

THE QUIET ZONE

R/C SCALE ELECTRICS BY PETER RAKE

PETER RAKE PRESENTS HIS PINT-SIZE SPERRY MONOPLANE, WITH FULL SIZE, PULL-OUT CENTRE SPREAD PLANS. (PART 1).

Here we go again, another instalment of electric flight excitement. However, as promised last time, I actually get to write this one myself – all of it.

Since the little Eastbourne Monoplane feature from a few months back proved so popular, I've decided to treat you all to a similar sort of column. Instead of my usual waffle, this month's column will just be a construction article to go with the first part of the full size plan that appears elsewhere in this issue. Good or what? Not only do you get to see me writing my own column, you get a free plan to boot.

The model

Once again this is a scaled down version of an already successful design. This one, however, is intended to use a Vapor receiver 'brick', brushed motor and single cell LiPo. The plan shows a *Nine Eagles* motor unit, which is pretty much like many of the *Parkzone* units. It also shows an alternative motor plate (MM) to suit the motor I actually used in the prototype model – an AEO 7 mm unit. This proved adequate for my model, so if you opt for the larger motor you'll have no problems with regards sufficient power.

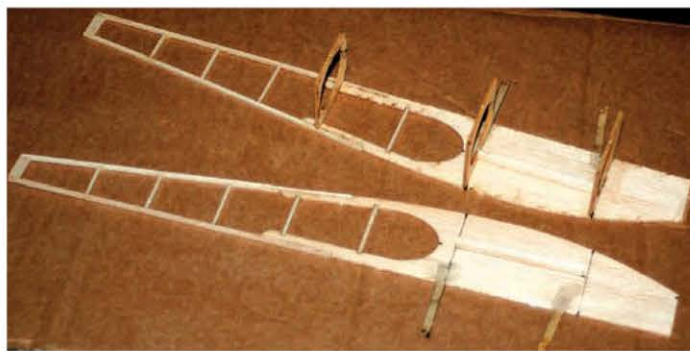
One thing that you will notice in the photos is that I used some 1/32" ribs in my wings, but the plan shows all 1/16" ribs. Similarly, my model has balsa trailing edges, but the plan shows bass. The reason for these changes is that as the tissue shrunk, my original wings buckled quite badly. They didn't just warp; they almost destroyed themselves. Ribs buckled and trailing edges actually broke

Printed tissue finishes allow the addition of as much detail as you like without adding any weight.

