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# RCME

**MISS SIZZLES & FLYING BANJO 2**

VOL.63 NO.7 JULY 2020

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## RADIO CONVERSION THERAPY

VMC SE5A GOES R/C



**SIMULATOR STIMULATION**  
STAY AT HOME AND FLY R/C

**WW1 QUADRUPLANE**  
FUNKY FOUR WING SCOUT

**VIRTUAL FF NATS**  
RECALLING FUN TIMES AT BARKSTON



**PHASE 5e**  
FOSS FLOATER  
WITH FACTORY  
FIT MOTOR



**BATWING**  
VOGEL-FLY  
FLYING WING  
REVIEWED





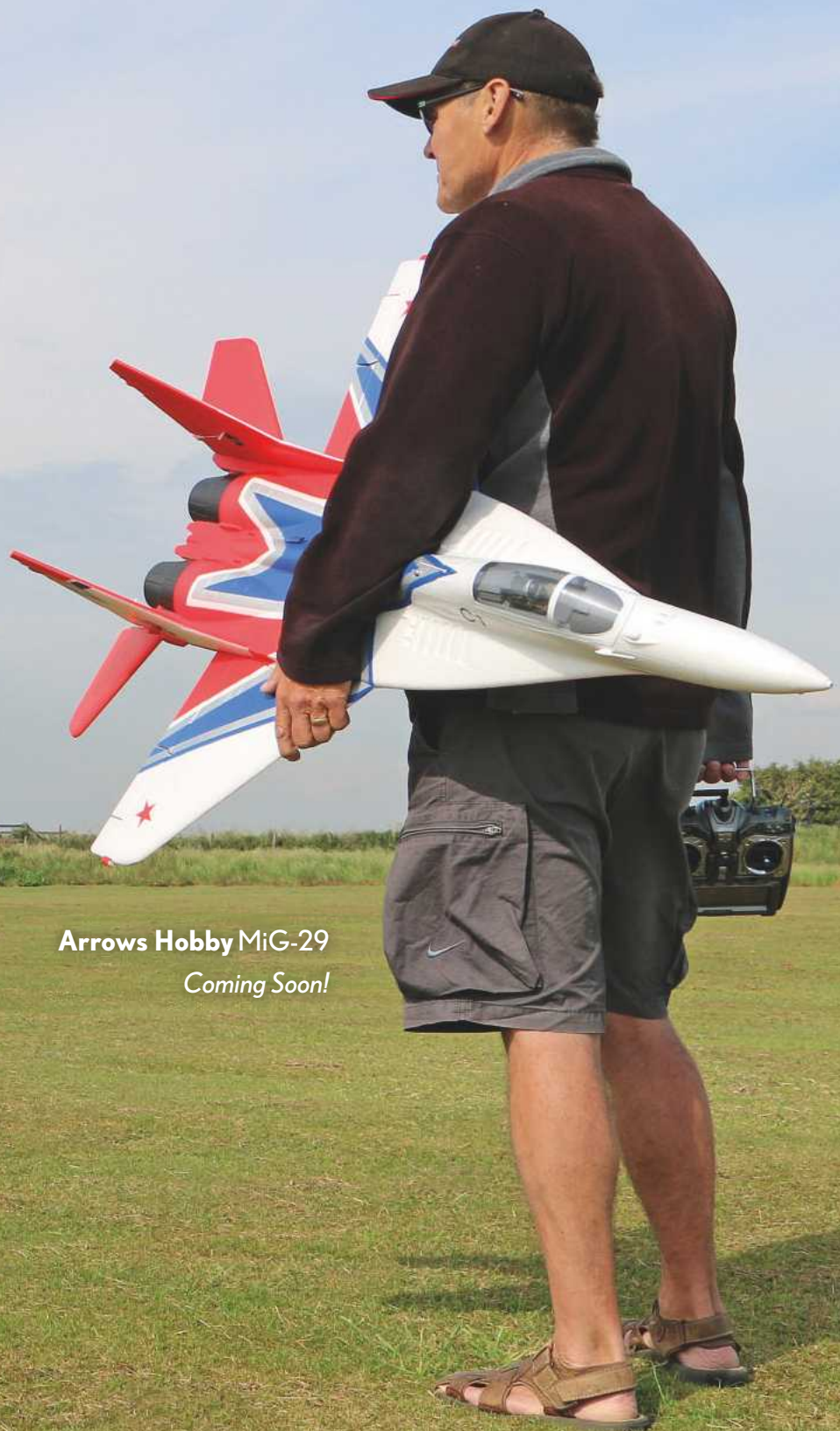
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# WELCOME

Editor: Kevin Crozier. MyTimeMedia Ltd. Suite 25S, Eden House,  
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**F**ingers crossed that by the time you read this most of our readers will have had the opportunity restored to visit a flying field and let off some steam by flying a model or two.

As I write this, here in the UK it is only England that has seen a partial lift in lockdown restrictions, so I can only imagine the frustrations that must be building within active model pilots in Scotland, Wales and Northern Ireland; hopefully it won't be long before you get to resume flying too, as well as all of our many overseas readers.

All my local model clubs have re-opened, but with varying degrees of restrictions in place, ranging from the 'you're all adults, so use common sense' approach to those requiring slot booking via the clubs' websites. After the expected initial flurry things have calmed down and booking slots is proving to be easier than I expected; I've enjoyed a couple of fine outings in recent days, albeit with far less clubmates than usual to enjoy socialising with.

Talking about frustrated model pilots, I do try to be open minded about other people's pastimes and occupations and I try to let them be without complaint for the most part. And that goes for fellow drone pilots too, especially as I've operated my fair share of quadcopters, large and small, over the years. But I must say that I've become increasingly irked throughout the lockdown by TV news companies using drone footage as part of their daily reports, often seemingly in contravention of the CAA's Dronesafe code (or very close to the limits of said code) by appearing to fly over houses and gardens, with such flying sequences adding little or no value to the content being discussed. Also, the clips produced are invariably cut down to such an insignificant length that it makes you wonder why they bother.

Of course, these videos are made using pro-level drones and cameras with long lenses, so even though they give the impression of overflying property they are probably some distance away. But it does leave viewers who own less capable drones, especially those with little or no interest in obeying the rules, with the impression that it is okay to fly over gardens and buildings to take some footage.

None of it seems 'essential' to me, so I'm left wondering why it was okay for seemingly so many camera drones to be allowed to operate

whilst the vast majority of model aviators, except those flying from their own gardens or fields, were grounded for the duration of the lockdown?

Talking of drones, whilst checking the latest Drone Code, I came across a link to the Drones Reunited website ([dronesreunited.uk](https://dronesreunited.uk)). Far from being a dating site for lonely quadcopter pilots, this is actually a resource for reporting a lost drone, as well as for logging ones that any members of the public may have found, with the intention of reuniting any lost aircraft with their owners. To use it a drone pilot has to input his operator number, contact details, drone type and drop a pin on a map where it was last seen.

It's early days, I guess, but I was a tad surprised to see that there were no drones reported on the Found side of the site when I visited. However, there were quite a number posted on the Missing board, including several quite expensive models. The most wander prone machines do seem to be the fold up types, with DJI Mavics being the most sought after.

As I know from personal experience, whilst many drones are packed to the gills with advanced technology that behaves remarkably well in most instances, they can and do go wrong - normally if you don't fully follow the instructions! If you are lucky, you'll get your prized machine back down after a few hairy minutes, during which your model flying experience will kick in and be invaluable. But for those without such instinctive training all they are likely to do is to freeze on the sticks and watch open-mouthed as their expensive aircraft drifts away from view.

It will be interesting to see if any model aircraft make it onto this website, especially those with gyro assisted flight controls that could conceivably keep the aeroplane in the air long enough for it to fly away. Since we've all paid for our Operator Numbers, I guess there is nothing to stop us from taking advantage of this service?

Happy Flying!

*Kevin Crozier*





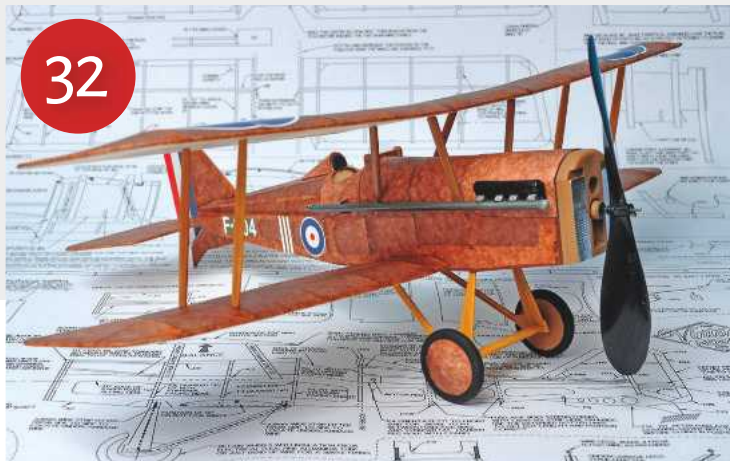


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Photo: Danny Fenton

Our scale columnist, Danny Fenton has been asked for more information on the R/C conversion of his little Vintage Model Company SE5a. Danny converted this free flight model by fitting the radio and motor from a rather tired ParkZone micro indoor model. Key to moving the control surfaces is a pull-pull set-up using 1lb fishing line that is super light.

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## VE DAY 75 COMMEMORATIONS



**D**espite lockdown restrictions many hundreds of thousands of people from all across Great Britain joined in the VE Day 75 community commemorations, including John Norman and his wife, Sue, who put on a grand display of John's WW2 models for local residents to enjoy. John writes:

*"Kenwood Drive, the quiet cul-de-sac in Beckenham where we live, has an active WhatsApp group. Early last week a couple of posts suggested we did something for V.E. Day. Sue and I very tentatively enquired if a display of my WW2 models on the front lawn would be of interest. We were overwhelmed with enthusiastic responses and these pics show the result.*

*On the day we were even more overwhelmed. Although we had posted an 11am start, people arrived before we had finished putting the models out and it was non-stop from then on until gone 4.30pm. We have 159 years between us, and we ended the day stiff, hoarse, hungry and knackered. All really gratifying, though. For the pedants, the Tiger Moths qualify because they were used to train WW2 pilots, weren't they? And yes, we had enough space to maintain social distancing!"*

## DIACOV FABRIC COVERING

Sarik Hobbies are now stocking Diacov 1000, the iron-on fabric polyester covering from the makers of Diatex, who are leaders in the production of aviation covering fabrics for light and ultralight aircraft.

Diacov can be used as a replacement, both in colouration and performance, for the much missed Natural Solartex that is no longer produced.

It has equal shrinkage in warp and weft, making curves easy to cover, along with excellent adhesion using a normal covering iron at around 100 degrees C. It will bond to most substrates including wood, foam, aluminium and paint.

Diacov is perfect for those vintage models of all sizes where a very tough woven fabric look is required. It offers excellent UV proofing and Sarik say that they have used Klass Kote epoxy paint with it to great success.

Weighing 86g per sq/m and to a width of 73.5cm, it is sold by the running metre from 1m to 100m, which will allow for excess fabric to be kept to a minimum on your next building project. Price is £9.99 per metre.

See the Sarik Hobbies website - [www.sarikhobbies.com](http://www.sarikhobbies.com) - for further details and P&P pricing on this covering product.

## A RETURN TO THE SKIES

Just prior to the UK Government's 'relaxation' of the Covid lockdown restrictions for England on Wednesday 13th May, the BMFA issued new advice to their members on the resumption of some model flying activity (for England only at that time), subject to compliance with certain guidelines and social distancing. Points to note included:

1. We remain in the midst of a pandemic. The updated government advice must not be regarded as meaning a 'return to normal'. The situation is dynamic and current government advice must be followed.
2. The effects of the COVID-19 virus are most serious in men over the age of 60, especially those with other underlying health problems. As many BMFA members fall into this group, we would urge careful consideration before venturing out and risking any potential exposure to the virus, however small the risk may be.
3. At no point during the lockdown has model flying been prohibited. It is mainly the government's blanket restrictions on non-essential travel which has precluded our activity (which remained the case in Northern Ireland, Scotland and Wales at the time of writing), although some landlords have imposed their own restrictions on activity on their land. Therefore, regardless of any changes to the government's advice, any such local restrictions must also be considered.
4. Should Clubs/members in England decide to resume model flying then they must follow government advice. Some simple measures to consider may include:
  - Social distancing in accordance with government guidelines ensuring the minimum 2 metre (and preferably greater) separation from other people (unless from the same household) is always maintained, including in the carpark, pits and pilot box. Clubs need to consider measures to ensure compliance with this requirement, which in some instances is likely to require limitations on the number of members on site at any one time.
  - Latex/Nitrile/Vinyl gloves to be worn or hand sanitiser used immediately before and immediately after opening/unlocking and closing/locking access gates and padlocks
  - Latex/Nitrile/Vinyl gloves to be worn or hand sanitiser used immediately before and immediately after using any club site maintenance equipment.
  - No sharing of model flying equipment and aircraft (apart from by those sharing a household).
  - Unless both instructor and pupil share the same household, if an individual has not yet reached a 'safe solo' competence and still requires supervision, a buddy system must be employed, preferably wireless and with the instructor and student using their own equipment. If a wired system is used it must allow the instructor to maintain a minimum 2m separation from the student and appropriate sanitation measures should be taken when handling the buddy lead.
  - Clubhouses and any shared facilities (e.g. toilets) to remain closed.
  - Hand sanitiser should be considered an essential item in every model aircraft flyer's flight box.
  - Anyone displaying symptoms of COVID-19, or who shares a household with any individual displaying symptoms, must not fly and should stay at home to maintain social isolation in accordance with government advice.

*Ultimately, it has to be the individual's decision whether to go flying or not and to take responsibility for their own safety."*



## BMFA STC NEWS

John Minchell has taken up the baton as the new PRO for the BMFA Scale Technical Committee. John has kindly given permission for us to pass on any scale related items of interest that may be of interest to RCM&E readers, taken as snippets from the STC Newsletters that he regularly writes.

Let's start with John's own introduction:

*"The STC traditionally have sent out Newsletters on an ad-hoc basis and they are generally a mix of meeting/competition reports and upcoming event dates, venues, announcements and changes to rules etc. They also should encompass all the varied disciplines of scale modelling from R/C through C/L and F/F.*

*Please take a look at the website - [scale.bmfa.org](http://scale.bmfa.org) - and if you have not already registered to receive notifications and you wish to be kept informed of all matters scale, then please register there for the email updates. Also, you can give me permission to put your details onto the STC emailing list."*

### F4 SCALE WORLD CHAMPIONSHIPS

The FAI F4 Scale World Championships were due to be held at the Jarlsberg Flying Sports Centre, Tonsberg in Norway from July 25th to August 1st.

However, due to the coronavirus crisis the decision has now been taken to postpone the Championships until the summer of 2021, "following the Olympics lead, I guess", says John.

When the event does take place, the team who will represent Great Britain in the F4H class are Steven Jackson, John Carpenter and Richard Crapp (pictured here with his Stampe).

All three are experienced Scale competitors and John and Richard have represented their country before at world level. Not only will they be competing for individual honours, but they will also be going for the team prize.

The Team Manager for the competition is Graham Kennedy. He has a scale CV in judging and organising at the highest level.



### SCALE FACEBOOK GROUPS

Three Facebook groups have been set up to cater for the different types of scale modelling disciplines:

**BMFA Scale:**

[www.facebook.com/groups/245781122787150](https://www.facebook.com/groups/245781122787150)

**Scale Indoor F/F:**

[www.facebook.com/groups/441957813162158](https://www.facebook.com/groups/441957813162158)

**Scale Indoor R/C:**

[www.facebook.com/groups/619252605230388](https://www.facebook.com/groups/619252605230388)

These groups are run by extremely well qualified people in each discipline, being Graham Kennedy, Mike Stuart and Danny Fenton.

They are a very useful tool in their ability to post a question and get a pretty quick response from other modellers who have overcome the problem. They are also a great way to learn the techniques and working methods of the experts and to see projects and models across the size spectrum, from indoor free flight Pistachios up to giant LMA size models.

### OTHER SCALE WEBSITES & FACEBOOK GROUPS

In his April 2020 STC Newsletter, John lists some other websites and Facebook groups that will be of interest to many of our readers with an interest in scale modelling, not just R/C but free flight too:

Pete Fardell (many of you will know his father, Martin, one of the masters of UK RC scale) came up with an interesting way to keep all the traditional builders busy. He has started a 'Walt Mooney' designs mass-build over on the predominantly free flight forum, Hip Pocket Aeronautics:

[www.hippocketaeronautics.com/hpa\\_forum/index.php?topic=25052.0](http://www.hippocketaeronautics.com/hpa_forum/index.php?topic=25052.0)

Vladimir Alfery from CZ, the son of that great Alfa Models manufacturer and multiple Interscale and Nijmegen winner, Tonda Alfery, has also started an 'indoor building and flying in your living room' Facebook challenge whilst on lockdown. The maximum wingspan is 8", which is the same as a Pistachio model and makes it a half size No-Cal scale model:

[www.facebook.com/groups/1051511798567031/about/](https://www.facebook.com/groups/1051511798567031/about/)

Last, but not least, following on from the other recently started Scale Facebook groups mentioned previously, George Kandyllakis, the well-respected World Championship Scale F4C RC Judge and indoor model maker, spotted a gap in the scale coverage on Facebook, so he recently set up a new group for CO2 motors. Take a look: [www.facebook.com/groups/1485693254944963/](https://www.facebook.com/groups/1485693254944963/)

## BMFA POWER NATS CANCELLED

The latest event to fall foul of the Covid crisis is the hugely popular BMFA Radio Control, Control Line and Scale National Championships (a.k.a. the Power Nationals) that were due to take place at RAF Barkston Heath from 29th to 31st August 2020.

In his written address to members, Ian Pallister FSMAE, BMFA Chairman, wrote:

*"The safety of our members and those attending is always our number one priority.*

*I appreciate that this will come as a huge disappointment, particularly after so many other contests and major model flying shows have already been lost to the COVID 19 pandemic. However, whilst there has recently been some welcome relaxation in the restrictions on movement and participation in recreational activities allowing some model flying to resume, it is clear that social distancing and additional measures for those who are more vulnerable to*

*the virus will remain in force for the foreseeable future. There are no indications if, or when, the MOD will lift its current embargo on external use of its facilities or when the Government will permit large public gatherings.*

*Against this backdrop it has become clear that we would be unable to run the Power Nationals as an event open to the public: some of the elements that contribute to making 'the Nats' what it is, such as the intimate campsite, Sunday swapmeet and evening free flight jamboree will simply not be possible.*

*Furthermore, many of the competition classes are not viable with social distancing in place and the continued advice for elements of the population to remain isolated goes against the ethos of competing in the Nationals being open to all.*

*The BMFA Technical Committees will continue to keep the situation under review so that other competition flying can resume as soon as the conditions for each discipline and Government instructions allow. If circumstances change dramatically it may be possible for National Championships in some disciplines to be held before the end of the season, but this currently looks doubtful."*



*Tim's AW FK 10 sweeps the air with great authority and no shortage of power.*



# AW FK 01 QUADRUPLANE

Alex Whittaker admires Tim Hooper's funky four-winged WWI scout words & photos » Alex Whittaker

**T**he FK 10 two seat quadruplane was designed in 1916 at the height of WWI. Although as a project it was short-lived, nevertheless it did explore some interesting design concepts. For example, besides the obviously generous wing area, the FK 10 also sported an all-moving tailplane. It was penned by Frederick Koolhoven, then Chief Designer at Armstrong Whitworth Aircraft. At the time multi-planes were fashionable. Indeed, the great Tommy Sopwith had already brought forth his own innovative Triplane. Of course, it

is instructive to note that whereas the British were adding wings, Anton Fokker and the Axis powers were deleting them. The prototype FK 9 first flew in 1916. It was powered by a 110 hp Clerget 9Z engine. The RFC placed an order for 50 machines, which were designated the FK 10. The complete order was never fulfilled because the FK 10 proved inferior to the Sopwith Triplane.

In all only nine were built and the type never saw operational service. In truth the FK 10 Quadruplane was a blind alley in British aeronautic design, but impressively off-beat.

## THE MODEL

My RCM&E colleague, Tim Hooper scratch built his own version to 1/4 scale. Now, between you and I, Tim makes an excellent job of anything he turns his hand to, and this WWI beauty is no exception. She has wingspan of 80" and weighs 22lbs. Tim has chosen electric power for his model. She is surprisingly tall, at about 33". Her wing area is an expansive 21 square feet. Tim told me that she is spectacularly overpowered if you chose not to fly her in a scale fashion! She uses five digital servos and has a complex 'redundant'





*The ideal WWI scale model? An excess of two wings, and a round engine!*



*Despite the four wings, the FK10 has an oddly familiar 'WWI Scout' presence.*



*No nonsense ailerons and pushrods! Rib tapes are from ripped Solarfilm.*

**“At the time multi-planes were fashionable.”**



*Tim's model is covered in Solartex. Four metres of linen and six metres of green.*







*This view exemplifies the strength of the jig-built hardwood strut arrangement.*



*Lots of lovely rigging, turnbuckles, cable terminations and struts.*

control system, which separates radio control from the power requirements.

### PLAN

Construction is fully traditional, with balsa ribs and spars. The wings are under-cambered as per the original. The top spars, front and rear, sit below the top edge of the ribs, so they don't show through the covering. The bottom spars sit flush with the ribs. This provides more balsa for the covering to adhere to on the under-camber. Adhesion is further assisted by the use of Balsaloc on all the balsa before covering.

The rib stitches are achieved by tack-cyanoing 5mm bits of cotton across the ribs, and then 15mm wide rib tape was ironed on top.

The wing panels plug into the fuselage using 3/16" piano wire as dihedral braces. These are affixed permanently into the wing. They slide into brass tubes, which are set in beech wood blocks in the fuselage at the wing roots. There are one-inch stand-off blocks at the wing roots because there is a scale gap between the wing and fuselage.

### WINGS

Tim is a handy builder and bashed through a wing panel in two nights. Accurate alignment of the wing panels is vital, so Tim used a simple ladder frame to jig the panels correctly at the assembly stage. Tim used Tufnol to attach the panels to the sturdy hardwood interplane struts.

### FUSELAGE

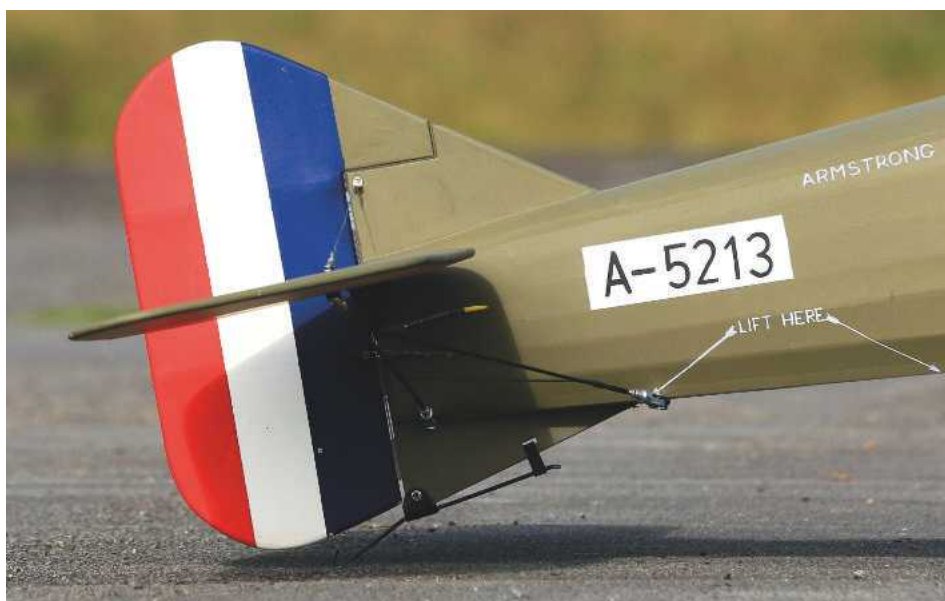
Trad built around a box fuselage; Tim has incorporated an engine/battery box at the nose to support the motor.

### TAILPLANE

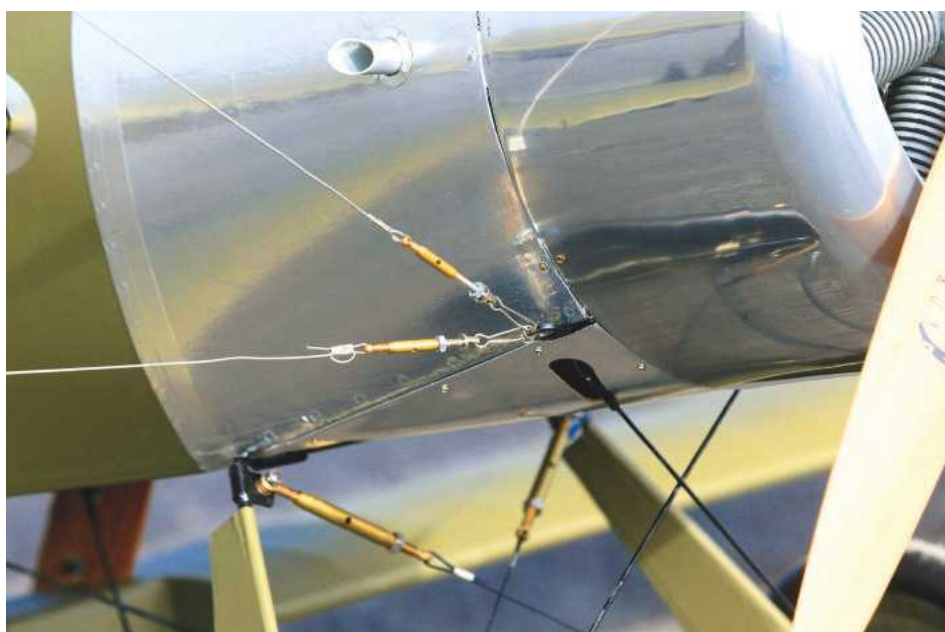
Again traditional, but it is an all-flying unit, which required brass control tags protruding both above and below the surfaces.

### RIGGING

Tim used 200 lb fishing trace and turnbuckles for the landing wires. 16 swg piano wire is employed for the main flying wires. The drag wires from the front of the fuselage to the top of the outer struts are from 75lb trace.

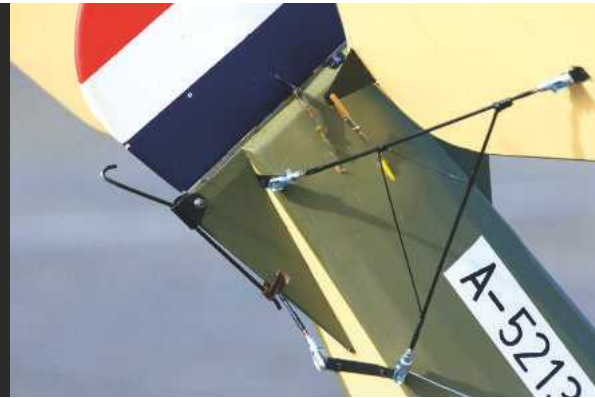


*As per the full-size example, Tim's FK10 has an all-flying tailplane.*



*This part of the cowl and panelling looks very crisp. Note the turnbuckles and cable terminations.*





Far left: Undercarriage arrangement is scale-like and practical. Left: Busy tail area with sprung skid and triangulated tailplane strut with M3 clevises.

Their opposing anti-drag wires, made off to brass tabs on the lower rear fuselage, are also 75 lb trace.

#### UNDERCARRIAGE

As far as practicable for a flying model, Tim has reproduced the FK 10 undercarriage system. The main structural elements are made from 6 swg piano wire with a lower spreader. The legs and spreader are soldered together. Brass sheet fairings are used to reinforce the joints. Tim used cheap plywood mock-ups to get it all fitting and travelling correctly. These sheets have slots to allow for undercarriage travel. There are also lugs for the rigging wires. The assembly is simply, but necessarily, sprung with bungee cord. The undercarriage is fitted to the fuselage hard points with brass saddle clamps.

Finally, the tail skid was made from 12swg wire soldered into a brass U-clip. The skid articulates about an M3 bolt and is sprung with heavy-duty hair bands.

#### COWL AND COWLING

Tim used a DB Models' metal 1/4 scale Pup cowl. Unfortunately, this was delivered with a metal turned finish, so Tim had to polish it with increasingly fine grades of wet and dry

**“Tim is a handy builder and bashed through a wing panel in two nights.”**



DB Models Pup cowl, which Tim polished. Cowling panels are from Flair Aluclad.



*The undercarriage stance is quite narrow, but Tim's model handles well.*



Far right: Iron men in wooden aircraft. The observer/gunner looks very exposed.

Right: Tim used white marker pens to legend his model. Main panel is from white Solarfilm.



Bellicose pilot came from [www.realmodelpilots.com](http://www.realmodelpilots.com)



Netty, Tim's fiancé (and also a scale pilot and builder) made this neat leather cockpit edging.

paper, ending up with 2000 grit. The final finish took much elbow grass with Brasso.

The bright metal cowl panels were produced with a layer of tissue and dope on the fuselage, these were then topped off with a layer of Flair Aluclad. Brass tube was pressed into the Aluclad to suggest rivets. To pick out the details of his rivetry, Tim wiped the panels over with black marker pen, then wiped most of it off with a rag dipped in solvent. This revealed the rivets nicely.

### DUMMY ENGINE

Tim's very impressive nine-cylinder radial engine was conjured up from a yoghurt pot crankcase, plus convoluted caravan sink tubing for the cylinders. It looks well.

### MOTOR SET

Tim installed a Turnigy G160 Outrunner Motor and an HV 80-amp speed controller. The FH 02 uses a 10S 5000 mAh LiPo pack.

### CONTROL SYSTEMS

Tim has prudently separated the motor control functions from the radio control functions. This means that any emergency in the motor control or battery department does not result in a lost signal and a crashed model. This moderately complicated wiring involves two UBECs, an SM Services Battery Backer and a Turnigy power distribution board.

In addition, Tim has dispensed with all power switches and all servos are substantial digital types. The model uses a single rudder servo, two elevator servos and two aileron servos, plus, of course, an ESC for the motor. To maintain a forward CG, Tim sited the battery, elevator servo and twin elevator servos right at the front of the model in the combined motor/battery box. This box positions the motor exactly where required by the cowl.

### COVERING AND LEGENDING

The olive drab and linen scheme lent itself well to Solartex covering. Four metres of linen and six metres of green were required. Tim used carefully ripped strips of Solartex to simulate the many, many rib tapes.

Roundels are cut from white Solartex and then brush-finished with Flair enamels. White stencilling on the rear fuselage was done with a steady hand and a white marker pen.

### CREW AND OTHER DETAILS

The pilot and observer are really are impressive and came from [www.realmodelpilots.com](http://www.realmodelpilots.com)

The Vickers gun was made from balsa, cardboard and a dash of inspiration, whilst the Lewis gun came from a wooden kit available from Balsa USA.

The windscreen surround was fretted out from aluminium sheet.



## DATAFILE

<b>Model Name:</b>	Armstrong Whitworth FK10 Quadraplane
<b>Designer:</b>	Tim Hooper
<b>Wingspan:</b>	80"
<b>Wing Area:</b>	21 sq. ft. (1.9 sq.m)
<b>Fuselage length:</b>	64"
<b>Height:</b>	33"
<b>Controls:</b>	Rudder, elevator, ailerons and ESC
<b>Weight:</b>	22 lbs
<b>Motor:</b>	Turnigy G160 Outrunner
<b>ESC:</b>	80A HV
<b>Prop:</b>	22" x 6"
<b>Battery:</b>	10S 5000 mAh LiPo

### FLYING NOTES

The FK 10 is generously overpowered and takes off with great authority. Tim reports that she flies very predictably. I watched her flying in stiff autumn winds at Ashbourne and she displayed with no problems whatsoever. She looks uncannily stable and from the ground she really does seem to lean into the turns.

