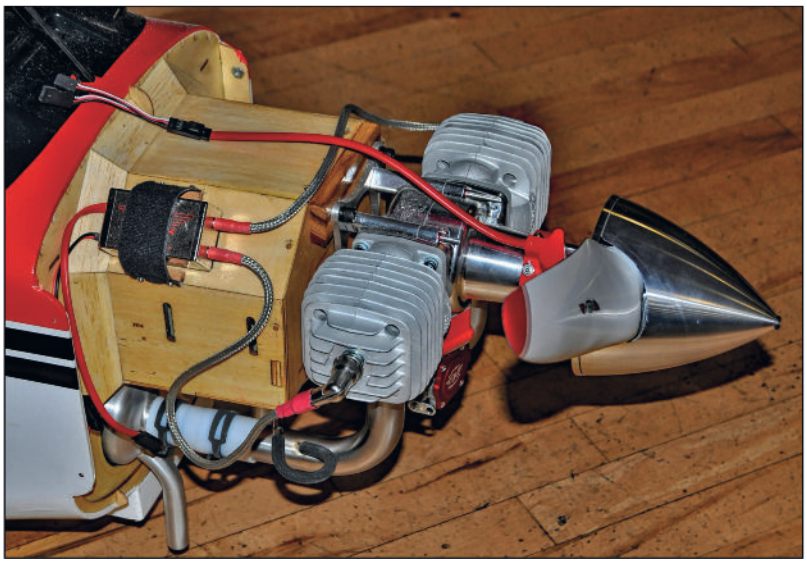
Newsletter

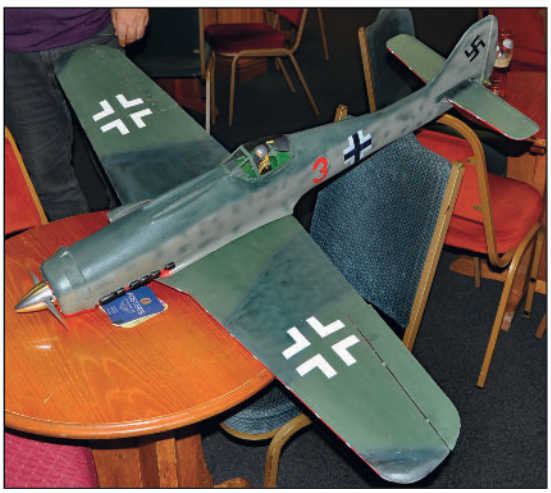
October 2016

We enjoyed our first meeting at the new venue - the Marton Institute. You have to ring a bell to be given access into the building - it is after all, a private club. The room is great and so was the beer!

Mark Conlin brought along his 38% Hangar 9 Super Decathlon powered by a 120cc flat twin petrol motor. He gave a very interesting talk on it's construction, - how he'd modified the fuselage to take the exhaust system and the dual fuel/smoke tank he had fabricated. I very much look forward to seeing this one fly. Mark never hangs around when he's holding the sticks! Should be rather exciting to watch.

Great evening and a really good venue. I took a couple of pictures.





