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Fosdyke's F

A 45" span model of a vintage 'style' aircraft, designed for 3-function radio-control and a geared 400-size electric motor

To dispel any confusion, it's not a scale model, simply a scale-like model for sports flying. I suppose it's always possible that there was an aircraft like it, but not that I know of - it does however, bear some resemblance to a couple of the early pioneering types and that's what it was intended to do.

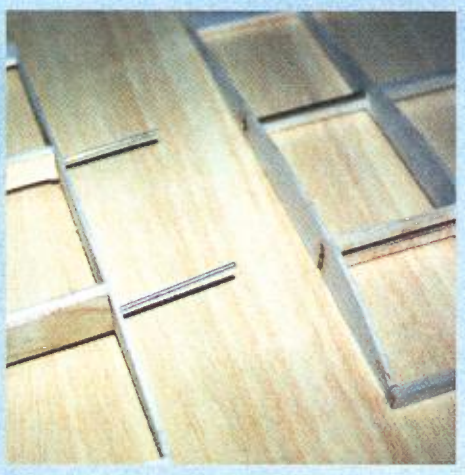
When I set out to design a model I try to make it look as if it could have actually existed, and since the pre-1920 era is the period that I favour for my scale models, that's the way I like my sport models to look too. The model was designed to be simple both to build and to fly whilst retaining an air of realism. I feel that this particular model has managed to fulfil all of the design criteria admirably. It involves no complicated building, uses stock sizes of wood and easily available R/C gear and motor.



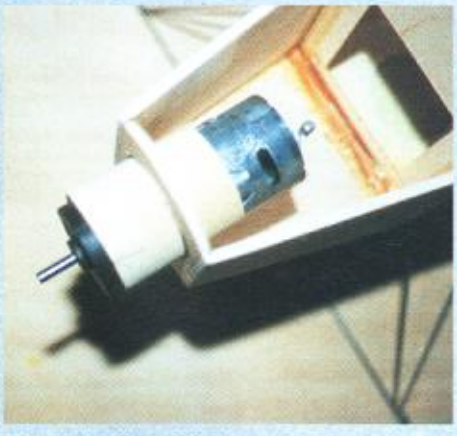
Pre-cut wood parts are now ready for building to commence.



In typical style, the front fuselage section is completed first.



Wing joining braces and boxed doublers shown here in stages.



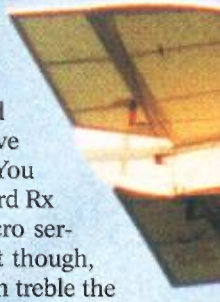
The Speedgear 400 is wrapped with a ply tube and inserted into the nose. The plastic bottle nose-cone id fitted later.

Three functions operating rudder, elevator and throttle control is best for this type of model. It not only avoids the complication of ailerons in the wing panels but also looks more scale-like. Most of these early aircraft were 'wing warpers' which is not practical on a model this size. So, with this in mind, I usually build a model that is stable enough not to need aileron control.

Equipment

Breaking from my usual practice I chose one of the more expensive in-line geared motors, a Graupner Speedgear 400. The main reason for this was to be able to enclose it easily within the dummy engine, you can also use low-cost mini or micro R/C. The Rx is a Jeti 4 micro, the servos are the 9-gram micro variety which are available under a number of brand names and the speed-controller is a Kontronic Easy 1000. I have found this, or similar combinations of equipment, to be both reasonably priced and extremely reliable.

The one item I would not recommend cutting costs on is the Ni-Cad pack. I only use Sanyo 500 AR cells. They really do have a distinct advantage over many of the cheaper types of cell. Treated fairly harshly in my models they still keep coming back for more. With the possible exception of Ni-Cad choice, none of the above list is written in stone. You could always use a standard Rx and mini rather than micro servos. Do watch the weight though, it can soon double or even treble the weight of your R/C gear. This will mean that you have less scope for detailing your model.



Details

Some detailing is essential if you are to get the best from your 'Flyer'. Because of its very simple construction the model could end up looking very plain. It's only the detailing that turns her into an attractive and appealing little plane.