This is a very impressive scale model, with just that bit of quirkiness that many of us adore. She is certainly the nearest you or I will ever get to observing the real thing. ✈️



Damaged by enemy action! Actually, it's a sprung cowl-catch on short finals.





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## What's NEW

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Plans	£25.00
VAC Set	£34.00
CNC Pack	£75.00
Wood Pack	£75.00
Complete Pack	£199.00



66" Span Lysander  
0.52 IC or Electric

Plans	£25.00
VAC Set	£60.00
CNC Pack	£81.00
Wood Pack	£42.00
Complete Pack	£198.00



42" Span BAE Hawk  
68-70mm Electric DF

Plans	£22.00
VAC Set	£42.00
CNC Pack	£57.00
Wood Pack	£37.00
Complete Pack	£153.00



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*This Aeromodeller issue inspired my late uncle to design his own peanut version of the Bristol M.1C.*

# RUBBER SOUL

David Ashby indulges in a drop of nostalgic tinged trad' building to banish the lockdown blues  
words & photos » David Ashby



*I found this old Aeromodeller issue...*



**AEROMODELLER**  
(INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR")  
*The Model Aeronautical Journal of the British Empire*  
Established 1936

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VOL. IX No. 107  
OCTOBER 25th, 1944

**ON PETROL PLANES**

Under date of September 16th we received the undernoted letter from the Air Ministry (Department of Civil Aviation) :—

C.S.22713/C.H.2(a)  
Ariel House,  
Strand, W.C.2.  
16th September, 1944.

Sir,  
I am directed to refer to Air Ministry letter C.S.22713, dated 22nd June, 1944, concerning the flying of model aircraft, and to inform you that in the light of prevailing conditions the Department has decided that the restrictions which govern the flying of model aircraft may now be relaxed to some extent.

Subject therefore to the following conditions, which will supersede those contained in Air Ministry letter under reference, any type of model aircraft (including gliders), whatever its motive power, may now be built and down anywhere in the British Isles :—

- There is to be no flying of model aircraft between the hours of sunset and sunrise.
- There is to be no flying of model aircraft in officially prohibited areas or within two miles of any Royal Air Force Station.
- All petrol-driven model aircraft are to be set to fly in a closed circuit only.
- Wing span in all model aircraft is not to exceed 10 ft.

(e) Maximum engine running time for petrol-driven model aircraft is to be forty-five seconds.  
(f) Maximum airborne time of any petrol-driven model aircraft is to be not more than two minutes on any single flight.

Copies of this letter have been sent to the Society of Model Aeronautical Engineers, The Association of British Aeromodellers, The Model Aircraft Trade Association, and The Model Aeronautical Press, Ltd., for information.

I am Sir,  
Your obedient Servant,  
(Sgd.) R. S. S. DICKINSON,  
for Director-General of Civil Aviation.

The Secretary,  
Royal Aero Club,  
119, Piccadilly, W.1.

The above letter results from a communication addressed by the Managing Editor of this Journal, under date of September 8th, to the Air Ministry asking for the removal of the "ban" on the flying of petrol "planes south of the Bedford line." We are pleased to have taken such an important and successful part, during recent months, in re-establishing peace-time conditions for the flying of all types of model aircraft, on behalf of all aeromodellers in Great Britain.

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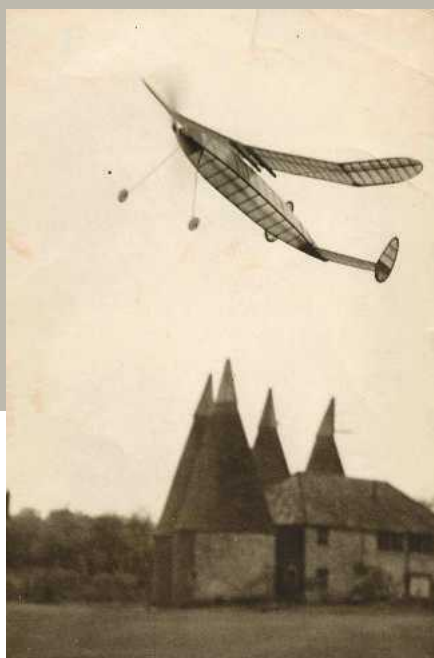
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*...that announced the lifting of restrictions on war time model flying. Not that free flight modellers had taken much notice.*





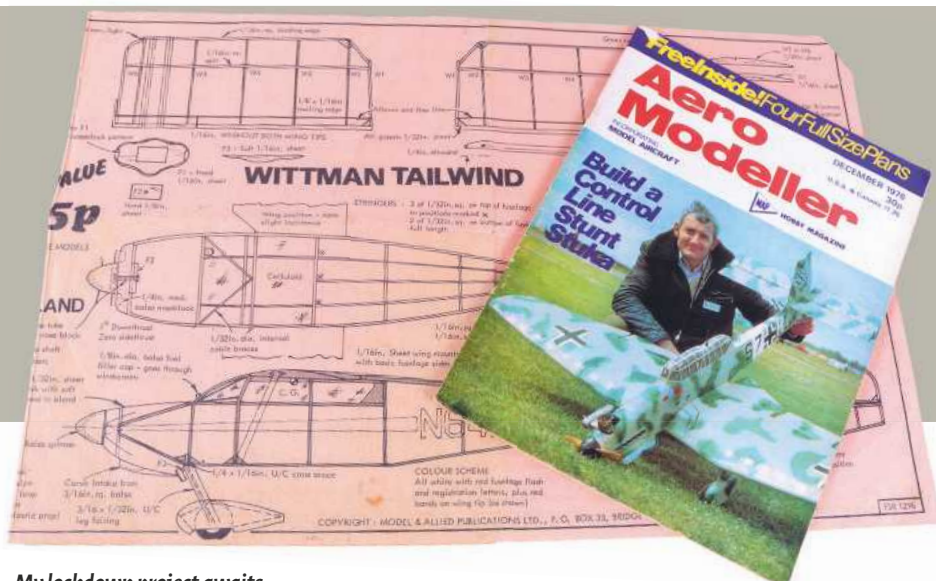
**Uncle Roy's own-design Wakefield style model rises above a Kent field in 1945. Sadly, he never kept the plan.**

I sincerely hope that, by the time you read this, the words 'lockdown' and 'social distancing' are a distant memory and life has returned to normal, or the new normal, whatever that turns out to be. I've spent many lockdown hours leafing through old magazines to cure the boredom and perhaps find some inspiration. I haven't a huge library of aeromodelling books and periodicals but came across an issue of *Aeromodeller* from October 1944. You know, from the days when, thanks to wartime restrictions, the paper was so thin you could use the mag' to cover a model after you'd read it.

The editorial page had a letter from the Air Ministry announcing a relaxation of restrictions on model flying and permitting that 'any type of model aircraft (including gliders), whatever its motive power may now be built and flown anywhere in the British Isles'.

Some caveats applied - models couldn't be flown within two miles of an Air Force station and wingspans weren't to exceed 10 feet. Petrol engines were limited to a running time of 45 seconds, petrol powered models to flights of no more than two minutes and in a closed circuit too.

So, did modellers celebrate their new freedoms? I can't imagine they did simply because those restrictions hadn't exactly been followed to the letter. Not that anyone other than the early pioneers - Col. Bowden, Lt. Col. H. J. Taplin and a few others - possessed a petrol engine, for most that was the stuff of pipe dreams. But, as those *Aeromodeller* adverts and articles testified, modellers were building and flying through the war years, restrictions or not.



**My lockdown project awaits.**

We're talking free flight of course (control line flying hadn't been invented), a fact confirmed when I chatted with some of RCM&E's more... ahem... mature contributors. Dad agrees, and watched his older brother, Roy, fly own-design rubber-powered models from the field near their house in this period. In the absence of balsa, obeci was Roy's main building medium and his creations flew well.

One of his larger designs was photographed by a friend one day in 1945 and published on the SMAE news magazine cover in the 80s. With a Kentish oast building in the background, the shot is highly evocative and many modellers got in touch with Roy to say how it reflected the spirit of wartime aeromodelling.

### LOCKDOWN PROJECT

Back to the present. My instinct was to build something from balsa as a way of keeping the mind occupied and to fill the time. The last model I flew before the lockdown was a Nesmith Cougar peanut-scale free flyer at an indoor meeting. It reminded me of my first peanut, a Wittman Tailwind built from the long since discontinued Andrew Moorhouse kit in the early 1980s. I still remember feeling stunned to find that my mistake-ridden creation would fly in a gentle circle for 20 seconds or so. The Cougar had done better than that so another little peanut would be perfect, and a welcome change after the 4m span SHK glider that, you'll recall, overran my workbench last winter.

### PEANUT?

Peanut Class refers to free flight rubber-powered scale models with a maximum wingspan of 13" or a fuselage of not more than 9" (excluding propeller). A few other competition caveats pertain too, such as extra points for a ROG take off and you can find out more at [scale.bmfa.org](http://scale.bmfa.org)

If you want to build a peanut-scale Tailwind these days then you'll need to find a plan, but there are some out there for purchase or download including the Moorhouse version. A quick Google should find them. Sorting through the plans I had, my eye fell on a pull-out from a 1976 issue of *Aeromodeller*; one of those long thin sheets they used to print on that thicker brown paper, if you recall.

The sheet had four small models: two control liners and two peanuts in the form of a Lacey M-10 and Tailwind, both designed by the late great Butch Hadland. I remember watching him fly both models at an indoor meeting in the early 1980s, each was impeccably built and flew impressively well. Incidentally, if the name seems familiar it's probably because his son, Mike Hadland, is a well-known indoor scale flyer with a number of titles to his credit.

### TAILWIND?

So, say hi to one of the most famous aviation designs you've never heard of. Designed by Steve Wittman, the famous racing pilot, it's based on his 1937 Buttercup cabin monoplane and took to the air in 1953. It was the first home-built aeroplane certified by the CAA to carry a non-revenue passenger and kick-started the home-built revolution, making this two-seater a firm favourite in garages and workshops across the US, particularly in the 1950s and 60s.

With its fabric-covered tubular steel fuselage and wooden wings the Tailwind seems quite innocuous at first glance, but there's a little more to it than meets the eye. Conceived as a cheap, easy-to-build, economical machine with fine flying qualities - a remit which was comfortably met - the Tailwind offered one other thing; Wittman could never hide his lust for speed and the new aeroplane, which was both light and clean, happily obliged.

The prototype was powered by a modest 85hp Continental engine yet was capable of 150mph. Replaced in 1966 by a 145hp







**Named the Flying Carpet, the Tailwind prototype now sits in the EAA Museum, Oshkosh, Wisconsin. (Daniel Berek photo)**



**Steve Wittman had a racing background so, needless to say, the Tailwind didn't hang about.**

Continental, the speed increased to nearly 200mph. That's fast for a little two-seater, even by today's standards. In the early 1970s a new version of the Tailwind was developed by Andrew Perkins in the UK; these AJEP variants were available as kits and incorporated many modifications such as a graceful, swept tail and extra glazing. Back in the States, meanwhile, the original W-8 design evolved into the W-10.

Many Tailwind enthusiasts will tell you that the 60-year old concept is just as efficient, reliable and cheap to own as modern home-build favourites such as the RV series or the Europa. Indeed, RVs use a sprung rod undercarriage, another Wittman design legacy, and one that Cessna developed to grace the many thousands of machines it produced. On this point the Tailwind has sometimes been likened to a simple R/C sport model as its landing gear is attached to the engine bulkhead, offering a very rugged arrangement.

Assessing an AJEP Tailwind for Pilot magazine in 2006, Nick Bloom likened the machine to an old MG Midget sports car, reporting little built-in stability and an aeroplane that needed to be flown all the time, yet a 'manoeuvrable little thing'. Bloom also mentioned the fast landing speed and I



**The AJEP version added a little flair to the simple appearance. (Mike Burdett photo)**

chatted to Andrew Perkins a few years ago, who concurred, "*The Tailwind's small stabiliser means that you can't flare the machine like, say, a Cub, so a fast, flat approach for landing is essential.*" Andrew flew a Tailwind to Grenoble in the 1970s and bumped into Steve Wittman who, he reports, "*...took my aeroplane on a trip round the mountains!*"

#### **SMALL STUFF**

I digress, so back to the building board. A steel sheet in my case as I'm a magnetic convert. My model was built from no more than half a sheet of 1/16" balsa. Strip was cut by eye on a 'if it looks good enough...' basis

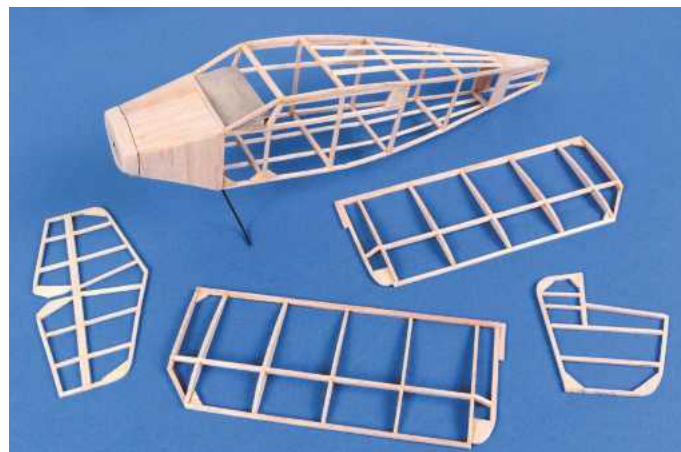
and the Perma-Crit blocks came out if anything thinner was needed.

I'd forgotten how fiddly peanuts are. They may be small but that doesn't equate to ease or speed of construction. What's nice is that you can hunker down with the radio on, cuppa alongside, without the need to get up and move around the project. Everything is within arm's reach. Aliphatic glue did most of the sticking, with clear drying PVA to retain the glazing.

Both the Lacey and Tailwind are good peanuts for starters thanks to their constant cord wings and slab-sided fuselage. The Tailwind is without large fuselage formers



**Small doesn't mean speedily built. The tricky part was fuselage alignment; those magnetic squares were a godsend.**



**Ready for covering, but which method to use?**



*All done and ready for next winter's indoor flying. Warts and all, I'm pleased.*



*The prop is 4.75" and from Sams Models. ROGs should be possible.*



so keeping everything straight and square while lining up the sides and adding cross members is the trickiest part. Although it can be built from the plan without instructions, I found a copy of the magazine it came with and Hadland's article useful, especially his generic tips concerning peanut building and flying.

### DARK ART

Ideas about airframe prep' tend to converge - sand down to remove the rough bits, apply a coat of thinned 50/50 dope and follow with a light sand to remove the fur.

So far so good. If only tissue covering was so straightforward. Hadland's suggestion was to use dope straight from the tin as an adhesive for the tissue. When dry he steamed or water-shrank the tissue while holding down the parts on balsa strips (to allow air to circulate) overnight. Thinned dope (70%) was applied, followed by a sprayed flash-over coat, mixed 10% white dope, 10% clear dope and 80% thinners.

But that's just one method. Some apply the tissue with a glue stick, others use watered down white glue or tissue paste. Others will tell you to coat the airframe with dope, allow it to dry then brush thinners as the tissue is applied to activate the dope's adhesive effect. Wetting the tissue first so it moulds around corners is how some do it, but to be honest, if you ask ten modellers you'll discover ten different methods.

There's no right or wrong; do what works for you and the model you're building. Remember, the words 'practice on a piece of scrap material' were never more apt. I have tried using a glue stick but found that it grabs the tissue too quickly so doesn't allow for easy adjustment. It's a bit unwieldy around a small delicate airframe too. My feeling is that the wet tissue method is better suited to larger airframe, but someone may write to contradict that assumption.

I use tissue paste, applied by brush, then water shrink the tissue with a fine spray



*The wheels are 18mm diameter Peck Polymer items, also from Sams.*

before holding the structures down. Thinned 50/50 dope comes next and, again, the pieces are held down overnight.

### FINAL TOUCHES

The Tailwind's blue tissue trim was added using thinned dope and the balsa block nose given a coat of neat dope, then sanded smooth before a couple of coats of Tamiya acrylic flat blue. Little accoutrements - U/C legs, lights and a tail skid - were added



*I won't tell you how many parts were broken and replaced during construction and covering!*

before a thin marker pen and black tissue trim highlighted control surfaces and doors.

It's nowhere near Mr Hadland's standard but I'm very pleased with the result, warts and all. It's now tucked away ready for next winter's indoor flying season.

### MOORHOUSE VERSION

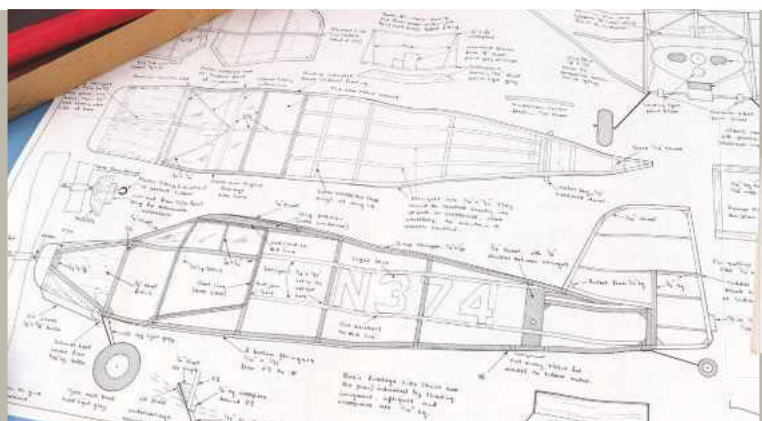
Just returning briefly to that Moorhouse version, I'd left an ad' in this mag's Marketplace section a while back hoping



*Woo-hoo! I've finally got a Moorhouse version thanks to, of all people, Dave Wilshire at Motors and Rotors.*







*The Moorhouse plan is beautifully done. Fit for framing.*

that someone might have a dusty kit surplus to requirements. It worked, although Dave Wilshire at Motors and Rotors was the last person I thought would have one. Have one he did and the reason I mention it now is because I'd forgotten what a lovely plan it comes with. Annotated by hand and beautifully laid out, it's one that makes you want to start building; you could happily frame it on a wall too.

#### BULLET

That Aeromodeller magazine from 1944 sported a Bristol 77 racing monoplane on the cover to accompany Eddie Riding's 46" span rubber-powered plan feature inside. The '77 was a one-off developed from the M.1C fighter to house a Cosmos three-cylinder radial engine of 100hp. It enjoyed a brief racing career, winning a few trophies, before crashing in June 1923 and killing the pilot.

That magazine may have been Roy's because the Bristol M.1C Bullet, the WW1 fighter, was one of his favourite types. He designed and built his own peanut version back in the 1980s and it survives. Not that it flew particularly well; it weighs just under 16g (without rubber), which is heavy by peanut standards. Compare that to my

Nesmith Cougar's 12g and the new Tailwind's 10.5g and you'll appreciate what I mean. Still, knowing Roy it would have flown with a homemade prop back in the day, so I may see how it performs with a lighter, more efficient plastic prop come the winter season. It hasn't flown for over 30 years but seems reasonably warp free and, hopefully, may manage a few circuits. It's certainly a pretty little thing.

#### SILVER LINING

I write this while movement remains restricted, shops are closed, and people



*If you fancy a larger Tailwind, then Simon Pollock's 1/5 scale design appeared in Radio Modeller, July 1977. Sarik Hobbies will sell you a plan.*

furloughed. The hobby industry hasn't escaped any of this upheaval, but the shops fulfilling online orders are reporting healthy business with sales of traditional kits, coverings and bits doing particularly well. Thankfully, despite the ARTF tidal wave of recent years, trad' building never went away. Yet in the same way that WWII provoked a post-war aeromodelling boom, it's curious to see how the world's greatest calamity since is doing the same thing, perhaps on a more modest scale. No bad thing, eh?

That's it for this time but, as always, I'm at [justforfunrcme@gmail.com](mailto:justforfunrcme@gmail.com) so do drop me a line with your news and views. ✈



*Uncle Roy's own peanut version of the Bristol M.1C. It hasn't flown since the 1980s.*

*At nearly 16g it's heavy by peanut standards but I may just try it on a flat calm day over grass to see if it wants to fly.*

*Pretty little thing, isn't it?*





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# MISS SIZZLES

Peter Miller combines a couple of favourite designs to produce an agile but well-mannered aerobatic low winger words & photos » Peter Miller

I needed something to build but I really could not find the enthusiasm to start designing a model from scratch. I looked back over my old designs and decided to knock up a bit of a cross breed. In the end I took the fuselage of my old Size Zero and enlarged it by 115% and changed the construction from an open framework to my normal sheet sides with doublers. I kept the stringered rear turtle deck. Well, it is easier than rolled sheet.

I then designed the fuselage for electric power with a battery platform and opening for airflow through to allow cooling round the battery and ESC.

At this size the wing came out at the same chord as my Ohmen wing, but it was thicker, so I simply took that wing and increased the thickness to 13%. I knew that the wing was really nice for aerobatics. I made the tail from solid sheet with built up moveable control surfaces. The result was a pretty little model with a minimum of drawing.

## HOT STUFF

After waiting for weeks for the wind and rain to stop a Friday afternoon turned out to be almost perfect so I called up a friend and we went to the field. After the regular checks and with the controls set at low rates the

model was pointed into wind and I applied full power. I will just say that those first few moments were very bad for the nerves...

However, after a few minutes I had the trims sorted out and landed it. After an inspection I found that the control throws were very low but even a hint of trim had a marked effect. I carefully adjusted the elevators to exact neutral and likewise the ailerons. I also reduced the overall throws a little.

The second flight was great. At low rates the model is rock steady but will do aerobatics in a civilised manner. Go to full rates and it does everything right NOW or even sooner! One could probably reduce the high rates a little, but I do like a model that does what I ask RIGHT NOW!

I was soon throwing the model around and having fun. Miss Sizzles is very stable but responds instantly. Rudder/elevator flick rolls are awesome to say the least. Loops are really tight. Rolls are fast and easy.

I did try out the stall. On the glide I fed in full up elevator on high rates and it didn't even stall, let alone drop a wing. That thicker wing is really nice.

After another wait for the weather I had a couple more flights and found that by fitting a smaller propeller the performance was

better and less hairy; much more suited to my style of flying.

The third outing was a perfect day for in flight photography and I was soon doing low level passes for Michael Morris, my camera man.

Then I spent a couple of flights just throwing the model round the sky. This showed that it is completely forgiving and capable of most things, but knife edge flight needs a bit more rudder area.

The control throws given are a good starting point, but I am sure that people will want to adjust them to suit their flying style.

## CONSTRUCTION

I had not planned on offering the plans for publication because it was just a mixture of other designs and I just wanted something to build. There are no step by step construction photos because that means setting up my 'studio' in my bedroom and then taking it all down again on most days. However, the fuselage is very basic, and the wings are identical to The Ohmen so you will get a few pictures taken from my other designs.

Cut out all the fuselage parts and glue the doublers to the fuselage sides with contact adhesive. I prefer Thixofix but the choice is yours.





*Left: The fuselage is designed for electric power with a battery platform and openings for airflow to allow cooling around the battery and ESC.*

*Below: Underside view showing the aileron hook-ups and the generous cooling hole aft of the wing.*



Also glue on the 1/8" lite-ply rear servo mounts. Make sure that they are staggered so that the rudder one goes below the elevator one. Mine interfered slightly but fortunately a little trimming was enough to get them to fit.

Lay one side flat on the board and glue on the formers from F-1 to F-5 making sure that they are vertical. Once they are dry glue on the other side. Add the triangular stock in the corners of F-1 and the sides and also the 1/4" ply undercarriage supports.

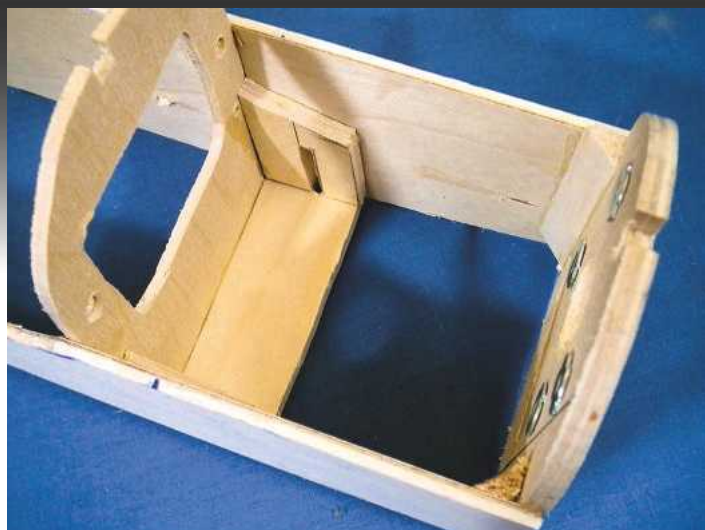
Pull the rear of the fuselage sides together and glue, then add the rear formers. It is easier if you only put the slots for the stringers in F-5 and F-8 and then cut the slots in the other formers using the stringers to



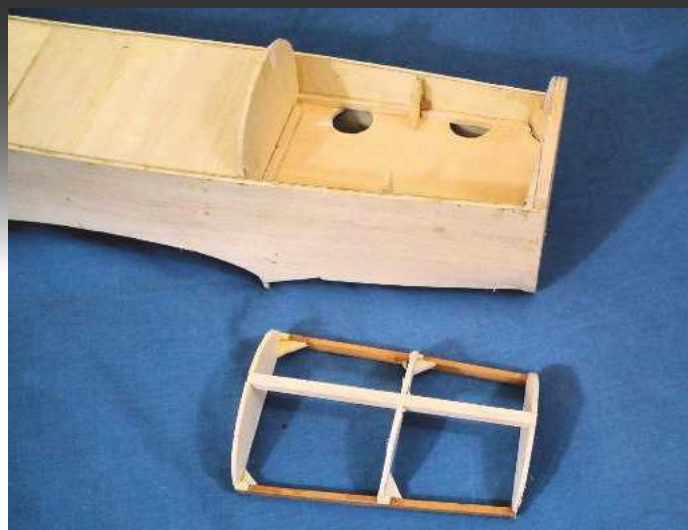
*"I looked back over my old designs and decided to knock up a bit of a cross breed."*

*At low rates the model is rock steady.*





*This shows my standard undercarriage mounting system.*



*Building the battery hatch is quite simple.*

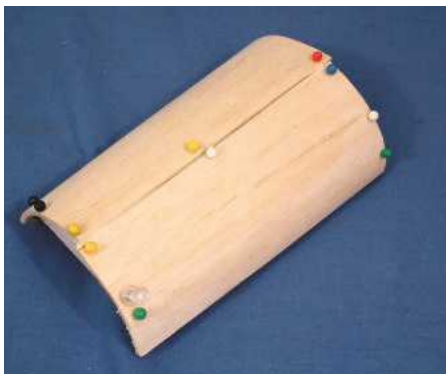
mark the locations. Add the scrap 1/8" sheet between the stringers at each end.

Fit the 1/8" sheet tailplane platform between the sides. Fit the cockpit floor. I fitted mine lower than shown as I had a very special pilot, which I did not want to cut down.

Make up and fit the ply plate for the wing bolt nuts and fit with the scrap balsa infill. Note that the infill adds gluing area so should not be omitted. Fit the bottom sheet and the ply tailskid mount.



*Glue the sheet on and leave the glue to dry. Then wet it and roll over the formers and glue down.*



*Map pins are the best way to hold the sheet down while the glue dries.*

Now to the front end. Fit the battery platform. This is cut from 1/8" lite-ply. The hatch is a bit fiddly but not too hard. Glue the formers to the 1/4" x 1/8" spruce rails. I added 1/8" triangles in each corner to add some strength. Also fit the 1/4" square spine. This can be fitted to the fuselage top at the same time.

Once this has dried completely glue soft 3/32" sheet to each side and leave to dry. Then wet the outside of the sheet and apply heat with a heat gun or iron and roll the sheet over and glue down to the spine. Under the nose glue on the triangular wood and then the bottom sheet.

Cut out rear cowl former. Now, using that, mark the holes for the four small round head screws in F-1. The keyhole slots in the cowl former allow the cowl to be placed over the screws and then pushed down to hold it firmly in place. Later a small swivelling piece of aluminium strip will stop the cowl rising up.

Mount the motor. Glue the spinner ring to the spinner backplate with small scraps of 1/16" balsa and superglue. Mount this assembly on the motor. I have an old

propeller hub to clamp it under the prop nut.

Build the cowl up between the spinner ring and the rear cowl former. This is very much a 'cut and try' operation. Once it has dried the whole nose can be carved and sanded to shape.

The hatch is retained by a dowel at the rear and a nylon latch at the front. I have spent too long walking the fields looking for canopies that were 'held on' with magnets to trust them.

The fuselage is now complete.

## WING PANELS

The wings follow my usual sequence, which, if followed, guarantees a warp free wing. One of my 48" long building boards allows me to build both wings at once.

Start off by laying down the leading-edge sheet and 1/16" trailing edge spar capstrip over the plan. Next, glue down the lower main spar. It will help if you let the first 1/2" of the leading edge overhang the building board.

Laminate the R-1a's to the R-1's. When the wings are joined the slots in the R-1's form the hole for the leading-edge dowel. This avoids any tricky drilling later.

*Basic wing structure pinned down on the board.*





# MISS SIZZLES

BY PETER MILLER

A 48" SPAN AEROBATIC MODEL  
FOR ELECTRIC POWER

PLAN No. 800231 No. OF SHEETS 1 OF 2



DESIGNED BY PETER MILLER

# Miss Sizzles

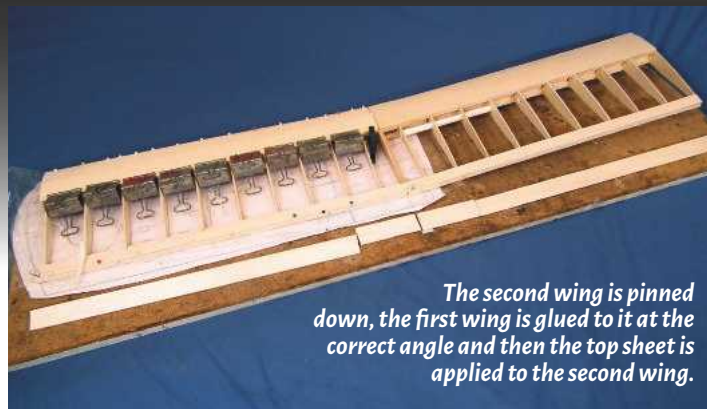
COPIED FROM THE PLAN No. 800231

AK SCALE





**Top sheet applied to the first wing.**



*The second wing is pinned down, the first wing is glued to it at the correct angle and then the top sheet is applied to the second wing.*

Glue down the wing ribs and add the top spar and trailing edge spar. Do not try to glue the lower leading-edge sheet to the ribs yet. Chamfer the 1/8" sheet leading edge and glue it to the front of the ribs flush with the bottom of the ribs.

When the glue has dried raise the lower leading edge sheet and glue to the leading edge. I use Aliphatic resin along the leading edge and Superphatic along each rib. I pin the leading-edge sheet to the leading edge with map pins. This is easier if you have left that overhang that I mentioned.

Trim the leading edge and rear spar to match the ribs with a razor plane and sandpaper.

Add the 1/16" sheet spar webs and then you can add the top leading-edge sheet. Here I clamp it to the top spar with masses of clamps and use map pins along the leading edge. Add the dihedral brace, then add the paper tubes for the servo leads. Once all the glue has dried you can lift the wing off the board.

Build the second wing up to the stage where you are ready for the top leading-edge sheet. Do not glue in R-1 yet.

