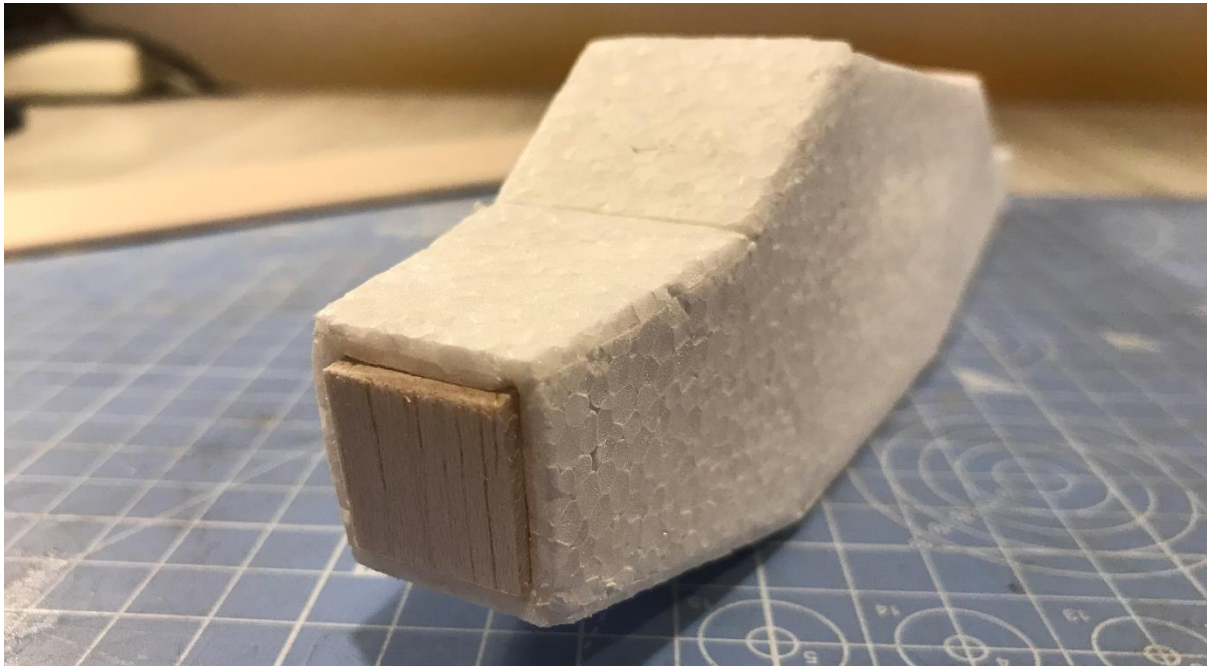


Basic Foamie – the other bits

My first two blogs covered building wings and fuselage. Time to add the rest of it, finish the model and get flying.

