



December 2015

# Newsletter

Another year passes. It can't be said that it was a good flying year - the weather really didn't produce what we could call a summer.

We have now had the AGM which was again attended by 29 members (exactly the same number as last year). Below, I will list items which resulted from the AGM affecting all members for 2016.

**Subscriptions are now due for 2016 membership.** Membership News!

At this year's AGM, on December 2nd, a new constitution was proposed and agreed by the members present. As part of the new constitution the structure of the club fees was altered to abolish the concept of a joining fee and merge it into the annual subscription. The new subscription fees are as follows:

Club Subs for any returning Senior member before or on 31st January £75.00

Club Subs for any returning Senior member after 31st January £95.00

Club Subs for Junior or Social members £20.00

Reduced Membership Fees for New Members!

Any new full member joining the Society will only be expected to pay reduced subs for his first year of membership. This equates to £48.00 instead of £95.00.

Club Subs £48.00

BMFA Insurance £33

Total £81

## Safety Officer

Jason stressed the need to continue to fly safely and to always use a lookout when flying. Watch out for other full size aircraft flying over the site - never over fly them. Ask your lookout to constantly watch for walkers either on the footpath or around the field.

Jason complimented the members in that there had been no serious mishaps/accidents



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## Safety Officers Report continued..

during 2015. He stressed that electric flight presented just as many hazards as combustion engined models. Of course with electric models, because they are silent, it may lull the modeller into believing that they will never bite back. Those little motors have a lot of power and should be treated with great respect. He also said that model restraints should be used when running up the motor to check out the radio operation.

There had been some crashes but these had all occurred in safe places but as always, this raises the questions as to what went wrong to cause the crash. Jason asked if members who have the misfortune to suffer an unexplained crash to let him know the following:-

- *Position on the field.*
- *Radio Gear being used.*
- *Type of battery and N° of cells.*

He said that he would collect this information and look to see if there are any obvious trends.

In conclusion Jason thanked the members and wished everyone safe flying for 2016.

## Events Report

Dave said that we had the two contests run on the same day - the Aero Show and the Scale contests.

Dave said that the standard of flying had improved and encouraged more members to take part whether they were 'A' certificate, 'B' certificate standard.

Dave encouraged more members to take part in 2016. The contests are scored on a handicap system so if you are an 'A' certificate flyer you can achieve full marks for the various manoeuvres flown whereas a 'B' certificate flyer will be earning less marks for those same manoeuvres. It's all totally fair and the whole day is always good humoured and a real 'laugh'.

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*The participants - only 12 members - could have been many more!*

**Awards** were presented at the AGM - John Higgins was awarded the Aeroshow trophy and Andy Harrison, the Scale trophy. Dave then presented Andy with a truly beautiful picture painted by Cath - Daves wife. I'm sure Andy will always treasure it for many years to come.



*John Higgins receives the Aeroshow Award*



*Andy receives the Scale Trophy*



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## Awards Continued..

Finally Paul presented Dave Swarbrick with a certificate giving him honorary membership for a period of 5 years for his dedicated work which he does for this club. He received a richly deserved standing ovation from the members present.

So, those were the main items coming from this AGM for those of you who were unable to attend.

## Hot Pot/Quiz Social Evening

We had a great night - 37 people turned up including guys from the LMA. As usual the quiz was run as only Dave knows how. This meant that he took the piss - it was better than going to a comedy night at a club. The raffle for the Brio 10 which Mark Conlin had kindly donated was won by one of the guys from the LMA.



We enjoyed the usual Hot Pot supper all organised by Jason and family. Yes, it was a great night and all thanks to all of you guys who came to make it so.

## Indoor Flying at Highfield School

Here's a picture of the latest couple of biplanes - they fly really well including 3D. Thanks



to Jason for taking these pictures. The motor in my model sounds like a bag of nails - I think the bearing is about shot but it has done many many hours of work so I can't complain.

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Here is the picture which Cath painted of the Hurricane - a very talented lady - she has caught the atmosphere and excitement of the subject. Andy, you are a very lucky guy - a painting to treasure.



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**A VIEW FROM THE HEDGE.** (By Will Sparrow)



Now that the nights are really drawing in and the weather gods are dishing up nothing but rain and gales, there is precious little of interest to view from the hedge. The conditions, of late, have been so awful that even the hardest modellers and the most determined pensioners have not dared to venture forth. It is a blessing that we sparrows are a philosophical bunch and are well able to make our own entertainment when you modellers are not about to provide us with interesting things to see.