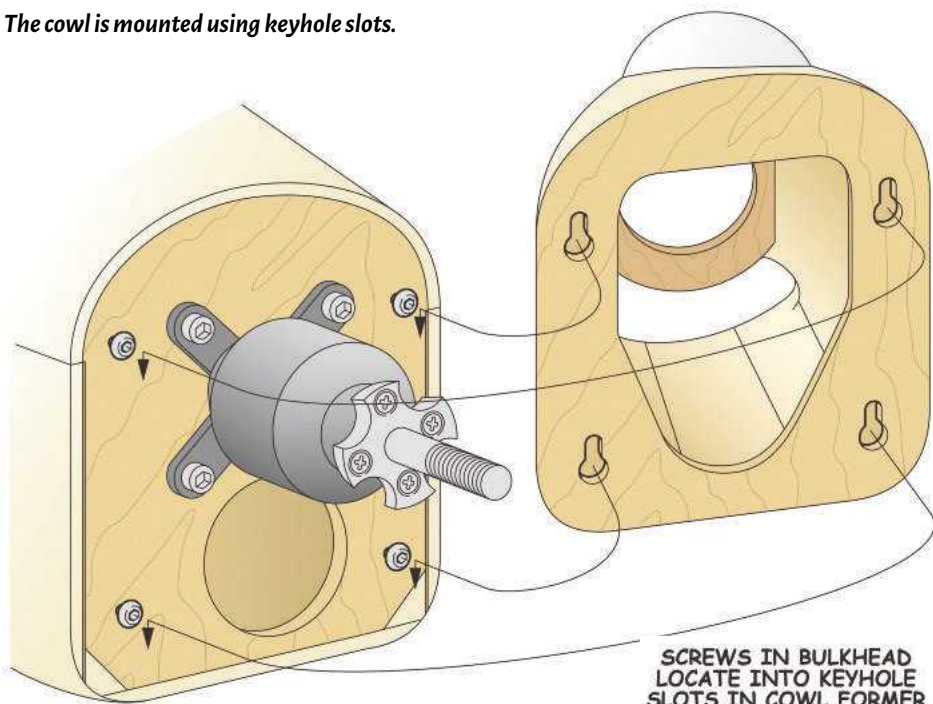
Once you are satisfied with the fit glue the two wings together and fit the remaining R-1 and leave to dry. With the second wing still pinned down complete the top leading-edge sheet and rear spar capstrip. Add the 1/8" ply dihedral braces. Prop the wing tip up 1.1/2"; this gives 3/4" under each tip.

When the glue has dried you can lift the complete wing from the building board. Note that the dihedral angle is not critical so don't get too worried about that. Mine is less than specified and even zero dihedral will make no difference to the model. Trust me on this.

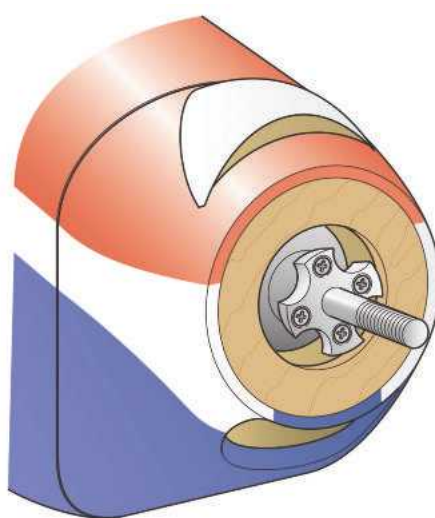
The servos are mounted on 1/8" ply plates. These are flush with the bottom of the ribs. I then added 1/16" sheet outlines to the servo holes to bring the surface up level with the capstrips. These are cut away to allow the servo mounting lugs to rest on the ply plates.

Infill the rear of the innermost two rib bays with scrap wood as shown at the trailing edge. Then you can add all the centre section sheet and the capstrips on the ribs. Also glue on the 1/8" sheet leading edge cap strip and shape the leading edge.

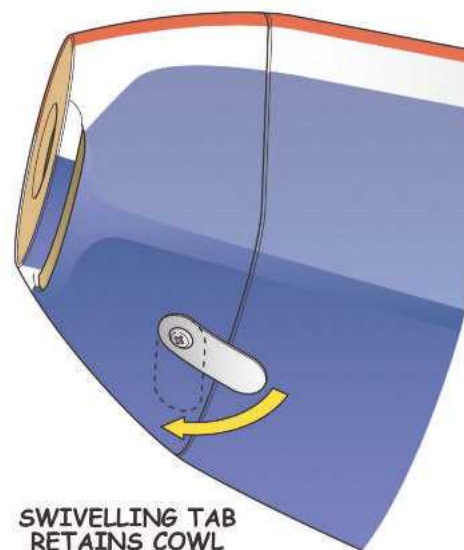
**The cowl is mounted using keyhole slots.**



**SCREWS IN BULKHEAD LOCATE INTO KEYHOLE SLOTS IN COWL FORMER**



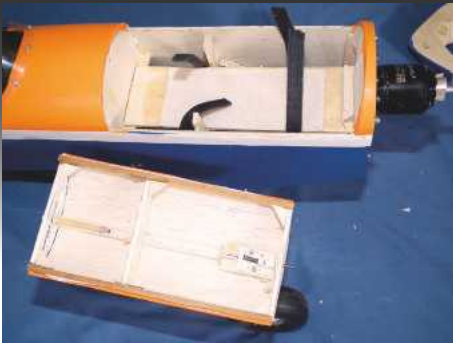
**A SLEC air scoop on top of the cowl cools the motor. An air inlet underneath supplies air to the ESC and battery.**



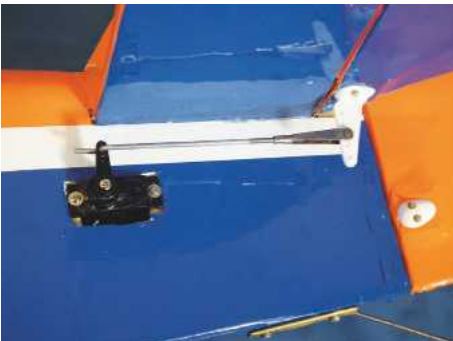
**SWIVELLING TAB RETAINS COWL**

**A simple swivel catch stops the cowl sliding up and coming loose.**





*This is the actual Miss Sizzle battery bay. Wide Velcro is from B&Q.*



*Elevator and rudder servos are mounted at the tail. Not my usual system but it works well.*



*Above: Windscreen is a simple piece of plastic held down with tiny screws and canopy glue.*



*It's best to cover the tail fairing blocks and the tailplane and fin before gluing them in place.*

The short sections of trailing edge are fitted and when dry the 1/16" ply plate is fitted. The wing is held on with two 5 mm nylon bolts.

The wing tips are extremely simple to make. Keep the tips light; this makes for more precise aerobatics. The ailerons are shaped from soft 3/8" sheet.

#### **TAIL SURFACES**

The tail is nice and simple. The tailplane and fin are cut from soft 3/16" sheet while the control surfaces are built up from soft 3/16" strips cut from sheet.

The elevators are joined with 14 SWG wire. I added small reinforcement plates from 1/32" ply to take the control horns.

I made the blocks that fair the fin into the fuselage by using scrap 3/16" in place of the fin and tailplane and then spot gluing this to the fuselage with small blocks spot glued on. Once the whole assembly is in place carve and sand to match the fuselage.

It is best to cover these fairing blocks and the tailplane and fin before gluing in place.

#### **COVERING**

I had a collection of assorted pieces of film from various sources, so I chose some orange that was left over from my Stampe SR7 and some blue with a white dividing line.

The flames along the leading edge were cut from a roll of Solartrim. The figure on the fin came from eBay; the company very kindly made a mirror image so I could have one each side of the fin for the straight price of two stickers.

#### **INSTALLATION**

The motor chosen is a 4-Max 3541-1070 turning a 11" x 5" prop and with a 40-amp speed controller. This is my favourite combination and provides more than enough power.

The model is designed to take a 3000 mAh 3S LiPo and this is held down to the battery



*The flying shots were all taken by club member Michael Morris.*





**“I used four 9g metal geared servos, one for each aileron and one each for elevators and rudder.”**

*Left: Duck! Miss Sizzles lines up for a low pass.*

platform with 2" wide extra strong Velcro. I found 1M rolls in my local B&Q and it grips really strongly. I added narrow straps that wrap round the battery as an extra precaution; rolls of this double-sided Velcro, 10 mm wide, were bought from Amazon.

The receiver is fitted under the pilot with Velcro strip. The Rx that I used is an Orange DSM2 compatible six channel Rx with a 3-axis stabiliser, although this has been turned right down to nothing for initial flights.

I used four 9-gram metal geared servos, one for each aileron and one each for elevators and rudder.

After test flights the throws have been set at:

Ailerons	High rate 5/16" each way	Low rate 3/16" each way
Elevators	High rate 9/16" each way	Low rate 3/8" each way
Rudder	High rate 1" each way	Low rate 1/2" each way.

The model ended up with the CG right on the designed spot, with no added weight. All up ready fly it weighed exactly 3 lbs, which gives a superb wing loading of 16 oz per sq. ft. ✈



**A 4-Max 3541 turning an 11" x 5" prop is my favourite combination and provides more than enough power.**



**Miss Sizzles is completely forgiving and capable of most club aerobatics.**

## DATAFILE

<b>Model Name:</b>	Miss Sizzle
<b>Model:</b>	Sports aerobatic
<b>Designed by:</b>	Peter Miller
<b>Length:</b>	34" (863mm)
<b>Span:</b>	45" (1143mm)
<b>Wing Area:</b>	440 sq.in. (0.284 sq.m.)
<b>Weight:</b>	48 ozs (1361g)
<b>Wing loading:</b>	16 ozs per sq. ft.
<b>Motor:</b>	4-Max 3541 1070
<b>ESC:</b>	40A
<b>LiPo:</b>	3S 3000 mAh
<b>Propeller:</b>	10" x 5"
<b>Controls:</b>	Ailerons, elevator, rudder, throttle



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These EDF units are a new generation of performance EDF units at an affordable price.

The prices include a brushless outrunner specifically designed and developed to work with these units. All of the fans are dynamically balanced at the factory and are therefore vibration free and very efficient. All fans have either 11 or 12 blades which gives them a great "turbine" like sound which adds to the experience of owning a "jet" model.

The 50mm FMS fans are those as used in the Tony Nijhuis "Mini Jet" series, as recently published in the RCM&E.

Diameter	Part Number	Thrust	Price
50mm	FMS 5400kv (3S LiPo - 358W)	620g	£38.50
50mm	PowerFun 4900kv (3S LiPo - 318W)	605g	£29.99
50mm	PowerFun 4430kv (4S LiPo - 458W)	765g	£29.99
50mm	FMS 4500kv (4S LiPo - 486W)	1,086g	£38.50
64mm	PowerFun 3900kv (3S LiPo - 434W)	872g	£32.99
64mm	PowerFun 3500kv (4S LiPo - 541W)	1,072g	£32.99
70mm	FMS 2750kv (4S LiPo - 740W)	1,253g	£64.99
70mm	PowerFun 3400kv (4S LiPo - 776W)	1,435g	£39.99
70mm	PowerFun 2300kv (6S LiPo - 1148W)	1,816g	£39.99
90mm	PowerFun 1450kv (6S LiPo - 1561W)	2,924g	£79.99
90mm	PowerFun 1450kv (8S LiPo - 1528W)	3,360g	£79.99



## Complete Electrical Setup For Miss Sizzle by Peter Miller

Please visit <http://www.4-max.co.uk/pm-sizzle.html>



Part No.	Description	RRP
PO-3541.1070	35mm Brushless Outrunner Motor	£33.49
4M-ESC40A	40A Brushless ESC	£28.95
APCE 11x5.5	APC Electric 11" x 5.5" Prop	£4.30
4x 4M-100AMG-022	4x 10g Digital Metal Gear Servo 2.2Kg	£19.96
PPL-40C3S-2200	11.1, 40C, 3S, 2200mAh LiPo Battery	£22.50

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*Vintage Model Co SE5a. A cracking Andrew Darby design, with which I finished 11th in Kit Scale in 2017.*

# MAKE MINE A GRUMMAN

Our scale columnist Danny Fenton finds himself still gripped by the indoor scale bug. After his neat little SE5a he builds a little lightplane close to his heart

words & photos » Danny Fenton

I hope I find you well and trying to stay safe during these troubled times. I can see on social media that many of my friends are beavering away on models, between spells in the garden. I work from home so this time has not been so productive on both the gardening or the modelling front, but I must count myself lucky that I can stay safe and still have an income.

The first bit of scale news has been on the cards unfortunately since the onset of the Corona pandemic, and that is the cancellation of the Scale Indoor Nationals. It is very disappointing but let's hope we can all get back to normal soon. Unfortunately, many events have also been cancelled or postponed, including the World Scale Championships that were to be held in Norway; the decision has already been made to delay a year.

Some good news however, every cloud and all that. We had a couple of dry runs of a new internet-based initiative by Graham Kennedy and the BMFA Scale Tech Committee. Graham has introduced a

fortnightly Zoom meeting tentatively scheduled for Wednesday evenings. Invitees include some of the world's best in the world of scale modelling, not confirmed, but the likes of Andy Sephton, Phil Clark, Gwyn Avenell, Mike Barbee and Mike Stuart are keen to give talks and demonstrations. Graham has said that provided suitable consent is obtained, he hopes to record the sessions to form an archive for years to come. Should be good, so keep an eye on the scale Facebook page for more information or drop a line to [bmfascale@gmail.com](mailto:bmfascale@gmail.com).

## LITTLE FIGHTER

I really must have inspired a few people last time we shared a coffee as I was inundated with emails (okay, I had two!) asking for more information on the R/C conversion of the little VMC SE5a.

You will recall I converted a free flight model by fitting the radio and motor from a rather tired ParkZone micro indoor model. Well, I have been asked to provide more information on the radio installation and my novel technique for moving the control

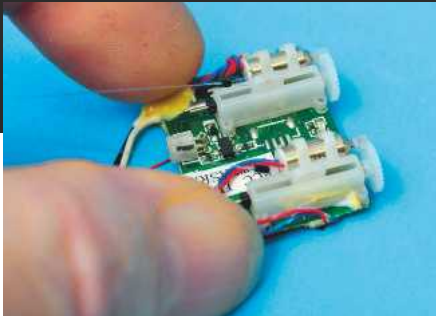
surfaces. Key to my pull-pull set-up is that I have found a 1lb breaking strain fishing line that doesn't stretch and is super light.

Firstly, a Spektrum AR6400 receiver brick from an old indoor model is mounted on a small balsa shelf in the nose of the model. I tend to use a small 'dollop' (technical term) of silicon sealant to attach the Rx brick firmly, but not permanently, to the balsa shelf. I have never had one come loose and they are also easily removed should the need arise.

I take short lengths, about 15 - 20mm, of 1mm carbon rod, push the rod through the rudder leading edge as close to the hinge line as possible, and centralise it with an equal amount protruding each side of the centreline, to create simple control horns. I wrap one end of a length of the fishing line twice around the end of one 'arm' and anchor with a drop of thin CA. Wick the excess glue with a tissue. This achieves two things: it reduces the excess glue, saving weight and allows the glue to instantly set.

The other end of the fishing line is fed back through an opening in the fuselage side





An AR6400 Spektrum R/C 'brick' is easily sourced from many a wrecked indoor model. If you look closely you may just be able to make out the two fishing lines running to the left of the frame.

*Below: Another angle of the carbon control arms and the 1lb fishing line pull lines.*

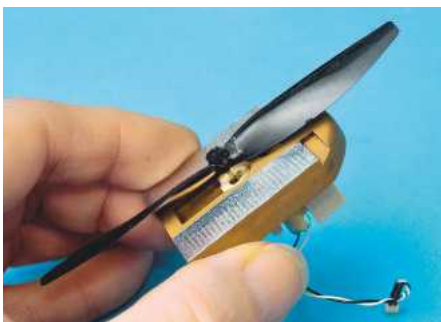


You can clearly see the carbon rod passing through the rudder forming the two horn arms. The line you can see in the foreground is the yet to be tensioned line to the servo.



and fed internally to the nose of the model. The line is attached to a 25mm length of lightweight shearing elastic. This is anchored to the inside of the balsa nose bulkhead whilst pulling enough tension to keep the surface fully deflected to one side.

The other side of the surface has a length of thread attached to the protruding carbon rod; again, two turns of line and anchor with CA. Make sure the line is attached at a similar distance above the control surface to the opposite side. Run this line through the fuselage side, to the front of the model. This time pass the line through some very fine heat-shrink or stripped fine wire insulation,



*The motor is mounted on the magnetically attached nose block. Keeps things simple.*

then through the servo output arm and back through the heat-shrink. Tension the line to position the control surface centrally and then lock the heat-shrink with heat.

If things are just too fiddly or you are using insulation, a drop of CA will work, but you will not be able to adjust the centre so easily.

The same system is used to set up the elevator. It goes without saying that the servo needs to be centralised!

I think I have already explained how the motor was mounted on a magnetic nose

*Above: Sorry about this pic. The two black out of focus lines are the rubber elastic tension lines. One to the elevator and one to the rudder.*

block. The battery for now is wedged alongside the Rx, as far forward as possible. I usually start with a 100mAh 1S cell and increase its capacity to get the C of G right. It's worth noting that I find the balance point needs to be moved slightly forward for R/C than the free flight suggestion. It makes the model more stable, so keep that in mind.

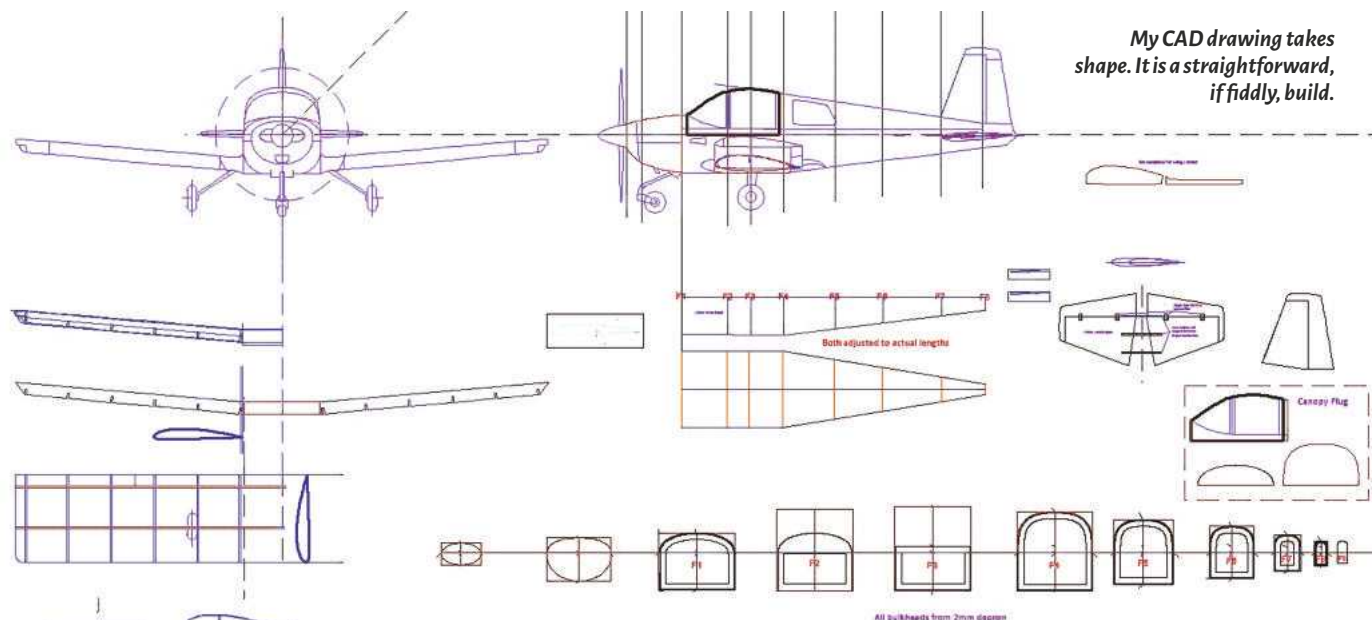


Grumman American AA-5 Traveller G-BCPN departs out of Old Warden (Kev Gregory/Shutterstock.com) - see overleaf.





*My CAD drawing takes shape. It is a straightforward, if fiddly, build.*



## NEXT UP

I had hoped to give you an update on my Dennis Bryant Hawker Fury, but to be honest I have been distracted (again) by another indoor project.

I was really impressed with how well Rob Wardale's super light, Vector Board scratch-built Piper Cherokee flew when I saw it at the St Helens Scale Taster session, so I decided I had to build something similar and to 800mm span.

Rob is a real wizard with Vector Board and has created some stunning models. My foray into using Vector Board has given mixed results. The material is very light indeed, much lighter than Depron, but not terribly rigid. This feature is useful for an indoor model that may end up impacting solid objects that just 'leap out' in front of your pride and joy! Vector Board is very tough and extremely light, but you must think and build differently.

I chose a subject which I know very well. My father, and the company he ran in the late 1970s, was the UK distributor for American Aviation, later to become Grumman American Aviation's line of small light aircraft. The range evolved from a Bede design, called the BD-1. This aircraft had some novel features and was for sale at almost half the price of the nearest competitor, the ubiquitous Cessna 150. Though the 150 was a more stable aircraft, the BD-1 was inexpensive and faster, using the same powerplant, as anything else available at the time.

The BD-1 used a symmetrical wing section, with a tubular full-depth spar. The spar was sealed and doubled up as the fuel tank, one per wing. The aileron and flaps shared the same bearings and the aileron torque tube passed through the flap torque tube. The wings could be swapped, port for starboard, and the tailplane halves and fin were the same and could be interchanged, reducing production costs. The entire aircraft was made from mostly flat or single curve alloy sections. The bulk of the fuselage was from

10mm thick alloy/honeycomb laminated material bonded with a specialist epoxy. The wing and tail skins were attached to the ribs and to each other using this epoxy. It made repair a specialised job, but initial production was faster than a conventional rivetted structure.

The only compound curves on the entire aircraft were either glassfibre (cowl, wingtips, wheel pants, tail-plane/fin tips and tail fairing) or Perspex (large bubble canopy).

The aircraft was not forgiving, mainly due to the symmetrical wing section requiring a faster take-off and landing speed. The wing also stalled somewhat abruptly by all accounts.

The BD1 was given a new wing section with a more flattened underside and the AA-1b 'Yankee Clipper' was born. This was a much safer aircraft but still a handful. The

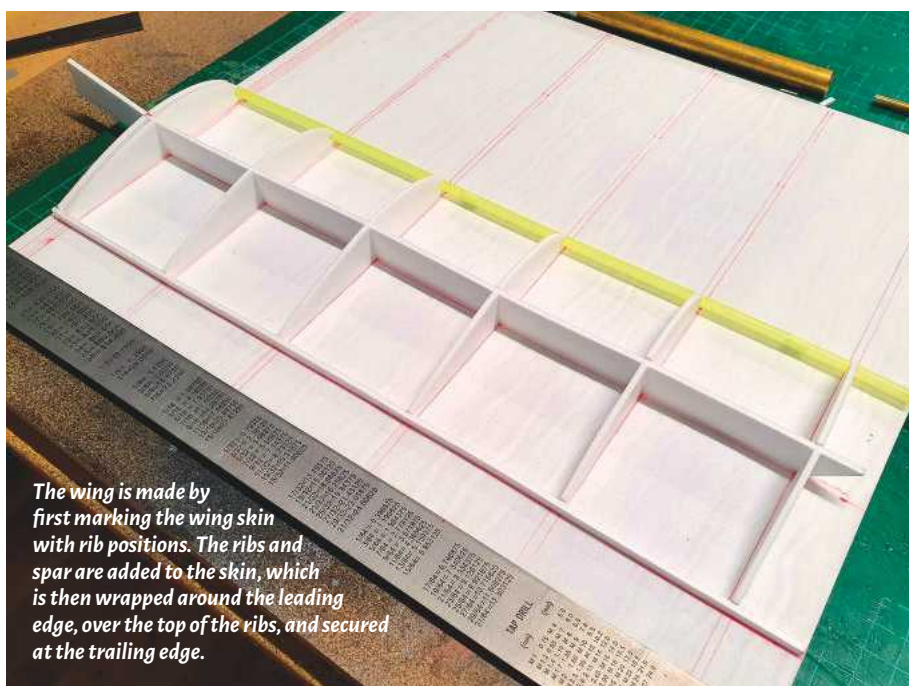
undamped undercarriage meant it bounced easily. The free-steering nosewheel (toe brakes were the order of the day for cost) also contributed to a bit of a bad reputation. I have fond memories of flying to events with my Dad, but we would often choose the larger four seat derivative, the AA-5 Traveller. It was less twitchy and could be flown without clenched buttocks.

## MODEL TIME

The AA-1 or AA-5 should prove perfect for Vector Board, which cannot be sanded and really is not good with compound curves.

TurboCAD was fired up and a three view for the AA-1b located. The drawing progressed well and within a few hours I had a plan for the fuselage and the wing.

The wing would be one piece, but incorporates a centre section, with the

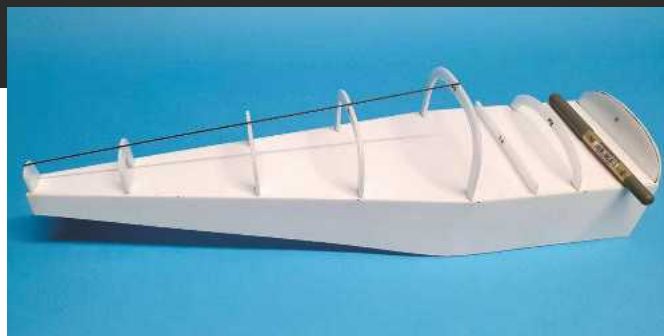


*The wing is made by first marking the wing skin with rib positions. The ribs and spar are added to the skin, which is then wrapped around the leading edge, over the top of the ribs, and secured at the trailing edge.*

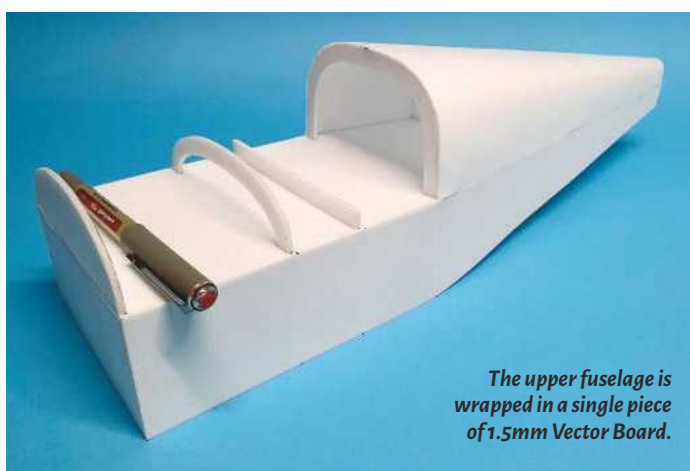




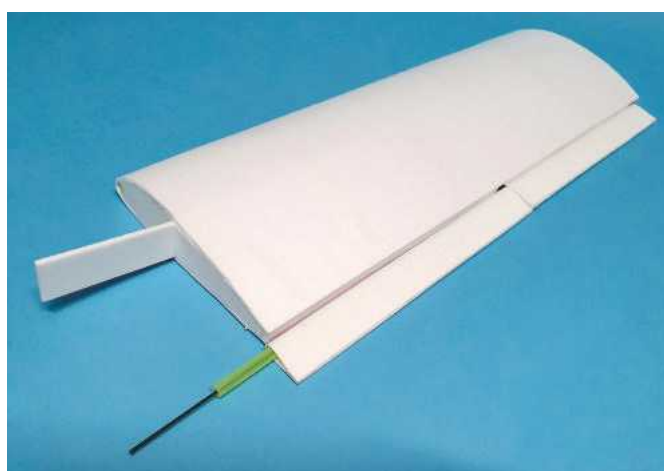
*I used straws to create a leading-edge spar. This gives the 1mm Vector Board something to attach to as it is wrapped around the wing and adds great strength for little weight. The joining 'plugs' are cut from 10mm thick Vector Board.*



*The fuselage with the lower rectangular bulkheads and sides added, forming a rigid box. The upper formers are added, with a length of 0.5mm carbon rod to reduce sag when skinned.*



*The upper fuselage is wrapped in a single piece of 1.5mm Vector Board.*



*I'm very pleased with the wing. I replicated the full-size flap and aileron actuation. The carbon rod is the torque tube for the aileron. The straw is the torque tube for the Flap.*

dihedral break at the fuselage sides. This would be made in three pieces then joined. Each wing was made using six identical ribs cut using a ply 'master' and the full depth spar notched at 50% of its depth, with the ribs being notched the other 50%, creating a sort of eggbox, if you are old enough to remember what those looked like?

The wing was skinned in 1mm Vector Board, wrapped around the leading edge. This area can be a weak spot so I decided I would fashion an internal leading edge from plastic drinking straws, the sections joined with plugs cut from 10mm thick Vector Board using a sharpened tube. The forward part of the rib has a circular section punched out using the same sharpened tube; this idea worked very well indeed.

The fuselage has a full-length horizontal crutch on the datum. Lower formers were then added along with the fuselage sides. The upper formers were then added and wrapped in 1.5mm Vector Board. The flat underside of the fuselage was left open to allow access for control runs and the fitting of the wing against the notched fuselage sides. Closing up was done at the end of the build.

The plan was to cut away most of the central crutch to save weight once the skinning was complete. This removed a few



*Dow Corning FLOORMATE 200 (no longer available) was used to create the cowl and the canopy plug. Both are glassed with L285 resin, the canopy with 48gsm cloth and the cowl with just 25gsm.*







*Availability issues during the lockdown means I have had to use clear styrene, which is not as clear as PETG. But needs must.*



*A quick inspirational assembly shot. The model at this point (not including the cowl) weighs 58g and includes four servos in the wing. My target weight is sub 110g for the 800mm span model.*

grams from the fuselage but, importantly, this was from behind the C of G.

The undercarriage legs are simple piano wire affairs with balsa wheels turned on the Dremel and neoprene foam cord joined to form hoops for tyres.

### VAC FORMING

The real challenge with this model was going to lie in two areas - the cowl and the canopy. Both were tackled in a similar way, once I found that I could not put the tasks off any longer. Extractions were made from the CAD drawing and Dow 200 FLOORMATE (blue foam) was used to create both the cowl and the canopy plugs.

I made a cowl for my Nationals winning Cub from blue foam, with one layer of 25gsm cloth. The blue foam was then hollowed out and the result was a nice, lightweight, accurate cowl. But that aircraft was a quarter the size of the little Grumman Yankee.

I ploughed on and have covered the blue foam cowl in 25gsm cloth and L285 epoxy resin. At this time, it's waiting to be

hollowed out but looks like it should work well.

The canopy I decided to glass in a much heavier weight 48gsm cloth with the same L285 epoxy resin. Those that have followed my build will know polyester resin will melt foam, so you must use epoxy-based resins.

The canopy plug was given a flow coat of more resin, before being sanded with 400 grade wet and dry to a really smooth finish.

I was concerned if the glass cloth would be enough to withstand the heat of vac-forming a canopy but hoped that the heat retained in a .25mm sheet of clear styrene would dissipate quickly without doing any harm.

The result is not as clear as PETG but during this lockdown thin PETG is proving hard to source, hence having to use clear styrene. It will do nicely for this model.

A friend liked the look of the Grumman and has taken on the AA-5, also at 800mm and will adapt the little Yankee's canopy if I can get one to him during the lockdown. Otherwise it will have to wait a while.

So that's where we are. I will give you the final instalment on this interesting

interlude to the Hawker Fury's progress next time we share a coffee.