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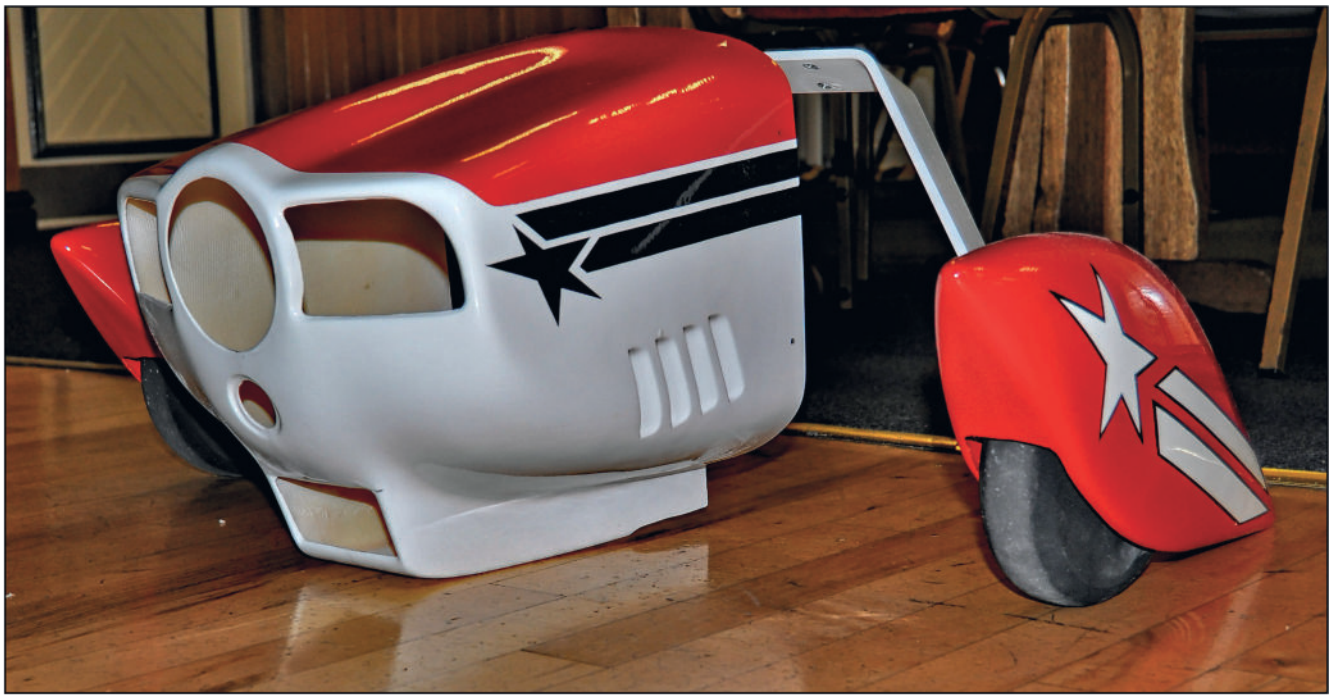