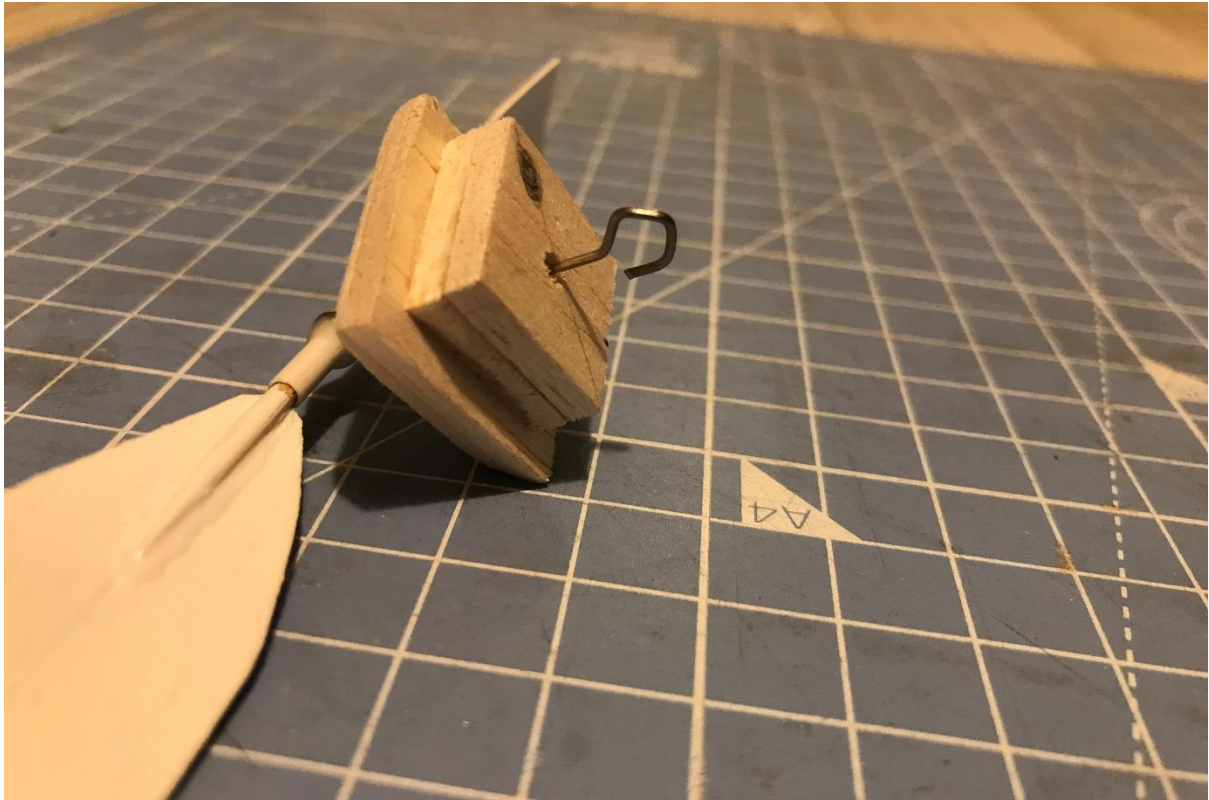
1)Nose block and plug

In order to be able to stretch wind the motor the nose block needs to be removable with a plug that fits into the front of the fuselage. I started by measuring the inside dimensions of the front of the model and cut a piece of 3mm balsa a little oversize. I marked the centre of this then used cyano to glue it to a second piece of 3mm, the same size but cross grained, this gave me a plug that was 6mm thick. This was then sanded to be a good fit into the front of the fuselage as below. Being 6mm thick it won't fall out when the motor goes slack.



I then glued this (cross grained again) to a piece of 3mm that had been cut a little over the size of the outside dimensions of the nose. I could have stopped there but added a second cross grained piece to make this nose block 6mm thick. The centre of the nose plug was already marked so I then drilled a 3mm hole through the whole lot, for the prop bearing.

I then sanded the nose block to size and shaped it to match the front of the fuselage:-



The next job is to fit the prop. The prop bearing was a good fit into the hole that I had drilled in the noseblock, so no need to glue it in place. I passed the prop shaft through the bearing, then formed the hook in the end of the shaft as you can see above.

Forming the hook is actually quite tricky. It needs two pairs of long nosed pliers and you have to take a lot of care not to damage the prop in the process. As you can see, I settled for a simple diamond shaped hook, I don't have the skills to form a circle hook or an S hook, a diamond works well for me. Note that the prop shown here is the MK1 balsa version.

This is the prop and nose block in place:-



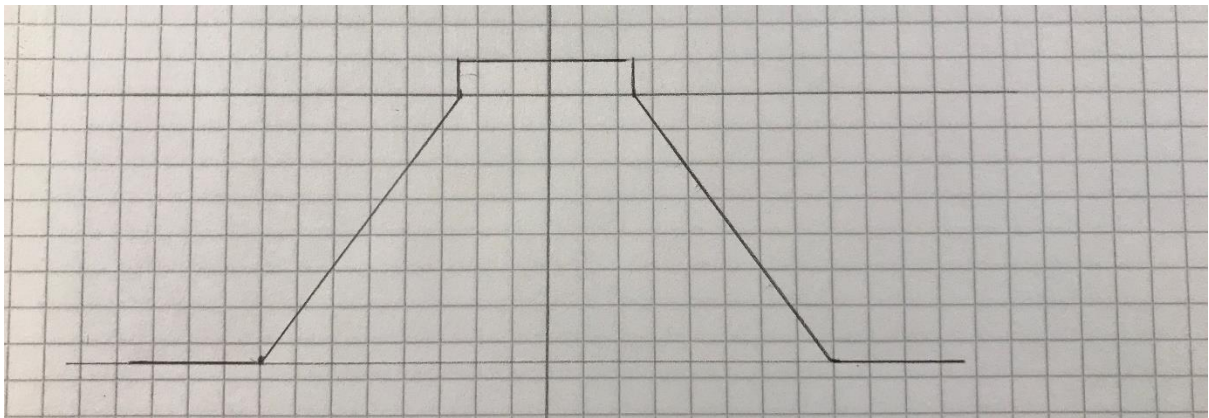
Moving on to the back end, I cut a piece of tubing for the rear motor peg and checked that this was a good fit in the reinforced holes in the fuselage. To aid fitting a rubber motor, I cut away a part of the lower outer skin, just behind the rear peg. Loading a motor is then a matter of dropping it in through the front and shaking it down the fuselage so the rear peg can be pushed through the motor loop. Being able to see what's going on helps a lot and if the motor won't fall through the fuselage on its own, you can pull it through from the back with a piece of wire with a hook formed on one end.