### WATTMETER UPDATE

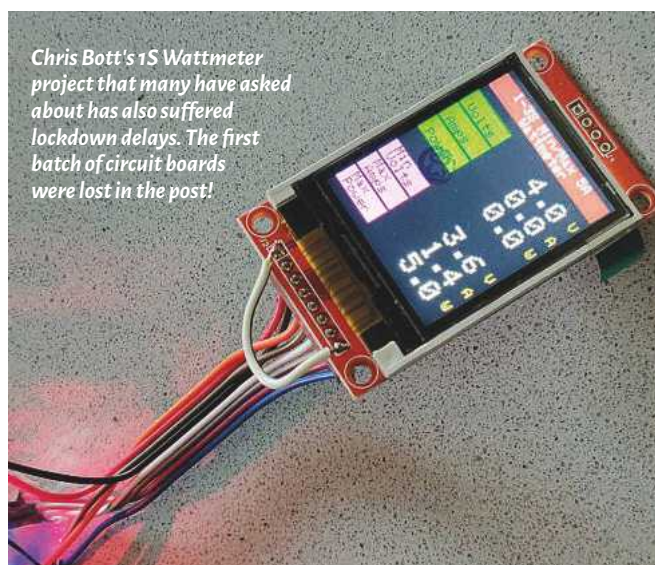
While I have your attention, Chris Bott asked me to give you an update on the 1-3S mini wattmeter that I talked about in the May edition.

Chris has thanked everybody that has shown an interest in perhaps a kit or an article, so he has created a thread on [modelflying.co.uk](http://modelflying.co.uk) (search 1S Wattmeter).

Chris aims to provide updates on the project, and he is waiting for circuit boards just now. The first batch went missing as they were ordered just as the world went into crisis, so that's hardly surprising. He has ordered another batch and is eagerly awaiting their arrival.

That just about wraps things up for me. I had loads in my notebook to cover but, somehow, I have hit my wordcount without covering half of it. Oh well, those that know me know that I can go on a bit...

As always, if you want to drop me an e-mail I can be reached at: [cammnut@gmail.com](mailto:cammnut@gmail.com) ✈



*Chris Bott's 1S Wattmeter project that many have asked about has also suffered lockdown delays. The first batch of circuit boards were lost in the post!*



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*Main pic: Bristol Scout D gets a textbook power launch from scale ace Andy Hewitt.  
Inset: Stephen Glass's free flight scale Tunnan on full throttle climb out.*

# VIRTUAL FREE FLIGHT NATIONALS

Resourceful Whittaker finds new ways to banish your lock down blues...

words & photos » Alex Whittaker

**A**t this time of year, as the daylight waxes, it is our custom to leave the shed and congregate on windy heaths. We want to be with other like-minded modellers, clustered around the downwind side of the bacon booty van, telling tall stories. However, this year, foreign infection has put a stop to all that. Government restrictions mean that this is the first flying season since 1994 that I have not been on the road with my camera. So, I have had to come up with a different approach for you this month, gentle reader. Rather than being downcast, I have decided to take you on a happy virtual visit to past Free Flight Nats comps, and revel in those feelings of delight and togetherness.

## FESTIVAL OF FLYING

As you read this report, for the full-on Barkston Heath experience you should sit in a draughty corner of the shed in your parka, with ice cubes down your socks and an electric fan blowing cold air down your neck. And perhaps getting the Significant Other in your



*David Beale's Harvard from the Veron kit. Martin Dilly, Timekeeper.*





*Mike Sanderson's Guillow's Beaver flying very well.*



*Paul Brigg's rubber powered Sopwith Triplane from the venerable Veron kit.*



*You may be pressed into timing duties! Brian Waterland timing another epic flight.*

*Right: Clever, multi-rubber Shackleton by canny designer/builder/flyer Monique Lyons.*



life to occasionally spray you with a cold-water bottle.

Aye, most times when you go to the F/F Nats, you are going to get a bit chilly, a bit damp and a bit wind burnt. There is nowhere quite as cruel as Lincolnshire in Maytime. Frankly, that is all part of the attraction. It's like attending a rock festival, but without the bands, the PA and those bright young things in designer wellies.

By long tradition, I pitch The Command Module near the RAF crash gate. I prefer it here, tucked up under the hedge for comfort when the blue winds doth blow. It is wonderful to wake up in your sleeping bag on a fresh Saturday morning in May, knowing that you are at Barkston for The Nats. One of the finest feelings in traditional aeromodelling. You sniff the pristine air and you sense that the new season, with all its promise, has finally arrived.

Also, there are friends I meet but once a year at Barkston. Often, we have camped together since the 1990s. This makes it a little village, and there is always time for a shared meal, or perhaps a wee single malt before bo-bo's. You also get to know all the insider gossip, who's bought what East European ARTF glider, and who might suspected of nobbling his timer. All great stuff.

### FREE FLIGHT COMPS

The Free Flight Nats are really a parallel series of intensive competitions, in all the various intricate F/F disciplines, but held at the same time. So, amongst others you can expect rubber, glider, power and electric, in all their diverse F/F forms. However, in many events, due to the nature of the competing, you have to observe



*Bill Dennis launches his very smart rubber powered Jungmann.*



*Ivan Taylor's typically ambitious DH 103 Hornet twin rubber. Wow!*



**A happy gang of Nats F/F Kit Scalpers!**



**Below: The vintage power classes have classic designs with classic engines.**



closely to see what is actually going on. It is not like a 100 yards dash, or a football match, with a clearly defined beginning and end. There are no teams as such, and there are only a few massed starts, however, the F/F Nats are utterly absorbing and, to begin with, quite mysterious. It is all a bit individual, gnomic and arcane.

First of all, flying usually takes place within a time period called a slot. This means that competitors have a window of fifteen minutes to decide when to fly. Sometimes they all leave it to the last minute of the slot. You will see flyers and their timekeepers going out onto the field and launch, and you may not be immediately aware of whom, or where, their immediate competitors might be. This is because the other competitors are either still waiting for the best time to launch ('good air'), or they have already launched and are haring off downwind after their model.

Do not make the mistake of thinking that because it is not all 'in yer face', full-on, one-to-one action, that it is any less exciting. Far from it. It all becomes immensely absorbing when the last few flyers get through to the final round, or 'Fly-Off'. Just before these Fly-Offs, usually held in the evening, everyone congregates at 'Control' to read the scores. It is a good place to eavesdrop other flyers assessing everybody's chances. At some of the



**Stand still long enough and someone will ask you to launch their towline glider!**

Fly-Offs you can cut the air with a knife. The crowd at the F/F Nats is made up of people who really know their onions, and the quality of assessment, analysis and comment far exceeds anything you would hear on a TV sport programme. This all gives the F/F Nats a unique 'community' feel. It is also very egalitarian. You can be standing about on the field and a complete stranger may come up and ask you to 'time' for him in a competition.

He may even be a past World Champion from the Ukraine.

The gladiatorial spectacle of the F1C power comp is the top of the tree for many Nats attendees. It is the butch, international, non-scale, F/F power flight class. These truly spectacular models have highly tuned internal combustion engines that develop truly awesome power. This outrageous mechanical thrust delivers incredible vertical



**Classic rubber powered models are everywhere.**



**Binoculars are a must at the Free Flight Nats - for pilots, timers and retrievers.**



**Checking the wind speed with a Dwyer.**





Windbreaks, poles and mylar streamers are all part of the game.



When that bit of good air blows through you must respond instantly...



F1c (international power class) has its stars, including Pete Watson.



Above: Control line flying is all down to teamwork.



Those F1c engines are real screamers. Note the ear protection.



Launching a rubber model into a big sky, hoping for a boomer.



Above: Look closely and this classic twin is actually a single...



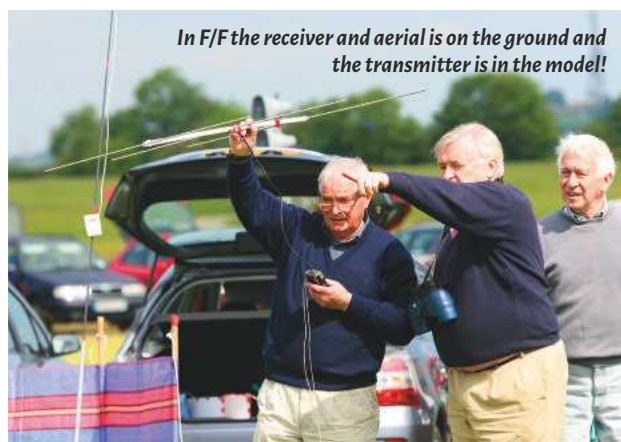
Left: Pole axed: temperature trend data, windspeed, timer, batteries, etcetera.



*Hand launching an F1c model screaming away is not for the faint-hearted.*



*In F/F the receiver and aerial is on the ground and the transmitter is in the model!*



*Fuses are still used as dethermalisers on some free flight models.*

performance. Some would say that these models depend too much on highly freakish flight, and ever more exotic trimming gizmos. I say: "Bring it on!"

### SCALE COMPS

The Free Flight Nats also has a lot of comp and casual scale flying. Unless it is flat calm this flying tends to take place before sunset. Now, to be a Free-Flight Scale modeller you have to possess a peculiar blend of fearlessness. In various proportions, you need iron resolve, masochism, skilfulness, heroic indifference to pain and big helpings of low cunning. A free-flighter blighter is the sort of

cove (because this sort of extreme sport only appeals to men of a certain age) who'll walk on a pebbly beach with no shoes, just for the hell of it. These are middle-aged adrenaline junkies. The sort of devil-may-care blades who think nothing of going through the carwash with the windows open, just to get another sick kick. They may drive sober late-model BMW estates all week, but at the weekend, after the obligatory visit to Marks and Sparks for their sun-dried tomatoes and pesto, it's the endless search for thrills, no matter what the cost in time or materials. Some would say that these chaps are seriously challenged in the common-sense department. I'm not so sure. OK, they may be one rivet short of a replica, but they don't harm anyone, they don't frighten the horses, and their models are absolutely superb. In short, these are genuine British Eccentrics and aeromodelling would be much the poorer without them. Radio men like us can learn a lot from their rugged individualism, their high craftsmanship, and their total disregard for risks. No one can seriously doubt their utter determination to succeed. In fact, such is the magnetism of the Free Flight Brotherhood of Scale's strange brand of self-immolation that the BMFA Scale Nats attracts doughty F/F Scale competitors from all over the globe.

### KNOCKABOUT

One of the joys of the Free Flight Nats is the causal flying of traditional kits and cabin models that takes place when the weather is kind. On a drowsy hot summer's day, it is a delight to sit in your deckchair sipping a chilled rosé and hearing a low-revving British diesel take a Junior Sixty gently aloft.

Take heart dear reader. These current health restrictions will not last much longer. So, let's drink to later on in the summer! ✈



*Les Parapluies de Barkston.*



*Typical timed engine cut-off in a vintage F/F power model.*



*Don't forget the catapult glider comp!*

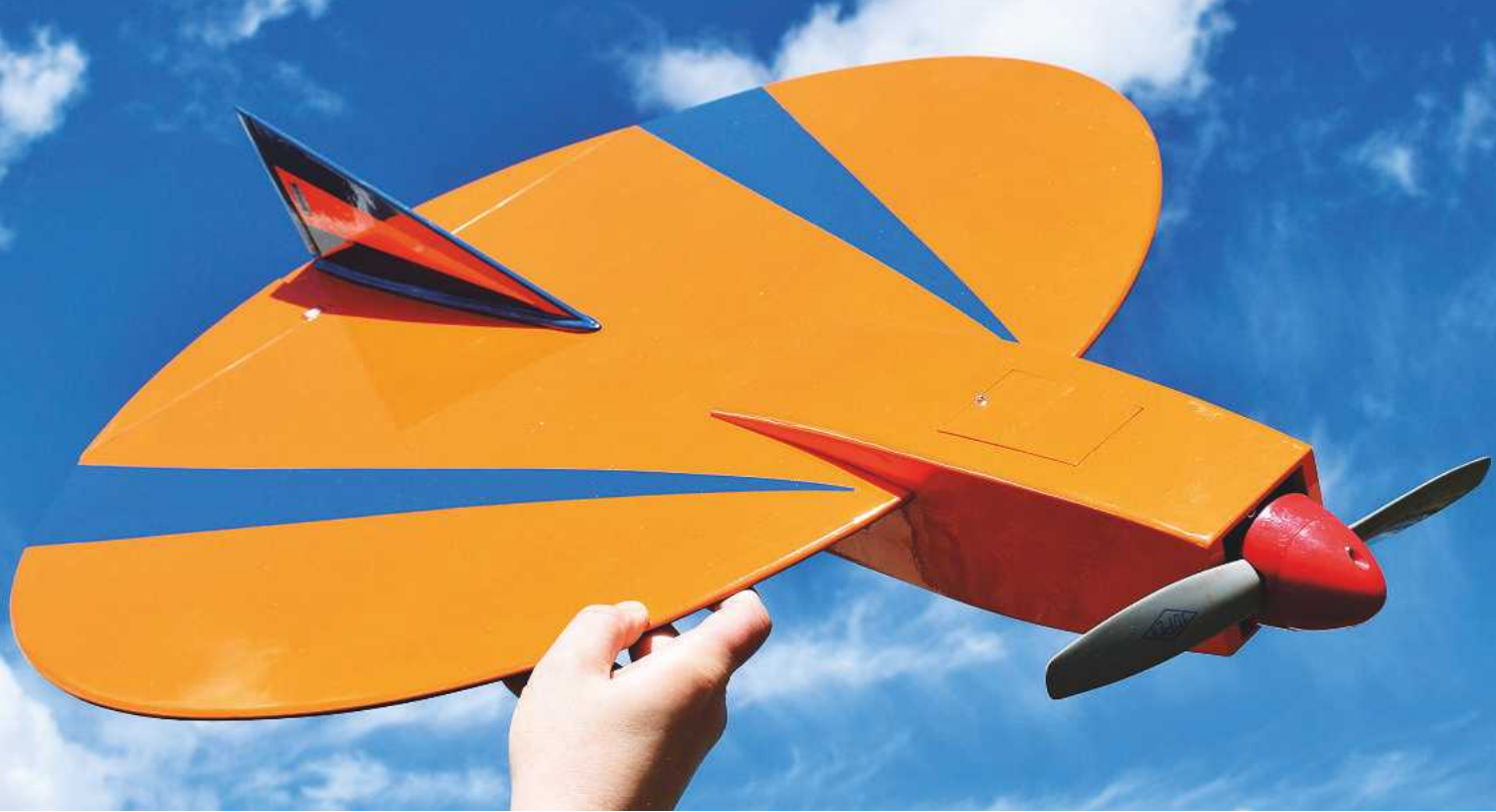




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# FLYING BANJO



Shaun Garrity updates the design of an amazingly popular Radio Modeller plan

words & photos » Shaun Garrity

In the summer of 1964 a strange UFO object model made its debut at numerous model rallies around the UK; what was this strange beast? Following its consistent successes in single channel events, designer Ken Merryfield was besieged with demands for plans. In fact, he actually produced a limited run of kits but found this rather too much like hard work.

In late 1966 Radio Modeller acquired the drawings for this novel and very aerobatic model and by publishing the plans hoped this would relieve the designer from what was quickly becoming something of a Frankenstein's monster. The original design was certainly robust; more akin to a cricket bat (with its interlocking ply fuselage structure) than a model plane but this strength was part of the appeal. Along with the very simple balsa disc wing it could be built relatively quickly after fretting out all the ply parts.

As mentioned, this was a single channel model designed to be flown with a 'bang-bang' system, i.e. sequential rudder control so each press and hold of the transmitter button would give left - neutral - right - neutral etc. in sequence. You needed to remember what your last input was, but it gave incredibly fast response.

## MY UPDATE

Time to update things; I've redesigned the Flying Banjo by taking out most of the labour intensive weighty inter-locking ply doubler construction, replacing it with vertically grained balsa and added elevons and e-power. Also, to speed things up the undercarriage has also been dispensed with.

Now I would guess you are wondering: why this model? Well, it's another of my former teenage builds I wanted to revisit. It is very quick to construct; I had the airframe finished in a day, then covered, hardware

installed and flight ready the next day. It will make a great mass build model for club events, especially as a cheap pylon racer or sportster for Limbo events etc.

I can't believe I'm saying this as a die-hard balsa basher but the construction of the model would also lend itself to using Depron for e-power, with localised strengthening of the wing with two or three spruce spars let in and a ply motor former.

## WING, DISC OR FRISBEE?

This has to be one of the simplest wings you can make. First of all, you'll need a pin, a piece of string and a pen to make a compass for drawing a 26" diameter circle. I initially drew a template on paper so I could position the 3/16" x 4" medium soft balsa sheets and roughly cut them to size. Lay the cut sheets down on a flat surface and Sellotape all the pieces together (no glue yet); this is to hold them in place and stop them sticking to the

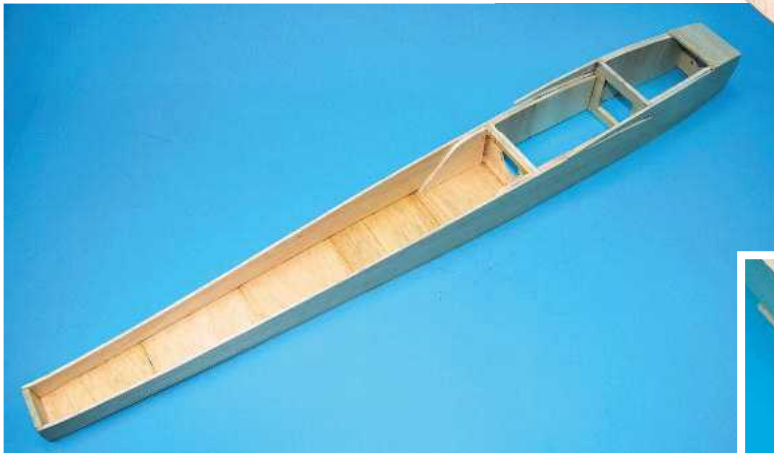
**"In late 1966 Radio Modeller acquired the drawings for this novel and very aerobatic model"**



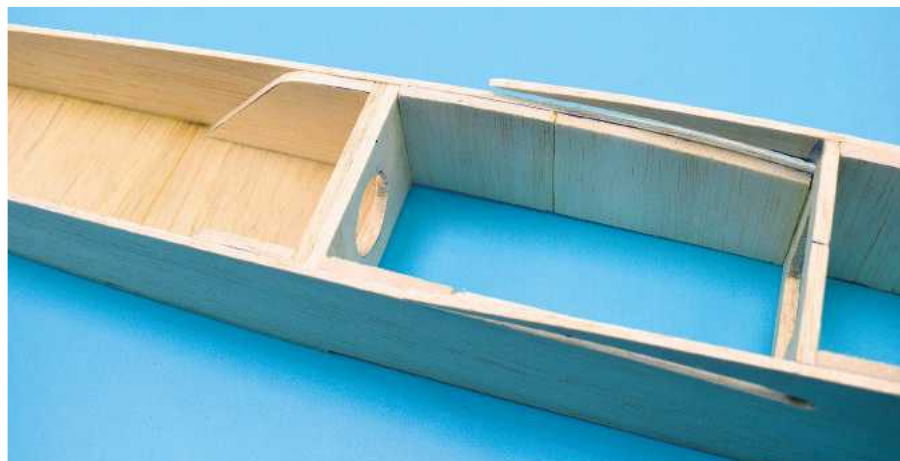
## 2

*The wing is a simple 26" diameter disc constructed from 3/16" balsa sheet.*

*The fuselage is also very simple. Ply doublers have been replaced with 3/16" vertical grained balsa and provide ample strength.*



*Below: I later modified the rear former to have a square opening to accommodate the LiPo and achieve the correct C of G.*



work bench. Open up each join and preferably use Aliphatic as it sands better than PVA to glue them together. Close the joints back up and lay the wing Sellotape side down on the workbench. Wipe off the excess glue that oozes out of the joints and weigh down to prevent warps until set.

Back out with the Heath Robinson compass and draw a 26" diameter circle on the roughly shaped wing, then trim and accurately sand to size. You only need to round off the edges, no aerofoil section is necessary, and once this is done put your wing to one side. The elevons can be cut out now; chamfer the leading edges to allow

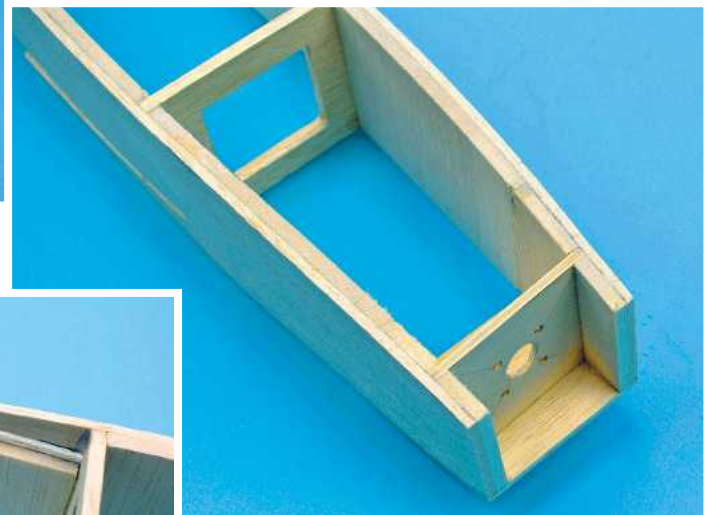
adequate movement when centre hinged and add some hard points for the elevon control horns.

The fin and rudder are simple. A tip to shape the lower edge of the fin to suit the curve of the wing is to use the fuselage side as a template. Don't forget the 1/4" triangular at the bottom edge as this ensures the fin can be securely glued in place.

#### **FUSELAGE OR FRETBOARD?**

As mentioned in the intro the original Flying Banjo used an inter-locking ply construction. Although immensely strong it would take a lot of effort to fret out the pieces and it adds

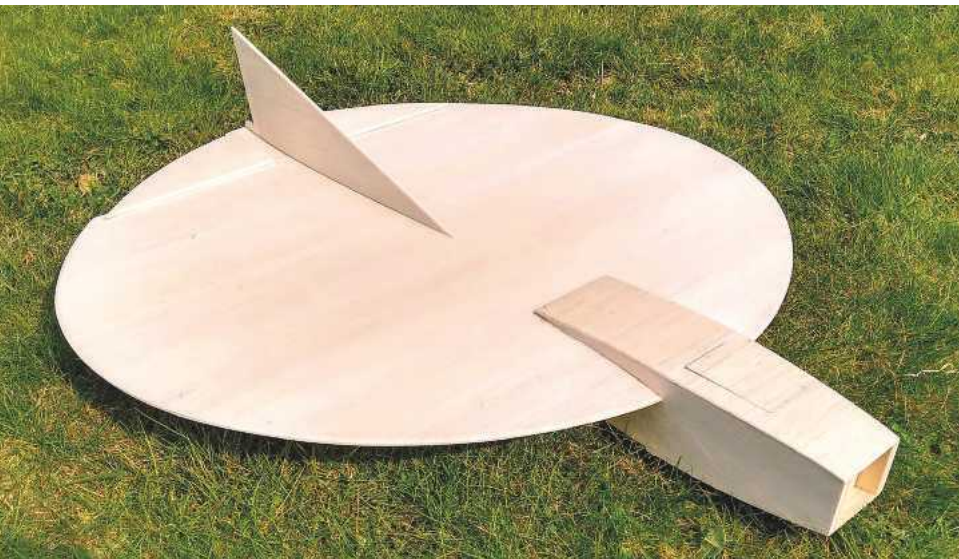
*Below: To get the propeller in the correct place position an 1/8" birch ply former to suit your motor. Include down and side thrust as detailed.*



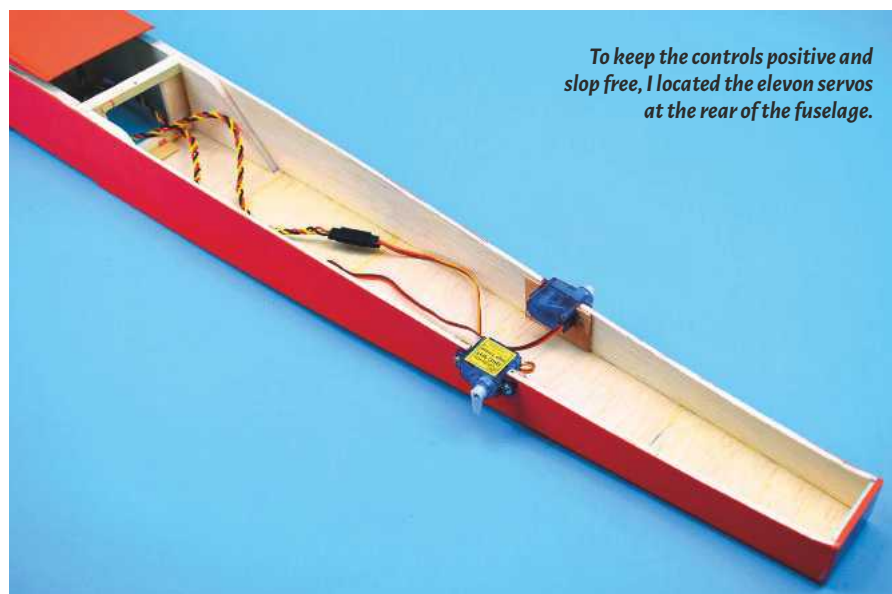
unnecessary weight for an e-powered model. On my redesigned version the ply doublers were replaced with 3/16" balsa vertical grained doublers, the 5/16" ply engine plate was removed, and a birch ply former used instead to mount the brushless motor on. The front of the model is now sheeted in to create a cleaner look.

As mentioned, there's no undercarriage on my version so the hatch to gain access to the LiPo was made from 1/16" balsa, laminated with 1/16" lite ply, as the model will be landing on this section of the fuselage. Where you place the LiPo is a tad fluid and depends on the weight of your brushless motor. The Axi example I used is a weighty old thing, but modern examples will in general be lighter, so the battery tray is approximately on the C of G. But this can be positioned when the rest of the hardware has been located. The 1/8" birch ply motor former needs locating so the propeller ends up in the correct place and I built in 3 degrees right thrust.





*It's a very easy aircraft to build. One day in the workshop should see you at this stage, with another to cover and have it flight ready.*



*To keep the controls positive and slop free, I located the elevon servos at the rear of the fuselage.*

## COVERING

The original used tissue and dope but for speed I opted for heat shrink film. Use a contrasting scheme otherwise it will be a little difficult to orientate at distance. To make things easier start by covering the fuselage first before gluing the wing in position. Next job is to temporarily locate the wing so you can mark up where it joins the fuselage sides. Glue doesn't stick to film so it will give you a line to film up to ensure a proper bond - balsa to balsa. Now film the wing top and bottom, then fix in place with aliphatic or PVA. When filming, use your iron (not a heat gun) and make sure it's well stuck to the sheet balsa. It will develop an alarming curve, but this goes when you do the other side.

After gluing the wing in position, you can now locate the fin and rudder. Again, I would pre-cover this before fixing onto the wing. The film covering on the wing (under the fin) can be removed by using a soldering iron to melt it or just cut it away, being careful not to damage the balsa.

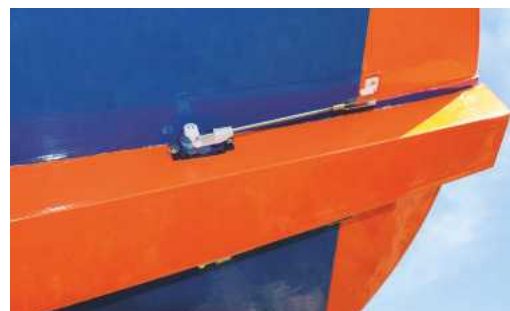
## POWER AND RADIO GEAR

The original model was designed to be powered by a 2.5 - 3.5cc (15 - 19 cu. in.) diesel or glow motor, so a suitable brushless should be rated around 250 - 350 watts, more if you like to get the adrenaline pumping.

Digging through the spares box I found an Axi 2820-12, plus a 50A Red Brick ESC. The only downside of this set up is that the motor requires a 10" propeller to deliver the goods on a 3S LiPo. A higher kV motor that will give the required power on an 8" prop would be a better proposition as there would be less chance of clipping the prop on landing, but I wanted to build the model out of items I had lying around the workshop.