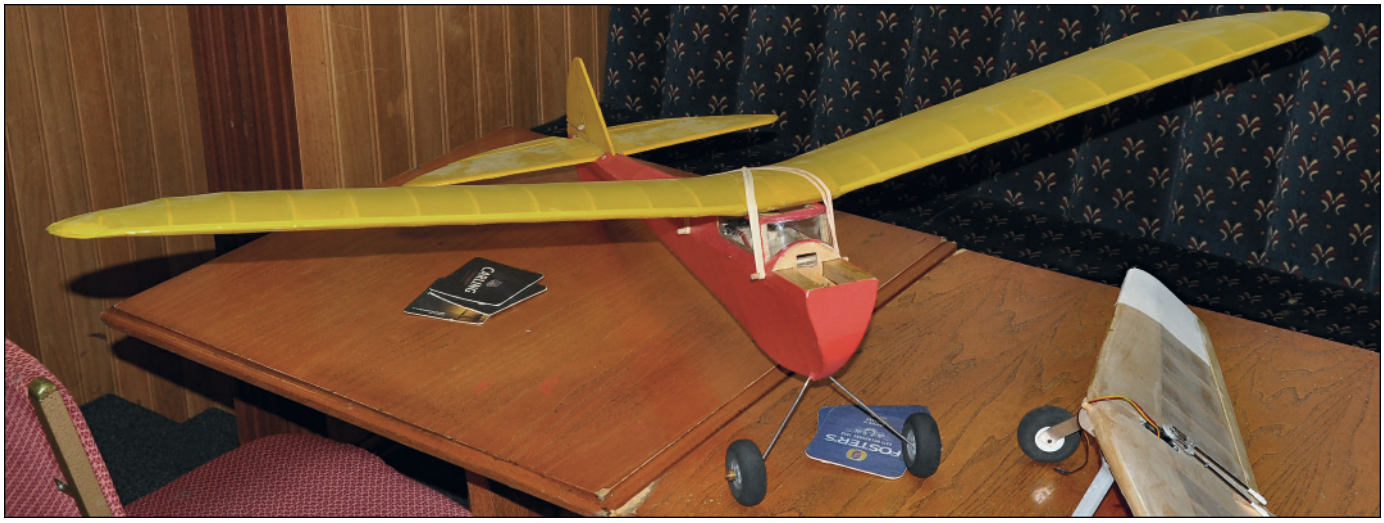

This last model is the 1930's designed 48"Diamond Demon built by Dave Swarbrick. It will be powered by a Mills 1.3cc diesel. Dave passed this model to me a few months ago and I finished the covering using LiteSpan. I made up a soldered tank using some thin brass plate I bought on EBay. It's got closed loop to control the rudder. In my opinion, it makes a very pretty model and I may be enlarging the plan 1.5 times to produce a 72" version to build over the winter. I'd then use an electric motor.

A VIEW FROM THE HEDGE. (By Will Sparrow)

Now that the equinox is behind us we are definitely into the season of… No, not mists and mellow fruitfulness, but wind and rain! I've never known anything like it; almost every day I've been clinging onto my twig for dear life and shaking the damp from my feathers. The Wise Old Owl once told me that the Inuits had more than a hundred words to describe snow, well, we must run them a close second with all the words that describe the conditions being experienced this October: gale, lashing, bucketing… all run like a soggy seam through our lexicon and stand ready to spoil your model-flying fun.

It is a known fact that every rule has an exception (I've never understood this one!) but you have had some cracking flying days in September/October – not many mind – but some of them managed to coincide with weekends. The latter days of September caught me witnessing the maiden flight of a newly-finished, twin-engine model. I've been privileged to see many models take to the air for the first time but, these days, they are, almost without exception, artfs. With these models, providing that the instructions have been followed with regard to CG position and control movements and the stickers have been put on the correct way up, the first flight is usually a formality; success being virtually guaranteed. However, when the model is not conventional in appearance and has features that one does not see every day, coupled to the fact that it was a complete home design and had taken years to build… You get the idea: this sparrow waited with baited breath and a degree of trepidation. I'm pleased to report that the maiden flight was a total success. It's always uplifting to see modellers grinning from ear to ear! I've now seen this model fly half a dozen times as the owner fine-tuned the flight settings. Now that the model is shown to be a "goer" I hope that it will soon acquire a pilot. No scale model looks "real" without a pilot in the cockpit, does it?

Regular readers of my ramblings (he must be joking! – Jim Sparrow) know that I take delight in viewing your antics when you hold club competitions. This year, however, I was to be disappointed; the event Sunday turned out to be plagued with the dreaded gales. The usual suspects turned up to offer support, but no one really wanted to fly and, to be honest, I didn't blame them. That day was not a flying day. The event was cancelled. I was denied my viewing pleasure to be sure, but rather that than have models risk making the ultimate sacrifice.

A View from the Hedge Continued/...

October 2016

Sunday, 2nd October dawned and delivered what was probably the best flying conditions of the entire year, with blue skies and no wind. The only insect in the medicament was the fact that the grass was a wee bit on the long side. By half past ten a full three members had turned up but this rose to ten by mid- afternoon! What is wrong with you people? How can you pass up on such an offer from the weather Gods? This day saw an outing of a Spitfire that I had not seen before. At first, its 4-stroke glow engine refused to start but, after what seemed like an hour of flicking (it was only 59 minutes – Jim Sparrow) the reluctant beast burst into life and the model, shrugging off the tenacious grip of the long grass, soon felt air under its wings. The intrepid owner then entertained us all with a series of ever-lower low passes. On one extremely low pass a worm stuck its head up and was rewarded by being salami-sliced by the prop! The motor stopped, the model hit the grass and slithered to a halt – fortunately with no damage. The following Sunday saw the conditions of the previous week all but repeat themselves. Another splendid day: another weedy turn-out of members. My interest was sparked when I saw a large jet being assembled, ready for its maiden flight. I do find the ubiquitous, twin-boom jets a bit boring (it's a personal thing, I suppose) but this one was not of that ilk and splendid did it look as it was prepared in the pits, then taxied towards the west end of the strip. Now, the grass had been long and wet, but on this day it had been recently cut and the clippings were deep and crisp (well, soggy actually but excuse a poor sparrow a little poetic license) and uneven. With the throttle wide open, the model accelerated… and reached terminal velocity before it was halfway along the runway. The take-off was abandoned and the model came to rest in the long grass, just in front of my twig. I stifled a cough as the jet fumes caught my throat. The recovery crew cleared handfuls of wet grass clippings from the undercarriage and the model was sent away westward, ready for another go. The model never looked like lifting and, on this attempt, hit the grass in front of my hedge with considerable force, damaging the wing and the undercarriage. I have never seen so much grass attached to a model; it was everywhere. The intakes had even swallowed the stuff and dumped it on the FOD guard. I'm sure that this model will prove itself a great success once it has been repaired and the ground conditions improve sufficiently to give it a sporting chance.

