to you all and thanks for all those pictures.

January 2019

First Social Evening of 2019



Allan Cardwell brought along his 10cc size Valiant which he has powered with a brushless motor.

Lovely ME109E brought along by Carl Brotherton



This is Steve Warburton's HK Dauntless - really detailed model



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This is a model JP has been given by an old modelling friend of his. The build is absolutely immaculate.



This is the Kyosho Calmato - very nice model.

Dave brought along this wooden model which proceeded to project lumps of plasticine 'bombs' around the room.



January 2019

A VIEW FROM THE HEDGE. (By Will Sparrow)



Throughout the year I've noticed the appearance of many new members. Some are returners to the hobby who, perhaps, are keen to rekindle the thrills and pleasures they experienced in the past. Some are genuine beginners who have yet to learn how to take the top off a tube of glue and to appreciate which end of a soldering iron gets hot, whilst others are confirmed life-long modellers who have recently moved to the area or have come to value the superb facilities that your club provides – not just the field but the help and advice that is always available (!). One new member from the latter group turned up one Sunday in late November and treated us hedge-dwellers to a lovely display of scale flying with a large-scale Corsair, complete with a sweet-sounding, petrol radial engine. Our feathered community really appreciates scale models flown in a scale-like manner. We are obviously biased (who isn't?), but we take no pleasure in watching scale models being flown in non-scale-like modes where the object seems to be to try to rip the wings off or test the ultimate integrity of sparse Chinese glue!

I often hear conversations amongst you modellers regarding the dearth of the traditional model shop – I believe that your nearest model shop is in the next county! Of course, you have only yourselves to blame. It is a fact of life that no one wants to pay more for anything than he absolutely has to, so you all “flash the plastic” and order everything from the interweb (or whatever you call it: a total mystery to us sparrows). I mentioned this to the Wise Old Owl, the fount of all knowledge, who occasionally perches at the far end of our hedge. Once this old guy gets the bit between his teeth he is difficult to stop, being oblivious to interruption and too big to kick. Here is a bit of his perceived wisdom, as best remembered. “People, not just modellers, are imprisoned by the laws of modern thought, as e-commerce now uses behavioural and cognitive science to forge a path to total retail dominance...” There was much more in similar vein but I'm ashamed to admit that my little sparrow brain became numb and it went right over my head. I really don't know where he gets it all from, but the hedge would be a sadder place without the presence of such birds. I believe that those “drone” devices have been up to their pre-Christmas tricks and have managed to ruin the Christmas holidays of many thousands of people. How lucky you humans are to have the services of politicians and the forces of the law to catch and punish these brain-free individuals with the utmost speed!



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A View from the Hedge Continued/...

The shortest day and the festive season is now but the stuff of distant memory. The Christmas decorations are nestling deep in dusty cupboard or cobwebbed loft, and turkey dyspepsia has been banished for another year. I've spotted my first clump of daffodils (eight of them) in full bloom, so I can look forward to spring and lots of new aeroplanes. I am reminded of the words of that famous feathered poet Oliver Herford-Sparrow at this time of year...

*I heard a bird sing.
In the dark of December.
A magical thing.
And sweet to remember.
We are nearer to spring.
Than we were in September.*

The bleak months are not totally without flying opportunities so grab them while you may. The grass has been cut just recently and you can rest assured that I will always be ready to view your efforts from the hedge. Happy 2019!

WS

BMFA Member Confirmation of Cover

When you rejoin our Club, you are entitled to fly immediately at our field. **However, you are not entitled to fly at any other Club field** (assuming that you are a member of other Clubs). This also means that if you have paid your BMFA fee through another Club, you are only entitled to fly at that Club field **until the BMFA contacts you to confirm your insurance cover.**

The BMFA will send you by Email your **INDIVIDUAL MEMBER CONFIRMATION OF COVER**. Print this out and sign it. The BMFA are not issuing you with the laminated cards any more



January 2019

My Winter Project

Article by Dave Neighbour

It was in the Autumn of 2017 that I began to ponder on the next project. I didn't fancy another foam or ARTF, as good as they are, but wanted to get back to basics, to be more creative and build a "proper" model, fashioned from wood using traditional modeller's tools and skills. Perhaps something scale this time?