Those very attractive and scale-like spoked wheels are commercially available from 'SAMS' - yes, the free-flight people. At about £10 a pair they represent very

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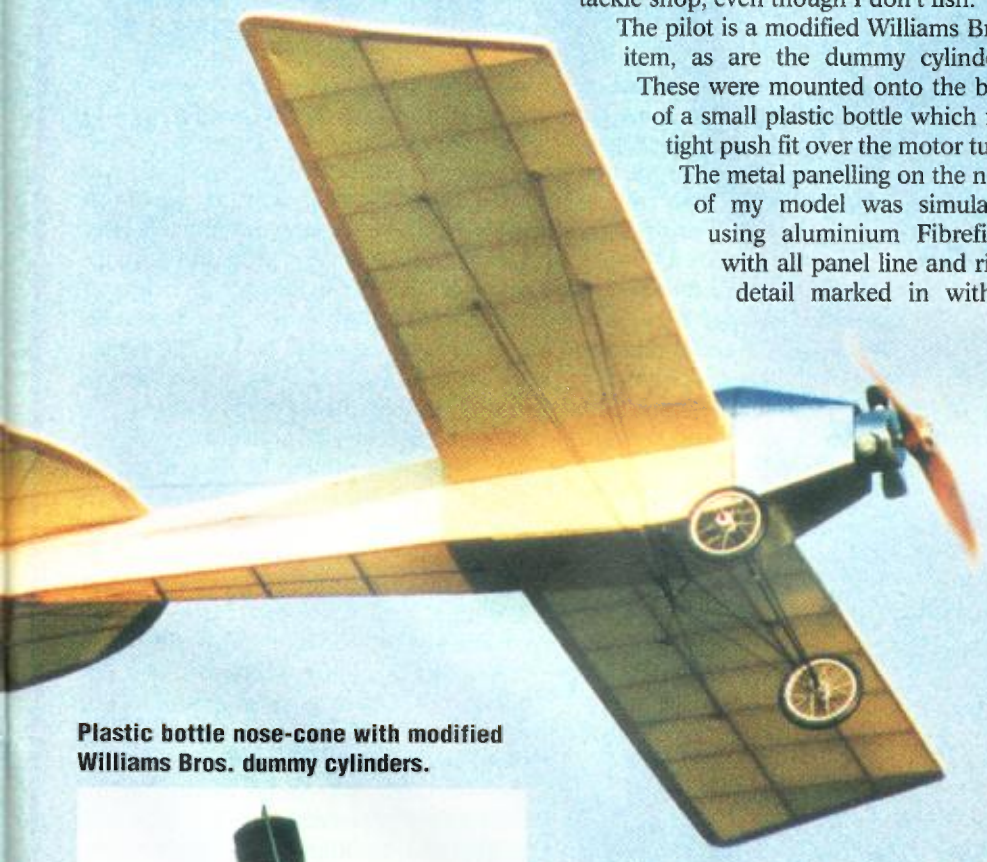


In flight she is gentle and floaty. The 'Flyer' requires a gentle landing with perhaps a touch of power to avoid damaging that beautiful undercarriage.

good value when you consider how long they would take you to make. They are really only strong enough for lightweight models like this one, so do try to keep the weight of your model to less than 25 oz. (mine weighs 20 oz.). They will work just fine and of course look superb.

The rigging, which forms such an important feature on an antique type aircraft, is from nylon fishing line. If you use a 25 lb. breaking strain mono-filament line this will perform the task with ease. It adds scale appearance and also reinforces the wings whilst holding them in place. It has just enough stretch to allow the rigging to be hooked and unhooked from the pylons, but without allowing the wings to move in flight. Once installed it can be painted using enamels. I also use the same material for my closed-loop control cables. Run these direct from the 1/32" ply control horns to the servo output arms, thereby saving the weight of clevises and adjusters. What appear to be turnbuckles at the pylons are small fishing swivels hooked into place. I'm a regular visitor to our local tackle shop, even though I don't fish.