In the fine months of spring and summer we watch modellers, we eat, we sleep and we make love; in the dark days of winter we don't watch modellers! What we do do, to pass the long, dark hours, is to socialise. There is nothing we sparrows like better than to huddle together and tell stories and, at this time of year, seasonal stories of snow, holly and Santa are hedge favourites. Not every bird is a good story teller, but one of the best is the Wise Old Owl who perches, on occasion, at the far end of our hedge. We are in awe of this old bird, who seems to know everything that there is to know (and then some). I always get the impression, perhaps mistaken, that he finds us little birds a bit amusing, but he never seems to be condescending. He is also much bigger than us and has a sharp beak - so we're always careful to maintain a respectful (safe) distance!

Imagine our glee when, a few nights ago, there was a soft rustling of feathers and the twigs parted to reveal the WOO himself. It wasn't long before word passed from beak to beak and the old chap found himself surrounded with a sizeable audience of sparrows gathered, like expectant young nephews around the feet of a favourite uncle. There was much talk of the magic of Christmas and the expectations of the presents to be had from Santa's sleigh. At this point there was a sharp intake of breath from the WOO: a hushed, expectant silence fell over little birds all. The old owl then proceeded to tell us his thoughts on the legend that is Santa.

"There is no known species of reindeer that can fly, however there are over 300,000 species of living organisms still to be classified, so flying reindeer cannot be completely ruled out.

There are over two billion children in the world but Santa doesn't appear to visit them all, so this reduces his workload to, let's say, 15% of the total – 375 million. Assuming



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## A VIEW FROM THE HEDGE continued...

3.5 children per household, he has 107 million homes to visit. Thanks to different time zones and the rotation of the earth, Santa has about 31 hours of Christmas to work with. The busy old fellow thus has to fit in 958.8 visits per second! Assuming that these households are evenly distributed around the world (we know that they are not but, hey, give a bird a break) there will be, roughly, 0.78 miles between the houses..."

Looking round, I observed sparrows sitting in open-beaked amazement. A few looked as if they had gone numb between the ears! They all listened, mesmerised, as the aged sage continued...

"... This means that Santa's sleigh will be moving at 748 miles per second ("Is that faster than a bird can fly?" Jim Sparrow asked: he was silenced with a stony stare). The load on the sleigh adds another interesting dimension. If each child receives nothing more than a 1 Kg present, say, a medium-sized Lego set or a couple of decent Lipos, then the sleigh is carrying 375,000 tonnes, not counting Santa himself. Those reindeer better be well-fed examples! This sort of mass, travelling at these sort of speeds, has enormous kinetic energy, and the heating effect, due to air resistance, would be akin to that experienced by a spaceship on re-entry. Poor old Rudolph really would have a red nose as he instantly vaporised, nose first, subjecting the following reindeer to a deafening sonic boom before, they too, were vaporised in thousandths of a second."

I could sense the feeling of dread that pervaded sparrows all as they listened to the owl's analysis, his words flowing smoothly over them, leaving a sense of unease in their wake. The owl, after a long pause, continued...

"I had you all going there didn't I? Everyone knows that Santa has magic on his side and, as such, is not subject to the normal rules of nature. The fact that he performs his magic once a year is proof positive".

The transformation of mood was wonderful to observe with sparrows breathing great sighs of relief. One or two birds purported to have "not been taken in for a minute" (there are always some of these), but they were not believed by many. The warm, cosy glow, generated by so many happy birds, must have dulled our senses for, when we looked round, the owl's twig was empty: he had vanished silently, magically into the velvety night.

WS



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## 2.4 Ghz in Practice.

*Article by Brian Holdsworth*

The introduction of 2.4 GHz has transformed the operational effectiveness of radio control systems. No frequency control is required since any transmitter can operate alongside any other. The shorter transmitter and receiver aerials are more convenient and the lower transmitter power consumption extends operating times. Receivers are smaller and lighter easing installation and the manufacturing techniques used make them less vulnerable to vibration, which is particularly important for petrol-powered models. The reduced sensitivity to electrical interference has made electric-powered flight practicable, especially as LiPo's and brushless motors became available at affordable prices.

There have been reports of "jammers" at events transmitting across multiple channels. These are fairly easy to make since most of the functionality is implemented by the chipsets, and there are some who think such activities are clever. Fortunately, current sets are resilient, so the perpetrators lose interest when they see no effect - hopefully!