I considered building from a kit, but then remembered the Miles Hawk Major plan I had bought back in the '80s. This was originally for a .40 four-stroke and I had assembled all the materials for construction. Also, during a period of avionics field trials with the Army at Middle Wallop, I had managed to visit the museum there. They had in store a dismantled Hawk Major and they allowed me to take lots of pictures of this airframe.

So, I had all the materials, information and equipment for a good scale model, but then life intervened and construction had to be postponed.

Maybe the time had come to realise the dream?

I found the plan, checked I still had sufficient materials and confirmed it would make a good electric conversion project. I set to, familiarising myself with the plan and started checking fits and dimensions. I quickly realised that this plan was drawn before Computer Aided Design!

It needed drastic modification with virtually every dimension and fit and line needing to be checked and revised. The design was reasonably straight forward, but even so, it was evident that this was no quick-build and would take months of work.

Casting around for an alternative, I came across the free RCM&E plan for Nigel Hawes' Whizza, published a few years ago. This is a 42 inch span sport model for a 350/400 watt motor and 2200 mah Lipo. What sparked my interest was that a virtually flat plate aerofoil was used. Now, I've built a few profile, flat plate foamies and these flew reasonably well – it was just the low-speed characteristics could be a bit iffy! I wondered how a larger, heavier model would behave with a flat plate wing?

My Winter Project Continued..

January 2019

Article by Dave Neighbour

A quick check confirmed I had all the materials and "bits" in stock, apart from the motor and ESC. But what about the plan?

This was a revelation, obviously produced using CAD. It was a free plan, but I couldn't fault it. Every dimension checked and cross-referenced was near enough perfect!

Time to clear the building board!

Construction was simple enough, but this is not a beginners model. Many details are omitted and left to the "builder's preferences". Not a problem when you've built a few and can easily modify the build in order to utilise the parts you have in stock.

The only tricky bit was the undercarriage. The easy option is no-wheels hand-launch, belly-land operation, but I'm not keen on this. With hind-sight, I should have changed the design which wouldn't have been too difficult. However, I went ahead with the original concept which entailed bending a



single length of 10 SWG piano wire with a U-section in the centre which fitted in the narrow fuselage with the battery fitting between the legs of the U. The distance between the legs of the U was critical!

If you've ever tried accurately bending thick piano wire then you appreciate the difficulties!

However, I dug out my old wire-bender (not used for years!) and was really pleased with the result – less than 1 mm error between the legs of the U!

January 2019

Article by Dave Neighbour

My Winter Project Continued..

The only real problem with the design was the location of the flight battery. I had kept the tail end as light as I felt was reasonable and as the large battery bay is centred around the CG I had assumed the battery would fit within this area.

Wrong!

When almost completed, a trial fit everything to check the CG position showed marked tail heaviness. To avoid adding nose weight, the battery needed to be as far forward possible – right up behind the motor. I eventually achieved this by o-fitting a thin ply battery box in the nose section.



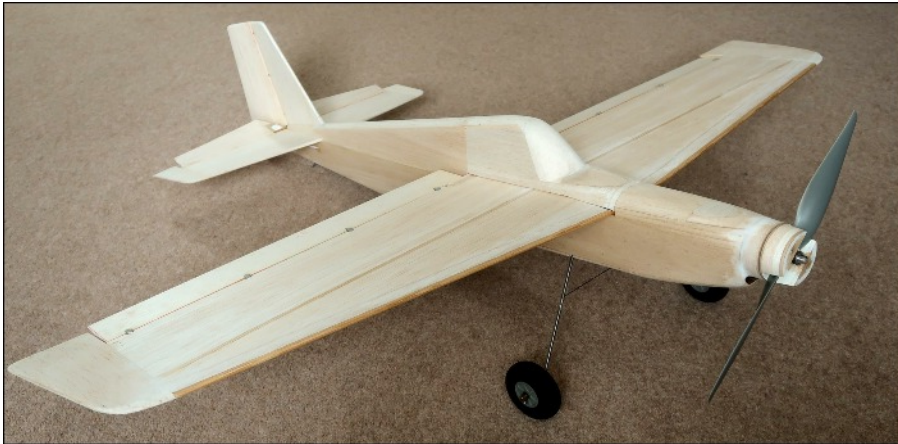
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My Winter Project Continued..