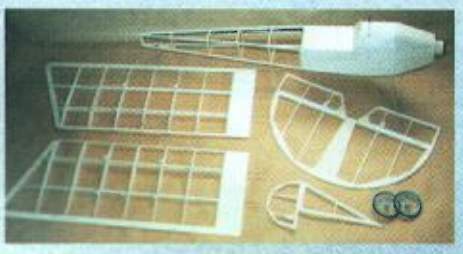
The pilot is a modified Williams Bros. item, as are the dummy cylinders. These were mounted onto the base of a small plastic bottle which is a tight push fit over the motor tube. The metal panelling on the nose of my model was simulated using aluminium Fibrefilm, with all panel line and rivet detail marked in with a fine tipped, all surface marker. This can then be lightly sprayed with varnish to fix it. This will save masking the nose area when you matt down your covering. Simply going over it again with gloss varnish will restore its shine. This system worked even better than I expected.

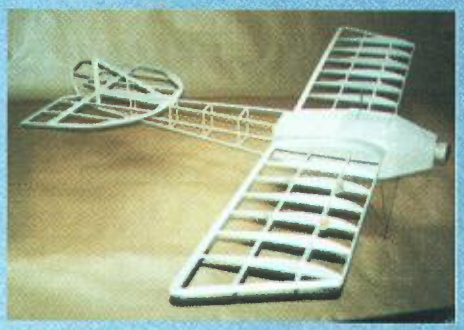


Plastic bottle nose-cone with modified Williams Bros. dummy cylinders.



Building complete and ready to cover and assemble. Note the commercially available wire wheels.





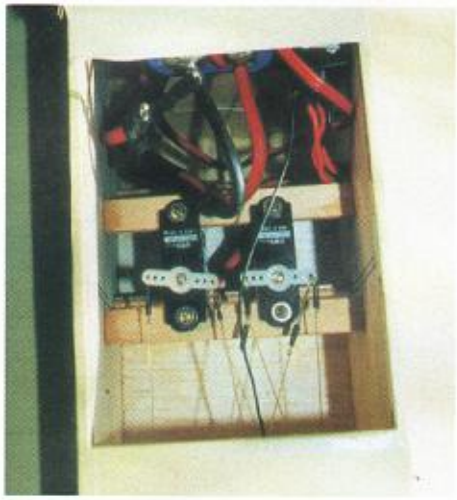
Fosdyke is now in the all-together!

The for the instrument panel. Cut the basic dash from 1/64" ply and cut out the dial positions with a piece of sharpened brass tube, then stain it in whatever shade you prefer, I used walnut. The brass instrument bezels are slices of the same brass tube used to cut the holes. The instruments themselves are just drawn onto thin card and covered with acetate sheet prior to fitting to the back of the dash. Now that you have made up all the detail parts you should have a very powerful incentive to finish the model.

Wings

Once all the parts are ready, you'll find that the wings will build quite quickly and easily. Virtually all the information you will need is on the plan, so I'll just briefly run through it.

Using the side view, mark the position that the wing tubes will occupy in the spars and slot them accordingly. Then build your basic wing panels. When dry, lift from the board and fit the wing tubes. Brass tubes are strongest but aluminium tubes are lightest, so take your pick. A tip here is to use two lengths of piano wire to help make sure that the two sets of tubes line up. Imagine that the wires are the wing dowels and slip both wing panels onto them before the epoxy around the tubes has set. Now, having made sure that everything is straight and square, you should have no problems when you come to fit the wings to the model. Build up the spars over the tubes to flush with the top of the ribs and epoxy in place the 1/32" ply braces. The braces are very important so don't be tempted to omit any of them. All that's left now is to add the hard balsa rigging blocks and the root rib bay sheeting and your wings are ready for sanding and covering. You now have the two most difficult parts of the entire model finished.



The 9 gram GWS servos are more than ample power required for the closed-loop control systems.



Underside view of the bracing wires and closed-loop control wires.