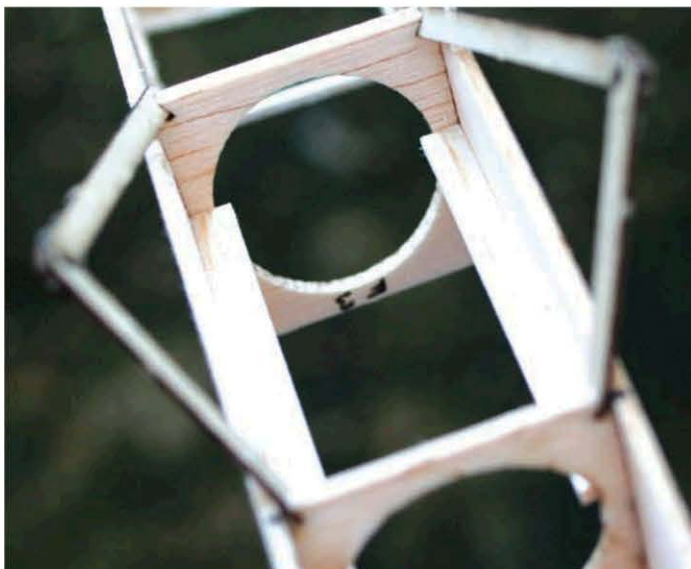




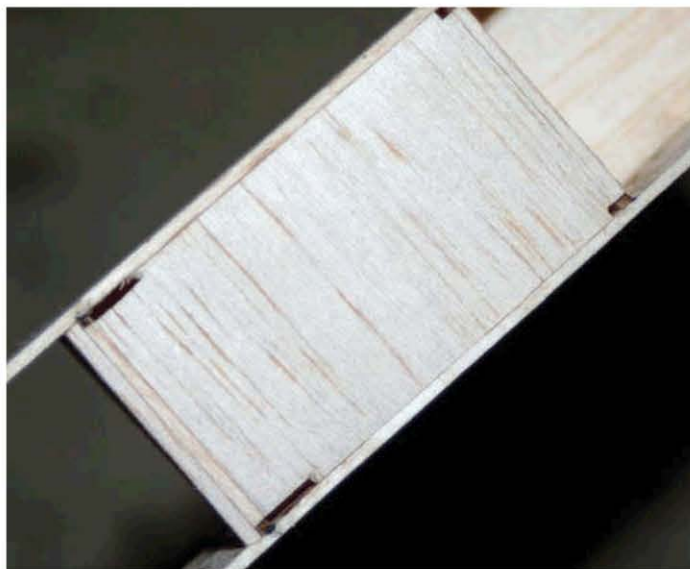
Totally conventional, the fuselage sides are built over the plan in the usual way.



Former positions marked and formers, radio mounts and strut position fill pieces added before joining the two sides.



How the u/c assemblies will eventually fit into formers F2 and F3.



The sheeting between F2 and F3 will need to be slotted for the U/C legs to fit into.

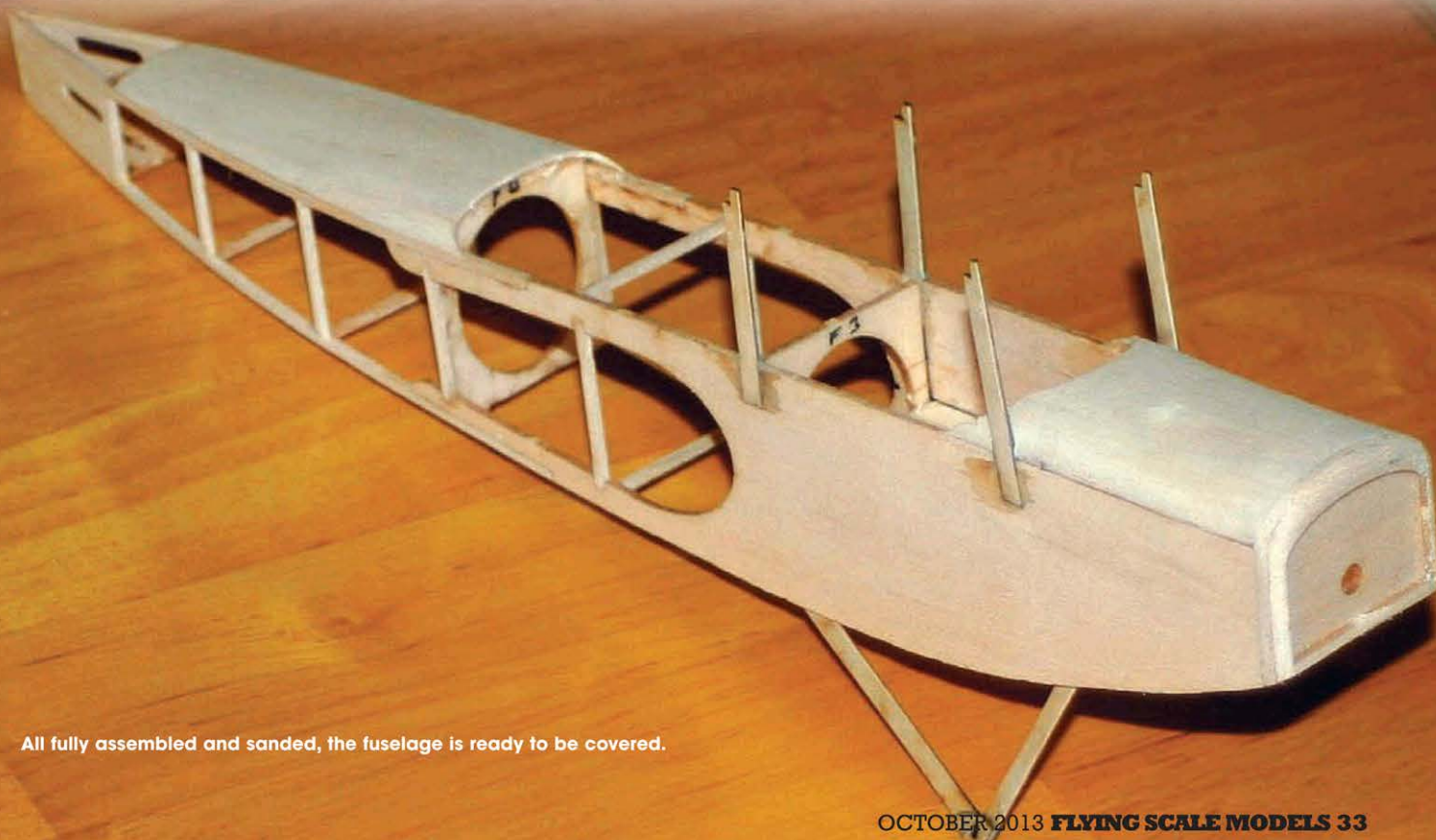
in places.