One of your members, who has a liking for large petrol-powered aerobats and has recently obtained his "B" certificate, has been putting in a good deal of airtime of late. The subsequent improvement in his flying has attracted favourable comment in the hedge. The flights that were once in the "demented wasp; look away now" category are now full of manoeuvres that are both elegant and a pleasure to watch. It just goes to

show, that with a bit of endeavour and determination great things are possible. Will more of you shake off the cloak of lethargy, put foot over threshold and enjoy all your great club has to offer? I would like to think so… but I'm not holding my breath!

WS

It's Chuck Glider Time Again!

November 9th

Your Picture could be here next year

Lee Conner our Current Champion

Can you design and construct an indoor chuck glider to beat our current champion Lee Conner and take the trophy?

You will be supplied with: - 12 inches x 3" (30.48 x 7.62) of the finest 1/16" (0.15875) sheet balsa wood money can buy, we will have glue available and you will be supplied with sand paper, a deluxe building board and a knife and some blue tack for nose weight. What more could you ask?

It would be very helpful if you could bring along some of your own equipment your favourite glue, knife, straight edge (sand paper of the appropriate grit) etc.

Chuck Glider Night

by John Prothero

Below is an example of a typical indoor chuck glider, but because of the constraints of the room we fly in I think it would be a good idea to go for more dihedral (take a look at Lee's model in the photograph). Remember light is right, so sand those wings as thin as you dare.

Try to trim your model to turn as flat as possible, this is done with rudder and bend down the trailing edge of the wing that is on the inside of the turn to produce more lift and drag to help the flat turn.

So let's see all you Aeromodellers turn up and give Lee a real challenge. How near the ceiling dare you go, can you avoid that chair again, can you make the turn slightly bigger without hitting the walls, will that Oaf with the size 12 boots step on your model? All these things are part of this challenge, it's going to be FUN with a capital "F", and it always is!

If you have never tried this, give it a go, or just come along and help, these events help make our club.

See you all on the night!

TX Setup - 4

October 2016

Article by Brian Holdsworth

Wing-type and Tail-type options define the model configuration. The functions may be listed separately or combined in a menu entry such as "Aircraft Type" or "Wing Type". These should be set before any other programming, preferably without the receiver powered, since other parameters may be changed - any reversed channels may be reset with obvious safety implications for electric power. Some sets have design flaws where changing wing or tail type on a re-used model memory may leave unwanted parameters not visible as menu options, with consequential undesirable effects - resetting the memory may be appropriate. Generally, Tail-type should be defined first since the chosen option may changes the options available for Wing-type.

Tail-type

The default Tail-type may be identified as "Normal" and is the usual horizontal tailplane and vertical fin. A model without ailerons should connect the rudder servo to the aileron channel so that steering is via the aileron stick as for other configurations - contradicting some manuals!