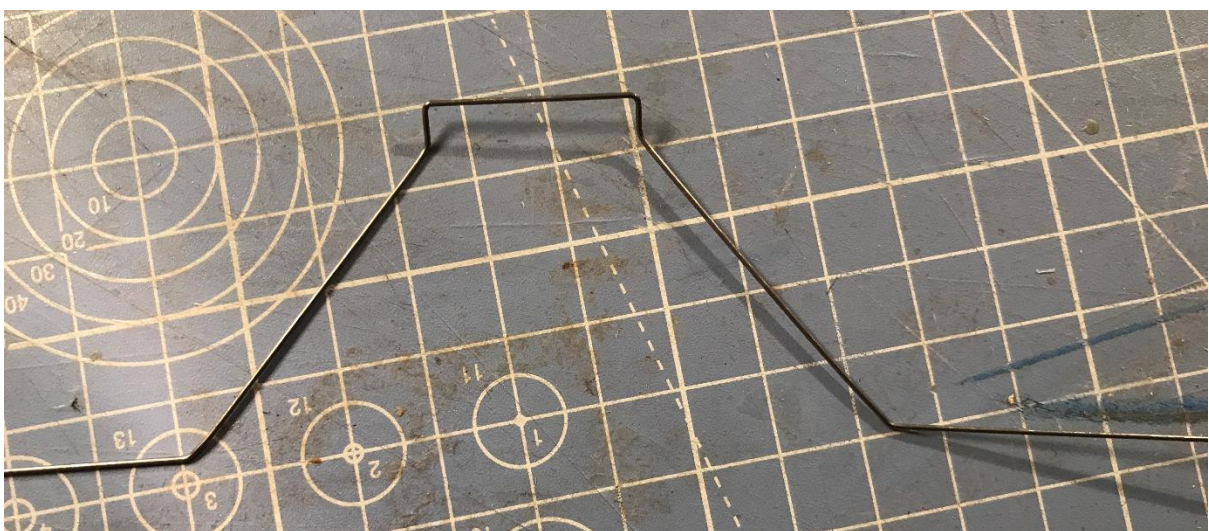
Time to move on to the undercarriage (U/C), but first I fitted a small tailskid which I cut from 2mm Depron, but could have used 1.5mm balsa. There isn't much to the tailskid but it will reduce the drag if you try a 'rise of ground' (ROG).



The next job I found tricky which is to decide on the length of the UC. The U/C height needs to allow the model to sit on the ground with adequate prop clearance, even when the tail has come off the ground on an ROG. I ended up needing three hands to hold the model in the correct position without the prop falling out as well as a ruler but ended up being able to draw the U/C. When deciding on the U/C length don't forget to allow for the wheels !!! . Actually I made my U/C a little short, an extra 5mm of height might be useful.