Because I can't specify very hard balsa for the laser cut parts, the publisher will doubtless offer, bass is a good option for trailing edges and the thicker ribs should make your life easier all round.

At just 18" wingspan, you are going to need to keep the model light. Even with the replacement trailing edges (from the hardest balsa I could lay my hands on) and heavily repaired ribs, my model came out at a respectable 35.5 grams ready to fly.

Let's get building

As you can see, there really is nothing particularly complicated about the build, so I won't bore you with a 'stick A to B' style article. I'll run briefly through how the model goes together, just explaining



All fully assembled and sanded, the fuselage is ready to be covered.



Just stooging by in a low pass for the camera. The model is very good at low, slow passes.

anything I feel needs more information.

There's nothing unusual about the basic assembly. It's the usual 'build-over-the-plan' sort of affair. You make two fuselage side frames, mark former and receiver mount positions on them and join with formers, MM and cross braces. I built in the centre section (c/s) struts as I built the side frames, but they could just as well be fitted after the sides are joined.

Worth noting here, is the need to use fairly soft 1/32" sheet for the rear decking. Not only is it lighter, it will also be easier to curve over the formers without distorting the rear fuselage.

The main undercarriage (u/c) is

assembled as two-ply structures, which are assembled over the plan and glued into the slots in formers F2 and F3. Since the area between these two formers is filled with 1/32" balsa, you'll also need to trim slots in that to clear the u/c legs. I like to cover this area before gluing the u/c in place; it's just so much easier that way. There's absolutely nothing at all funny about trying to tissue cover around and u/c firmly glued into your fuselage.

If, like me, you opt for the AEO motor (They're cheap, and I'm very fond of cheap), position MM (the alternative one) so your prop is in the right place and glue the motor into the former. Set up thrust

lines to match those shown on the plan.

...And then

Okay, after a little sanding, you'll have a completed fuselage, so now I suppose we'd better build some bits to hang onto it.

The hardest part of the tail surfaces is laminating the outlines. I like to use Depron forms, pinned to the board. Then the soaked and glued strips can be held in place around them using scraps of balsa to hold them snug against the forms. Some people like use a pin 'fence' to shape around, but I find that tends to crease the wood.

Once the outlines are completely set, pin them over the plan and stick in all the little bits of balsa that are supposed to fill the gap. I usually sand them as complete tailplane/elevator and fin/rudder units before separating them. Be careful just how much you sand them. It's surprising how quickly your 1/16" tail surfaces can become 1/32" tail surfaces.

Although you can just make out some experimental fishing line hinges in the photo, I decided that wasn't very practical. I ended up using narrow strips of scuffed up floppy disc material for the hinges. I just found it a lot easier to work with than fishing line I could barely see half the time.

Okay, I can see I've run out of space again – the hazard of including a plan in the column, but we will finish this off next time. Then we'll finish building the model and take a look at tissue covering.