Modern 9g - 15g servos will be adequate for the elevons and a 9g one for the rudder. As with the LiPo location the servo positioning can be fluid to enable the correct C of G to be achieved without resorting to additional lead, however mounting at the back end gives a very

**"This has to be one of the simplest wings you can make."**



*Very direct! Pushrods don't get much simpler than this.*



*Same for the rudder, I mounted the servo at the rear. Plan the position so it clears the elevon servos.*



*My e-power set up is a 50 A ESC and an old Axi 2820-12. This provides ample power using a 3S LiPo and 10 x 6 propeller.*



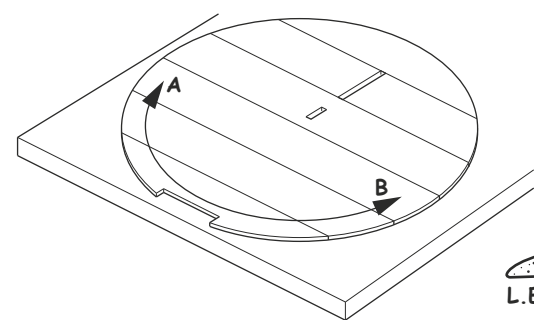
*It's necessary to add a top hatch as shown in order to be able to install the motor and ESC.*





1/2" PLY DOUBLERS  
SERVO SCREWS

F4



L.E. SECTION

LAY FLAT TO DRY, THEN SAND L.E.  
TO SECTION FROM POINT 'A' TO 'B'

SHAPE TO  
THESE SECTIONS

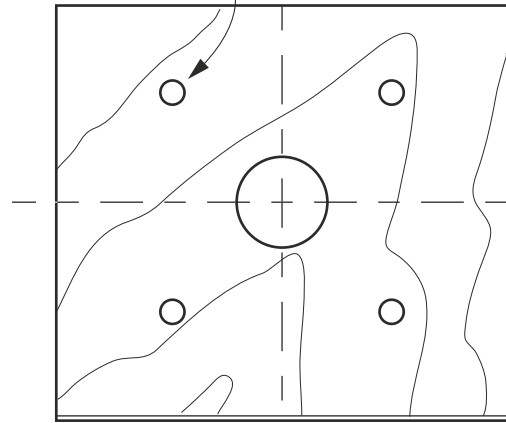
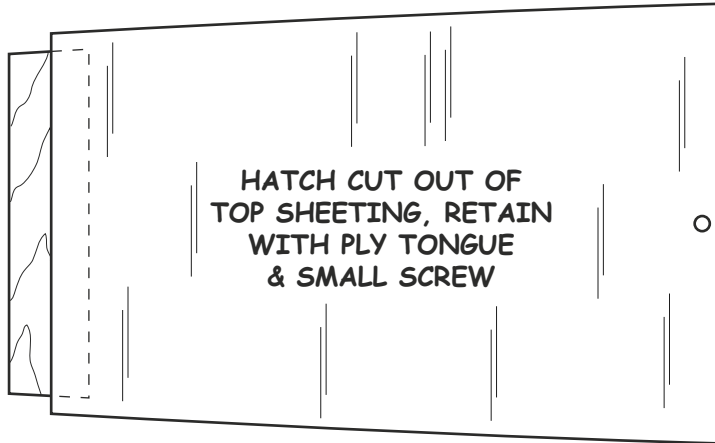
3/16" Balsa  
FIN & RUDDER

1/2" PLY DOUBLERS  
SERVO SCREWS

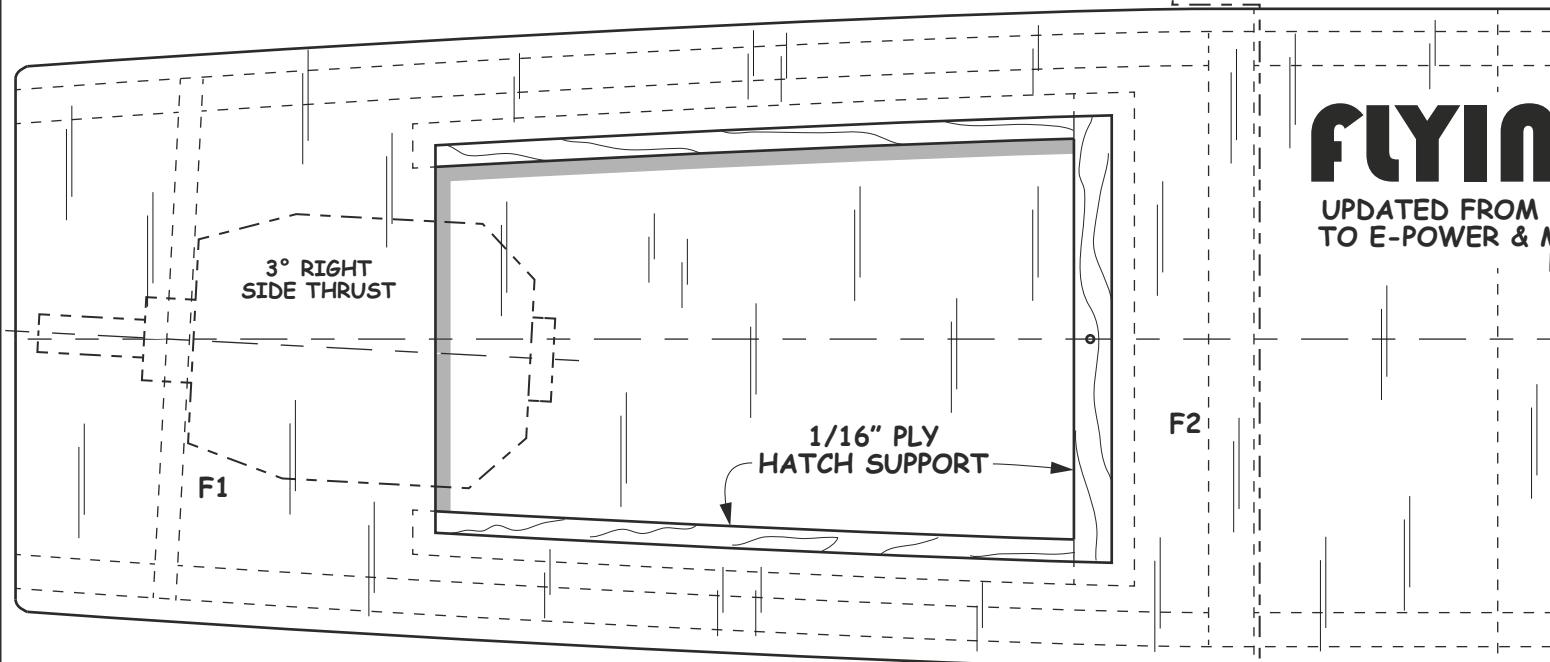
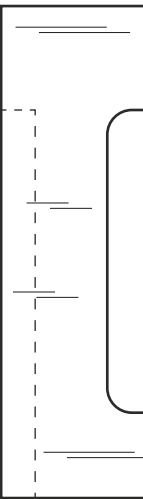
F4



HOLES TO SUIT  
MOTOR MOUNT

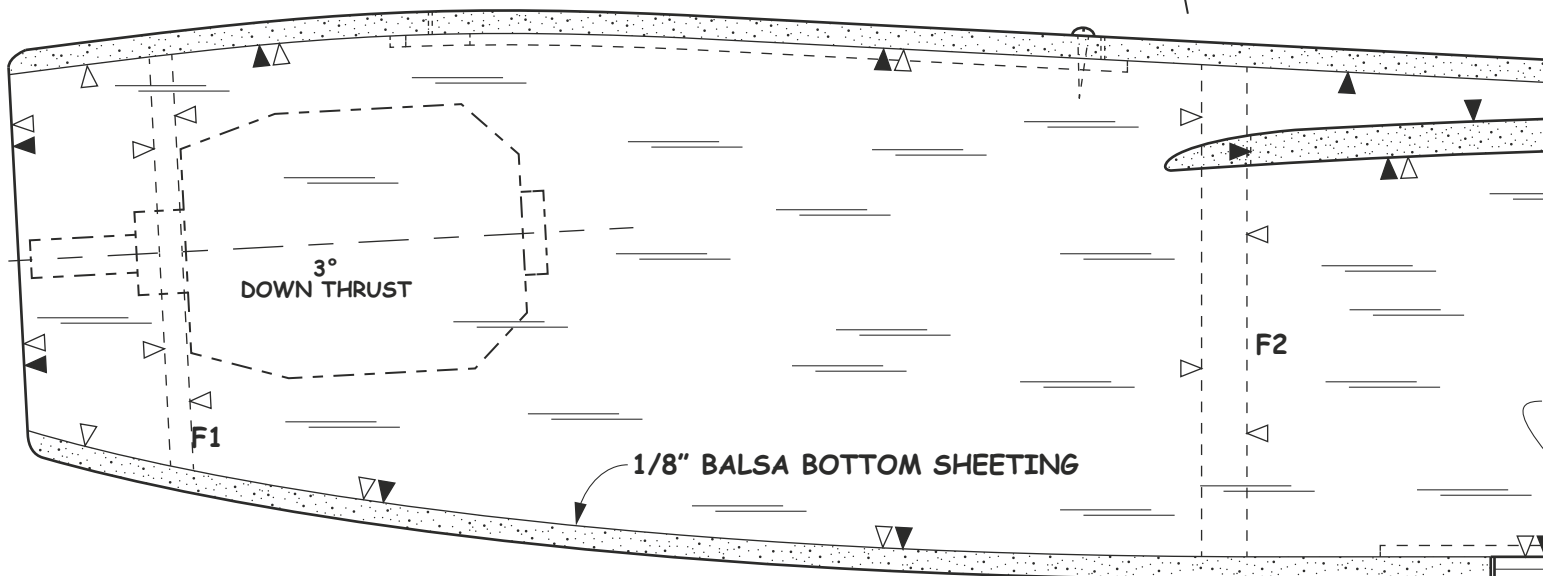


F1  
1/8" PLY

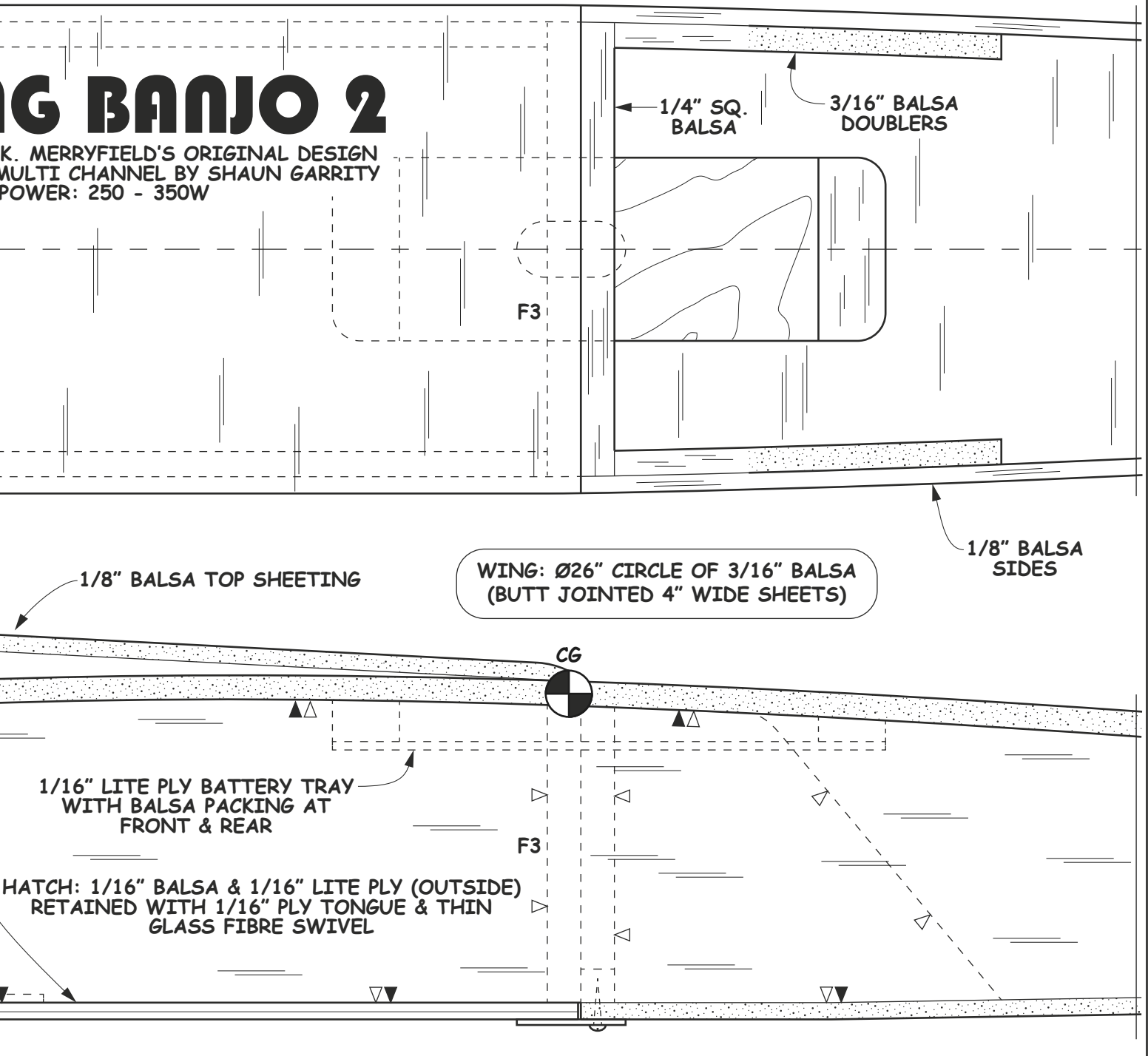
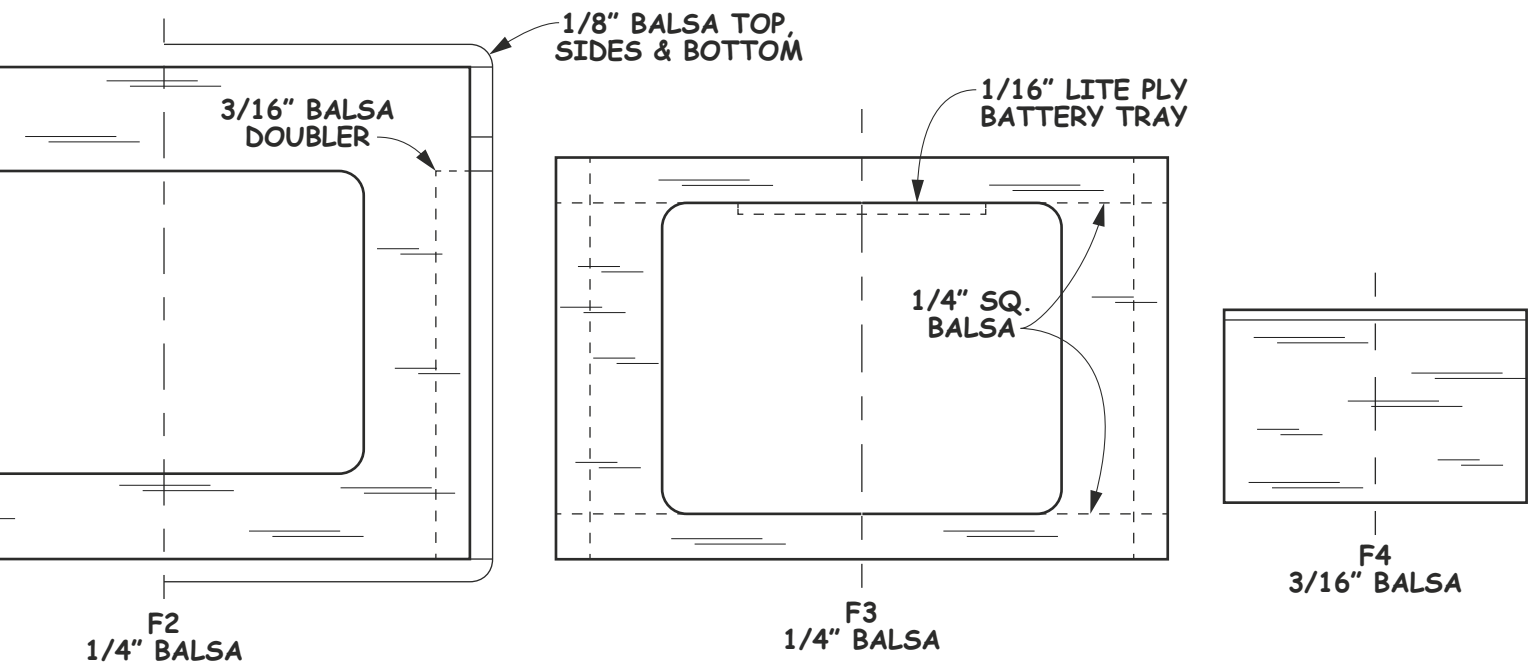


▲ INDICATES 1/8" Balsa Sides

△ INDICATES 3/16" Balsa Doublers (Grain Vertical)



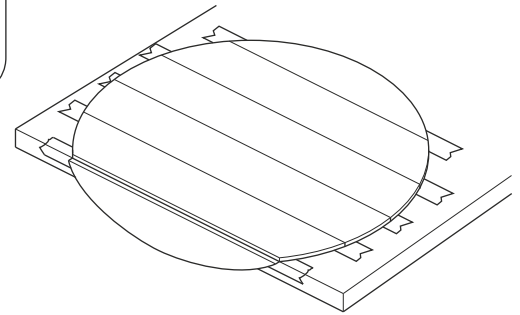




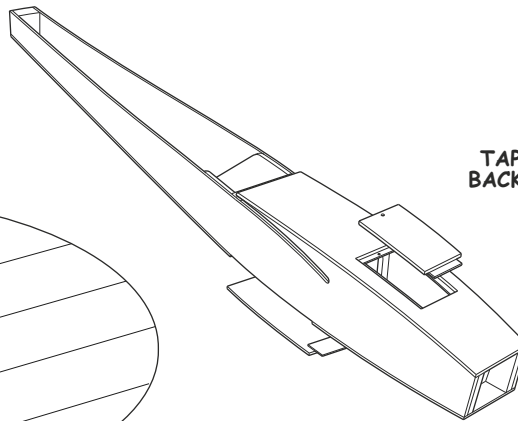
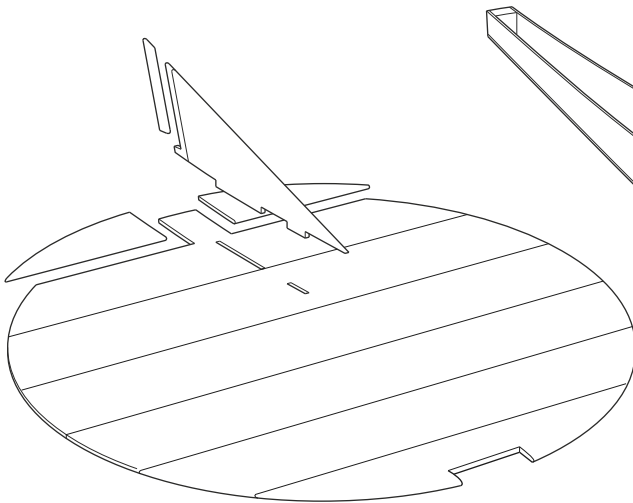


1/16  
FOR

WINGSPAN - 26" DIAMETER  
LENGTH - 32"  
WEIGHT - 26oz (EXCL. Li-Po)  
CONTROLS - MIN. RUDDER ONLY, IDEALLY ELEVONS, RUDDER & THROTTLE  
E-POWER - 250 - 350W (& BEYOND FOR THE BRAVE)  
ESC - 50A BEC VERSION USED ON ORIGINAL



TAPE Balsa SHEETS TOGETHER, FOLD  
BACK AS SHOWN & GLUE ALONG JOINT.



1/4" TRIANG  
REINFORCEMEN

1/8" Balsa BOTTOM SHEETING



Use a contrasting colour scheme on the underside so you can orientate the model at distance.



The lower fuselage hatch gives access to the LiPo. A laminate of balsa and lite ply was used as the model would be landing on it.

## “The Flying Banjo responds very well to rudder control”

direct, slop free installation. If fixing the servos as I did, use a 1/16" lite ply doubler on the inside of the fuselage as this will give the mounting screws something secure to fix into.

The rudder servo is similarly mounted onto the wing. Cut out to fit the servo, then glue two pieces of 1/16" ply underneath for the servo screws to fix into. It's a bit of a fiddle but needs to be done. Referring to the photos will show how I did it. The receiver can be mounted anywhere appropriate.

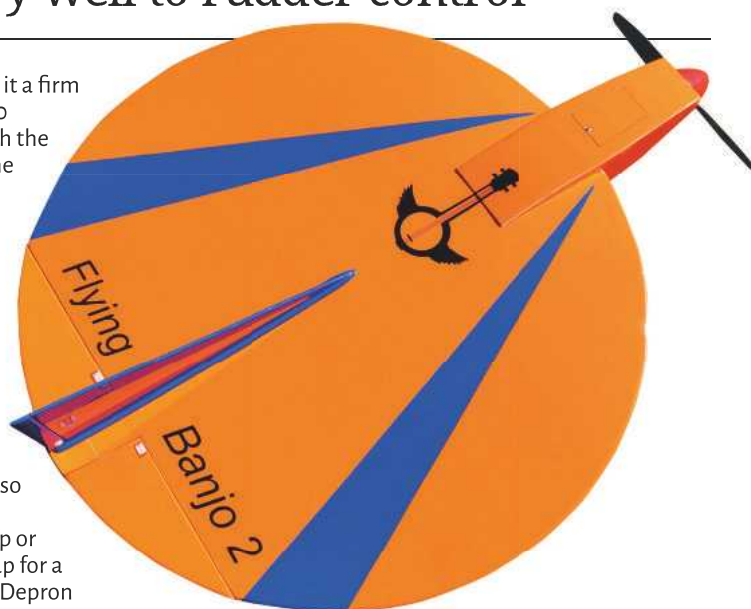
### TEST FLIGHT

The best part of any model build for me is the first flight skyward as it's unknown territory. Check the C of G, control surfaces move as expected and are bind and slop free. The Flying Banjo responds very well to rudder control, in fact as little as five degrees each way will give you adequate control, but adequate isn't any fun so have at least 10 degrees.

To launch just give it a firm throw at about 10 - 20 degrees upward. With the C of G as shown on the plan the model should fly in a slight nose up attitude. A little further forward will increase the flying speed of the model but do not go further back than shown - you won't like what it does!

Since the model is so simple to build you could easily scale it up or down in size. Who's up for a two-metre diameter Depron version, then?

Don't forget to send me your Banjo photos at: [thatbloke@garritys.net](mailto:thatbloke@garritys.net) ✈



Finished and ready to go. At only 30 oz. including the LiPo and 350 watts it won't hang around.



*Flying Banjo is a low cost, quick build, fun aircraft. Perfect for various club events as a mass build model.*

## DATAFILE

<b>Model type:</b>	Flying disc
<b>Wingspan:</b>	26" (660mm) diameter
<b>Length:</b>	32" (813mm)
<b>Weight:</b>	260zs (737g) exc. LiPo
<b>Functions:</b>	Min. rudder only but ideally elevons, rudder and throttle
<b>Power (Electric):</b>	250–350 watts (and beyond for the brave)
<b>ESC:</b>	50 A BEC version used on original
<b>LiPo:</b>	3S



# BATWING

Flying wings have long been a popular choice for slope soaring. This built up kit from Vogel-Fly offers the satisfaction of some enjoyable workshop sessions too. Mike Freeman investigates.

words » Mike Freeman | photos » Mike Freeman & Hannah Freeman

**T**he Vogel-Fly Batwing is different to most flying wings seen on the slopes in that it features a built-up structure rather than the usual foam and packing tape. Designer, Christian Vogel, wanted a 'Zagi' look-a-like with a difference and spent the best part of a year honing the design and manufacturing processes of the Batwing. It certainly looks the part but under the skin there are some intriguing and clever features. Let's have a closer look, shall we...



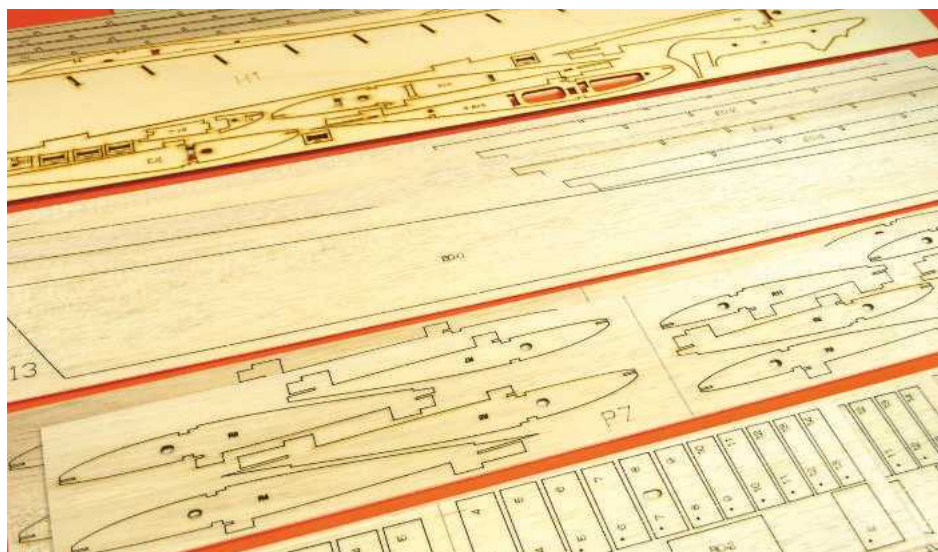
“The quality of the laser cutting is quite exquisite!”

## UP CLOSE

The Batwing arrives in a plain brown box. Inside it's clear that time and effort has been spent on the actual model rather than fancy box top artwork! The timber is well packed, and bubble wrapped for protection. There is also a laser cut fibre glass sheet and two small bags of accessories. Pretty much everything is included except glue, covering and radio gear.

Notably, there are no instructions included but these can easily be downloaded from the Vogel-Fly website. They are in German but there are lots of photos to guide the builder through the assembly. There is also no plan. The model is built over a ply building jig, which is included in the kit – an interesting concept.

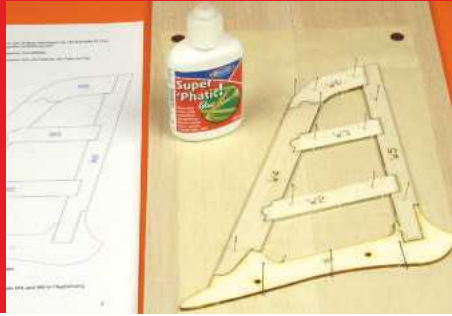
The quality of the laser cutting is quite exquisite! The components pop out of the sheets easily, even the ply ones, although the glass fibre parts need a bit of help with a knife. Just a light rub over with the sanding block removes the little pips which held them in place.



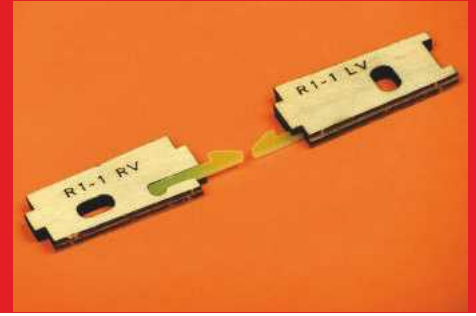
*The quality of the laser cutting is impeccable!*



Pre-cut GRP sheet for the central rib alongside the contents of the accessories pack. Pretty much all hardware is included.



The fins go together easily.



The wing locking system and root ribs are handed so take care!



Joiner boxes have to be built up. Those square doughnuts are formers to hold it all together while the glue dries. Remember to wrap the CF joiner in tape and a coat of Vaseline or silicon grease to stop it sticking!

It is clear a lot of thought and effort has gone into the design. The wings are held onto a central rib so the model can be dismantled for transport. There is a clever wing locking arrangement and sliding the wings on livens up the electrics. There is no need for a switch.

Just handling the components and dry fitting parts together suggested this was going to be an enjoyable build, so let's get cracking!

### BATWING BUILD

I don't speak German, but I found the photos in the instructions quite adequate to build my Batwing. However, as this was a review model, I did use the internet to translate some parts, just to make sure everything was done correctly. Here are some salient points to bear in mind:

The ply building jig is a great idea and ensures everything stays true and, hopefully, warp free. It is simply reversed to build the second wing.



Pictures of the wing with the bottom LE sheet and bottom spar in place. The ply false LE has also been fitted.

Before building a set of wings I weigh all the components and any that aren't handed get swapped around to ensure the wings weigh the same. The wood quality in the review kit was pretty good. One LE sheeting was just too hard and heavy and got swapped for a piece cut from my balsa stock.

The snazzy wing joining system means that ribs R1 and R2 and the wing retention components are handed. Thankfully, the R's and L's stamped on the parts translate from German to English the same, which should help avoid any confusion. Make sure the two ply incidence peg doublers are glued onto the correct side of each R1.

The wing joiner boxes are built up from ply and spruce strips. The square doughnuts are used as a jig to hold the box together while the glue dries and don't find their way into the wings. Be sure to wrap the carbon fibre joiner in tape and give it a good coat of Vaseline to stop it sticking!

R1 needs to be absolutely straight during the assembly for the wing locking system to

work properly, so regularly check it with a straight edge.

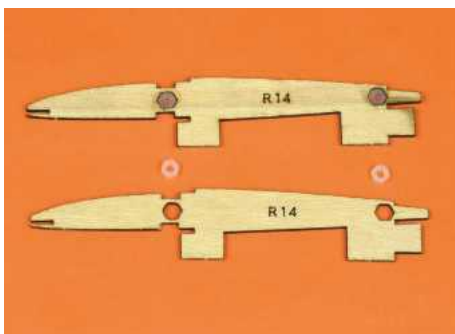
Laser cutting is brilliant, but it can't cut an angled slot yet so it's necessary to file the corners off the spar locations on the ribs to cater for the taper.

With all the ribs located on the building jig I found it necessary to place a sheet of balsa along the top of the ribs with weights along its length to hold them in place while fitting the bottom sheeting and spar.

It is easier to slot the bottom sheeting into the ribs first and then slide the 5mm x 2mm spruce spar from one end. Once happy that everything was correct, I ran Super-phatic into all the joints. Cyano could be used, of course, but I like the slight flexibility that Super-phatic glue has.

When fitting the top spar make sure the tip ribs are at 90°. These ribs set the angle for the tip fins and no one wants wonky fins!!

Even the vertical webs between the ribs have been laser cut AND they fit perfectly flush with the top spar. Note that the little dot on the webs signifies the top of the web.



Tip ribs have captive nuts glued in to hold the fins on.



Vertical webbing being added to complete the D-Box construction. The webs are laser cut and that little dot signifies the top edge of each web.







*I trimmed the ribs so the top sheet butted neatly against the step in the top of the ribs.*



**Fitting the top sheet.**

It is necessary to sand the tops of the ribs forward of the spar to remove the 'steps' that the taper introduces.

When it came to fitting the top sheet I trimmed the ribs where the rear edge of the sheeting butts against them to allow for the wing taper. Before fitting the top sheet remember to either install the wing servo extension leads or fit some pull through cords to allow them to be fitted later. Make sure the lead with the double servo socket goes in the RIGHT-hand wing panel. It is also important to ensure the bottom sheet at the root stays flat and doesn't droop down with the weight of the pegs holding the top and bottom sheets together at the TE. Each time sheeting is applied and when the LE and TE are added remember to put the wing back in the jig and weigh down on a flat surface to ensure it stays warp free.

#### **RADIO FIT**

The supplied servo frames are designed around Graupner servos, but I found with a bit of tweaking a couple of Hitec HS-45HB's fitted



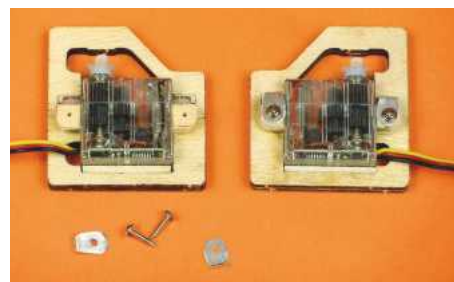
*A set of four LE profile formers are supplied to ensure the wing LE is sanded to the correct shape – a nice touch!*



*I added some glass cloth and Aliphatic glue to the top and bottom sheets in the first three bays to strengthen the sheeting. I could see this area being squeezed while assembling and dismantling the model so thought this a prudent move!*



*On go the TE and LE. Put the wing back into the jig and weigh down while the glue dries to keep the wings straight.*



*I wanted the servos to be removable, so I adapted the supplied servo frames to suit a pair of Hitec HS-45's.*

## **“There are step by step instructions on how to solder up the little PCB board.”**

perfectly. Some may prefer to glue their servos into the wing, but I like to keep them removable so came up with the little retention system seen in the photos.

There are step by step instructions on how to solder up the little PCB board. The builder will need to provide two servo plugs and leads to solder onto the board for connection to the Rx.

A small soldering iron bit is essential when soldering up the PCB. A set of 'Helping Hands' and a magnifying glass might be helpful too!

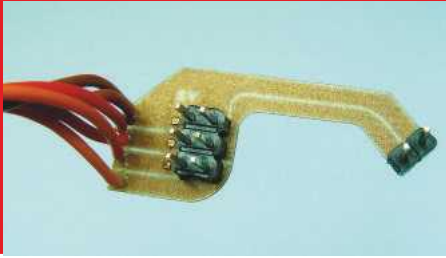
The Batwing requires a flat, times two, end to end AAA pack. Rather than try to solder one up myself I contacted the nice people at [www.componentshop.co.uk](http://www.componentshop.co.uk) and purchased a ready-made pack from them.



*Electrical components ready for soldering.*



*The double servo socket goes in the right-wing root. It connects the servo and also powers up the electrics when the wing is slid into place.*



*A small soldering iron bit is essential when soldering up the PCB. The builder needs to add the two servo plugs and leads for connection to the receiver.*



*A final check of the assembly before gluing the servo sockets into the roots and adding the bottom root sheeting.*



*Finished central rib.*

### CENTRAL RIB

The instructions say build the central rib first, but I assembled mine after the wings were finished. I'm glad I did as I found the tolerances just too tight, making it impossible to fit the parts together. With the wings built I was able to carry out a 'dry run' and tweak the components slightly to make them fit and slot together correctly. Had I followed the instructions it might have been more difficult to adjust.

The central rib is made up of three ribs and it is essential that the outer rib with the larger servo plug opening in it is on the right-hand side of the central rib.

I thought my Multiplex RX5 receiver was tiny, but it was just too tall to fit the opening in the central rib! A few minutes with a file sorted that out!

I reduced the thickness of the latch mechanism slightly to make sure it slid up

and down in its slot easily. A liberal coat of Vaseline or silicon grease helps here too.

When gluing the central rib sides onto the core only use a thin smear of glue on the mating faces as there must be no glue oozing out and gumming up the workings.