January 2019

Article by Dave Neighbour



Completion of my Whizza was delayed until July and still awaits a test flight as, once again, life got in the way. The maiden flight will now have to wait for next season.

However, I do have a model which should fly well; small and simple it may be, but I built it myself from sheets of wood with not a scrap of foam anywhere!

Satisfaction!!





Heat

January 2019

Article by Brian Holdsworth

For electrical and electronic equipment, heat is generally a significant problem and may require considerable effort to dissipate it and so avoid damage and consequential failure. In some cases, of course, generation of heat is intended - the clue may be in identification by names such as "Oven" or "Heater"!

If a heat source is enclosed within a perfectly insulating container, its temperature will rise indefinitely. The rate of increase is determined by the amount of heat from the heat source and its thermal capacity which is a measure of the heat required to increase its temperature. For example, a full kettle has twice the thermal capacity of a half-full kettle, and so will take twice as long to come to the boil. An empty kettle has a very small thermal capacity and so would quickly overheat to destruction unless the implemented safety precautions are sufficiently effective!

In practice, any insulation is not perfect, so the rate of temperature rise will be reduced by the transfer of heat to the environment, eventually stabilising when the heat from the source is balanced by the transfer. This transfer is proportional to the thermal conductivity of the insulation, the temperature difference across it and the temperature difference between the outside surface and the immediately adjacent environment, frequently ambient air.

Heat may be transferred by radiation, conduction and/or convection as some may remember from school! Radiation generally requires a considerable temperature gradient between the source and destination before it becomes significant. Convection requires mobility in the material and is generally significant for liquids and gases; often such material is in relative motion, being moved by a pressure gradient across the heat source, produced by pumping or by motion of the heat source through it, which has a similar effect to convection. Conduction transfers heat through the material; metals are good conductors while gases and liquids are generally poor, relying on convection or motion to move the heat through them. Some exotic applications such as nuclear reactors, use liquid metals giving good heat transfer, but obviously would have too many problems for general use!



Heat Continued..

January 2019

Article by Brian Holdsworth

Most insulation materials are actually air contained within a low conductivity material, which limits convection. This means that air is used as insulation and a heat dissipater! Fundamentally, restricted air movement provides insulation, while free movement provides dissipation. Materials such as foam plastic insulate by containing small bubbles of air within a thin plastic mesh. Similarly, clothes insulate by trapping air between them and the body and by trapping air between their fibres. Natural fibres are rough with many sub-fibres off them (a bit like a fir tree) and can be very effective. Synthetic fibres are generally very smooth and trap little air; some are manufactured in a very thin form, which tangles, providing better insulation.

When a liquid is sufficiently heated, it boils and becomes a gas. This phase change can absorb considerable heat without increasing its temperature and the resultant gas generally occupies a considerably greater volume. This is the basis of steam engines where water is heated in a boiler, and the resultant steam, usually under high pressure, can be used to turn shafts connected to equipment as required. This boiling effect has been used in some very high performance cooling applications, but the considerable complexity restricts usage.

Some aero engines, such as those in a few Schneider Trophy racers, were steam-cooled but had a very short usable life. Early supercomputers generated a tremendous amount of heat and their circuitry was effectively immersed in liquid refrigerant, which boiled vigorously extracting the heat into vapour which was condensed via a radiator to extract the heat - as in a domestic refrigerator. The heat was so great that loss of their cooling systems could result in circuitry meltdown within seconds! The refrigerant used CFC's, which have been found to have significant environmental problems (destroying the ozone layer), and their use was discontinued. Fortunately, modern circuitry produces less heat with consequently reduced cooling problems.

Some chemicals combine in an exothermic reaction producing heat or hot gases. A trigger to initiate the reaction may be needed such as a catalyst, spark or heat source to initiate what is often referred to as burning. To produce a useably vigorous reaction, the chemicals generally need to be in gaseous form or are atomised into fine particles, increasing the effective surface area. Coal-fired power



Heat Continued..

