# Waltham Chase Aeromodellers

Newsletter 27-01-2016

## 1. Introduction

With the exception of Sunday the 22nd Jan (when the weather was splendid) there has not been much going on at TVF. Therefore, I thought for this newsletter I would bully people into writing about their build projects. Bill, Dave, Steve and Pete gave in and you can see what they have been up to. If there is anything on your build bench you want to share please drop me a line.

*Winter Flying. Photo by Howard Metcalf*

## 2. Message from the Chairman

First of all I would like to thank all our regular fliers for the marked improvement in observing all the safety rules. We have had virtually no avoidable accidents over the last year at Tangier View Farm, so thank you all very much indeed.

All the indoor events are in full swing with good attendance. The new indoor FPV event held at Wickham Community Centre is a huge success, now operating at full capacity. Many thanks to Dave Reynolds and Alan Wallington for organizing this new facet to club operations. The dates are on the club website, so if you are interested, just go along. You can observe for £1 and Dave will give instruction on his own equipment, if you would like to have a go.

As bellow, it seems 2017 will be the last opportunity to visit the BMFA Nationals at Barkston Heath as usage of the site has been removed. This makes you appreciate how valuable a permanent flying site is.

Pete Sander January 2017

## 3. Club Renewal

Most members have now renewed (or let us know they will not be renewing) and I have sent out BMFA memberships certificates. All renewals must be in by the 31st January.

Remember we must have:

- Payment
- The club form
- BMFA certificate (if you do yours separately as a country member)

## 4. BMFA NATS 2017

Due to time overruns on the present building work at RAF Barkston Heath we are being allowed to use this venue for the 2017 Nationals. By 2018 Barkston Heath will be an RAF training school during the week and a commercial / civilian airfield at the weekends. At the moment 2017 is the last time we will use this venue ever.

The BMFA are proposing to use the new BMFA Central site for the 2018 Nationals, I believe some doubts have been raised about its suitability and there is no “plan B” in the offing if it doesn’t work. According to one HQ official there are no airfields or similar Venus available for the Nationals in the UK.

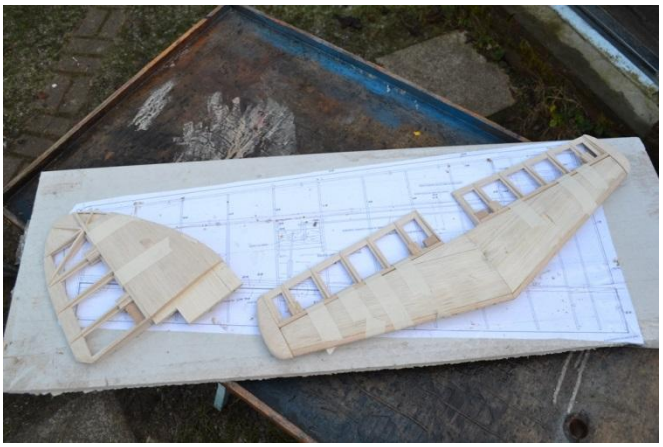
## 5. Richard B’s Airsail Chipmunk

I I bought a un started Airsail Chipmunk kit at Blackbushe a couple of years ago. Having run out of excuses and other projects I have finally made a start on it. Second hand “Un started” kits can be a bit a gamble as normally the previous owner has removed a thrown away some important and irreplaceable part. This one looked complete to me. However, after studying the plans I was still largely baffled by what all the wood was supposed to be for. Then I realised that the plans were supposed to be accompanied by instructions and a

parts list. An appeal on a forum lead to some kind sole in Oz scanning and emailing his copy.