In the meantime, should you wish to contact me I will be at the usual place; PETERRAKE@aol.com

The hardest part of building the tail surfaces is laminating the outlines. Ignore the experimental hinges; I didn't use them in the end.



THE QUIET ZONE

R/C SCALE ELECTRICS BY PETER RAKE

Yes, that b****y man is back to bend your ear with more electric flight nonsense. If you are a regular reader (there must be some out there somewhere), you'll know it's time to finish of the construction article for the little Sperry Monoplane. Since the remaining plan page takes up a fair chunk of this month's column I'll dispense with my usual, entertaining

waffle (I think it's entertaining, at any rate) and plunge straight into completing the build of our little model.

Winging it

Put basically, building the wings is dead simple (providing you have the right wood to begin with).

Build the dihedral brace into the centre section (c/s), angle the wing root ribs to match the dihedral (using

the guides shown) and allow the glue to dry. There isn't really much more to it than that. The plan shows quite clearly what goes where, so I won't bother telling you what order to glue them in place.

Take care while shaping the leading and trailing edges. It doesn't take much effort to snag something and break wing ribs. Join the wing panels to the centre section and a little sanding later we have a model pretty much ready to cover.

It's a cover up

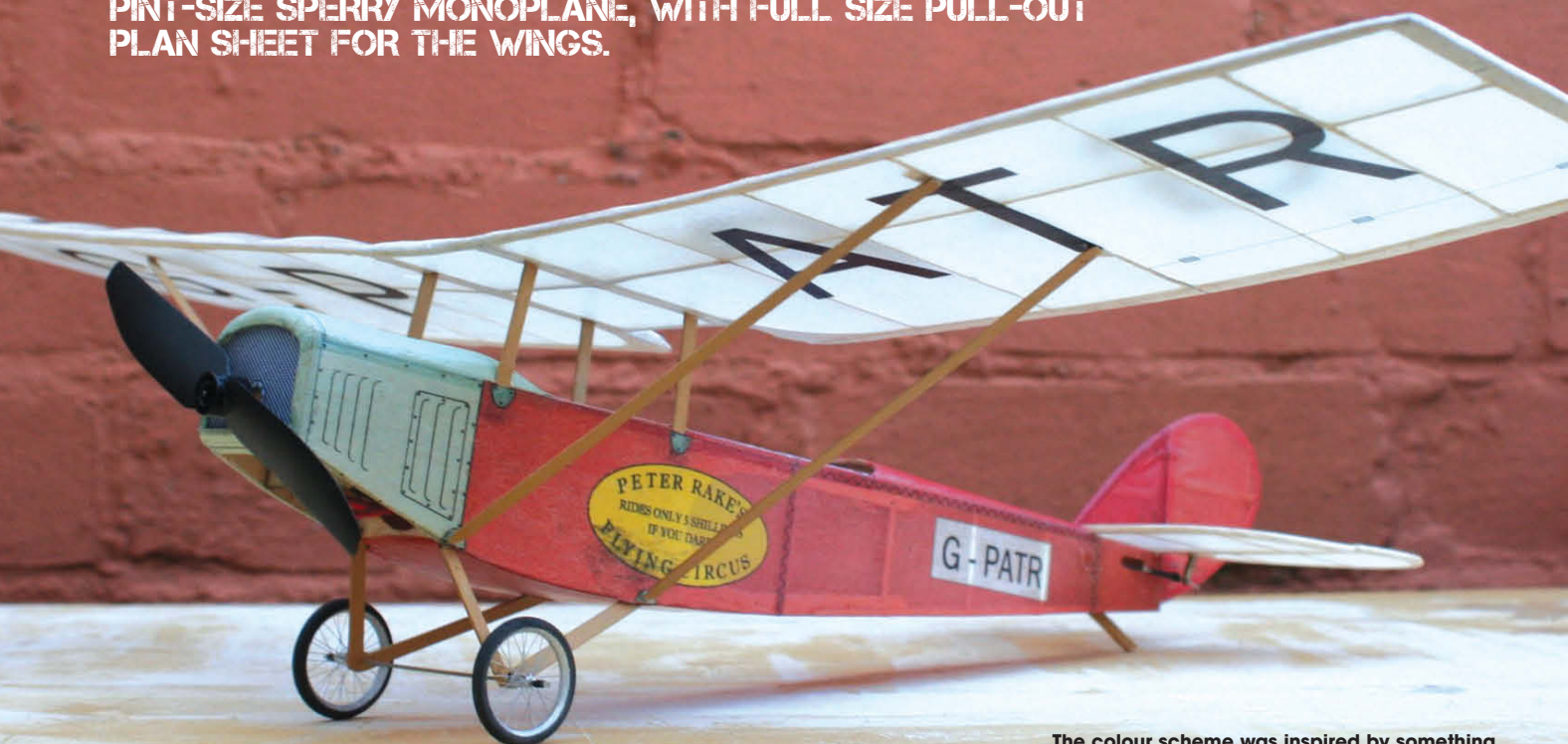
Yeah, I know these section titles don't get any better. Still, you can't have everything. Shame on you for being so picky.