Drones (quad copters) have become widely available at low prices. They are generally so easy to fly that there is no challenge and users lose interest or fly in silly places, especially with cameras fitted - passenger aircraft near-misses and over forest fires forcing fire-fighting helicopters to be grounded are recent serious examples. FPV with streaming video (often using 2.4 instead of the legal 5.8) has the potential to be flown beyond the vision of the operator, contravening the Air Navigation Order, but such users rarely take notice of legal trivia! In spite of the safety implications, FPV racing is being heavily promoted and the demonstration at the Nationals showed the potential with many crashes. If flown in isolated areas, the hazards can be contained but there are many who would race in crowded areas - others, including aircraft flyers, could be caught up in any public backlash and subsequent restrictions.

Receivers are only compatible with their corresponding brand transmitters and older receivers are often incompatible with later transmitter types. The implementation complexity makes it all too easy for design errors to creep in with resultant incompatibilities under specific conditions, which can be difficult for the user to identify before they occur in flight with obvious consequences.

Many of the early sets used plug-in modules to convert 35 Mhz transmitters to 2.4. These were somewhat dubious in operation with complex internal circuitry resulting in





## 2.4 Ghz in Practice continued...

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Article by *Brian Holdsworth*

high latency (the delay between stick and servo movement). Interference between the 2.4 signals and internal circuitry generally required the aerial to be connected by an external coaxial lead which was vulnerable to damage and made it unwise to rest the transmitter on its back - many users stood their transmitter on its base with consequent vulnerability to falling over and knocking the throttle open which is not desirable! Fortunately, integrated transmitters soon appeared and the cumbersome modules disappeared.

All sets incorporate a fail-safe function where, if the receiver loses its signal, the throttle is closed and the other channels held at their current positions. Some transmitters disable this as a default and it must be enabled, setup and tested before usage. It is a legal requirement that, as a minimum, the throttle is closed to avoid flyaways into controlled airspace. Some sets allow the servos to be driven to user-defined positions but this is rarely of benefit - some receivers remove the drive to all channels after a few seconds, so that any servos away from neutral are liable to be blown back by the airflow over their attached control surfaces; this may also apply to a petrol engine throttle servo since many carburetors include a spring which may be strong enough to move an unpowered servo, especially under vibration - an ignition shut-off may be appropriate for large models.

The main disadvantage of 2.4 is that the signal is very directional so that any items between the transmitter and receiver are liable to block reception. A model flying behind a tree etc. is liable to go out of range - another reason to maintain clear line-of-sight. Wood and foam airframes are thin enough to have little effect but carbon reinforcement or metal items, especially engines, can be a problem - black rods are often dyed plastic or fibreglass, not carbon. The transmission is significantly affected by close proximity to the ground so that putting the transmitter on the ground before retrieving a model is not advisable - the receiver is likely to go into fail-safe and, if the throttle is knocked open when the transmitter is being put down, the receiver will recover when the model is picked up and open the throttle.

Telemetry has become common, though it is of little practical use and can degrade receiver performance noticeably. Significantly, Hiitec were the first to offer telemetry but their later receivers do not support it.



## 2.4 Ghz in Practice continued...

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*Article by Brian Holdsworth*

Transmitter capabilities have improved to include many mixing options, but most user interfaces and manuals are so poor that it is a struggle to use the features. More seriously, some interfaces are so poor that it is easy to make unintended changes with obvious hazard potential if in flight - most touch screens and touch sensors are vulnerable to this problem. The displays are often cluttered with consequent confusion - many designers seem unaware of actual usage where the stored parameters are rarely accessed. The more expensive sets generally have the worst manuals and many are so poor as to be of little use, leaving the user to experiment with the various options to determine their effect and possible use.

### Spektrum

Being the first on the market with proprietary DSM2 gave a substantial market advantage. The collaboration with JR gave access to an existing transmitter design and early JR 2.4 sets were, essentially, re-badged Spektrum though they have now diverged. Most of their receivers require slave units to achieve sufficient range which is less than the other brands.

There were several design errors including failure to recover from brownouts (supply voltage dropping momentarily below that required to operate the circuitry) and other issues causing servo freezing in flight. A considerable number of receiver types have been introduced with some withdrawn due to errors, resulting in confusion as to their status. When returned for service/repair, transmitters were usually upgraded and receivers replaced, though this was not documented. The number of sets passing through the service centres was considerable and is still higher than other brands - the UK centre has closed so that sets are handled in Holland with additional delays. The early problems were so significant that they nearly destroyed the brand, and usage was discouraged by LMA and other groups until they were resolved.