*A Box of Wood and Vac Formed Plastic*

The kit contains strip and sheet balsa, vac formed plastic parts and die cut (crushed) ribs and formers. I'm told later ones had some laser cut parts, mine must be an older one as the only laser cut parts from that era where in 'Gold Finger'. The quality of the die cutting is not great



*Everybody always starts with the tail surfaces*

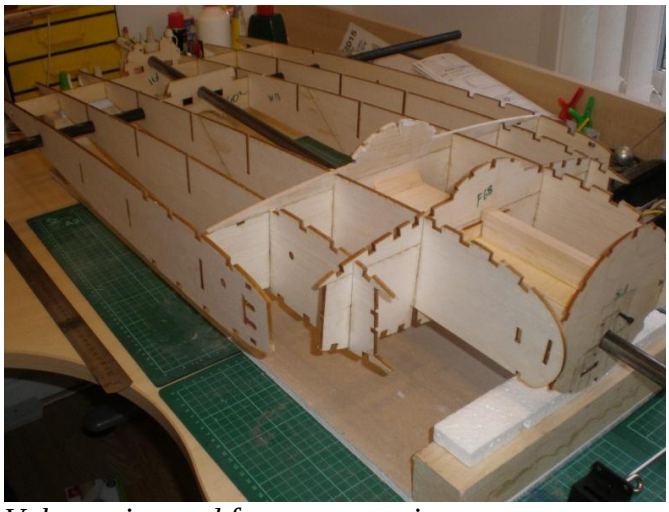
Progress has been slow, I manage to glue one bit on per week. In this weather the glue takes a long time to dry. I lost the engine I intended to fit when one of my Saito 91s destroyed itself. Spare parts are not available for this engine now. Therefore I am now thinking about going electric. I will have to decide before starting on the fuselage.

*Photos taken outdoor because I'm ashamed of the state of my work shop.*

## 6. Bill's Projects

Well apart from a few days when we have been able to fly in comfort, it has put my mind back to building.

It's a bit odd as you look round my workspace, everything from a free flight 'Peanut' Mustang to a turbine helicopter. I have been building a South Herts 'Vulcan' which turned up as a plan pack and I have been working on and off for months.



*Vulcan wing and fus centre section*

It has moved forward to being something that looks like a Vulcan, it could have been ready before now if I had not spent weeks on the undercarriage doors and things like that. It's been a labour of love.

*Looks like a Vulcan!*

This is where we are, ready for sanding, which needs to be done in the garden, so winter has stopped play. I intend to cover it with glass cloth, this will be a first for me, so wish me luck.

Years ago, if you wanted to fly free flight indoors you bought an American 'Peck Polymer' kit, I once flew with Geoff Griffiths at Crawley with my Zero kit which just could not get in to the 30-sec qualifying slot. Geoff's model was immaculate, as always. Here is a shot of my current project, a Mustang. The tissue has not yet been shrunk back yet and then will be sealed with 'Banana Oil' (not baby oil).

*P51 Fus takes shape*

*Bill must have a massive transmitter*

Other stuff on the bench is an 'Adrian Page' Gee Bee racer. Adrian is based in Canada and claims that this model is a good reliable flyer. OK, the model is very light and the CG is at about 20% of the cord, stability? Fingers crossed what could go wrong?

*Gee Bee, I ask you, what could go wrong*

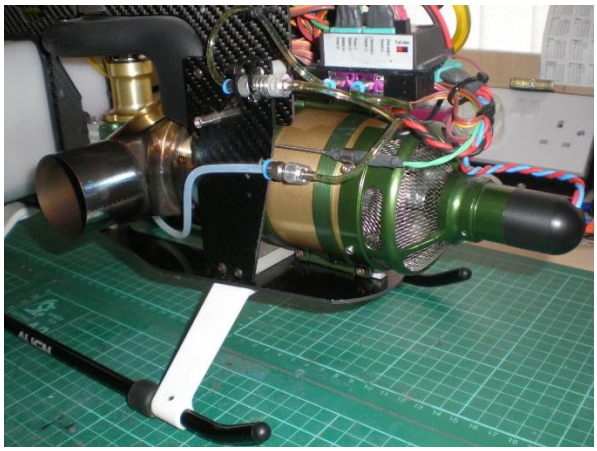
Another aspect of the hobby is Helicopters, these can be 30 sized up to a model with a turbine installed. Some months ago, I bought an Apache Longbow, which is an American attack helicopter, it came with a 23cc petrol motor / mechanics. I soon realised that petrol power or nitro would never lift this fuz. I looked at it for some months and decided to sell it, feat takes a hand and I saw a turbine heli for sale at the right price, the engine had very low hours. Bought it and after initial problems flew it. It's the smoothest thing I have ever flown, tick over is 55,000 rpm, hover power 160,000 rpm and a max power of 175,00 rpm. I fly this heli each flying session as an everyday flyer, no start up issues, just put the trim up, move the throttle stick to full and back to tick over and the FADEC controller does the rest. It is very quiet and does not sound like a 'jet'. It is a two stage turbine with no physical connection between the gas