When I built this model, I was still perfecting (?) the art of printing onto tissue. As you'll notice from a couple of smudges on the fuselage, I hadn't quite got the hang of it at this point. I have since discovered that an inkjet label, suitably de-stickied, makes an excellent carrier to which to attach the tissue for feeding it through the printer.

Simply apply the label to an available carpet and peel it off again. Repeat this until the label is only just sticky enough to hold the tissue in place, but still allow the printed tissue to be carefully peeled off again and you have it about right. Until then, I'd been using a glue stick to attach the edges of the tissue to a card carrier. Unfortunately, as the ink hits the unsupported area of tissue, it causes it to swell slightly and it can foul the print head, causing those smudges.

For covering models of this type I like to use lightweight Esaki tissue, printed using waterproof ink. You can use cheaper inks, but don't blame me if all your artwork runs when you attempt to do the initial shrinking - prior to doping. Water shrinking is obviously not

**PETER RAKE PRESENTS THE CONCLUDING PART OF HIS
PINT-SIZE SPERRY MONOPLANE, WITH FULL SIZE PULL-OUT
PLAN SHEET FOR THE WINGS.**



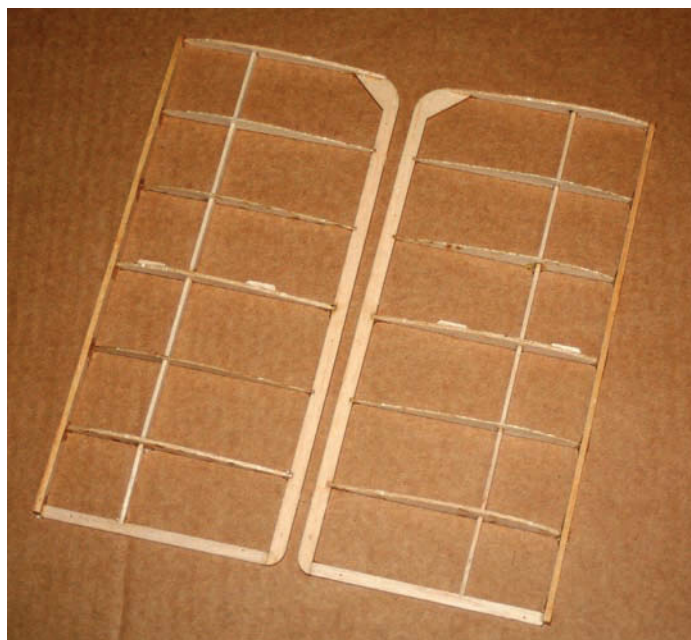
The colour scheme was inspired by something someone did with a larger version of this design. It's whimsical and looks good.



Wing construction follows the usual practice of building over the plan.



You can't have a construction article without a naked model photo.



The wings all trimmed and sanded ready for joining to the c/s. Those 1/32 ribs and soft balsa trailing edges played havoc with the shrinking.

an option with these inks, but careful steam shrinking does work fairly well. Waterproof ink is definitely the best option, although they are somewhat more costly than the after market alternatives.