With the central rib done I assembled the model and, once sure the servo sockets in the roots were properly connected, I glued the sockets into their respective R1's and, finally, added the bottom root sheeting and gave the wings a final sand over ready for covering.

### COVER UP

The wings are very rigid and should be able to take any covering. The fins are a little frailer and care is needed to ensure they don't warp while shrinking the covering. I chose Profilm (Oracover) for mine and with no compound curves to deal with the covering was a breeze!!

There are no decals with the kit, so I sourced a couple of happy looking flying bats from [www.hippymotors.co.uk](http://www.hippymotors.co.uk) which went on easily to finish the model off.

### SETTING UP

I found the supplied control horns were just too short, meaning that I was getting double the recommended throws even with the clevis at the servo end on the inside hole. I simply swapped them for slightly longer ones, which helped the geometry.

The recommended throws and 40% expo were dialled in. 44g of lead was shared between the LE bays at the root to achieve the recommended CG and with eager anticipation we waited for a suitable weather window.

### FLYING

The keel/hi-start hook on the underside of the central rib gives a handy point to grip the Batwing for a launch. The maiden flight was into a healthy 15-18mph breeze and the Batwing sailed away nicely with just a few clicks of down required to halt the persistent climb. Once trimmed out and after a few passes for familiarity we were soon into rolling and looping, which showed that the recommended throws were about right. Just the reflex needed reducing slightly; I settled on 2mm.

The recommended CG felt right too. There was still a gentle climb out after a dive but that is to be expected with a flying wing with no tailplane to keep it on an even keel. The Batwing makes a nice whoosh as it zips past and the resulting climb out on release of the sticks actually creates a nice climbing bank if the ailerons are introduced.

That colourful colour scheme looked great against the blue sky. I actually found the bright colours helped with orientation as the Batwing is almost invisible from some angles and a sudden flash of colour when



*Assembly at the slope is easy. The wings self-lock onto the central rib and the electrics are lived up ready for flight.*



*The keel protruding from the underside of the central rib is a handy grip for launching. It can also be used as a tow hook for a hi-start bungee. The key is used to separate the wings at the end of the flight and switch off the electrics.*





*Fancy some flat field frolics? A hi-start bungee and a suitable anchor/stake is all that is required for some adrenalin rushing launches.*



*For a hi-start launch, I wrap my fingers around the LE and rest the Batwing on my forearm 'launch pad'. Simply uncurl the fingers and off she shoots like a rocket!*



*Sadly, the Coronavirus lockdown prevented us from getting any genuine flying shots, so my daughter used her Photoshop skills to produce the accompanying 'flying shots' for me. Thanks, Hannah!*

#### BUYING A BATWING

Our review kit was kindly supplied by Flighttech [www.flighttech.co.uk](http://www.flighttech.co.uk) but they have now decided to stop selling this kit and to concentrate on their high-performance moulded gliders. Therefore, if you are interested in buying a Batwing, please contact Vogel-Fly direct for the latest price and postage costs: [www.vogel-fly.de](http://www.vogel-fly.de)



*Tip fins are held on with 3mm nylon bolts. I sourced the bat decals on-line.*

the sticks are moved quickly got my eyes back on track!

I inadvertently checked out the stall characteristics while playing with a pair of Red Kites that had formed up behind the Batwing. I gently pulled the stick back to slow her up and reversed the Batwing towards the Kites. Obviously, their superior flying skills meant they could do the same and they held formation and we all drifted back in the breeze together – great fun! I still had aileron control with the stick almost fully back and a wing only dropped when provoked by my moving the aileron stick too far.

As expected with a flying wing and the mandatory reflex a bit of down is required to hold level flight inverted but the recommended throws mean there is still ample movement left to allow the Batwing to bank and turn effectively while inverted – it'll even pull an inverted loop with enough entry speed! Rolls are reasonably axial with a dab of down whilst inverted. Nice tight loops can be achieved but larger loops after a shallow dive look more impressive.

**“The Batwing makes a nice whoosh as it zips past...”**

I had great fun on this first outing soaring with the Kites. Inquisitive characters, aren't they? I also enjoyed zipping back and forth in the lift zone with pylon turns at each end. I found the expo I'd dialled in was just right for soaring with finesse but having the movement to pull tight turns and aerobatics when fancied. A very memorable maiden flight.

Subsequent flights in an 8-10mph breeze showed that the Batwing is quite a capable soarer and floats around nicely with a few clicks of up trim dialled in. I have also flown the Batwing on the flat with a hi-start bungee. My 10 metres of 6mm silicon rubber, with a 2-metre length of fishing line with a split ring on the end, pinged the Batwing up to around 50-60 metres, which was enough for a minute or so of soaring. Good fun when there's no wind around!

As usual with flying wings landings are very easy. That almost non-existent stall means the Batwing can be slowed up nicely for a pinpoint landing. Just bring her round into the landing zone, point her into wind and blip the up elevator to introduce the underside of the wing to the airflow and all that drag will slow her up, kill the speed and she'll drop gently onto the slope – perfect!

#### FINAL THOUGHTS

With its handy two-piece wing and clever assembly method the Batwing is just right for those impromptu trips to the slope. The wide speed range means it'll cope well with all but the most extreme winds and the pilot is rewarded with a flight performance to leave a smile on the face for quite a while! ✈️

## DATAFILE

<b>Name:</b>	Batwing
<b>Model type:</b>	Flying wing glider with classic wooden construction
<b>Manufacturer:</b>	Vogel-Fly <a href="http://www.vogel-fly.de">www.vogel-fly.de</a>
<b>RRP:</b>	119 Euro
<b>Wingspan:</b>	49.6" (1.26m)
<b>Wing area:</b>	3.34 sq.ft. (0.31sq.m.)
<b>Wing section:</b>	8% S-Schlag (S-Flap) reflex
<b>Weight:</b>	17.3oz (490g)
<b>Wing loading:</b>	5.18 oz/sq.ft. (1.58 kg/sq.m.)
<b>Functions (servos):</b>	Elevons (2)



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*We should be out flying,  
dammit!*



# LOCKDOWN EDITION

Despite flying restrictions being somewhat lifted in England, Welsh resident Whittaker is, at this time, still quarantined - so beware... words & photos » Alex Whittaker

**O**h, the irony. There was I, in the last issue, half tongue-in-cheek, relating to you the joys of shed survivalism, attending the last indoor show of the year and looking forward to the BMFA Free Flight Nats. Barely two weeks later the UK went into lock down - we could not meet each other face-to-face, we could not travel, and we certainly could not fly at the field.

In the jitter of a dodgy servo we were thrown into a strange new life of house arrest, restricted freedoms and odd selections of mail order food. Mrs. Whittaker responded with her usual fortitude and promptly put me on gardening duty. Our grown-up children started treating us like invalids and left huge food parcels at the back door. Our ultra-reliable milkman, Mr. Pierce, made sure his very own cows put two



*We were so used to be being together and flying together.*





Far left: Mr. Pierce, our milkman, has a funny sense of humour...  
Left: I am revisiting a mystery British scale own-design project I had neglected.

bottles on our doorstep every day. Mind you, Geoff has a funny sense of humour. When Mrs. Whittaker asked in a casual milk bottle note whether he had any wine-bearing cows, next morning there was a nice bottle of Bordeaux alongside the red tops.

### MAX SHED TIME

Now at first, the idea of Max Shed Time was really appealing. Ah, the unalloyed joy of getting into the shed just after nine in the morning and working on the models until teatime, with just a break for a snatched lunch. Except it isn't quite working out that way. Things about the house and garden, long put off due to winter, also need doing now. Also, because you can't just jump into the jam jar and ram-raid the local home and garden store, it means that you are often working slower. Without paint, or wood, or potions, many home DIY projects just happen very much more slowly, cutting into shed time. Luckily the 'leccy mower still works, but you get my drift.

However, the surprising point is that in my own case, after weeks of lock down, a certain lassitude has set in. It is not that I have lost my modelling mojo, it goes a bit further than that. I seem to actually be doing more modelling, but at a slower tempo. I am certainly putting the hours in in my shed on my aeromodelling projects, including a cruelly neglected mystery British scale subject. But somehow that old snatched workaday urgency has gone. This is crazy, since as soon as the emergency measures



More good news is that I am finishing off my Funny Fokker at last!

are lifted, I will be chasing my tail to get my air fleet ready for the flying field. Human nature is odd.

### COLLATERAL DAMAGE

Now, as a good shed survivalist, I am leaning on my carefully salted-away shed stocks. However, I am increasingly worried about the collateral damage being inflicted upon our already besieged model trade. If we are lucky, we may just be able to keep them going by ordering some vital shed supplies

by mail order. Our faithful model shops have had to close, and/or go onto a 'Mail Order Only' footing. Frankly, this is all our long-suffering friends in The Trade need.

Changing retail patterns, the high cost of business rates and the rise of the internet have already made trading conditions grim for those who have always served us well. This Chinese 'Flu' epidemic has put the top hat on it.

I have been taking stock in my shed. I do have enough balsa, beech and plywood. If I



Model shops are sorely missed as social hubs for modellers.



My wood stocks, including key balsa sections, are fine.



I am not yet running short of the myriad of metal fasteners we use.







As I write the hope is that we will all be back in the air by high summer.



In my shed, glues and potions have been the first key items to run low.

am not too fussy about colours, I do have enough Solarfilm. I believe I will have enough of the correct Solartex to finish my Funny Fokker. Also, as long as I stick to yellow and blue, I will have enough tissue for the stack of unopened trad. Brit kits on the shelf (I have decided that this is the time to open them, by the way). I certainly have enough metal fasteners, such as engine nuts and bolts, servo screws and rivets for the foreseeable. However, just four weeks into strict quarantine and chinks are showing in my survivalist armour. I certainly have enough epoxy glue and, as I have mentioned before, I no longer use cyano glue due to health issues. No, it is the stocks of my staples like white aliphatic resin glue that are running short. Most worryingly, due to a cock up in my Shed Inventory Replenishment Programme, key stocks of balsa glue are frighteningly low. I have not been this low on humble balsa glue since I was an impecunious teenager. This represents a big hole in my shed defences. I have been using other glues like UHU and UHU-por, but it is no more than a stop gap. I shall have to mail order.

Another odd shortage is AA Duracell batteries. With the rise of cheap electric models, for indoors or out, I now have a few el-cheapo transmitters which require dry cells. My normal saunter up to the petrol station to buy two boxes of ten had to be put on hold. True, I could convert the transmitters to LiPos, but although the spirit is willing the flesh is weak.

Although I cannot fly my glow engines, because of good planning I do have many gallons of Southern Modelcraft fuel in stock. These are stashed in the small garden shed where Mrs. Whittaker stores her amazingly comprehensive range of petrol trimmers. Our embargoed two-seater has a full tank of petrol, so at a pinch petrol models could be made available.

So, the survivalist message is, look to those consumables that you currently take for granted. Low stock levels in those area may indicate your weak points.

## SOCIAL DISTANCING

I live on a very steep cul-de-sac in North Wales surrounded by a farm, halfway up on the ancient ridgeway. About fifteen minutes' walk across that hill farm lies a second sheep farm, but this one is owned by friends. Now theoretically, I could carry a small 'leccy model and transmitter up there over the fields in an improvised backpack and fly on my friend's farm. I would be climbing the scarp, crossing at least two stiles and meeting absolutely no one. In fact, in forty years of wandering up there, I have never actually encountered another human being. So, under lock down, I almost convinced myself that it would be kosher, even under increasingly Draconian regulations, to take a punt. However, I did not make the trip.

There are two reasons. First, I am a tax-paying/rational-rule follower. Second, no matter how long a shot, I would not wish to be responsible for inflicting illness on another human being. On a balmy morning like this, as I write here with the sun cracking the flags, it's a hard call, but I am staying at home.

## SOCIAL MEDIA

We are now all practicing social distancing. A few weeks ago, I did walk up the hill to Crash Parry's house. However, shouting at Crash through his upstairs window was hardly a cosy modelling chat. So, like everyone else, I have had weeks of staying in the house or cutting the grass. This means that most keen modellers like me have turned to social media to feed their model aeroplane habit.



www.modelflying.co.uk is proving a rich resource during the current lock down.



Savvy modellers are keeping up their flying contacts via social media.

First stop (naturally) is RCM&E's truly massive [modelflying.co.uk](http://www.modelflying.co.uk) site. If you can't find something of interest there then frankly you are not trying hard enough. Highly recommended.

I am also on Facebook, which in turn has introduced me to a number of worldwide English language on-line modelling groups. It also means that a number of resourceful RCM&E readers have tracked down my personal account and 'friended' me, as it called. I have been contacted by readers across the UK, but also many throughout the globe. We all feel pretty much the same: modelling withdrawal symptoms



*In 2020 we went from indoor flying to staring out of the lounge window!*



*The last time I flew indoors I damaged my little Fokker in a mid-air. Matthew Lees made me the handsome present of his damaged Ares model.*

exacerbated by that unnerving feeling of lost time slipping away.

Incidentally, I have not set up a specific Facebook page specifically for modelling. So, beware that my Facebook presence is my unexpurgated personal all-purpose page and does not just deal with my modelling life. If you are poky to be offended, look elsewhere, LOL!

If you ask me to 'friend' you on Facebook, just make sure there is a model aeroplane picture on your page photos. If not, I may mistake you for that lovely chap in Africa who, apparently, is holding millions of dollars in trust for me...

### PHOENIX FOKKER

On my last indoor flight my lovely Ares ARTF indoor foam/electric Fokker was cruelly savaged by another model. This happened on the Fokker's maiden flight. These things happen and in time-honoured fashion such shunts are taken by modellers as 'knock-for-knock'. However, as I related here at the time, there was silver lining to this particular cloud of ripped foam. A certain upstanding chap called Matthew Lees took pity on my battered Fokker bits, looking all forlorn on the cold hard school gym floor. Now it so happened that Matt had recently crashed his own Fokker, so he stepped forward and most generously gave me his entire damaged airframe, boxed, complete with batteries and transmitter. He said I could make up one good one from the two fractured Fokkers. However, in the way of these things, I kept on



*My tail group after the mid-air collision. Note the blue tail support strip.*

putting the repair off. These intricately small but beautifully formed foam Fokkers have airframes that can be tricky to glue and repair. Also, since my model had lost her tail set, I would also have to delve into the truly tiny internal R/C parts to re-connect them after any airframe repair. In truth, the old mice pies are not really up to micro-surgery these days, so the two damaged Fokkers stayed on the shelf for about a year.

Anyhow, the lock down arrived. Suddenly I had time to tackle this fussy airframe and associated R/C refurb job. Now the moral with any unusual model repair is first to give the task a good dose of looking at. No matter how tricky or formidable it may seem, the secrets of the model will reveal themselves. Provided, of course, that you select low mental gear, do not get impatient and work logically.

I have never repaired a small indoor R/C foam model before, so I admit there was some initial trepidation.



*The damaged tail seat on my model before I cleaned it up with my nails.*



*Using fingers and nails, I prised off the undamaged tail group on Matt's model.*

### TRANSPLANT

The port tailplane and elevator half on my Fokker was badly chewed up. The crash had made confetti of them.

Although I collected all I could, once on the bench it soon became evident that no easy repair could be affected with the surviving bits. There would have to be a wholesale transplant of the untouched tail group on Matt's Fokker to the fuselage on my model.

Fortunately for me, Matt's model had only sustained substantial nose damage, leaving its tail group intact. However, an unforeseen bonus was that I could see inside the broken nose how the tiny Ares R/C worked. I could also scope out where the pushrods operated on his machine, before tackling the disconnection of the pushrods on my own. This proved to be a double bonus.

### TAIL GROUP

I now had to think about removing the good bits from Matt's airframe - the tailplane, fin,



*Removing panels with my nails to access the R/C system on my Fokker.*







*The control surface wire push has a joggle to fit the radio servo output.*



*Luckily, I had UHU-por in stock to glue the foam. I will buy more; it is good.*



*Applying the glue to the cleaned up tailplane seat on my Fokker.*

and rudder. Here more serendipity set in. You see, maddeningly, I could not find my trusty scalpel to slice off the whole tail group. (I had put it away when my tiny granddaughter had visited the shed and had since forgotten where I had stashed it.) So, I had to think again.

I was feeling out the tail group joints with both hands, above and below the tailplane, when I detected the glue line. I could also detect the glue line on the top-forward tailplane. Then, almost without thinking, I decided to 'peel off' the tailplane/fin/elevator unit along its fuselage glue lines, like one peels an orange with both thumbnails. To my delight, I was able to tease off the whole tailplane/elevator assembly from Matt's Fokker in one piece. I just had to deal with the tailplane's lower support strap. This was a light flexible plastic, or maybe carbon, lookalike. Once again, my nails alone were able to tease this, undamaged and in one piece from Matt's model. I was now able to finesse the two joggled wire pushrods from the elevator and rudder horns without mishap. That was the trickiest bit of the disassembly.

I immediately removed the same shattered assembly from my Fokker, and tested Matt's tail group on my fuselage. I cleaned up the joining area with just my nails, my tweezers and a bit of fine grit

emery paper. It was clear that it was going to glue back on to my fuselage very well.

At this point it was prudent to charge up the Fokker's tiny flight battery and test my Fokker's radio installation. Frankly, I was hoping that it all just worked, since I didn't fancy a radio swap. The parts really are tiny. Anyway, my Fokker stoked up beautifully, all functions obeying the transmitter. I now knew I could proceed with gluing on Matt's tail group. Luckily, I had some unopened UHU-por glue in stock and used it for the first time in anger on foam. The flexible tailplane support strap was not forgotten, nor was the tricky re-connecting of the joggled wire pushrods to the control horns. Very fiddly, but the UHU glue grab time was sufficiently leisurely.

I must say the UHU-por glue works well. I used very little, but I made a mental note to buy some more. It was at this point that I noticed that Matthew's fin had a decided lean to it. By now on a roll, I cracked the existing glue joint with my nails, reset the fin angle square to the tailplane and flooded the joint with UHU-por. I use some engineers' steel blocks to hold the fin square on the bench whilst the glue set.

I was feeling full of myself as I switched the radio back on. Unfortunately, I had no elevator control - nnnnggg!

## MISSED IT!

I was not a happy bunny. I was getting no pushrod movement. A quick check on Matt's mashed-in model confirmed that the pushrod fitted a vertical output arm on the tiny integrated servo/Rx pack. With all the jiggling, I must have disturbed the radio end of my model. Before I could refit it, I would have to get my nails into the engine bay top and bottom, to get access to reconnect the servo.

Again, I broke the foam at the glue line with my nails and all was well. I reconnected the piano wire joggle with long-nosed (snipe) pliers. It was bit tricky, since you must avoid applying any force to the frail tailplane assembly. Anyhow, I got it refitted and tried again. I now had proper control!

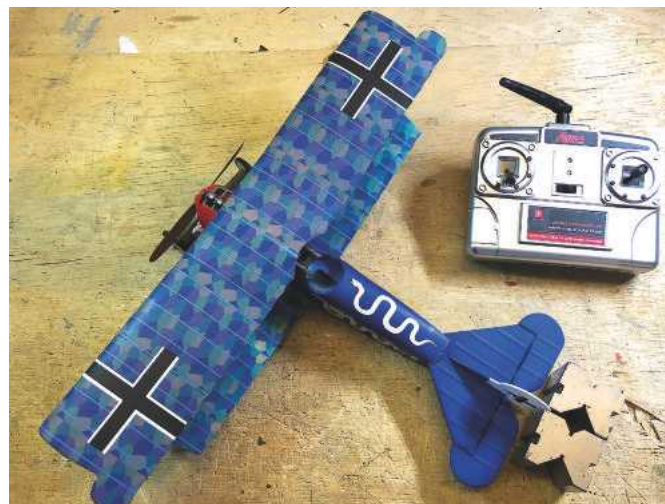
Incidentally, in the tussle I had forgotten to check which holes had been used on the tail group control horns. So, I chose the outside holes, reasoning that they would provide less twitchy control. We shall see, 'cos banged up like this it may be a while before I get the chance to fly her!

## EPILOGUE

Stay safe, Gentle Reader, and I will speak to you next month. By the way, now would be a good time to remove any uncertainty and subscribe to your favourite R/C magazine.



*I used my engineers' blocks to glue the re-set fin square to the fuselage.*



*My Fokker bitsa reporting again for indoor duty. Trannie needs dry cells!*



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# GOING PLACES

Diary dates for the coming season

## JUNE 2020

**June 27** **GBRCAA F3A National League Competition**, Knettishall, 12 miles NE of Bury St Edmunds, Suffolk. All schedules. See [gbrcaa.org](http://gbrcaa.org) 'Competition Entry Form' for fees and payment and 'forum' 'Competition News' for details. Visitors welcome but please contact Contest Director, Peter Jenkins on 07725 314950 for details before travelling.

**June 28** **UK Classic Aerobatic Association (UKCAA) Fly-in** at Royston MFC. Fly-in with round 1 contest to Pick5, Pick7 and 1979 rules. This is an active light aircraft airfield so there may be some minor disturbances to deal with during occasional aircraft movements. On-site catering (closes 1pm). Visitors welcome but pre-registration is required at [ukcaa.org.uk/events](http://ukcaa.org.uk/events). Contact Martyn Kinder on 079890 25198 or email [ukcaa2013@gmail.com](mailto:ukcaa2013@gmail.com)

## JULY 2020

**July 4** **Fun Flying** at Chigwell School Sports Hall, High Road, Chigwell, London, IG7 6QF. For small models, all types, maximum wingspan 20". Flyers £10, spectators £2. For details contact Mike Quille on 0208 500 3549 or email [mp.quille@live.co.uk](mailto:mp.quille@live.co.uk)

**July 5** **Wessex Soaring Association Slope Fly-In**, first Saturday or Sunday of the month. Various slopes approx. 5 miles east of Shaftesbury. Non-powered gliders and e-soarers permitted. All welcome but must have BMFA insurance. Contact Pete Carpenter for more details, email [pete.carpenter12@gmail.com](mailto:pete.carpenter12@gmail.com) or call 07919 903742.

**July 10-12** **UK World Cup F3A League Competition**. FAI Schedules - International entry. This is also a BMFA Team Selection competition to be held at Woodchurch Airfield near Ashford, Kent. Visitors very welcome. Please contact Contest Director Kevin Caton on 07805 347627 for details.

**July 12** **Open Fun Fly and Avicraft Day** at Bickley MFC's flying field, Church Road, Sutton at Hone, Kent, DA4 9EX. This open event has been running for many years and the sixth year it will have been sponsored by the London Area BMFA. The day consists of light-hearted flying competitions that can be entered with virtually any model. There will be many prizes (about 25) which are wrapped modelling goods. Winning the competition does not mean you get the best prize; you get first choice of the mystery prizes. There will be a free BBQ around lunchtime. Toilets on site. Free access to food facilities at the gun club down the lane. The day is free to any member of any London Area BMFA club or £5 to others. Details at [bickleymfc.org/events](http://bickleymfc.org/events), or contact John Veasey on 01474 852015.

**July 19** **UK Classic Aerobatic Association (UKCAA) Steve Dunning Memorial Day** at Retford MFC. No contest, but awards (for members) for Pilot's Pilot and Concourse d'Elegance. Visitors welcome but pre-registration is required at [ukcaa.org.uk/events](http://ukcaa.org.uk/events). Contact Martyn Kinder on 079890 25198 or email [ukcaa2013@gmail.com](mailto:ukcaa2013@gmail.com)

**July 25-26** **Hastings MFC Summer Fly-in**, Swapmeet and Scale Competition. Open to all BMFA and LMA members. For a longer stay, camp and fly on our site off the A259 at Middle Bridge near Pevensey from 22nd to 29th. £10 for the week (subject to ground conditions). To fly pilots must have min A-cert and a B-cert for models over 7kg and turbines. South East Area BMFA Scale competition on the Sunday. Scratch/kit built and ARTF classes. Free open air swapmeet on the Sunday. Bring your own table. To book camping or swapmeet phone Kevin on 01323 849032. All other enquiries phone Bob on 01892 852137.

## NOTICE:

As you'll be all too aware the Coronavirus pandemic has decimated the spring and early summer events calendar. The dates listed here represent activities for which a cancellation notice has NOT been received although, needless to say, please do refer to government guidelines and the event organiser before making travel plans.

## July 26

**GBRCAA F3A National League competition**, Leicester. All schedules. This is designated as a BMFA Team Selection (P21) and BMFA Open Competition. See [gbrcaa.org](http://gbrcaa.org) 'Competition Entry Form' for fees and payment and 'forum' 'Competition News' for details. Visitors welcome but please contact Contest Director, Chris Bond 07811 196418 before travelling for details.

## AUGUST 2020

## August 1-2

**Wrexham Model Aircraft Club Big Summer Fly-in.**

The best big sky site in the country with 25-mile views to the North Wales coast and beyond. Well-kept grass and plenty of it. Good toilets. Everyone catered for from novice to expert. Pilots must be BMFA members and bring their documentation, all models must display the correct CAA registration mark. Just £5 per day to fly. Camping £8 and caravans £10 for weekend (from Friday lunchtime). Nearest post code is LL21 9NP. For detailed directions, updates or any other enquiries phone Kez Taylor on 0782 4379462 or email [keztaylor100@gmail.com](mailto:keztaylor100@gmail.com)

## August 2

**UK Classic Aerobatic Association (UKCAA) Fly-in** at Huddersfield DMAC, W.Yorks. Primarily a contest day to Pick5, Pick7 and 1979 rules. Visitors welcome but pre-registration is required at [ukcaa.org.uk/events](http://ukcaa.org.uk/events). Contact Martyn Kinder on 079890 25198 or email [ukcaa2013@gmail.com](mailto:ukcaa2013@gmail.com)

## August 2

**GBRCAA F3A National League Competition**, Mansfield, Derbyshire. All schedules. See [gbrcaa.org](http://gbrcaa.org) 'Competition Entry Form' for fees and payment and 'forum' 'Competition News' for details. Visitors welcome but please contact Contest Director, Adam Lomax on 07795 546471 for details before travelling.

## August 2

**Wessex Soaring Association Slope Fly-in**, first Saturday or Sunday of the month. Various slopes approx. 5 miles east of Shaftesbury. Non-powered gliders and e-soarers permitted. All welcome but must have BMFA insurance. Contact Pete Carpenter for more details, email [pete.carpenter12@gmail.com](mailto:pete.carpenter12@gmail.com) or call 07919 903742.

## August 15

**Bickley Model Flying Club Car Boot Swapmeet** at the club's flying field, Church Road, Sutton at Hone, Kent, DA4 9EX. From 11am till 5pm. An opportunity to move on modelling items which have not seen the light of day for some time and to pick up a bargain. Open to all with free entry, but with a £5 charge to sellers who are not BMFC members. Selling only from designated pitches for each vehicle. You will need to supply your own display table. Toilets on site. Free access to food facilities at the gun club down the lane. Details at [bickleymfc.org/events](http://bickleymfc.org/events) or contact John Veasey on 01474 852015.

## August 16

**Open Scale Day** at Bickley MFC flying field, Church Road, Sutton at Hone, Kent, DA4 9EX. The ever-popular open event for members and visitors to fly scale models of all types. There will be a pilot briefing at around 10 am so flyers will need to be there early. Ample parking. Food and toilets available, with free access also to facilities at the gun club down the lane. Details at [bickleymfc.org/events](http://bickleymfc.org/events) or contact John Veasey on 01474 852015.



For more events go to [modelflying.co.uk](http://modelflying.co.uk)



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## Pylon Power

Andrew Sutton, who lives in Greece, is one of many readers who put their time in lockdown to good use to build a new model:

*"During the weeks of lockdown, I decided I needed something relatively quick to build using the materials and running gear I already had to hand, and that I knew I'd be able to finish to maiden flight status. I settled on David Boddington's superbly designed 'Apprentice', originally a free plan in 1968 - though I wasn't old enough to be modelling then. This is the third time I've built this design in nearly 40 years from the very same plan. First in 1982, then 2003 and now. This time I deviated from the plan quite a bit.*

*First, I added two more rib bays to increase the overall wingspan. I also incorporated a removable nose hatch for two reasons: mainly to gain access to the battery and receiver, but also the power-pod is mounted here, and not on the top of the wing, which means the mini throttle servo is located underneath this nose hatch and is a unit, along with the engine.*

*The first two models were powered by a Cox .049. This time I used an AP throttled Wasp .061 for power. The model has three controls - elevator, rudder and throttle; the original only had rudder.*

*Lastly, I fly off tarmac, so I fashioned something resembling a Keil Kraft Ajax undercarriage screwed to 'hard-points'.*

*Apprentice is covered in Solarfilm and is yet to have its maiden flight."*



## Retirement Opportunity

Andy Holmes, a member of Smithy MAC, kicks off this month's readers' models gallery with a couple of tidy Tony Nijhuis designs:

*"Retirement gave me the opportunity to revisit my teenage hobby of building scale model aircraft. The first, a Lysander, was built from plans in the RCM&E Special Edition 2009. Since then I have built several scale models, the latest being a North American Harvard. The photograph shows the Lysander, finished in the colours of the Royal Navy Target Tug T1445 and the Harvard, yet to fly because of the Covid-19 restrictions. The latter is a model of a New Zealand example NZ1099 which was restored in 1992. Both are designs by Tony Nijhuis."*



## Swedish Sopwith

Bert Jansson from Orebro in Sweden has sent in this evocative picture of his 2.52 metre wingspan Sopwith Pup built from the Toni Clark Practical Scale kit. Bert's model is just over 1/3rd scale and is powered by a Zenoah 38 with 1:2.8 reduction gear swinging a 32" x 18" prop. She tips the scales at 14kg.



## Hite Finder

Our next letter, from Chris Rumball, who currently lives in the glorious environs of the New Forest, has brought out the old rose-tinted specs in the Editor's office...

*"The Micro Mold Hite Finder 100-inch span thermal soarer I built in about 1978! Solarfilm covered wings and car paint on the fuselage. It still flies now and again, but not with the Skyleader TSX!*

*It was a glider that never quite lived up to its name, much to the amusement of my fellow members of the Maidenhead Model Flying Club back in the early 80s."*

Chris hasn't provided any information on his other classic kit, but many of you will recognise it. Chris ends his letter: *"I am planning to start building and will get the Gangster in the air again!"*





# All Write

Get in touch...



Kevin.Crozier@mytimemedia.com



For his letter this month Brian Jackson wins a very popular LiPo and low self-discharge receiver pack combo courtesy of Overlander Batteries - [www.overlander.co.uk](http://www.overlander.co.uk)

## TOP LETTER

### DRACON RESURRECTED

I was surprised and delighted to see the Dracon article in the June issue of RCM&E. I've been building and flying model aeroplanes since 1944 and most times the build takes from a couple of weeks to several months. The Dracon project turned out to be slightly different.

When I started to build it, I had a Cox .049 and enough balsa to be able to complete the model. The build started at my place of work; we had a project running that needed a lot of monitoring so to while away the long hours on night shift I took a small building board and was able to do a spot of relaxed building. By the time I'd cut a set of parts the project had come to an end. Fortunately, it was successful. I was offered a better job by another company and the Dracon sort of drifted into the background.

I retired in 1998 and spent many happy hours building and flying free flight models. Finally, with the trees getting higher and the gorse getting denser, I gave up F/F for the challenge of R/C flying.

I had an all too rare tidy up in 2009-10 and the Dracon was just as I'd left it. Seemed a shame to leave it and the Cox had long gone to a collector, so I used a small brushless motor instead, with 9g servos and a LiPo battery - in fact pretty much the same as Shaun's conversion. The model is finished in several very thin coats of sanding sealer and clear non-shrink dope, and the trim is lightweight Jap tissue.

I only fly the Dracon when it's a summer evening and there's just the hint of a breeze - in other words, about once every three years!