Fortunately, the upgrades seem to resolve most of the problems. The sensitivity to brownouts is still greater than for other brands but the receivers now recover quickly so that most users will be unaware of the problem. There are still issues with receivers not connecting on power-up so that the binding sequence has to be repeated. There are also occasions where a slave does not connect on power-up reducing the effective range - checking that the LED on each unit is lit before flight may be needed! Receiver aerial placement is critical and problems may be evident with carbon-fibre structures



## 2.4 Ghz in Practice continued...

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*Article by Brian Holdsworth*

and large engines which tend to screen the radio signal. There have been manufacturing issues, particularly intermittent power switches and RF boards.

DSM2 breached the 2.4 standards and the brand was not sold in some countries, including Japan, where JR sold a variant (DSMJ) not available in the UK. Changes were agreed to achieve compliance producing proprietary DSMX. From 2015, DSM2 may not be sold though existing sets may be used - upgrades remove support. DSM2 was easy to clone and many compatible and counterfeit receivers became available, but with inferior performance to the genuine units. DSMX is harder to clone and few are available.

The current transmitters, DX6, DX7, DX9 and DX18, use common software and user interface, supporting telemetry, and are DSMX only, though the manuals imply DSM2 support. User upgrade of the software is supported and wired or wireless trainer linkage is implemented. They have a bulky fixed transmitter aerial, avoiding the problems with the original folding aerial which was prone to damage; care is needed not to point the aerial at the model which would reduce the effective range. Worryingly, the manuals emphasize the need to upgrade before any usage and occasional warnings are displayed until upgraded, suggesting that the supplied software contains significant errors - early DX6, especially in wireless trainer mode, showed problems which were resolved by upgrade.

AS3X receivers incorporate gyro stabilization and seem effective; they are included in many RTF aircraft from the Spektrum distributor Horizon Hobby. While user setup is claimed, many receiver types do not seem to support it and documentation is lacking suggesting that they are primarily intended for the RTF market. The new DXe transmitter also seems to be intended for this RTF market, since it has no display and can only be programmed via a mobile device. The considerable investment correcting the errors, replacing faulty items and continued development, particularly for AS3X, suggest that the brand will continue to be popular, especially with recent heavy advertising and price reductions.

### **Futaba**

They started slowly with modules and a 2.4 version of the 35 MHz 6EX with proprietary



## 2.4 Ghz in Practice continued...

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FASST. Significant early design/manufacturing issues caused transmitters to interfere with each other -this was first identified in the U.S. suggesting that significant costs were incurred to resolve law-suits! The problems were corrected and most modules and 6EX transmitters were exchanged, generally via the supplying model shops.

The implementation breached the 2.4 standards and changes were agreed to achieve compliance so that, from 2015, FASST in its original form may not be sold, though existing sets may be used. User upgrades are supported and the current transmitters remove support for the original FASST implementation without documentation. Several clones (Frsky, Orange etc.) became available, but they seem incompatible with the revised implementation so that their performance is erratic with occasional lockup, especially in flight; unfortunately, range-checking etc. provides no reliable indication so their continued usage would seem unwise.

The receivers are single unit with simple binding and show good range, provided their twin aerials are installed away from metal items at ~90 degrees to each other with adequate separation (>4cm).

All current transmitters support FHSS, which is defined by extensions to the 2.4 standards and seems likely to become widely accepted. 8J and 10T (with telemetry) and the recent 6K (replacing 6J with telemetry) have a convenient internal transmitter aerial; their power switch is very close to the trims with consequent potential for inadvertent operation. The other transmitters also support FASST and FASSTest (with telemetry). This brand has become expensive, particularly the receivers.





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## Social Calendar/Shows for 2016

**6th January.** Jason will give a talk about those impressive **night flying models** followed by 'Choosing the Right Adhesive'.

I will keep you informed of future social evenings as the information comes available.

**10<sup>th</sup> January Indoor Flying Event** Springhill Sports centre, Turf Hill Road, **Rochdale**, OL16 4XQ commencing 11am and concluding 4pm. You must take your BMFA card to enter. If you want more details, contact Keith Barker on 01706 659396.