To attach the tissue there are several options. Tissue paste, wallpaper paste and dope are all viable, but probably not all suited to non-waterproof inks. Personally, I like to apply the tissue wet, doping it in place - definitely only suited to waterproof inks. However, on this model I tried something a little different. A quick visit to our local W.H. Smiths procured an 'extra strong' glue stick and that was used to attach the tissue to the framework. You have to be a little careful using this method because it 'grabs' quite quickly.

If you need precise alignment (and you will if using printed tissue) I find it best to stick just a small area and tease the tissue into place before gluing the rest of the panel. Apply it to a small section of frame at a time and smooth the tissue into place as you go. Try to get it on as wrinkle free as you possibly can before the glue does what it's there for - sticking the covering firmly in place.

Once that's done, and initial shrinking completed, it's just a case of applying a few coats of your favourite finish. My model got three coats of very thin dope, mixed about 30% cellulose dope to 70% thinners. That's enough to seal the tissue and provide a reasonably durable (as durable as lightweight tissue gets) finish.

You could, of course use a lightweight film covering, but you'd have to be very careful not to warp the flying surfaces or distort the fuselage. (Yes, that probably does mean that Solartex is out of the question!). Litespan might work okay though, and would retain the tissue-like appearance without adding too much weight. You can't, however, print directly onto Litespan, so detailing would add weight.

Installation

Although this will depend on what equipment you are installing, the installation should go fairly easily. I'll assume you're using a Vapor style 'brick' for the purpose of this article and describe accordingly. If not (why not?), you're on your own.

What I describe here is something I

learned the hard way when I installed the gear in this model. I tried using pushrods of the correct length and, believe me, it was an absolute pain trying to feed them into the fuselage without feeding them through the tissue at the same time. To save you having the same problem I'm detailing how I did it on subsequent models. It wastes a little carbon rod, but that's infinitely better than poking holes in your carefully applied tissue.

Make up the pushrods from 1 mm carbon rod, 0.02" wire and heat-shrink tube, but only at the receiver end. Leave the rods over-length, with one of them a lot over-length. Slip the made up ends into the servo arms and then feed the rods through the fuselage. The very long one is easily guided into its exit plate, and because it's so long, there is no fear of the shorter rod poking holes in the tissue. Guide the second rod into position and glue (UHU Por) or servo tape the receiver to the rails as shown. Make up the other end of the pushrods, but do not glue them yet. Trim pushrods to approximate length.

With the gear in place, we need to assemble the model before making the final pushrod connections. Glue the

Climbing gently away from a hand launch. The model has proved stable and reasonably easy to fly.



wing onto the c/s struts, checking for alignment, and fit the struts. These struts are purely cosmetic, but should be made up as matched pairs (front and rear) to avoid building in warps as they are fitted. Use this assembly to aid aligning the tail surfaces.

Flexi-hinges

Before continuing, a brief word about hinges is in order. As I said in the first part of this article, I used scuffed up floppy disc material for the hinges on my model. Because the 'brick' servos aren't exactly what you'd call hugely powerful, whatever hinge material you use will need to be pretty flexible - and thin enough to slot into the 1/16" tail surfaces without destroying them.

Normal hinge strip is usually too thick for this, so we need to find alternatives. Sticking to the modeller's adage of never throwing away anything that looks even vaguely useful, I still have several computer floppy discs but not everyone will. Sewn hinges work well but don't always look that pretty. Thin plastic film is the best, but it still needs to be stiff enough to insert into the slots you cut for it. Floppy discs, thin packaging material and overhead projector films are all viable options. Use narrow strips (1/8" wide) and be careful not to get glue in the hinge line and you shouldn't have any problems.

So where do we go from here?

Oh yes, about to complete the pushrod installation. Slip the control horns onto the pushrods and glue them into the rudder and elevator slots. Now you can centre your servos and adjust the pushrod length until your surfaces are centred too. Then glue the pushrod ends to the carbon rod - ONLY TO THE CARBON ROD!!!!