OK, I HATE wire bending and U/C's in particular so I am not going to offer any advice here. The saving grace is that's is very thin wire. The end result is shown below:-

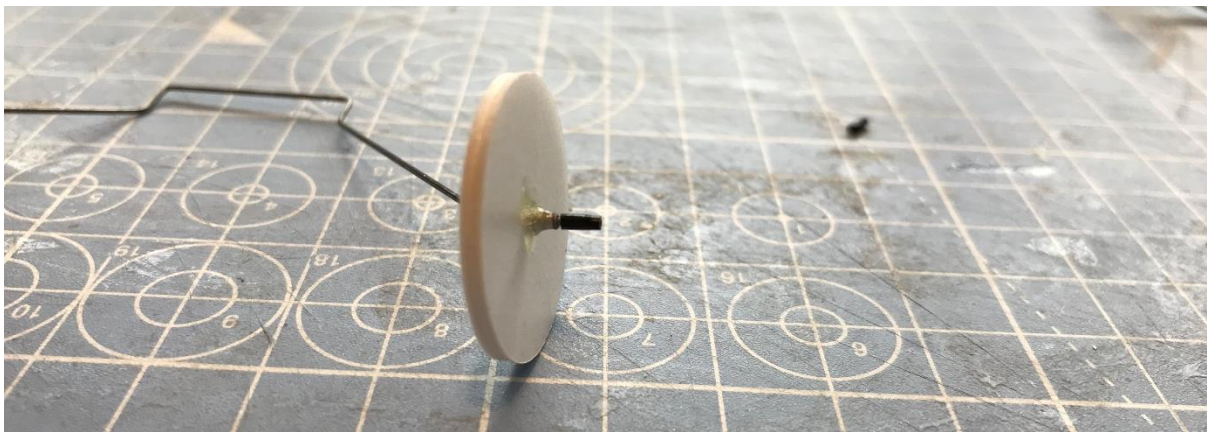


The upper U shaped portion goes into the slot in the underside of the fuselage that was formed earlier and the legs are raked forward.

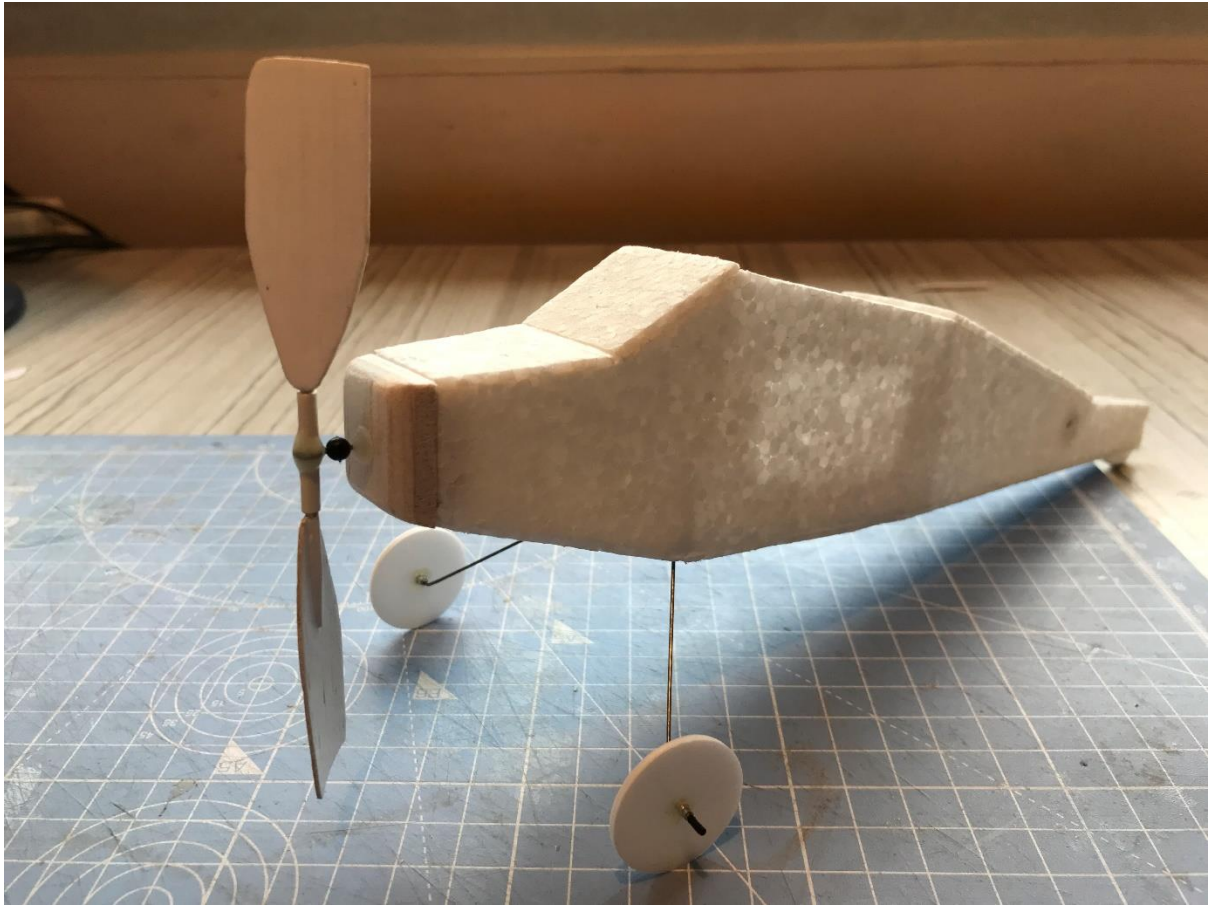
To make the wheels, I glued two of the supplied wheel discs together to make each wheel. I then cut a short length of tubing for the axles, drilled a suitable hole in the wheels and using small fillets of epoxy and checking the everything was square, glued the axles to the wheel discs:-