**18<sup>th</sup> June Weston Park International Model Airshow**

**25<sup>th</sup> - 26<sup>th</sup> June Strathaven LMA**

**18<sup>th</sup> - 19<sup>th</sup> July Cosford LMA**

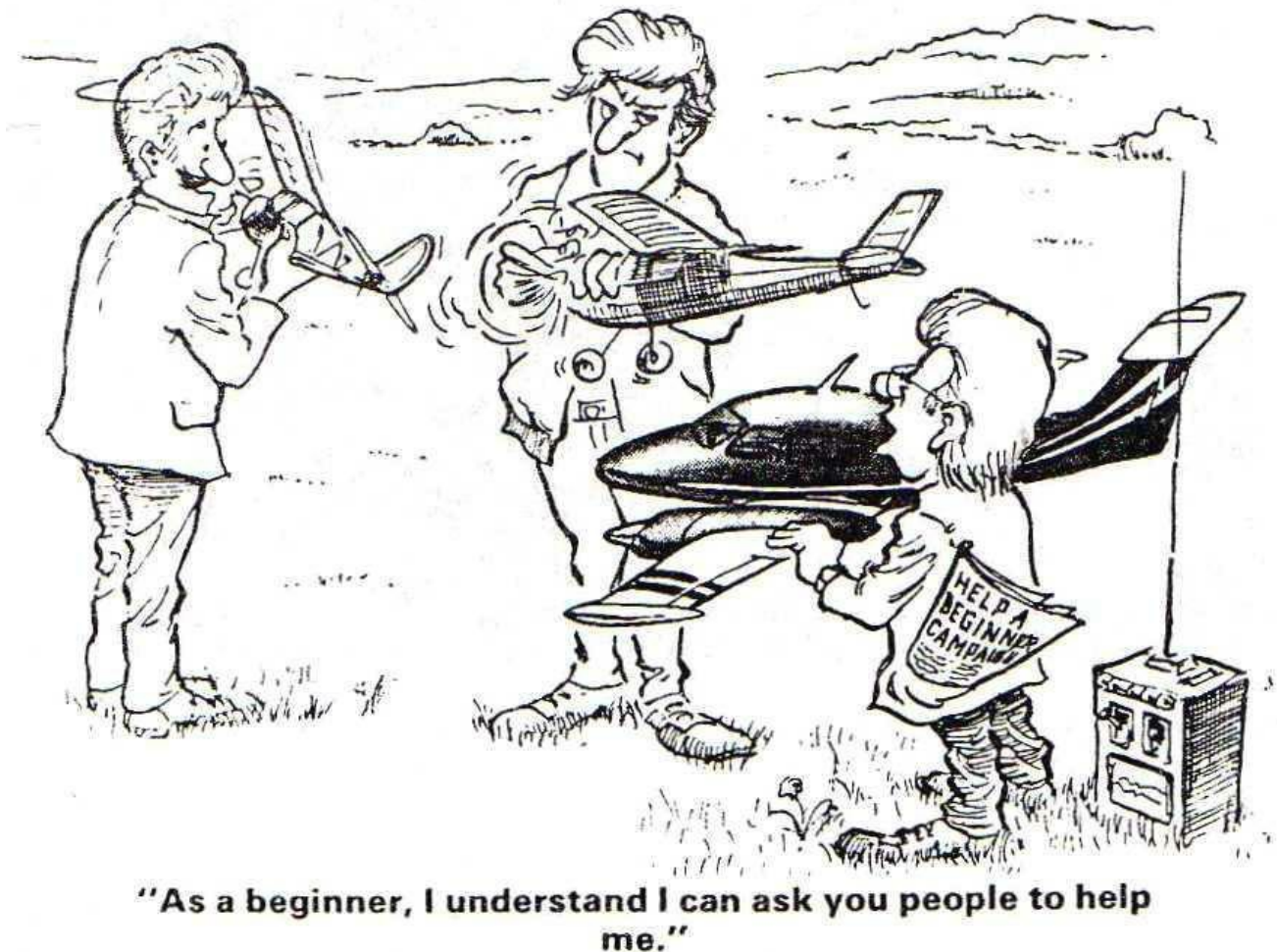
**13<sup>th</sup> - 14<sup>th</sup> August Elvington LMA**

## Items for Sale

I had a phone call from one of the members asking me why I never advertised models and equipment which members wish to sell. I assured him that I would be delighted to advertise any For Sale items which a member wishes to sell.

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John Prothero sent me this cartoon which I thought was good - thanks John.



Well guys, I guess that's it for this year. As ever I thank all those who have contributed to this newsletter whether it is the photos you've sent me and/or the articles.

The next newsletter will be at the end of February.

**I wish you all a Very Merry Christmas and Happy New Year.**