January 2019

Article by Brian Holdsworth

stations pulverise their coal into a fine powder, which is blown into the boiler firebox for rapid burning. Liquid petrol does not burn, but, at normal temperatures, it readily turns into a vapour, which is very flammable if mixed at a suitable fuel-air ratio; too high or low a ratio and it does not burn. Diesel fuel is a form of oil and does not vaporise easily; it is atomised into fine droplets, which become more flammable, though with a tendency to leave a core of unburnt carbon producing micro-particulate pollution, which is currently causing concern.

The heat may be harnessed for a boiler as above, or the expansion of generated gases may be used directly as in a piston or jet engine. For increased efficiency, temperatures greater than the melting point of the containing materials are often used, requiring additional complexity to insulate them from the heat such as by routing ambient air between the hot gases and the materials to act as insulation; jet engines are an example of this technique

Batteries contain a mixture of chemicals whose reactions generate free electrons, which become "stored" at one terminal, with the other terminal storing what is effectively an absence of electrons - semiconductor physics refer to these absent electrons as "holes" which is quite a good description! When equilibrium is reached with sufficient electrons separated to produce the cell voltage for the chemistry, the reactions stop. If a current is taken by connecting a load across the terminals, the electrons pass through the load to the other terminal, cancelling the holes; this reduces the cell voltage triggering reactions until equilibrium is restored - this voltage drop is roughly proportional to the current and produces a characteristic referred to as ESR (Equivalent Series Resistance).

There are some chemical combinations, which would produce good battery performance, but their reactions are excessively exothermic meaning that such batteries would rapidly overheat and possibly melt, which would not be good! LiPo's are generally effectively and safe in operation, but under excessively high discharge, their reactions can become exothermic causing considerable warming. The much-hyped LiPo thermal runaway can occur if the battery gets very hot, or is overcharged by a considerable margin resulting in too many electrons (and holes) being available; unwanted reactions then occur producing heat and releasing oxygen within the cell, triggering further reactions and more heat until the cell



Heat Continued..

January 2019

Article by Brian Holdsworth

smokes! High performance applications may draw more current than their cell capability, which would require cooling provision to remove the generated heat. Electric cars demonstrate this problem and require cooling provision with temperature monitoring and automatic current limiting to avoid problems. Boeing ignored this potential characteristic for the ground supply batteries in their recent Dreamliner airliner, resulting in fires on some of their development aircraft - their solution was to install the batteries in a sealed box next to the fuselage skin with a blow-out panel to release any smoke and heat to the outside!



January 2019

Club Instructors

Jason Reid, John Higgins, Chris Vernon, Mark Conlin, Brian Holdsworth, Jim Sheldon, Paul Cusworth, Andy Harrison, Justin Goldstone, John Prothero & Allan Bates.

Social Evenings

Held at the Marton Institute, Oxford Square, Blackpool FY4 4DR

6th February Talk and demo on 3D Printing

7th March Flight Sim Night

3rd April Safety Talk

Club Events

22nd June Fly In

11th July BMFA Scale event

Scale and Aero Show Trophy Event - TBA



January 2019

Shows 2019

8th/9th June Cosford LMA

14th-16th June Weston Park Model Show

10th/11th August Elvington LMA

31st August/1st September Much Marcle LMA

In Conclusion

So there we have it and another summer to look forward to. I have at last got myself a full frame camera which I'm slowly exploiting. It's a joy to use but the controls are in unusual positions and I still have to check the book of instructions to find out how to do what was simple on my previous cameras. It's already brought me some success in Club competitions.

Thanks to you gentlemen who do such an excellent job giving me articles and pictures to put in this newsletter. Thank you for putting your valuable time in and what you do is so appreciated.

To all those of you who brave the cold, I wish you happy and safe flying.

January 2019



I leave you with this fabulous shot of the English Electric Lightning taken and processed by Wendy Martin, the secretary of our photographic society. She seems to have this knack of getting the 'spot on' angle to shoot her pictures and has fast become, in my opinion, our best photographer.

When I saw this picture I asked her if I could put it in our newsletter to which she kindly agreed. Brilliant shot Wendy.