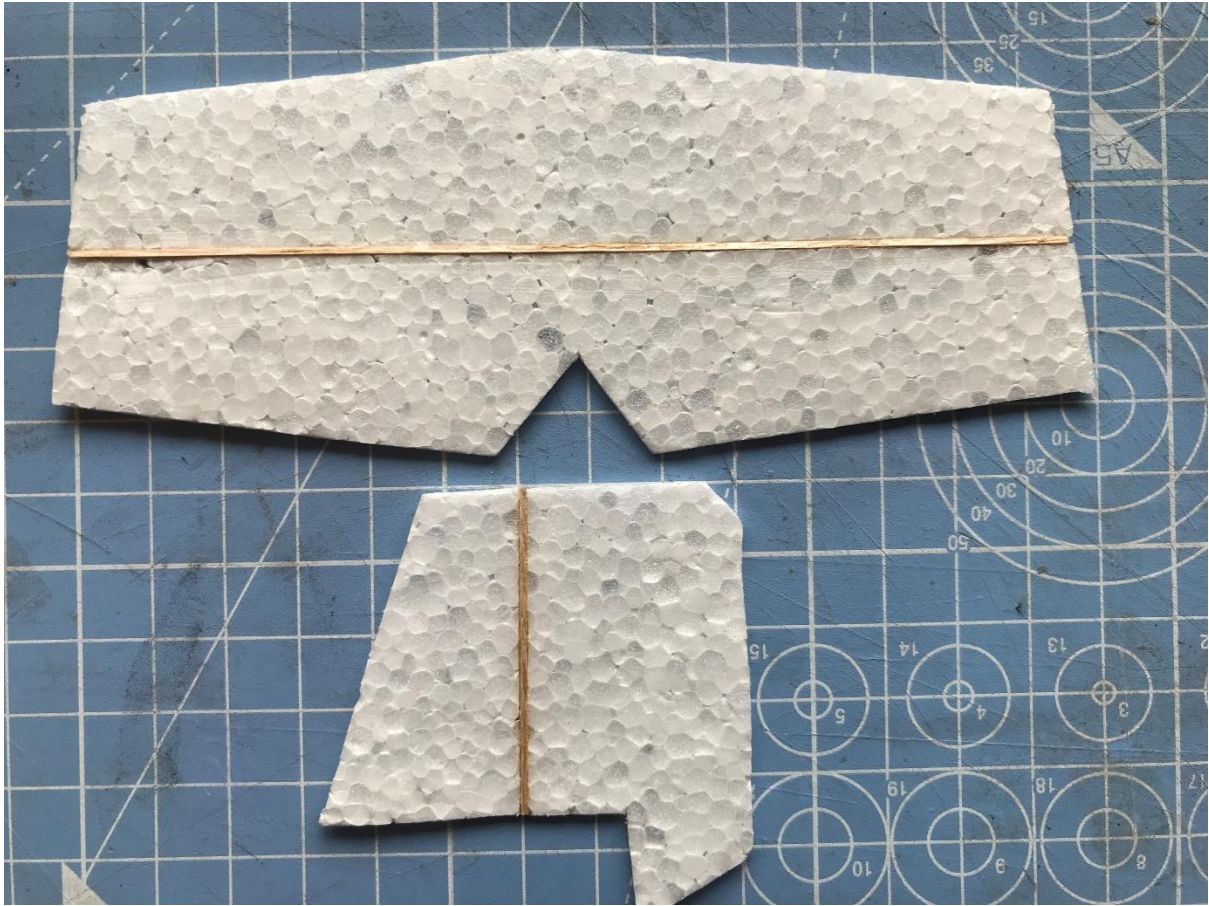
To retain the wheels I used a short length of insulation stripped from some electrical wire that happened to be a tight fit over the U/C wire:-



