

Lots of good detailing in this very flyable Free Flight Scale job. Aluminum tape looks real—because it is. As Dave says, duplicating parts and finishes is easy if you can use the real thing. Small nuts and bolts fasten wing wires which are made from 1/2 A Speed lines.

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# Eastbourne Monoplane

SCALE modelers always have a squadron of elusive "ideal subjects" that haunt them in their daydreams as well as their sleep. This time it was that "ideal vintage craft," and it kept me up many a night ravaging through my files. After a week of sleepless nights a friend drops by with an interesting three-view he's come across. Tearing it from his hands, ranting and raving, I descended into the depths of the model shop. The EAC was the result.

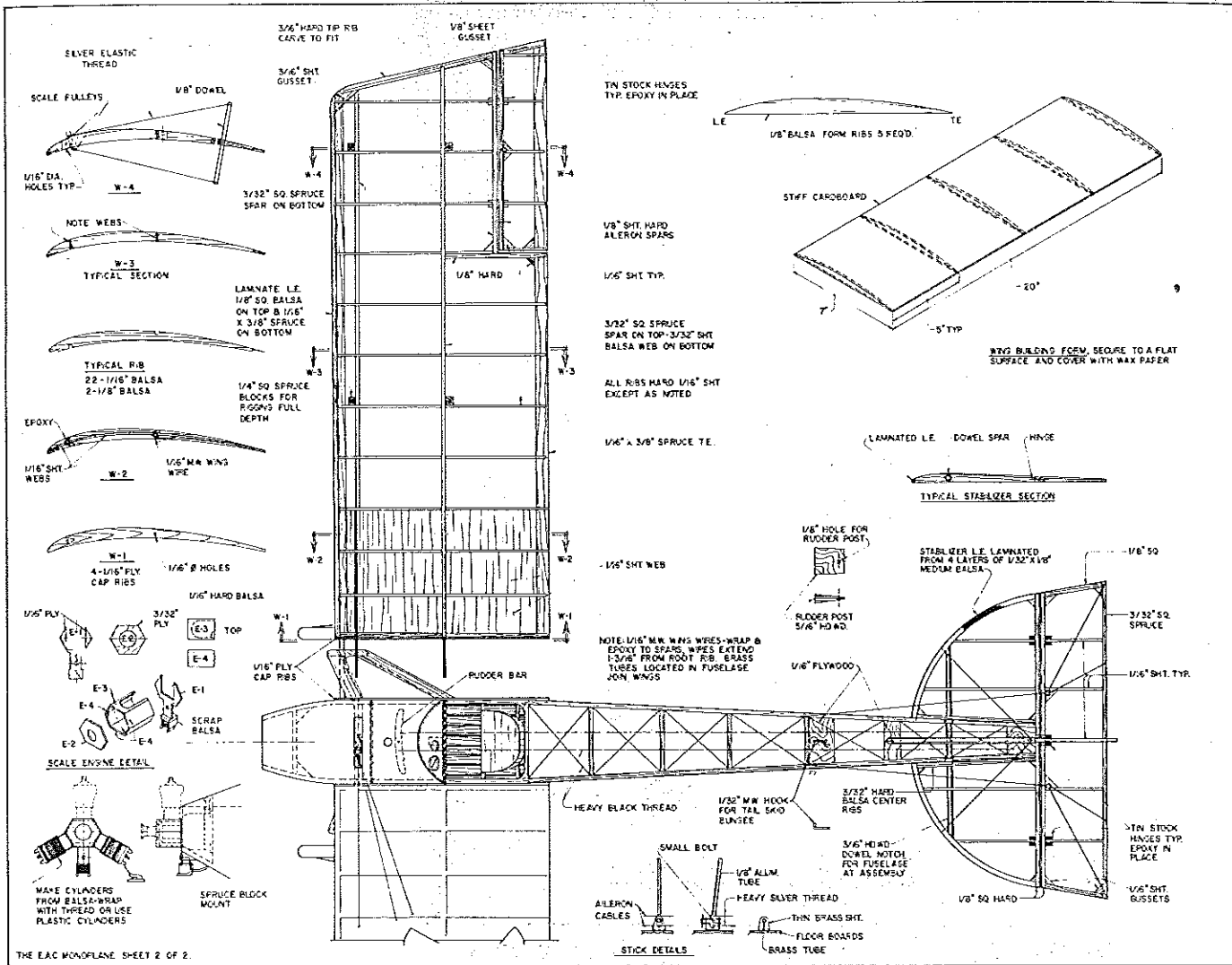
Designed and built in England in 1912, the Eastbourne Monoplane was the first flying machine built by the Eastbourne Aviation Company. Clean and strong, it was ahead of its time. All