"V-Tail", sometimes referenced as Ruddervators, is where there is no fin but the tailplane halves are angled at about 100 degrees to each other, combining the functions. The control surfaces are driven by separate servo channels (Elevator and Rudder) where the surfaces are moved in the same direction for elevator and in opposite directions for rudder. Since elevator and rudder movements are combined on a control surface, the movements of each must be limited to about half the full servo travel. This is generally achieved using the Dual Rates function - typically 40% elevator and 60% rudder though, of course, these should be adjusted as required maintaining the full rate sum at ~100% for optimum mechanical advantage. Some sets change the Dual rate setting to 50% for each when the V-Tail option is selected, but many require the user to set - preferably before the servos and/or linkages are over-driven! With four combinations, the control surface directions will often be incorrect. Some manuals (eg Spektrum) mention "V Tail A" and "V Tail B", described as reversing the servo directions instead of using channel reversing; as the descriptions contain contradictions, it would seem more logical that they actually swap servo channels to avoid physically swapping the plugs - experiment needed!

* Elevator reversed - swap servos between channels
* Elevator and Rudder reversed - reverse channels
* Rudder reversed - reverse and swap servos

TX Setup - 4 Continued/...

October 2016

Article by Brian Holdsworth

There may be an option "Dual Elevator" which, as the name suggests, drives two servos with one for each elevator; usually, the linkage orientation will require one channel to be reversed. The second servo channel is generally pre-defined though some manuals do not identify, requiring the user to experiment! "Ailvator", sometimes referenced as Tailerons, may be available, possibly as a separate menu entry, which also allows aileron control by moving elevators differentially; usually, the elevator and aileron throws are adjusted in the menu entry where the aileron value should normally be set to zero to inhibit this coupling. Military jets often use tailerons in the all-moving tailplane required for supersonic speeds, usually with spoilers rather than ailerons, but the control effectiveness is poor, often requiring considerable use of Fly by Wire complexity to achieve acceptable performance - model usage can produce strange effects, so experiment with caution since any aileron coupling is generally not switchable!

There may be an option "Dual Rudder" with obvious usage.

For use in tailless models, there is an option "Elevon" or "Delta" which may be under Tail Type, Wing Type or as a separate menu entry. Aileron and elevator functions are performed by a single pair of control surfaces where the surfaces are moved in the same direction for elevator and in opposite directions for aileron. As for V Tail above, the throws need to be setup to to avoid over-driving the servo and linkages; channels may need reversing and/or the servos swapped. Sometimes, Elevon A" and "Elevon B" will be available, similar to "V Tail A" and "V Tail B" above. For V Tail models without ailerons, this Elevon function should be used rather than the V Tail option so that steering is via the aileron stick as for other configurations.

Wing Type

The default uses a single aileron channel and may be identified as "Normal" , "1A" etc. The other options are generally involved with flap-type capabilities and vary considerably between sets, often with confusing manual descriptions. Most models have two aileron servos, one in each wing half, which may be linked into the single channel via a "Y" extension lead.

A dual aileron option may be used where both servos move in the same direction to act as ailerons or, perhaps, in opposite directions to act as flaps when they are known, descriptively, as Flaperons. Their movement as flaps should be small, typically less than

TX Setup - 4 Continued/...

Article by Brian Holdsworth

about 5 degrees, otherwise aileron effectiveness will be greatly reduced or even reversed; down flaperon can produce significant adverse yaw when the ailerons are used - if available, switched aileron differential may be used to compensate. Some sets support flaperons only if the "Sailplane" Aircraft Type is selected so that free mixers may be needed to implement flaperons for a powered model.

There may be a separate menu option "Flaperon" where the second servo channel is pre-defined (usually channel 6) or may allow, for example, 5 to be selected to use channel 5 as the second aileron channel and channel 6 to drive separate flaps; selecting 6 would use channel 6 for the second aileron channel implementing flaperons only.

Some sets use a defined switch and channel for flaps. Others may have no specific support for flaps, so that a spare channel(s) would be used, controlled by a suitable switch with the throws set for the required flap movements. Any elevator compensation would be set using a free mixer.

Usually, an option "Wing Type", or similar, selects the configuration. Values such as "1A", "2A", "1A1F" and "2A1F" select the number of aileron and flap channels required. Where 7 or more channels are implemented, "2A2F" may be available to drive two flap channels (one for each wing). These servos could be linked via a "Y lead and driven by a single channel but, if they do not use the same rotation direction, the "2A2F" option would be needed to allow one channel to be reversed. Servo reversers in an extension lead are available but generally do not operate satisfactorily, especially with digital servos, and so should not be used unless very carefully tested. Sets with more channels may have other values for multiple aileron or flap channels. The servo channels are often pre-defined and should be shown in the manual, though some require experimentation to identify! Where flaperons are required without flaps, it may be necessary to select "2A1F", driving a flap channel, so that the appropriate menu options are available - providing no flap values are set, that channel should still be available for other purposes.