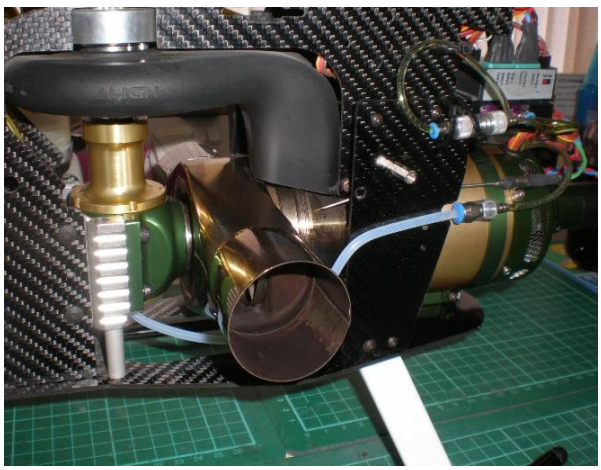
turbine and the gear box section, the hot gas blows on to a fan (turbine wheel) that it what drive the gearbox section. So, there is lovely sound (and smell of kerosene) as the engine spools up and the rotor build up speed.

*Apache Long Bow. Which is more ugly, the aircraft or the garden box?*

*Out with the petrol mechanicals*

*Apache detail. This is going to be impressive*





*Three views of the Turbine intended for the Apache if Bill ever stops flying it as it is.*

Kits to build: Pica TA 28 Trojan, Schneider Trophy sea plane, B17, Vulcan (part built), Bell Huey, BK 117 heli to name a few.
Plane crazy, Bill

## 7. Dave's Indoor Quads

Well apart from a few days when we have been Indoor FPV and micro quads in general are exploding in the RC scene and are now well supported by the club as I am sure you have seen in recent emails and even in an RCM&E article or two quite recently, that said I'm aware that it may seen a somewhat arcane and inaccessible to a lot of you so I'd like to demystify it by discussing some of my recent indoor projects and provide links to the products in case you would like to duplicate them and join in some of the fun.

Over the last few months I have been experimenting with various far eastern low cost toy grade quadcopters to gauge their suitability for conversion to FPV providing a simple, cheap and rugged entry into the scene initially with a number of models from Banggood such as the Eachine H8 Mini and E010 (in green), with the former being a great choice with minimal modification required and the latter requiring some minor modifications to increase it's lifting capacity but proving extremely nimble, flexible and rugged however recently a new contender has appeared that has beaten them both, the Furibee F36 from Gearbest (in orange with upgraded board).

*Eachine H8 Mini E010*

For approx £30 delivered you can purchase one of these machines (complete with Tx) along with a lightweight (3.1g) camera VTx a combination that can hang with the more expensive Inductrix FPV from horizon and in some cases outperform it due to its upgraded motors, lower overall weight and 40 vs 8ch Vtx, combine this with a Low cost FPV headset such as the Quanum Cyclops and a set of high C batteries and charger and you can be up and functioning for little less than £90 and 15 minutes tinkering.

*Furibee F36*

This represents outstanding value in my opinion and a perfect entry into the sport, it will even grow with you through it potential to upgrade the control board to work with your transmitter brand of choice (Spektrum or FrSky) and further upgrade the motors, as a result it's my current recommendation, if you'd like to build one yourself I'd be happy to 3d print you a camera mount and give some advice, just get in touch or pop along to our next event, I hope to see you there!

*Furibee F36 Not Shown Actual Size, err no actually…*

http://www.gearbest.com/rc-quadcopters/pp_571963.html?wid=21

http://www.tmart.com/Boldclash-F-01-5-8GHz-TX-Camera-AIO-Combo-3-1g-AV-TX-48CH-Power-Supply-2-9V-5-5V_p352293.html

https://hobbyking.com/en_us/quanum-cyclops-fpv-goggles.html

http://www.banggood.com/5PCS-Eachine-E010-0006-RC-Quadcopter-Spares-Parts-3_7V-150MAH-45C-Upgrade-Battery-Charger-Set-p-1103758.html?rmmds=search

## 8. Steve and the Gangs DC3 Dakota

The DC 3 continues to make progress on the dark Tuesday evenings and non flyable Sunday mornings. The wings are mechanically complete and Kevin plus Richard are now in the process of covering them with Solartex. The colour scheme will be olive drab (matt dark green) relieved by the black and white 1944 invasion stripes.