**Brian Jackson**



### MOON DANCER 2

So, I thought, I need a project, so what about Peter Miller's Moon Dancer 2? (March Pro-Plan)

First problem - I needed a four-foot building board. It's almost impossible to source small bits of pin board, but last year I laid wooden flooring around the house and had half a packet of underlay left, which is compressed wood fibre. I made a small sample and stuck two layers together with PVA. Perfect, it's flat and takes pins well. After more hunting around, I sourced a bit of MDF, battens to stiffen things and two layers of the board. With the plan on top and clear covering over that, it's my best building board yet and very cheap.

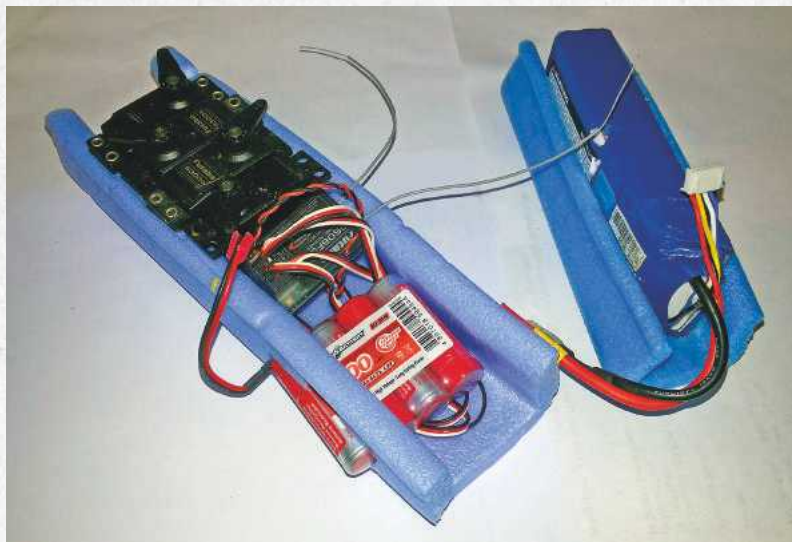
On with the project and as usual I made some mods - sorry, Peter! I recognised that the relationship of the ESC and battery was going to cause me a set up problem so rather than glue the battery platform in, I used six servo screws so it could be fixed after the motor connections were done. I also added an exit vent on the bottom between F6 and F7. I thought the wing was a lovely idea, but I made a fillet to fair the front edge into the fuselage to fill that small gap.

In these days of shutdown, I must commend our online suppliers for their speedy service, particularly Model Fixings, SLEC and Sussex Model Centre.

Many thanks for the magazine, which keeps me worrying about what to build next.

**John Peall**



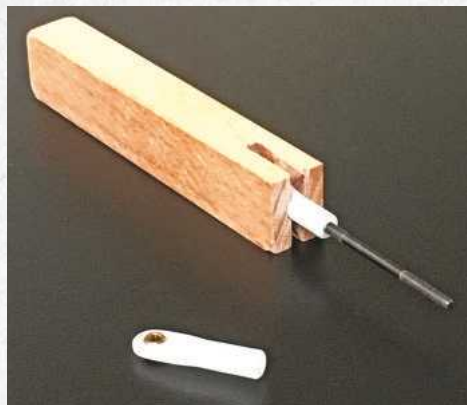


## KEEP BRITAIN TIDY!

Quite often, when converting a model from IC to electric, it's not always easy to fit batteries and other hardware without some modification. A simple solution I've used can often be found by the roadside - in fact I've never bought any! It's the protective blue foam strip and extrusions used by double glazing companies. It weighs next to nothing and grips batteries, receivers and BECs well.

As can be seen from the picture it comes in various sizes and although it doesn't glue very easily, it will after a bit of sanding. Often it can be wedged into a model without adhesive - I've just done that in my FunCub. It's free and picking it up helps to keep our verges tidy!

**Mike Edgcombe**



## BALL LINK TOOL

Some months ago, I recall seeing a reference in your magazine to the Dubro 'EZ Threader' intended to make short work of fitting swivel ball links onto threaded pushrods, closed link connectors, etc. A great little device, but very difficult to source here in the UK. Having recently bought a model that requires 20 such connections, I thought I would have a go at making a tool myself.

All you need is about a 75mm long piece of 12mm x 15mm beech engine bearer, a new or very sharp 5mm drill and a steady hand to cut an appropriate slot, about 2.5 mm wide on the centreline of the hole. It works perfectly and holds the ball link snugly and accurately whilst you apply the necessary (often considerable), rotary pressure to cut a thread into the nylon.

**Jeff James**

## SIGNS OF THE TIMES

How are we all coping with the constraints imposed by The Plague? Have you got to the stage when, with all your winter projects completed, you are suffering withdrawal symptoms as all model flying is curtailed? Have you noticed that your fingerprints have disappeared from the ends of your digits because you have been using thinners as a substitute for unavailable hand sanitizer? Have you walked outside and marvelled at the beautiful flying weather with light winds, sunshine and clear, blue skies (now almost totally free of vapour trails)?

As I walk into my workshop, models seem to exude a mournful miasma, and that pile of old RCM&Es in the corner seems to quiver in fright every time mention is made of a shortage of toilet rolls. Lipos,

snuggled together in the darkness of their travelling case, lie unused. One can imagine them complaining, as they rest in their storage state, of missed opportunities to expend their energy in powering a model through its natural element.

On the plus side, every scrap of domestic DIY has been done (I try to keep the list of domestic DIY as short as possible!), the garden is in a state of spring perfection and all the lawns have been edged. Our flying activities may have been put on hold and our beloved flying events culled, but nothing lasts forever: we committed modellers know that we will, eventually, get back to doing what we enjoy doing so much.

Be of good cheer, the times will be a-changing...

**John Higgins**



## STORAGE CHARGE

I have noticed that some of my Lipos are puffing up and I think it's partly because I have left them fully charged for a long time. This is bad for them apparently; they need to be stored at 60% charged. Anyway, I thought that this would be a good time to go through them and do some charging/ discharging of them to that level. My charger has a 'store' setting and this works okay for smaller Lipos but takes a long time to do bigger ones, so I knocked up this discharger using a 12-volt headlight bulb, which drains them a lot quicker.

The only problem is that I have to keep checking the voltage so that I don't kill the battery by over discharging it. It works well on 2S and 3S Lipos, but 4S would probably blow the bulb. Maybe one of your more electronically clued up readers could design a circuit to automatically and speedily discharge different voltage Lipos to 60% capacity for storage?

**Fred Burman**

Thank you for your suggestion, Fred. If any of our readers can come up with a better solution for safely discharging popular sized LiPos to a storage state more quickly than a commercial charger/discharger then please do let us know. In the meantime, I'll be using the storage function of my favourite two port charger to do the job; even at up to six cells, I don't recall it ever taking so long that it has been a problem. However, I always do this on my return from flying, so usually I'm dealing with already partially discharged packs - **Kevin**



Heavy duty KA7 is a treasure and so pilot friendly.



# MYND MAIDENS

As the lockdown eases, Simon Cocker heads to the hills to release all his pent-up flying frustrations

words & photos » Simon Cocker

**T**he lockdown has been challenging for everyone, but I have put the time to good use in producing new models and finishing off numerous ongoing projects. The pandemic is horrific, of course, a subject we are unable to avoid. The human devastation is heart rending, which sadly includes my own father, and of course the economic consequences are yet to be addressed and faced.

Boris let off the brakes for us all to have a little movement to exercise so I shot off to the Mynd the moment the Westerlies settled down and have made numerous separate sorties to feel my freedom there once more. Sunday May 17th and 24th were ideal 'Mynd Magic' days, with warm, buoyant WSW winds, which were further enhanced with thermal activity in the afternoon sunshine.

This first outing was a little tentative so I slipped out after checking the National Trust would allow flying again on the Mynd, but I kept the sortie as a solitary visit for a quick flying session so as not to feel I was exploiting the new more relaxed rules. The roads were still deserted, and the world felt as though it was in hiding, with only a few souls brave enough to venture outside.

## FELLOW FLIERS

Although no arrangements were made with fellow modellers one or two had decided to travel to exercise as recommended under the

new guidelines. I bumped into Paul Watkins on the slope, who had brought along his 5m span 1:3 scale KA-7 built by the late Steve McSherry, who was a master builder of larger size classic looking vintage gliders. I had enjoyed ownership of this tough old bird before Ian

Stromberg had a long spell of ownership on the aerotowing scene. I never flew this majestic model anywhere other than the Mynd and it appears the same will apply perhaps in Paul's care as the model is utterly triumphant in the big skies where the aircraft's flight energy can



New owner is Paul Watkins, an aficionado of scale and loving his new steed.





**LET made DG1000 at 5.4m span is a superb all-round performer and spritely too.**



**Mighty Rhonadler takes to the skies once more for a long thermal hunting session.**

be amassed and put to strikingly effective use in big smooth and stylish aerobatics. The KA-7 has confidence inspiring control authority even at slow cruising speed but it comes alive and into another zone when injected with kinetic energy, which it relishes, quite uncomplainingly and none prototypically too.

The scale police have winced previously when witnessing the aircraft rolling and even the occasional 'ohhh - wowwww' when the KA-7 has executed a lovely and timely four-point roll quite low across the length of the slope. In an unhurried style the model was remarkable poised through the manoeuvre; yes, it was a little slower in the latter half of the proceedings but still safe and neat. Paul flies in a similar style, graceful and with measured inputs to maintain a scale rate of speed so the illusion of a full size can be maintained, one of the wonderful facets of these much larger scale gliders. Ian had never believed that I had flown the KA-7 with the full aerobatic repertoire that I had claimed and who would blame him without ever experiencing himself the smooth abundant lift that the Long Mynd continues to proffer on the magic days of perfect weather conditions. So, Paul kindly allowed me to

pilot the KA-7 once more, so we might record on his phone camera that a few of the aerobatic antics I had mentioned were possible. Sure enough, a reasonable but very safely executed four-point roll was captured and popped onto Facebook to finally prove my integrity on that subject. Scale Gliders and Towplanes, if you fancy a look see.

I flew my LET models DG-1000 and 5m span Rhonadler in the sublime fresh air, which was such as blast. I had forgotten just how much reward there is to be enjoyed from model aviation when all the positive elements come together in the right place and the right time. It is just such a euphoric feeling of being connected with nature at the same time as the thrill of being in command of a beautiful flying machine that has potent performance. Once fully absorbed and immersed, and hopefully without external distractions, the flying phase can become a most personal bonding experience. I know when this state of connection happens because I am physically shocked when a flying buddy appears beside me and their voice makes me jump, instantly shattering my waking dream!

Martin Gough appeared with the quirky Gheppio sailplane that he purchased from Vic Steele some years ago and with the addition of 440mm electric airbrakes it has proved to be a fun all round model to fly, both on the slopes and by aerotow. The model provided a new level of fun in the strong lift conditions, surprising Martin with its versatility.

Matt and Gwen Atherton, pilot and crew for Easyjet, dropped by for a few hours to break away from their busy workshop before they are called to duty once more. Matt enjoyed flying his FlyFly DuoDiscus after it being strengthened by a neat all glassed finish to the flying surfaces. You may well have already met this charming couple at Weston Park Model Show, where they provide a scanning service so you can have a 'mini-me' in the cockpit printed in 3D; check out Scalemedown on Facebook. They have just started their own clothing range too.

F3B pilot and all-round excellent modeller Mark Southall showed how well his PSS Spitfire could fly, despite its age. Mark mentioned that his Dad built it eons ago; fortunately, he saved it from the main sale clearout to fly in his memory. We were all delighted he did as it flew so nicely.



**Martin Gough's enigmatic Gheppio is shunted up to flying speed and sails away for an exciting sortie.**



**Mark Southall flew his late Dad's neat Spitfire, which is a new trick for this F3B pilot. PSS seemed to suit him well.**



Roo Hawkins with the glorious Fox before the second maiden flight and ensuing disaster.



Roo Hawkins with his latest and greatest self-made monster ASH 31 at 7.2m span. Wow!

## SECOND SUNDAY

On the morning of the following Sunday there was a small group of sailplane enthusiasts from all around the country present, all eager to sample the joys of slope soaring following their forced hibernation. Clearly there were those whose hands had not been idle as new airframes emerged, pristine and perky. Maiden flights are always exciting, hopefully the realisation of many hours of intense workshop energy being rewarded by that first moment of success, to then lead to many happy hours of piloting nirvana and beyond.

The beautifully restored 4m span Fox sat resplendent on the slope edge awaiting a re-maiden test flight. You may recall that this completely scratch built model met its demise on its previous maiden flight at the Buckminster inaugural aerotow event, when the elevator linkage failed on the tow to height and it returned rather rapidly to the point of take-off or thereabouts. I always take photos of new models before they are given their send-off but, in this instance, I added 'well just in case!' Hmm, perhaps I should have said nothing...

Roo asked me check over the model, which had been upgraded in terms of linkages,

horns and servos. A tweak of programming and all was well. Launching was awkward as the Centre of Gravity was too far forward, so the Fox touched down before taking off. A second launch over the lower promontory saw the lively model on its way with trimming issues, but we sorted that as we returned back to the pits area to continue Roo's proving flight. Just at that moment the Fox broke away and flew off downwind and no amount of frantic wagging of his 35-meg aerial was changing that outcome. It transpired that the on board, single, five-cell Sub-C sized pack had failed, so receiver contact was lost, and the newly restored model was once more destroyed when it was intercepted by the large swamp area behind the slope. The flight lasted about four minutes, the same period of time as its first ever flight, so it seems this pesky Fox is never going to be a member of Roo's pack.

Undeterred, Roo's next project was unveiled from the bowels of his car and roof box, a magnificent ASH 31 at 7.2m wingspan and 16kg, that Roo had again built from scratch using his unique skill set, unrivalled tenacity and resolve. With a reliable Rx battery and Taranis radio the model was range tested successfully and all pre-flight

scrutinising was passed. The massive aircraft sports a fully carbon D-box and spar, and certainly the wings proved worthy of this investment in time and material as the ASH 31 has a tendency to groove along, partly encouraged by the rather safe Centre of Gravity position. Trimmed and steady, I was invited to take the ASH 31 for a spin and was pleased with the general set up, only spoiled by the overwhelming nose heavy condition. Before I could undertake anything more than cruising circuits, we lost control of both of the starboard outer ailerons. In fact, the inner of the pair had failed in an elevated position to make handling even more interesting. Roo landed the aircraft safely and I am pleased to say a second battery will be employed in future, through an S&M Services backer unit, for that all-important redundancy safety measure.



Bob Aston's old, bold Salto with a stunningly impressive performance. So pretty.



Bob holds the revamped vintage Salto. He is mightily made up.





*6m span Baby Grunau is just so realistic. We all loved it.*

Bob Aston had also spied a chance to escape from isolation to test fly a 4.5m span Salto of unknown vintage and origin. Nevertheless, Bob invested the 1:3.5 scale model with new servos and a generous coat of loving to restore this airframe to its former glory. It is a rare sight to see the scale functioning trailing edge airbrakes on a model Salto but here for once we got to witness them doing their thing most effectively. The Salto launched perfectly and flew faultlessly, providing Bob with sheer delight as he opened up the benign and user-friendly flight envelope. The port side airbrakes suddenly deployed when the hexagonal shaped drive shaft rounded itself off, but Bob calmly entered a landing circuit, opened the starboard air brakes and made a smooth textbook landing. He was overjoyed with his £250 purchase and we were as

delighted as he was to witness such a pretty scale shape perform so convincingly.

A massive Grunau Baby appeared on the slope face in varying stages of undress, as it was so much easier to carry across in a partly rigged state. Paul Renkyvick had previously flown this half size colossus at the Milson aerotow event in 2019 and in the process burnt out Ray Watts' petrol engine in the bulky Decathlon, thus proving that too much accumulative drag on a hot summer's day can even be too much for the usually bulletproof DLE motor range. This time all that was needed was 14mph of a wafty westerly breeze and the Baby effortlessly sailed away and stayed up in the heavens without any effort. The conditions at this point in the day were ideal for the light wing loading of this delightfully graceful model, which Paul invited me to fly. A little like 3D Long Boating, it was just sublime.



*Whopping Baby Grunau in perfect conditions for the type.*

The Airworld 6m span Libelle, built and beautifully finished by Paul Watkins, found a couple of flying slots when the thermic conditions were booming all around the capacious flying arena. The Airworld company in Germany, like the Tangent team I



*Airworld Libelle: such a beautiful shape in the sky, with a price tag that's not frightening.*



*At 4.5m span the Salto is a good size, with scale airbrakes too. Quite a find on the internet.*



*The Libelle is a whopping model at 6m span but will launch easily into a 15mph headwind with little trouble.*







*Realism is off the chart here. Tailored Pilot figure from Wilson Li at 1/4 scale. I would like a third size version for sure.*

*This Dart at 4.2m span is pristine and owned by Wilson Li, our pilot figure maker in person.*

mentioned in my last musings, offer value for money in their extensive range of moulded airframes. The level of prefabrication is much less than the likes of LET, but the basis for a clean and performance imbued airframe is there for the taking without breaking into a cold sweat when you reach for the buy button.

Paul has shown that Airworld are helpful and reliable to deal with while realising his dream model. This gorgeous Libelle project is a scratch Paul has been itching since coming back to sport in earnest again five years ago. The model is so steady and

comfortable to fly, with a healthy turn of speed when you open the taps for big open style aerobatics and fast low passes. The performance is steadily being identified more and more with every outing - after all, as we all know, there are no on-board instruments to warn us of the VNE, so we just keep pushing until we find out!

Bob Aston has recently taken delivery of the Airworld ASW-15 at 5m span and we chatted about his progress. Having owned an early example a number of times I can vouch for the outstanding all-round performance. I do miss the model as it is so easy to handle on



*Happy happy! Look at all that joy just from being free to fly his Multiplex Flamingo.*

your own, unlike the 6m example I own in its place. Check out Airworld next time you are browsing but try not to dwell too long on their stunning ASW-20!

### NICE TO BE OUT

Anti-social distancing was adhered to, which did not affect our fun and banter together, as there is so much space out on the hills compared to the busy pits areas at model flying clubs beside a flat field site. Let us hope that we can continue to fight back against this deadly virus and return to our normal way of life. It was heart warming to pull together at these recent flying gatherings during these difficult times to celebrate the freedom of our unique sport in a responsible manner. The weather has been so glorious for so long now, it would be sacrilegious of us to waste it now we are being actively encouraged to go out and get fit again and restore our wellbeing and positive mental health. ✈️



*Simon Marston and Simon Clayton enjoyed much fun flying together with their modified pull out plan builds of the Highside 2.*





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# PROGRAMMING THE CORE

## PART 2

The Editor finishes setting up his first model with PowerBox's versatile transmitter words & photos » Kevin Crozier



### FUNCTION MENU

PowerBox say that this is the most important of the many displays as it is where most of the set-up of the new model takes place. You can also access it at any time to tweak the set-up of any existing models that you may have loaded from the model memory.

It lists any function names that you have already set up when creating a model, but the + button at the bottom of the list allows you to input additional ones, plus a matching trim if required. In my case I added Crow Braking as a new function, then I assigned servos 2,3,6 and 7 to it, i.e. all the aileron and flap servos. To control it I allocated the left slider, although I may swap it to the throttle stick after flight

testing, at which time the throttle will be operated by a switch - all easily reassigned using the Function page.

The Function menu is also where you set up the failsafe for each function. It can either be set to Hold or you can teach it a Failsafe position to return to in the unlikely event of signal loss. The throttle is a 'must do' for setting up Failsafe so please don't leave it in the default Hold setting.

This just leaves the Setup menus to discuss, which are accessed by pressing the virtual buttons annotated with a curve icon. Pressing this will bring up a curve display for each function, alongside which are Rate and Expo settings. You can allocate separate Rate



A reminder of the main menu, accessed by swiping down the home screen. The Function menu is top right.



The Function menu lists your chosen flight controls along with the stick, switches and trims you have allocated to them.



For initial flight testing of the Phase 5e, I allocated Crow Braking to a side mounted slider.

and Expo switches if you want but over the years I have become accustomed to having both controlled by one three-position switch, usually the one on the top right shoulder of the Tx (this being what I would previously have called my Flight Mode switch). Thanks to the Core's easy to manage switch assignability this switch was soon allocated to both rates and expo, with matching values to best replicate those given in the Phase 5e





*My habit is to use the top right shoulder switch as a simple Flight Mode switch - easy to set up using the Function list's Setup buttons.*

instruction manual. Positive values of expo will reduce sensitivity near the centre of stick movement (JR style) so beware of this if your previous radio uses negative values to do this, otherwise things could get a bit twitchy around neutral!

To give fine control over each function you may wish to use the Curve Editor to allocate up to 33 points. I used this to set up flaps and crow braking, although with somewhat less smooth three-point curves!

### SERVO MENU

Back to the main menu, pressing the Servos icon will bring up a display showing the servos that you have allocated to each control, up to a maximum of eight (that would be for one big model aircraft!)

Here you can adjust the servo travel and end limits, as well as offsetting the centre position if required. The last column has virtual buttons to reverse each servo if needed, and a curve editor button to fine tune the servo response to match the model's mechanical set-up.

### RECEIVER MENU

Also clearly signposted on the main menu, here is where you bind your receivers. Up to four Rx's can be allocated to each model, which will be appreciated by those who like to build in high levels of redundancy into their valuable airframes.

For the Phase 5 things are much simpler, with just one PBR-7S Rx doing the donkey work. Binding is quick and easy and does not require a bind plug.

The Rangetest button is also found here; pressing it should result in perfect control responses up to a test range of 50 metres.

### RECEIVER UPDATE

During my glider set-up I was a bit perturbed, quite close to wrapping things up, to see the motor power up very briefly at low revs - and it did this several times. Not quite what I was expecting from such a premium quality radio system! Now a few things may have contributed to this: the Tx had been on for quite some time, but the batteries were still well in the green; the Tx was pushed under one wing, fairly close to the servos which being digitals were making a bit of a racket - could they be generating some RF noise too, or was I swamping the receiver by having the Tx too close? And checking the model's LiPo it was down to 30%, but that should still be okay for flying albeit nearing the end of a flight, let alone a simple bench test...

It was then that I remembered that PowerBox receivers can be updated and with the Core this can be done wirelessly and in-situ, without having to disturb any wiring or other accessories that might need moving if you had to connect a cable to make a wired connection. I quickly accessed the System sub-menu, located a further swipe down of the Main Menu. Here you will see a Software button, which when pressed shows the status of the various software packages used within the Core, plus any bound receivers too. Pressing the Update button alongside Receiver A showed me the available upgrades for the PBR-7S and there were two. The latest included a note saying, 'Servo glitch at startup fixed' so I selected it, pressed Update and the Rx quickly updated itself.

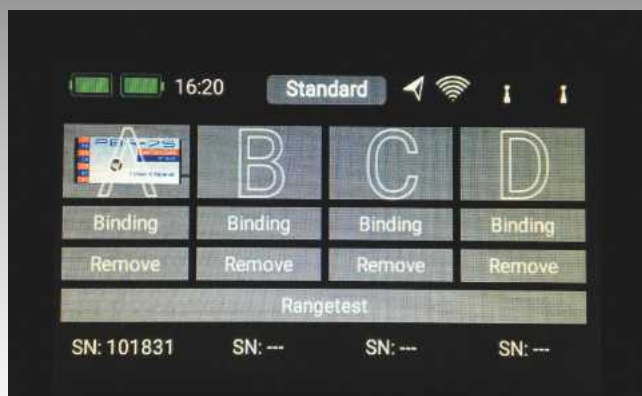
I am happy to report that no further power glitches have been seen since so full



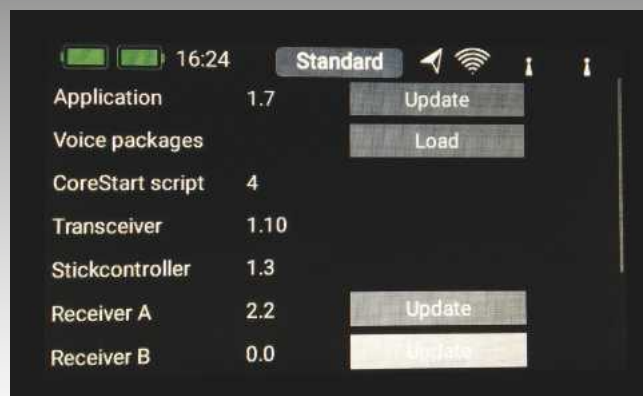
*After allocating the shoulder switch SW-M, I set Rates and Expo for the first two positions to match the Phase 5e instructions. Position three was maxed out, but with more expo.*



*The Servo menu is where you can set travel adjust and end limits, as well as altering the servo's centre position. The all-important servo reverse buttons are here too.*



Up to four receivers can be bound to each model for redundancy purposes.



Updates are easy to check for using the Software button in the System menu.

confidence is restored. The moral of this story is that you should check for both Tx and Rx upgrades on a regular basis and, for the latter, preferably before you start programming your latest model. This will ensure that you are working to the very latest standards that the Core system can offer you.

### MIX IT UP

Although you can mix servos by assigning servos, as I did when setting up Crow Braking, you can also use the Mixer menu to set up other mixes. In the case of the Phase 5e the instructions give clear advice on mixing in some down elevator compensation when selecting flap or Crow Braking.

As you can see in the nearby picture a Flap to Elevator mix was quickly set up, piggybacking the chosen flap switch to automatically add some down elevator when flaps are selected. A similar mix was added for Crow Braking. The quantity of the mix (Gain) for each switch position will be adjusted following flight testing. Once again, a curve editor is provided for fine tuning the mix, if required.

### VIRTUAL SWITCHES

Virtual switches are a way of using the travel of the linear controls (main sticks and

sliders) to set up thresholds as the stick moves to operate the same as a switch. You can also set up logical links between two or more switches or linear controls.

In the last issue Keith Jackson described one such scenario in his Aerobatic Scene column, where a throttle to elevator mix is applied at the very last click of low throttle to introduce a small amount of elevator to prevent an F3A model from pulling or pushing towards its canopy during a true vertical dive.

### FLIGHT MODES

Earlier I mentioned setting up a three-position switch in the Functions menu to simulate an old-fashioned Flight Mode switch, allowing me to call up three different control rates and increasing levels of exponential. These are indeed flight modes, but the Core can provide a much higher level of Flight Modes that just that and it can assign priority to them too.

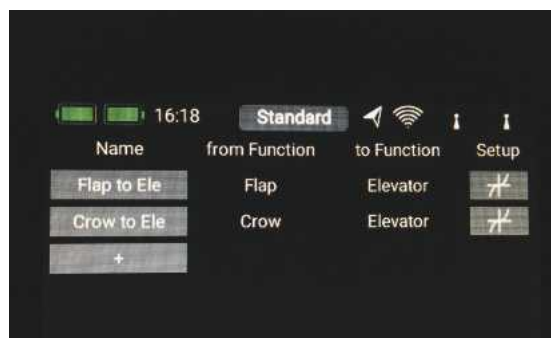
For instance, a modern moulded sailplane may require you to set up various flap, aileron and camber settings, probably including some elevator compensation in some phases. Popular flight modes for such a model (otherwise known as flight phases or flight conditions) are: Launch, Cruise, Land, Thermal and Speed.

I will be looking at this in much greater detail when fettling my Infinity Evo.

### SERVO CUT-OFF

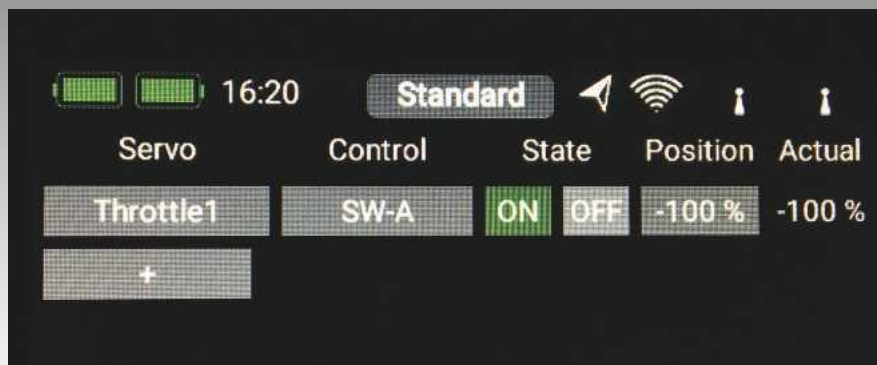
This feature allows you to use a switch to move a servo to a fixed position. Examples are moving a nosewheel to a predetermined position to make sure it retracts neatly into a fuselage and setting up a motor arming switch.

Until recently I have to put my hand up and say that I did not always set up a throttle cut switch on my Tx's, but after reading David Ashby's recent piece on this subject in a recent Just For Fun column, I thought I should do so and have



Free mixes are simple to program. Here are my inputs for some down elevator compensation when dropping flaps or using crow.





A throttle cut switch is also easy to add, this time using the Core's Servo Cut-Off feature.

used it ever since when carrying my models to and from the pit area. With the switch engaged the throttle cannot ramp up if the throttle stick is inadvertently moved.

Using the Core's Servo Cut-Off feature covers this quickly and easily using the by now familiar sequence of servo selection and toggling the switch that you want to use.

## WIDGETS

As mentioned earlier, widgets are things like telemetry values or timers that will appear on the home screen.

I don't currently have any PB telemetry sensors to play with, but I always like to have a down timer for my electric models to make sure that I don't over discharge my LiPos. And with my most recent radios I've always appreciated the ability to pause the

timer when the motor is off, setting up a low throttle threshold below which it stops, as there's no point in timing a throttle run when it's not actually being used.

With the Core this is very easy. You simply touch an empty black area of the home screen and this will bring up a Page plus icon (P+) with 12 grey boxes. If you run out of boxes as you populate the home screen you can add further pages (or delete them).

If you touch a grey box then you will be prompted to select one of four types of widget: telemetry, servo values, timer or quick select menu.

By this stage you will be well versed in the PowerBox way of doing things so setting them up should be quick and easy - it certainly was when setting up that Down Timer!



I forgot to discuss the Servo Monitor button in the centre of the main menu. Simply put, it does exactly what you'd expect!

## SUMMING UP

When first faced with that big, mostly black home screen things look a little daunting, but the slim instruction book soon gets you going, backed up by the Core support section of the PowerBox website. Type in a keyword or two and chances are that you will quickly find the information you are after.

Overall, I have been impressed by how easy the Core is to set up and it's only by doing so that you really start to appreciate how versatile it can be. Although my first set up for the Phase 5e hasn't really taxed it too much, I can begin to see how easy it will be to program in more complicated set-ups for advanced model like jets, and all the different flight modes that I will need for my upcoming Infinity Pro F5] glider. ✈️



Despite the Core's ease of programming it's worth taking the slim manual with you in the carry case, just in case you forget something when making a change at the flying field.



# PHASE 5e

Ripmax's electric kit of the famous Chris Foss slope soarer has been around a while but the matching motor has only just arrived. The Editor tries the two together. words & photos » Kevin Crozier

**R**ipmax's collaborations with leading model aircraft designer, Chris Foss has resulted in some very popular model kits in recent years. This is perhaps unsurprising since Chris' own kits have proven to be a real hit for decades, having been built by thousands of model builders. But kudos to Ripmax for opening up many of Chris' excellent designs to time short model flyers, or those not really interested in a more traditional build, by developing ARTF versions of an increasing number of the stylish Foss model range.

Having made several Chris Foss kits over the years, I make no bones about being a bit of a Foss fan. So, when Ripmax offered me the chance to build the latest Phase 5e kit, together with the long-awaited motor set that it was designed for, I jumped at the chance.

## OUT A WHILE

While this is not a new kit, having been available since early 2019, it took until the end of the year for stock of the recommended motor to arrive. This is the Quantum II 36 of 900 kV and when matched to a Quantum 60A ESC and an 11" x 8" folding prop on 4S it's capable of putting this 3.5 lb model into 200 W/lb hotliner territory - so much so that I had to turn down the wick a bit for fear of damaging the ESC...