When enabled as above, "Flap" and/or "Airbrake" etc menu option allows the selecting switch to be defined, together with the required flaperon, flap and elevator compensation values. Others use options such as "Camber Mix", especially for the "Sailplane" aircraft type. "Flap-Elevator" option may be available to define elevator compensation. Additional options such as "Ail-Flap" would allow ailerons to be mixed to the flaps to increase aileron

TX Setup - 4 Continued/...

Article by Brian Holdsworth

response, though the increased drag and adverse yaw makes usage a compromise - care must be taken that the flaps are not overdriven.

Using a rotary knob to control flaps would require a hand to be removed from the sticks which is difficult and has safety implications; some transmitters have sliders on their sides for operation by a finger, while still operating the sticks, though it can be difficult to set interim positions. Where available, it is generally convenient to define a three-position switch to define three flap positions - none, part and full for normal, take-off and landing for powered aircraft or reflex (up), none and camber (down) for gliders where the movements would be only a few degrees. For a powered aircraft, the part flap position should be near servo centre with normal at full throw one way and full at full throw the other to maximise mechanical advantage for optimum performance; with some sets and/or servos, significant servos twitches away from neutral may occur on power-up and this technique may also reduce the possibility of the flaps being momentarily driven above their retracted position, straining flap hinges and linkages.

Flaps are intended for use at low airspeeds and usage at cruising speed or higher can generate significant structural loads and considerable pitching moments.

When flaps or flaperons are lowered, lift and drag are generated. Small movements (up to about 10 degrees) usually produce more lift than drag - the lift moves back on the wing producing a nose-down pitching moment and increasing stability. Greater angles produce more drag than lift moving the lift forward on the wing, producing a nose-up pitching moment and reducing stability - the lift may be reduced. The increased downwash angle at the trailing edge can affect the airflow over the tailplane which alters its normal downward force producing a nose-up or nose-down pitching moment, depending upon its position in the downwash. The increased turbulence behind the wing can reduce the tailplane effectiveness, normally producing a nose-down pitching moment. The direction and size of the resultant pitching moment depends upon how these effects cancel each other - small differences in positioning and airspeed can have significant effects. In practice, most models pitch down for small movements and pitch up slightly for larger movements, but there will be exceptions! The stall may become more pronounced, especially for large flap movements (greater than about 30 degrees), which could be unfortunate during the landing approach!

TX Setup - 4 Continued/...

Article by Brian Holdsworth

Elevator compensation may be setup to reduce these pitching effects. If down is needed, it seems unnatural to hold down elevator stick during a landing approach so that compensation would be helpful, if not essential, to reduce the considerable stalling potential. Where up is needed, this may be achieved by increasing the up elevator stick often needed during the approach so that compensation is convenient rather than potentially critical.

Especially for large flap movements, it can be helpful to use two stages so that part flap would be selected, wait for the model to settle, and then select full flap - matching full-size practice. If overshooting on full flap, part flap needs to be selected once the airspeed has increased, raising completely as climb speed is established. Full throttle propeller slipstream on lowered flaps could cause damage, so the flaps should be raised before full throttle is reached, suggesting gradual throttle opening which is desirable for other reasons. Lowered flaps are vulnerable to being caught by grass etc, so raising for taxiing would be helpful - matching full-size practice again. Gliders, with their limited ground clearance for lowered flaps, would need to raise them before touch-down to avoid damage.

Some sets have a "Servo Speed" etc. menu option but this is rarely helpful for flap control since only the flap servo(s) could be slowed so that any elevator compensation would be out of sequence. A function to slow the combination of servo movements would be needed, but this is seldom available - an obsolete set had such a function which inhibited aileron and elevator stick responses during flap movement with no means of cancellation!