Finally, the U/C test fitted in place:-



All that's left now is the fin and tailplane. I cut these, as normal, using templates and then ironed them to flatten them and the process also adds strength. I then cut through each of them and added a 2mm deep spar, cut from some medium 0.8mm balsa:-



At last, I was in a position to fully assemble the model. The wings, tailplane and fin can all be glued in place, taking great care that the wings have equal dihedral either side, that the tailplane is parallel to the wings and that the fin is square to the tailplane. I glued the U/C in place with a thin smear of epoxy. This is the end result.



The addition of a small amount of decoration makes a big difference. The windows and stars are cut from tissue and glued on using diluted PVA. I think it looks pretty neat!

Motor winding

In order to stretch wind the motor, the model will need to be restrained in a stodge, as below :-



Now you can see why the rear motor peg is a tube, a wire passes through this and holds the model in the stooge, none of the winding forces act on the model they are all carried through the rear peg to the stooge. I'll be bringing my stooge to Begbroke and I'll ensure that others bring theirs so we have plenty.

Trimming and Flying

I flew my model at Berinsfield and was lucky (or was it skill?). On low turns, without any trim tabs, the model was flying in nice LH circles. I upped the turns a little and it showed a bit of stall so added a small amount of blue-tak to the nose. The next flight was very steady and stable, climbing nicely and making nice turns. Increasing to 800 turns it was cruising below the rafters. I have rarely had a model that needed so little trimming. Luck or skill? Actually what it does is show the value of basing your design on another model that is known to be a good flyer, in my case, the Wot Ho!

More general trimming notes however. As usual, these are my thoughts on trimming, other may do thing differently.

I have indoor models that fly LH turns and I have some that fly RH turns. I don't think it matters either way other than not trying a force a model that wants to turn one way, to turn the other. The first thing I do, before introducing any rudder trim tab, is the just fly the model on low(200 ish) turns and see what happens.

If the model stalls then you need to add noseweight. If it dives for the ground, then add tailweight. Once you have it neither stalling or diving, does it show a pronounced turn one way or the other? If it does, then add a rudder trim tab to introduce a suitable turn in that direction. If it goes straight without a trim tab then you can add a tab to have it going in either direction.

Hint:- The easy way to add a trim tab in these foam models is just to make a small snip in the back end of the fin and then just fold the foam over to form a rudder,

What you are aiming for really is the largest radius turn that keeps the model clear of the walls. Making the turn too tight will introduce problems as we are about the see.

One common issue is that once the model is turning, it just spirals into the ground, the turn getting tighter and the model speeding up until the ground intervenes. I call this the 'death spiral' and is due to the turn being too tight for the model to handle. One answer of course is to open up the turn but you may not be able to do this without the model hitting the walls. What you need to do in this case is increase the lift on the wing that is on the inside of the turn, so the LH wing for a left turning model. The aim is to get the model less banked over in the turn. The easy way to increase the lift is to add a trim tab on the inside wing that acts as an aileron. This can be done by making a snip in the trailing edge and then bending down the foam, or by adding a paper trim tab. The other way (which I am not keen on) is adding a tiny piece of blue-tak to the outside wing.

The rubber in the kit is a tad over 80 thou. When I flew my model at Berinsfield it was flying on a motor nearer to 90 thou but reaching the roof. Hopefully the 80 thou will be suitable for the lower roof at Begbroke. I will be bringing other rubber sizes.

There is a lot more to trimming than that of course, I could write volumes on it, maybe an article in Meadow Flyer some time.