*A DC3 "Dakota" with "1944 invasion stripes". This one is set up for dropping parachutists.*

This model is approximately 10ft span and is estimated to weigh 25lbs all up so it is not insignificant. We calculate that it will take approximately 1400 watts to fly realistically. (nearly 2.0 horse power)

The fuselage has been a pain to put together. There were no plans or instructions with the bits that we bought and we have effectively had to re-engineer part plans and building templates especially at the nose end and from the inside. This has been made more difficult due to the port side of the fuselage being of a different curvature to the starboard side. We didn't notice this anomaly in the fibre glass moulding initially when we were making the templates for the fuselage formers and having achieved a good fit of the templates to the port side we naturally just reversed them for the starboard side. We had a perfect templates but unfortunately they did not match the starboard side at all. It took much time and effort to get templates that fitted correctly and there after the fuselage formers, battery support trays and servo trays. The whole of the front of the fuselage from just aft of the pilot's cockpit to the nose cone is supposed to slip over the rear section and bed down on what is essentially a socket arrangement. After many Tuesdays and Sundays we achieved an acceptable mating of the two components but what a work up. We eventually had to cut away most of the socket and build a new one from 0.8mm ply that the nose section would actually slide over. The batteries are supported on a horizontal ply tray that is cantilevered from the main fuselage section out into the nose and helps to line up and support the two main fuselage sections.

*The "plug & socket" fuselage join with cantilevered battery tray.*

Our problems were increased by huge and thick flashings on the fibre glass mouldings that had to be ground away from inside with very restricted access. Some of the glues that had been used previously were very "rubbery" and had to be cut / ground away and the glue joints remade. The steer-able tail wheel assembly like wise had to be totally remade and refitted. We are getting very close to fitting the tailplane now and this is a "get it right first time job". If we don't then it will be a nightmare to rectify. The access to the join between

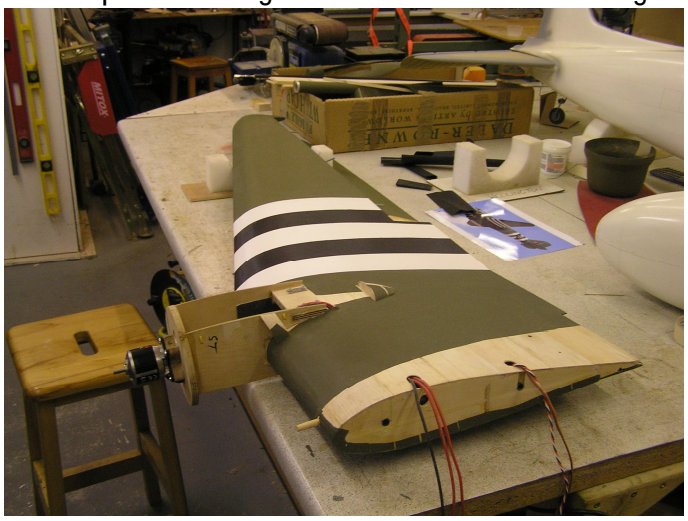
the tailplane and the fuselage is extremely restricted and we shall struggle to get a satisfactory glue line. There will no doubt be several dummy dry runs (no glue) to find the best way to achieve a good fit between these critical components. The very tail end of the fuselage on a DC3 comes to a sharp point so even though it is detachable it is useless for access.

*A first "coming together" some months back when we were trying to assess all up weight and C of G position. The plug on nose section is very visible*

The engine firewalls have been fitted and cooling ducts trepanned through the nacelles. Jim Hall has fabricated, from scratch, scale retractable under carriage assemblies that look the part. Well done Jim!