Straight from the box some of the airframe components were a bit wrinkly so I spent a bit of time ironing down the worst bubbles. But really this was a waste of time as during the relaxed build that followed over the next couple of weeks, combined with the recent warm spring sunshine, which warmed up my workshop a fair bit, the poor finished Phase 5e came out of the shed even more wrinkly than she went in! So, my advice is to just crack on with the build straight from the box and tidy up the covering when it's all finished. The heatshrink film used is best tightened up using a heatgun and judicious numbers of pinholes to release any excess hot air.

## WINGS FIRST

Assembly is covered by the 18-page colour manual, which largely hits the spot. There are one or two areas that could do with a little more detail but overall the excellent illustrations, combined with the bi-lingual text (also in German), guide you through the process with ease.

The build starts with gluing the furry aileron and flap hinges into pre-cut slots using thin cyano. The slots are largely accurately cut but I was lulled into a false sense of security and glued them in after only checking that the leading edge and trailing edge cuts were aligned in pairs, only to find afterwards that one of the slots at the in-board end of an aileron was cut a couple of

millimetres vertically too low, resulting in a slightly raised aileron leading edge at that point. Not a big problem in the grand scheme of things but it's worth dry fitting all the hinges before gluing them to check for any such issues.



“...kudos to Ripmax for opening up many of Chris' designs to time short model flyers”





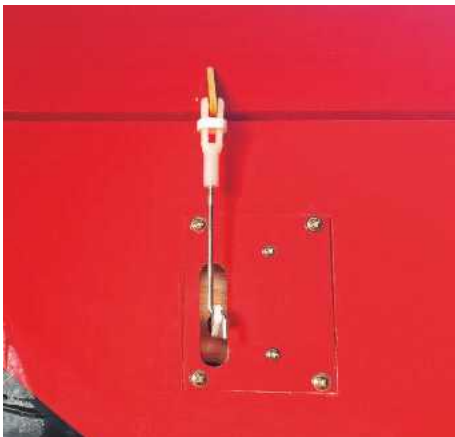
*Phase 5e is a classic soarer, well-built and neatly covered. What's not to like?*

Next, the aileron and flap servo mounting blocks are glued to the underneath of the ply servo hatches. I used the recommended Quartz QZ101 digital servos for each wing surface. However, when the time came to drill mounting holes for each servo in the wooden blocks some of them popped off the ply plates, so cyano was obviously not the best glue for this job. I contemplated using 30-minute epoxy but then realised I had some as yet untried Gorilla glue, which is activated by wetting one gluing face. The resultant bond was certainly much stronger than when using CA, but just to make sure I drilled into each block from the covering side of each hatch and fitted a small self-tapping screw to hold the two parts together.

After fitting 500mm extension leads to each aileron servo lead they were pulled through using the pull-strings provided; ditto for the flap leads. The servo output arms were then cut down by one hole, as per the pictures, and centred before finally securing each servo hatch using a self-tapping screw in the corners of each hatch.

The control horns are neatly cut from epoxy board. They are meant to slide into pre-cut

**Wire pushrods are short and of good diameter. No slop here!**

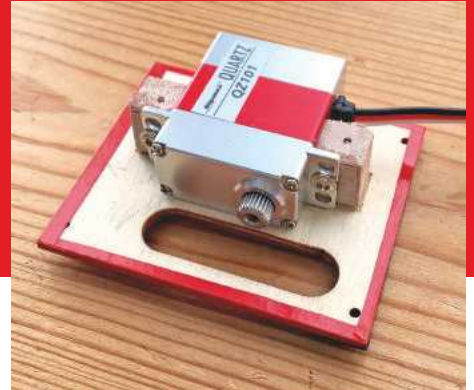


slots, using some drops of cyano down the sides to secure them. The only problem is that the slots are much too thin, so they needed opening up with my Perma-Grit needle files. Even with these excellent tools it takes a while as the surrounding wood is quite hard. Before inserting each horn, I roughened up the gluing tabs on each side to provide a good key for the adhesive.

The aileron and flap pushrods are made from threaded wire. The threaded ends are screwed into plastic clevises, which clip onto the aforementioned control horns. With each surface taped at neutral the distance to the hole in the servo arm, which I held at neutral using a servo tester, was marked off. The wire can then be bent by 90 degrees at this point, the keeper fitted, and any excess wire cut off. However, I have a pair of Ripmax's own Z-bend pliers, so I used these instead to form Z-ends in each wire, doing away with the need to fit the keepers.

Next job on the wings is to glue a locating dowel into the leading edge close to each wing root. These locate into the former at the front of the fuselage's wing bay.

At the rear of one wing root a short plastic rod is glued in to act as an incidence peg. This slides into the matching hole in the other wing root when both panels are brought together,



*Wing servos are mounted on hardwood blocks.*

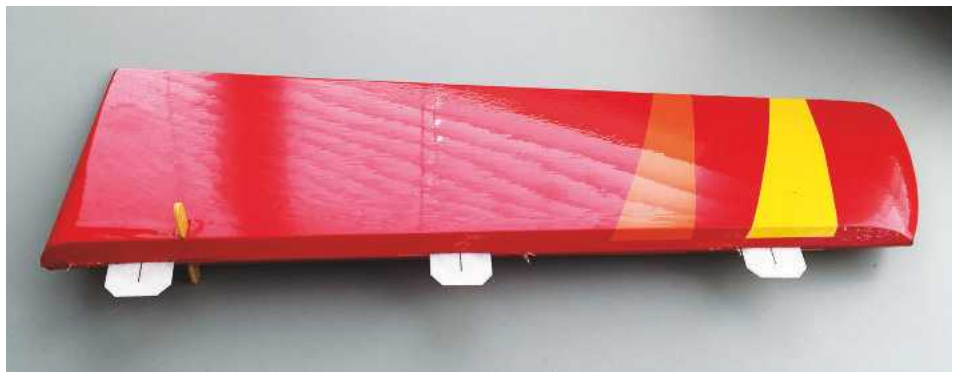


*I backed up the glue joints with a couple of self-tappers from the spares box.*

sliding onto the carbon tube wing joiner. All very logical but in one of my dozy moments I discovered that two plastic pegs were provided, so both were glued in... Later, when assembling the wings for the first time, I had a long tussle with a pair of pliers when trying to extract the extra unwanted peg from its incidence hole!

#### **RUDDER AND AMT**

The rudder is fixed in place with three fuzzy hinges; just make sure that the one closest to the rudder horn slot doesn't interfere with the opening. The rudder horn is from the same epoxy board, but this time it extends on both sides of the rudder where it is operated using closed loop wires.



*Control surfaces need furry hinges gluing in. A pencil mark across the centre of each hinge helps stop them from being inserted too far.*

*The all moving tail had gaps on both sides, so I fitted wedge shaped end caps to fill them in.*

**“I used the recommended Quartz QZ101 digital servos for each wing surface.”**



**Ample adjustment is provided via turnbuckles at the rudder.**

This model features an All-Moving-Tail (AMT) that is operated via a bell-crank mounted in the fin. It rotates around a central pivot point, with a forward joiner wire operating in a shallow arc. I've had several AMT equipped models and have never had a tail panel slide off but if you're worried you can gently smear the rods with a glue-stick to make them a bit tacky. In this instance the rods were quite a firm fit so I don't think this will be necessary.

My only concern was that the roots of each panel were not sitting parallel to the sides of the fin; there was a small gap at the leading edge on one side and vice versa on the other side. So, I took them off and checked each joiner rod for square against each panel. All was fine so I can only conclude that the central plastic pivot tube has not been glued in dead square.

More importantly than those small gaps on either side though, when checking that the tailplane was level with respect to the wing, all was well, so thankfully there should not be any tail induced errors to trim out.

As for those gaps, eventually I decided to glue on end caps made from thin balsa sheet to each tailplane root. After shaping to the correct profiles, I then carefully pushed each one up against a sanding disk to make them wedge shaped and hence fill in most of the

gaps. They are not perfect, but after covering in red tape they have improved the appearance at the back.

#### **TAIL SERVOS**

For the tail Ripmax recommended their New Power XLD-17MB digital servos.

The elevator servo connects to the AMT via a wire pushrod. A screw down connector clips on to the servo arm and holds the pushrod firm. Again, I used the servo tester to hold the servo at neutral, then moved the tail bell-crank until it sat in the middle of its arc; no instructions are given for centring the AMT, but in his notes concerning the Phase 5e in his Just For Fun column in the November '19 issue of RCM&E, David Ashby confirmed that this was his starting point too and that all was well during flight testing. So, fingers crossed!

Time now to set up the rudder closed loop system. First, loops are made around each side of the double-sided servo arm and the brass tubing is crimped to secure them. I used my electric connector crimp tool to do this as it is more secure than just squeezing the tube with pliers.

With the horn fitted whilst the servo tester held it at neutral, and the wires threaded through to the tail via the factory fitted tubes,

the crimping process was repeated at the rudder horn. Here the crimps are made after the wires have been looped through a turnbuckle, with a metal clevis screwed on each end. This gives plenty of adjustment when fine tuning the rudder set-up.

#### **MOTOR MOUNT**

All was going relatively smoothly up until this point, but when examining the motor, I realised that the shaft was fitted the wrong way around for the folding prop that Ripmax recommends for this model. The motor comes with a bolt on threaded prop shaft, allowing conventional propellers and spinners to be retained with a simple prop nut.

However, the folding prop hub comes with a collet that slips over the protruding length of motor shaft. The problem here is that this long piece of shaft is at the wrong end of the motor as supplied, so it has to be taken apart and the shaft carefully drifted out using a bench vice and a lightweight hammer. It then has to be re-assembled with the shaft reversed but remembering to refit the small brass shims in the correct order to prevent the moving parts from rubbing and binding. Since I had reversed a couple of motors before, I didn't have much trouble doing this, but you do need to take a lot of care and it could be a bit off-putting to some builders. Hopefully, Ripmax will make reversed shaft motors available for this specific model.

Also, the motor mount supplied was too big to use with the Phase 5e. My contact at Ripmax told me that a small number of motors had been supplied with the wrong size of mount, the one I had being for 60-size motors. Fortunately, I had some marine ply cut-offs to hand of just the right thickness so a replacement ply motor mount was quickly fabricated and the motor was at last bolted on to the front of the fuselage.

Before fitting the prop unit, I installed the Quantum 60A ESC in its bay at the front of the fuselage. The combined motor wiring and



Mr. Foss certainly knows how to design a pretty model.



assembled connectors are quite stiff but eventually I came to a satisfactory result with the ESC Velcro'd to the fuselage floor and the wires laid on top at a jaunty angle. Luckily for me I had guessed the correct wires to connect up and the motor spun up briefly in the correct direction - phew!

Time now to fit the cowl before bolting on the folding prop. In David's piece he mentioned how flimsy his cowl was. I think Ripmax must have followed up on such comments as the one I had was reasonably firm, however I did follow up on his

suggestion of taping up the cowl bottom, both inside and out, to hopefully minimise any cracks caused by rough landings. The red electricians' tape I used should also help any such cracks from spreading too fast.

The cowl was a good fit on the front of the model and so was soon fixed firmly in place using two self-tappers on each side.

#### RADIO FIT

The receiver sits alongside the tail servos using either foam tape or Velcro. The LiPo sits under the wing and is retained using a hook

and loop strap. I opted for the 4S option using 3200 mAh cells. My pack was too wide to lay flat on the battery floor, so it sits on its side and is held in place with two straps, just to make sure that it doesn't move in flight.

With that done the Phase 5e can be assembled for a CG check. A relatively narrow 6 mm range is given, starting at 72 mm back from the leading edge. I was really pleased to see that my model balanced on the tips of my fingers smack between the two Sharpie pen marks that I had made at each wing root; a good starting point for the test flights.



It's been a long wait, but you can now buy the recommended Quantum II 36 motor to go with the Phase 5e kit.



The recommended 11 x 8 folding prop seems to offer plenty of punch. Set the ESC brake on to make sure it folds properly during the glide.





*Despite the rigid wiring the 60A ESC was eventually located on the fuselage floor.*

### THE LONG WAIT

The manual is well detailed in terms of control surface rates and expo settings. Details are also given for Flap and Crow Brake settings, plus recommended amounts of down elevator compensation when selecting either option.

As for motor checks, at first I was a bit concerned to see 68A and 980W pop up on my Wattmeter at full throttle. This equates to 243 W/lb at the review model's finished weight of 3.5 lbs, this being a bit more than the 2.8 lbs listed on the Ripmax website. But with that much power on tap I wasn't unduly concerned that my version had turned out a bit overweight.

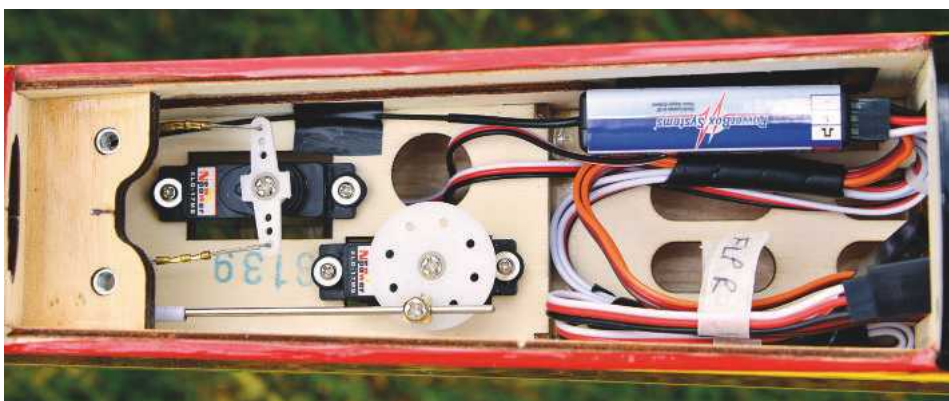
However, my main concern was for the long-term health of the 60A ESC, so I put a limit on the throttle at 58A, which still returned 850W and 243 W/lb. Depending on flight performance, I may reduce that even further as the Quantum 36 motor is rated at 50W continuous and I don't want to exceed

that when climbing to soaring height.

David reports that his model flies just fine at 100W/lb and on 3S, so it looks like I've got a lot of spare oomph left in my set-up for some spirited aerobatic action. Mind you, unlike David, most of my flying is likely to be from the flat rather than off the slope, so a bit more power is unlikely to be a problem.

A couple of further points regarding the ESC. First, it's wise to set the throttle range following the procedure listed in the instructions. Doing that is also good practice for setting the brake function, which is turned off at the default settings. You'll want it switched on to avoid the prop wind milling during the glide.

The Phase 5e was the first of my lockdown builds and so at the time of writing I am still confined to home and champing at the bit to fly her. Part two of this review will follow just as soon as I have managed to fly her. Like me, I bet you are praying for continued good weather! ✈



*The radio bay is quite spacious but it's worth taking time to neaten up the wiring to keep it away from the top of the servos.*

*We'll be back! As soon as the lockdown lifts, I'll report on the Phase 5e's flight performance.*



**“The manual is well detailed in terms of control surface rates and expo settings.”**

## DATAFILE

<b>Name:</b>	Phase 5e
<b>Model type:</b>	Electric sport glider
<b>Manufactured by:</b>	Ripmax
<b>UK distributor:</b>	Ripmax www.ripmax.com
<b>RRP:</b>	£159.99
<b>Wingspan:</b>	1,880mm (74")
<b>Fuselage length:</b>	1,168mm (46")
<b>All-up weight:</b>	1,270g (2.8lb) listed, 1,588g (3.5lb) as reviewed
<b>Rec. Power system:</b>	Quantum II 36 900kV, 11" x 8" folding prop, Quantum 60A ESC
<b>Connector type:</b>	Deans
<b>Battery:</b>	3S or 4S 2900-3800 mAh 20C LiPo



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# SIMULATOR STIMULATION

Whilst still complying with the 'stay at home' message at the time of writing, John Stennard looks at other ways of getting a flying fix words & photos » John Stennard



*Absolute RC models are very realistic.*

Is it real or is it a simulation? Real model flying is just a memory at the moment. My last 'real' flight was on Monday 16th March. I knew that by the end of that week my age group would be asked to stay indoors, and I needed just a few photos for an RCM&E magazine feature. The weather co-operated and the outing was very successful - something to remember and relive!

Since then the situation has changed rapidly requiring social distancing and only essential driving so all model flying is on hold. While model building and new projects can occupy some time, the missing element is of course the flying. Depending on your situation flying in your garden may be an option. I can fly my electric helicopters, small quads and the HH Osprey in my quite small back garden/flying patch. However, this does not really replace flying at the model field.

Can anything replace it? Well, I'm afraid not entirely but perhaps model flying simulation is the next best thing. Okay, so there's no real wind in the hair, cold fingers and sun in the eyes but it can come surprisingly close. In the full-size world trainee airline pilots and even future F-35 pilots do a lot of their training on simulators. Not the same as the real thing of course, but if flying on a simulator does it for them there must be something in it for us!

## WHAT'S IN IT FOR US?

Well a lot depends on what you want, or expect, from your simulator. Our club has a very active indoor flying group and during the winter slow down we can still normally keep our hands in. While this is a valuable asset, the opportunity to fly models outdoors through a simulator can also provide satisfaction, enjoyment and even training.

At one end of the spectrum there are a great many apps that can be downloaded, often free, for virtually all aspects of flying. These vary from extremely basic to sometimes surprisingly sophisticated. At the opposite end there are very high-performance model flight simulators with either a dedicated transmitter or the capability of using your own Tx. In this short feature it is impossible to cover the whole range so I will be taking a look at several I am very familiar with.

Ideally, before looking for any type of simulator get local advice. Asking the opinions of club members and having a go on their programs is the best scenario. Even in non-contact situations a phone call could get you the help you might need before spending some money.

Ah, yes, spending money... Everyone has a different view on what represents good value as far as modelling purchases are concerned.

To pay around £150 - £200 for a high-tech model flight simulator will, to some people, seem excessively high. If you do even a few comparisons with, say, your last model (is it still in one piece?), the last Tx you bought (did you really need it?), or that pricey LiPo pack (worn out or damaged beyond use in a crash?), the price for a top-quality simulator may not seem so excessive. A good one will have the ability to be updated and last out the lifetime of most of your model gear.

## THREETYPES

Looking generally at simulators they tend to fall into three categories. The first is the very basic simple type, often with its own dedicated transmitter. These can typically be purchased on-line and will feature a small range of models. Their low cost makes them appealing, but the lack of realism and limited model types will usually result in it losing its long-term interest. They also usually require a disk drive to install on a PC or laptop. However, they do offer a low-cost simulator experience that will keep your fingers and brain in action.

The second is the type used on a tablet. A typical one is the sim from AbsoluteRC. The graphics are extremely good, and a wide range of aircraft is available - 35 at my last count. Additional models and flying fields beyond the very basic do have to be purchased. Boats and cars are also included in the range. Using fingers on the screen to fly the models makes it less appealing but a gamepad can be used with certain devices. Of course, this simulator has the advantage of being very portable and can therefore be used anywhere. This app has been regularly updated and now models feature flaps, retracts and smoke. The screen shots show the excellent graphics and the model response to the controls is very smooth. Apart from lack of the physical stick 'feel', flying is very satisfying. A gamepad controller can be used with this app but neither my GameSir nor PG-9156 controller would link up, but maybe that's just me! A gamepad would further improve the flying experience. A helicopter version of this app is also available.

The third type of model flight simulator is where the simulation attempts to offer the user the best possible model flying experience. This naturally means a high level of sophistication and a correspondingly higher cost. However, in my opinion this is the only way to go if you want a level of realism and performance that is the nearest experience you can get to actually flying a real model in real conditions.





*Absolute RC opening page giving a number of options.*



*As can be seen the models look very realistic in flight.*

My simulator of choice has always been the Realflight and I purchased my first, the Realflight Classic, around 20 years ago. Then it was under the Great Planes label but is now a Horizon Hobby product. I kept up to date as the system improved from the original, through the G2, to the latest RF9 version.

I know there are other simulators of a similar type on the market, but I am not drawing any comparisons in this feature. This can be best done by having a flight on different versions courtesy of fellow club members or reading up on all the online information and choosing the type that suits your requirements.

I still have the original Great Planes branded special Tx and it works fine with the latest RF9. Although I knew it would, I still purchased the RF9 with its InterLinkDX controller. I had an ulterior motive here as for a number of years we have used Realflight on laptops at our various outreach sessions with young people. To have an extra Tx available will be very useful and allow us to use up to four laptops simultaneously.

### WHICH COMPUTER?

Moving on, there is an early and important question to ask: do you have what it takes, computer wise? To run a sophisticated simulation like RF9 a capable PC or laptop is required. This will apply to any similar simulator. If your PC/laptop is a fairly recent version with a good graphics capability, there should be no problem, but this does need to be checked.

The RF9, for example, requires as a minimum of Windows 7, 8 or 10 with Intel Pentium 1.0GHz or equivalent, 512MB RAM and 10GB Hard Drive space, as well as 3D Accelerated Video with 32MB Dedicated Video Memory and Full DirectX 9 compliant (Shader Model 2.0 or better). You'll also need an InterLinkDX controller or a compatible controller for use with an adapter lead. For optimum results a Dual Core 2.4GHz CPU with 2GB RAM and 3D Accelerated Video with 512

MB dedicated video memory is recommended. The InterLinkDX controller requires a USB 2.0 port and, of course, a DVD drive is required to download the program. The RF9 is compatible with some VR sets and again this means checking if you intend using this feature.

If you are looking at purchasing a high-end simulator then you will probably have a decent PC or laptop. This means that you can check out all of the specifications and prices on the web. Looking at just the RF9, if I attempted to list all the features I could easily fill the whole magazine - for several months! I'm serious here as to start with there are 160 different models, several versions of some models, plus 40 airfields! If you are in the mood for a long read visit the RF9 web site where a 397-page manual should satisfy your quest for knowledge! I'm sure other makes of similar simulators will enable you to do this as well. In these circumstances I'm just going to highlight the features that are likely to be the most important for the average model flier.



*InterLinkDX controller is very nice to handle.*

### CHOICES

Starting at the beginning with RF9, there's a 'choice' situation. As I mentioned, I decided to purchase the RF9 version complete with the InterLinkDX Tx controller. I have to say that the new controller is much nicer to handle and is modelled on a Spektrum transmitter with 15 channels. Of course, you don't use them all but what you can do is allocate functions to specific switches, the knob or two sliders. If you want to use your own Spektrum Tx, you can do this with an adapter lead or wireless dongle; some other makes of Tx with a trainer port will also work with a cord/cable adapter lead but check this out.

So, if you purchase RF9 without the Tx you save money but lose the advantage of your simulator being permanently connected to a Tx, unless of course you have a redundant 'real' Tx. It can also be expensive to purchase the InterLinkDX Tx controller at a later date. An advantage to using your own Tx is if you are flying models on the sim that are models you actually own and fly. Being of the Mode 1



*Mode switching slider.*



RF9 start-up screen gives instant access to flying.



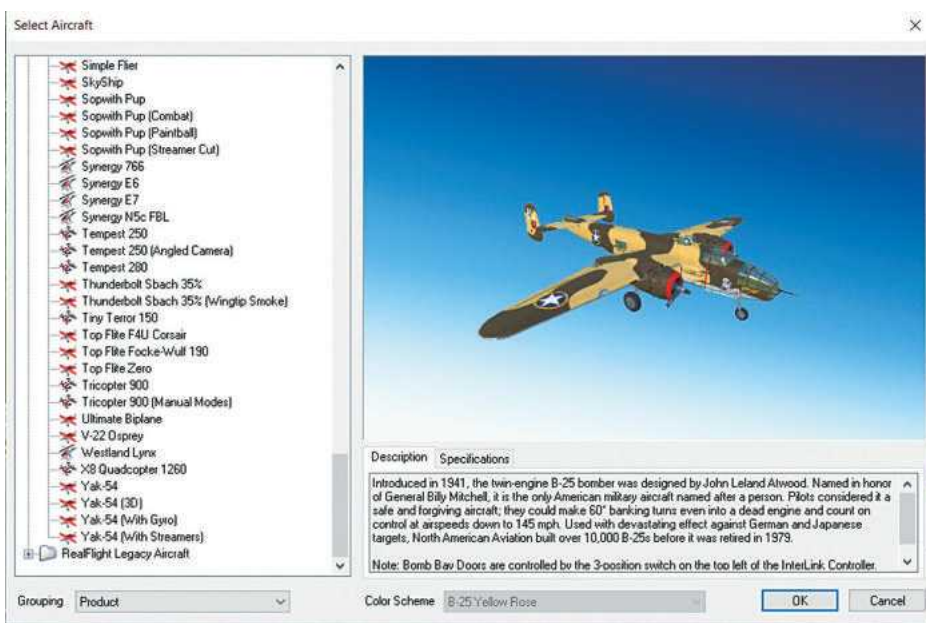
Your controller needs to be calibrated before flying.



Challenges are fun and again provide 'ready to go' models and fields.

persuasion, in the past this has meant getting a Mode 1 Tx controller. The new controller has a neat arrangement whereby the sticks can be physically 'mode changed' through a slider on the rear of the case. You then have to visit the stick configuration settings in the program to allocate commands to sticks. This actually only involves changing the elevator and throttle allocation.

With the program installed - from two disks with RF9 - and sitting in front of the screen, what can you do? Initially it's a case of registering your sim and downloading any updates. Before you fly it's also necessary to calibrate the controller. At the very basic level there is certainly enough to keep you out of harm's way for a long time. If you flew every model at every airfield that would be 160 x 40 flights; I'll leave you to contemplate that!



Choosing the Aircraft menu give you the whole range of models, with alternative colour schemes in some cases.

Clearly that is not going to happen as you will tend to fly what interests you most, remembering that there are also helicopters and multi-rotors to have fun with and maybe enjoy as a new experience. While what I am describing is specific to RF9 a similar specification flight sim will include a range of models, flying fields and scenarios.

The initial screen on RF9 provides the opportunity to immediately fly by selecting a scenario. There are a large number available and when you choose one - it could be 'Pattern Practice', 'Thermal hunting' or 'Night Flying' for example - the model and flying site will be presented on the screen ready for you to take off. This is an alternative to choosing



One of my most used menus is View; here you can select your camera position.



Sopwith Camel as seen from the 'tail' camera.





*Turbine Me262 is a real contrast to the Camel and a super model to pilot.*



*The Harrier is quite demanding to fly and really satisfying.*

your flying site and model. If you want to do this, it is easy from a drop-down menu and in some cases alternative model colour schemes will be offered. RF9 allows you to change the weather and flying conditions at the field and change the physical properties of the model.

On the first page you can also go straight into a lesson, fly a challenge or watch a training video. The challenges are fun and combine flying skill training with a fun activity like say bursting balloons. The ten menus at the top of the screen give access to many different functions and settings; I tend to find I only use a few. In 'Gadgets' I usually use the NavGuides function as it adds interest to see the height and speed of the model.

The one I do use frequently is the 'View' menu. This provides an option to have a camera view from a number of positions and these vary between the models. For example, the Sopwith Camel has seven different positions: nose, chase, cockpit, pilot, etc. It is added interest to fly a model from the cockpit and try out different scenarios. One of my favourites is the RF-97 aero towed glider. I enjoy flying using the nose view, performing aerobatics and, of course, precision landings - well, sometimes!

I use the 'Training' facility mainly for helicopter flying.

If you are into 'Multiplayer' there are a number of models for streamer cutting, paintball and rockets. It is interesting to fly sim examples of models you own and compare their flying performance and characteristics. For example, I have a 'real'



*A number of different multi-rotor models gives another experience.*

Mini Convergence and find the sim version to have all the same characteristics, and this does present a way, when housebound, of keeping in touch with some of your models.

### IN SUMMARY

There are obviously far too many aspects of this particular sim to be able to cover them all. All I have tried to achieve in this feature is to offer the simulator option as a way of keeping in touch with your flying. I think it is a good investment for now, and the future, to purchase a simulator that will give you the best experience and plenty of operating

options. Check what's around online and, very importantly, compare the prices!

I'm using my simulator a lot at the moment and enjoying the huge variety of models and flying options. We have to keep positive and look forward to the wind in the hair, (usually too much), the sun in the eyes (the 'I just lost it!' scenario) and the unplanned landing (I was sure that was a fully charged pack...) In the meantime, you can always set up for 'flight failures' (or is that fright failures?) on the sim and enjoy an almost real flying experience without needing a black bag! ✈



*If you want to modify models there is plenty of scope.*



*Piloting a simulation of a model you own is a real bonus.*

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**ESM SPITFIRE ELEVATOR.** I have a part-built model and, somehow, the elevator was lost in a house move. I think the model is the same as the YT version. Please email Grant at graant@xtra.co.nz (New Zealand).

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# NEXT ISSUE

**RCM&E**

August 2020  
issue on sale  
24th July

## AVRO AVIAN

A photo of an Avro Avian on floats and another with folding wings prompted Rob Caso to draw up next month's free pull-out Pro Plan. The result is this neat 41-inch wingspan biplane model for a 200W motor, a 36A ESC and a 2200mAh 3S LiPo. Both land and float options are detailed on the plan, as are the folding wings, although these can be built as full span panels for simplicity's sake.



## WOODFIELD WONDERS

After John Woodfield's lightweight vintage style gliders made a brief appearance in a recent On Silent Wings column, we thought you would enjoy learning more about John's slow flying soarers and how he goes about designing and making his distinctive style of eye-catching model aeroplanes.



## MARTIN BAKER MB5

Alex Whittaker admires Tim Ruck's model of the Forgotten Fighter, the Martin Baker MB-5, a superb design that was killed off by Air Ministry politics. Tim is no stranger to the BMFA Scale Nats and when he first wheeled out his MB-5 a few years ago at Barkston Heath it delighted everyone. The model really looked the part in fast low passes, with her smooth flight envelope and aggressive sit in the air.



## STATE OF THE ART F3A

Our regular columnist on all things related to aerobatics, Keith Jackson, returns with a look at the latest trends in the design of F3A competition models. Keith also introduces some new lightweight carbon props and provides more in-depth explanations on how to perfect advanced aerobatic manoeuvres.

**RCM&E**

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# PARTING SHOT



## WHEELS UP LANDING!

Some models need a higher landing speed, but Seagull's 62" span Radial Rocket throws a curved ball by adding those long legs to any landing scenario. Sometimes the elements conspire, such on this occasion, when the model seemed to be sucked in towards the ground at the last moment. The damage was clean so the support blocks and legs should go back easily enough - along with plenty of extra strengthening, no doubt!



**Photo:** David Ashby

**Camera:** Canon EOS 7D Mk.2

**Aperture:** F/7:1

**Focal length:** 300mm

**Shutter speed:** 1/500

**Lens:** Canon EFL 70-300mm

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73in (1.85m)	69.3in (1.76m)	1,084sq in	30-40cc

\*Or Electric Equivalent

### Laser 88

Wingspan	Length	Wing Area	Engine Req
88in (2.24m)	83.5in (2.12m)	1,291sq in	50-76cc*

\*Or Electric Equivalent

### Laser 103

Wingspan	Length	Wing Area	Engine Req
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## **SPECIFICATION:**

**Approximate Assembly Time:** Less than 1 Hour

**Approximate Flight Time:** 10 minutes

**Flying Weight:** 5.2lbs (2350g) approximately

**Landing Gear:** Monowheel with tail skid

**Minimum Required Radio:** 6-channel

**Motor Size:** 3541-750Kv

**Wing Area:** 779.5 sq in (50.3 sq dm)

**Wingspan:** 98.4 in (2500mm)

**Length:** 54.7 in (139mm)

**Material:** EPO foam

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