I so value these articles Brian has been writing over these many months. I really don't find it easy programming my transmitter and it's so very important. I find the manuals supplied with the transmitters very difficult to understand. I reckon it would be worthwhile putting all of his technical articles into a reference book. All I can say is, thanks Brian for sharing your knowledge.

Editor

A Lesson Learned

October 2016

It is often said that one should learn from one's mistakes. Let's be honest, we would be daft if we didn't. Who wants to keep doing the same silly things? Ideally, we would not make any mistakes of our own and would be grateful to learn from the mistakes of others – but who is that lucky?

I have been building and flying model aeroplanes since I was about ten years old and, I must admit, I've made a few mistakes in my time – but, unless my memory is fading, I've only made these mistakes once. Back in the day, my free-flight models were never fitted with a dethermaliser until, one day, one of them flew off. After that, they were all fitted with dethermalisers! In the days when radios had long aerials, I took off with the aerial still retracted and watched, mesmerised, as my pylon racer all but destroyed itself in the next field; another lesson learnt. More recently, the advent of computer radios gave me another chance to destroy a fine model; I took off with the wrong model selected from the memory. Yes, I did check everything before take-off, but my addled brain insisted on telling me what I wanted to see, not what I was actually seeing: funny things, brains. So far, touch wood, I've not repeated that mistake.

None of these "I could kick myself" moments have had any consequences, apart from damage to the model concerned, but I will now relate a tale that could have had an outcome far worse than a bent model. Once upon a time (you are sitting comfortably, aren't you?), aerobatic models were not the lightweight, collection of film-covered holes flying in close formation that we enjoy nowadays. No, models were about 60 inches in wingspan, weighed about seven pounds, and were powered by 10 cc two-strokes operating on tuned pipes. The models were ideally suited to the aerobatic schedules current at the time. My model was of this ilk, and it was powered by a Webra Speed 61 which turned an eleven inch, fibreglass "pattern" prop. In this era, health and safety was but a pipe dream (yes, men did smoke pipes in those days, small boys played conkers, carried penknives and climbed trees…) and modellers usually restrained their models with an oily hand or a screw driver stuck in the ground in front of a wheel. As I kneeled down to apply the starter to the trusty Webra, my model had its right wing wedged behind my model box and its left wing restrained by a screwdriver in front of the left wheel of the tricycle undercarriage; the transmitter was to my left, leaning against my model box, throttle set to tick-over. The motor started at the first turn of the starter. So far, so good. This happy state of affairs was immediately terminated as a gust of wind blew over the transmitter and mother earth slammed the throttle stick

A Lesson Learned Continued/..

to full. The model, with the motor turning that razor-sharp, fibreglass propeller at some 12,000 rpm easily overcame the puny grip provided by the screwdriver and pivoted around the model box, narrowly missing the inside of my left thigh and carrying on to attack the ¼ ply side of the box. You could not have done a better job on the model box if you had used an axe!

I, deliberately, never repaired the damage to the model box but left it there to stare me in the face, whenever I went flying, to act as a salutary warning of what might have been.

These days we wouldn't dream of starting an unrestrained model, forgetting to check our failsafe settings or omitting our full-power checks before each flight. However, we are all human… and humans will always make mistakes. Let's hope that we can learn from them.

John Higgins

Social Calendar for 2016/17

5th November 'Bonfire Night with Night Flying Display' at the field
9th November 'Chuck Glider Contest'
7th December - AGM
21st December - Hot Pot Night & Quiz

We are continually trying to give you 'Social Evenings' which you will enjoy. Come on guys, what would you like the Club to put on? Please Email me - I'll pass these to the committee - it is your Club. We want it to cater for what you want.

This month I have published a separate PDF of an article which Dave Swarbrick wrote and Jason put together. I attempted to incorporate it into the newsletter but whatever formatting he had applied simply wouldn't be accepted by my desktop publishing programme. It's hilarious and there are some lovely photos. It is well worth reading.

Thanks to John Higgins, Brian Holdsworth and John Prothero for your valuable contributions this month. See you at the Bonfire Night.

Pictures by Dave Swarbrick

October 2016