*Starboard wing with invasion stripes and motor in situ. Covered by Kevin.*

There was much discussion about what motors to use and the batteries. Eventually it was decided to use Turnigy motors and six cell battery packs, two three cell packs in series for each motor and the whole lot paralleled up so that both motor runs off all batteries. The ESCs are rated at 70 amps each. We can just get 14 inch diameter propellers on the motors with a minimum of clearance between blade tip and fuselage side. Just like the real thing.



*Port wing being covered by Richard. It didn't weigh anything until that motor was mounted.*

We hope to get the beast finished for it's maiden flight in the spring.
Steve Warren 22-01-2017.

## 9. Pete's Mini Junior

The Junior 60, designed by the great Albert E. Hatful, during the last days of the second world war, first appeared, marketed by Eddie Keil's Keil Kraft as a plan for 10 shillings, soon followed by full kits. The Junior 60 immediately began winning contests at Eaton Bray , powered by the Keil Kraft K6 spark ignition engine and instantly became a firm favourite with model aeroplane builders, which it has remained to this day. This longevity is

purely due to the Junior 60's wonderful flying characteristics and it is very simple to build. The flight stability has allowed it to be adapted for radio control. A three channel version makes an excellent trainer, giving student pilots plenty of time to think and get out of trouble. I have even seen a four channel version with ailerons and reduced dihedral, capable of basic aerobatics. However, as a free flight model, the Junior 60 still excels. It has that indefinable look of a great flyer.

The model was modified, with a slightly wider fuselage in the mid 1950s and a number of improved structural modifications to operate, using early, primitive radio control, as well as a free flight subject. Junior 60 has remained in production, almost continually over these seventy years, currently available in kit form from three companies.

To celebrate this wonderful, classic, British model aeroplane, I decided to develop a 75% version to fit a free plan in Aeromodeller. The Mini-Junior. The model is about the same size as David Boddington's Mini-Super and is ideal for a wide range of diesel motors from 1cc to 1.5cc. It can easily be converted to electric power and up to 3 channel radio control powered by a 2.5cc diesel or glow motor. Details are noted on the plan to aid r/c conversion. A 4oz fuel tank can be fitted on a platform at the front of the cabin.

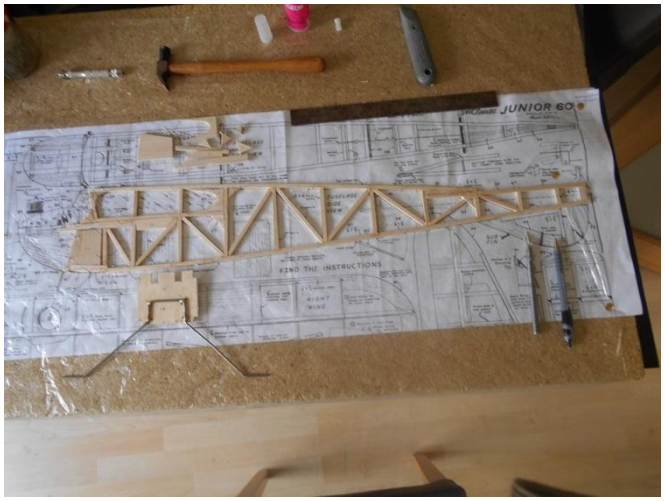
To make the Mini-Junior a multipurpose model, I elected to base it on the later mark 2, with a stronger wing design and wider fuselage, but left out a couple of infill sheeting panels on each fuselage side and replaced with diagonal strip to give the 1946 mark 1 "look".

## BUILDING THE FUSELAGE AND EMPENNAGE

Anyone who has already built a Super 60, Mini-Super, Hepcat or similar built up model aeroplane, will have no problem building the Mini-Junior as it is one of the easiest available. This isn't a detailed, step by step instruction manual. I will highlight key areas to aid readers who have not built this type of model before.

First, it is desirable to cut out a full kit of parts from the plan before commencing construction. Not having a key part is a total pain and holds things up. Separate into fuselage, wing and tail feathers, so you don't have to keep rummaging for parts.