Adjust the position of the battery to assist with balancing the model and you have a finished Sperry Monoplane - albeit a diminutive one. Pretty as the spoked wheels on my model look, they are both expensive (over £20 a pair) and fragile. I would recommend something less delicate for your model. My wheels died the death when the model was minding its own business on the dining table as the wife walked by. Just managing to brush the model as she passed, it rolled off the table. Yes, that's right; the first thing to hit the ground was one of those very costly wheels. It didn't survive the experience.

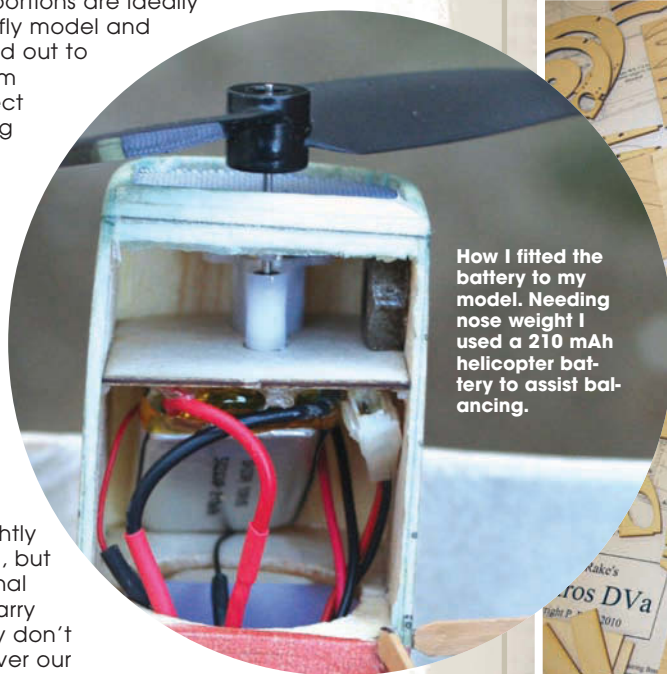
Flying

As with this model's predecessors, test flying is pretty much a non-event. Its proportions are ideally suited to a stable, easy-to-fly model and that's exactly what it turned out to be. Yes, it does require calm conditions, but you'd expect that from a model weighing very little more than an ounce.

The AEO 7 mm motor and GWS 4.5x3 prop provide ample power for gently stooging around and, if you work at it, the occasional loop. Gentle circuits, figure eight patterns and low, slow passes are where the model excels. Since that was the aim, I'm more than happy with the end result. The more powerful motor would provide a slightly more spirited performance, but bear in mind that the original aircraft was designed to carry three passengers. We really don't want them being sick all over our printed tissue.

Next time we'll be taking another look at that previously featured Sopwith Camel model. If you'd like to contact me, other than for abuse, you'll find me at

PETERRAKE@aol.com



How I fitted the battery to my model. Needing nose weight I used a 210 mAh helicopter battery to assist balancing.

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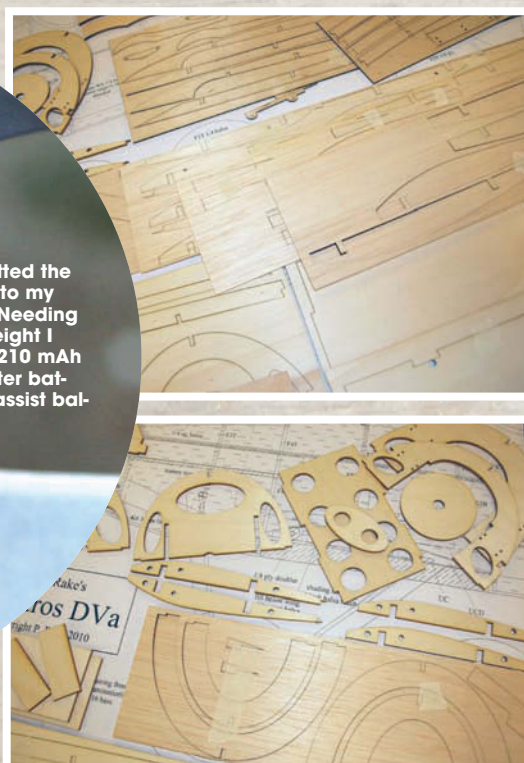
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