Tail Surfaces

If you need me to tell you how to build these then I would suggest that the next time you visit the tackle shop you buy a rod and take up fishing. They are totally conventional in construction and are simply built over the plan as shown.

Fuselage

This follows my usual practice of being built as two separate basic boxes. The front sheeted one and the rear built up one. These are joined over the plan prior to adding the lower surface sheeting.

Solder the lower pylon to the rear u/c leg at the correct angle before binding both u/c legs to the fuselage with strong thread. Bind and solder the legs and axle together, checking for alignment, and then cyano the thread bindings. Bind and epoxy the top pylon to F4 and fit the fuselage tubes to F4 and F5 before adding F6 and the top decking and you are just about done.

The motor tube is 1/32" ply rolled around the motor and glued. The side and down-thrust are achieved by angling the motor tube to suit where it passes through F1. When satisfied, epoxy the motor tube in place.

Finishing

One little point here before I go any further; the rigging blocks in the wing should be drilled for the rigging before the wings are covered. It's much easier to do at this stage.

With the exception of the metal nose areas, my entire model is covered using antique Solarfilm. This isn't available everywhere so you may have to search it out. Do be careful not to shrink it too much though as this structure is fairly light. Note the rigging on the tail surfaces of my model - try as I might not to over-shrink the Solarfilm the tail plane still warped. The rigging serves to pull out the warps. A much safer solution would be to cover the tail plane with Litespan which doesn't shrink so much.

To matt down the film just wipe it over with Primol and then lightly spray the model with matt varnish. All the paint work on my model was done using Humbrol enamels; before varnishing for matt colours, and after for gloss.

Assembly

Plug the wings onto the fuselage and rig them. Run each rigging cable from the swivel at the top pylon, through the rigging block in the wing to the swivel at the bottom pylon and lock them off with crimps.

Once the entire compliment of rigging is in place you will be able to slide it through the rigging blocks in order to remove any warps, set up some washout if required and ensure that you have equal dihedral on each wing panel. Now simply lock it into the rigging blocks with some thin cyano. This rather strange sounding system does work very well.

Williams Bros. pilot sits in the 'office' of the Fosdyke's Flyer and completes his pre-flight checks.



Use the wing/fuselage assembly as a guide for aligning the tail surfaces which are epoxied in place. Control surfaces are hinged with mylar strip. You should by now be looking at a complete Fosdykes Flyer. If yours looks as good as mine did you will be feeling pretty chuffed with yourself. Or, on the other hand you may be considering what I said about fishing.

Flying

Having made sure that your model balances as shown, maybe slightly nose heavy, definitely not tail heavy, and with the Ni-Cad fully charged it's time for flying.

This is how my first flight went: Having headed her into the light breeze, and checked that my wife Pat was ready with the camera, I opened the throttle. Holding in some up elevator until she was moving, I used some rudder correction to counter a swing. Nothing happened, so, shut her down and try again. Exactly the same thing happened. It was at this point that I realised that after flying a 4-function model, I was trying to steer her with a stick that wasn't connected to anything.

Trying again, using the correct stick to steer, it all went very smoothly. Correct the turn with a little rudder, allow her to build up some speed - another dab of elevator had her in the air. She climbed away very steadily with very little trim change required. Having made some height it was time to bring her back towards me. A little rudder was fed in and, oh so gently, she started to come round - a very leisurely affair indeed. This was obviously going to be a very relaxing model to fly. Almost like R/C interrupted free-flight. More control input brings her round faster but in a less scale-like manner. So it was back to gentle turns which suits me fine.

After cruising around for what seemed like ages, with some low passes for the camera and the odd loop thrown in, it was time to try a landing. I took her well out and throttled back gradually to allow her to sink in. However, as she floated gently past at about 15 feet, it became obvious that I would have to go around again. Starting my approach again but from less height and throttling back further she came in beautifully. A little flare and a slight bounce later and she was down. If only all test flights went as well as this.

I know I shall get many hours of pleasure from this model doing low passes and enjoying the way she looks with the sun shining through the covering.

Fosdyke flies again.

RCMW

Peter Rake