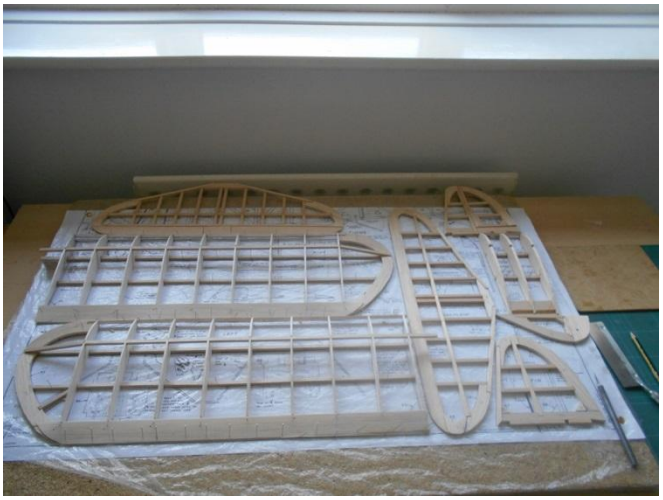
This is important! Check the width of your engine crankcase before cutting the engine bearer slots in the two fuselage formers. If you prefer to use a motor plate, set the beech bearers wider to accommodate this option. Bind the undercarriage wire legs to formers H1 and H2.




Build two fuselage sides over the plan, one on top of the other, with polythene sheet between them so they don't stick together. Pin either side of the longerons as pinning through weakens them. Lift both sides from the plan and make sure you have a left and right side and add the cabin strengthening strips and wing seating doubler strips. Join the fuselage sides with the motor and undercarriage formers, upside down on the plan, making sure all is dead square. It's probably best to use epoxy on these joints. Glue all the cabin cross pieces and infill parts. When set, draw in the rear fuselage carefully, making sure the tail seating is dead square and both sides follow the plan. We don't want a banana shape or a lopsided tail plane. Fill in all the cross pieces. Slot the beech bearers into the motor formers and epoxy. When set, position the engine and drill for bolts and blind fixings. Add the cowling parts and carve. The undercarriage wires are joined with tinplate, bound with fuse wire and soldered.

TAILPLANE, SUB FIN AND FIN

Very straightforward, build flat on the plan and pin either side of the leading edge and main spar. There are details on the plan if you want a "working" set of tail feathers.



WING CONSTRUCTION

The wing construction is very straightforward. Pin down the 1.5mm trailing edge and pre joined wing tips and bottom two spars, packing the rear one with 3mm scrap to take account of the undercamber. Tilt the inboard rib with the dihedral template and glue, pinned in position. All other ribs glued and pinned at 90 degrees, using a small right angle template. Glue the leading edge with pins holding it in place. Add the top spar and top trailing edge, noting the overhang, shown on the plan for the top spar. Repeat for the other panel. Build the centre section and when set, join the wings to it, propping up 100mm at each wing tip (75mm for r/c version). Add webbing sheet to the main spar and trailing edge. Cut slots for the ply dihedral braces, then epoxy and clamp securely until set. Finally sheet the top leading edge and top centre section; infill the bottom centre section.

FINISHING AND FLYING

Give the entire air frame a good sanding and shaping and use very fine paper to finish, then dust with a damp cloth. Seal the front fuselage and engine bay with a coat of cellulose dope to prevent oil seeping into the wood over time.

Covering is a matter of personal choice. The Mini-Junior lends itself to a traditional heavyweight tissue and dope finish, mylar, covered with tissue, Airspan or Lightspan. For free flight, it's best to keep the covering light. Radio controlled versions can take the plastic films, although I think Solartex is too heavy. Make sure you give the engine bay and fuel soaked areas a coat of fuel proofer.

The ready to fly model weighed 24oz (600gm) and balanced perfectly, so no lead. I powered my Mini-Junior with my trusty 1972 PAW 1.49cc, which with hindsight is a bit too powerful. A modern PAW. .06 (1cc) would have been better and lighter.

Begin your test flying by hand gliding over longer grass, adjusting packing, if necessary under leading or trailing edge, to get a nice flat glide. Commence power trimming with very small amounts of fuel with the motor just idling over. The Mini-Junior flies best with left hand circuits under power. You can use a small alloy trim tab on the fin or right hand wing if you need to. Mine

flies exactly the same as my full size Junior 60 Mk 1. Majestic wide circles and a lovely long, long flat glide at low speed. Bliss! I hope you enjoy building this classic model as much as I did and it fits more easily in the car too.

Pete Sander & Richard Bristow 27-01-2017