efforts were turned to make it as strong an aircraft as possible. Independent pylon structures above and below the fuselage supported the landing and flying wires, thus landing gear damage would leave the airframe intact. The landing gear is a study in engineering simplicity. Unencumbered with flying and landing wires, the landing gear was simply the landing gear. The main struts were ash, bolted together with steel gussets which were slotted to allow the axle to travel up and down. The axle was then laced to the spreader bar with elastic cord near the wheels and attached securely at the center to the spreader. This unit was then bolted directly to the fuselage

longerons and required only minimal wire bracing. The fuselage incorporated many novel ideas as well. Steel tube compression struts tied the wing together through the fuselage, making the rigid fuselage even more so. The top fairing in front of the pilot was the fuel tank, windshield and instrument panel. The cockpit was no doubt Spartan. Flight controls are recorded as consisting of a stick mounted on a double axis for aileron and elevator control, a foot bar for the rudder control. No mention was found of flight instrumentation, but it is safe to assume a lever actuated throttle and mixture unit, a tachometer, a temperature gauge and possibly an altimeter.

In 1912, in England, appeared an impressive, sturdy little single-seater which perked along at 50 mph on its 35-hp Anzani. Sporting "newfangled" ailerons, it was smooth and pleasant to fly—but then came WW I. It's free flight, but would be a grand RC subject to adapt. ● Dave Haught





THE EAC MONOPLANE SHEET 2 OF 2.

plywood plate in the fuselage with a small sheet metal screw, and the assembly is complete.

The main landing gear wires are covered with 1/8 spruce strips. Instant glues work well for this if you pre-groove the wooden struts. Carve and sand the fairings to the outlines on the plan.

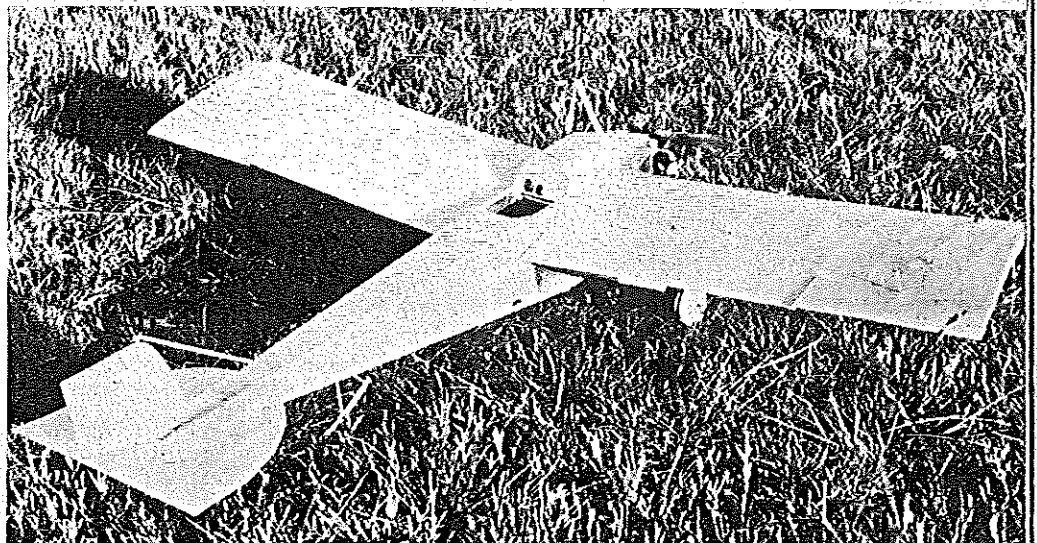
Final sand the entire fuselage, filling where necessary to ensure a nice smooth finish. Now it's time to run the black thread diagonals in the fuselage. This is a lot of work but well worth the effort as the sun shines through the tissue when the model circles overhead. Inspired? Give the fuselage a couple of coats of dope and set it aside.

The rudder and stabilizer are straightforward but each has a quirk or two. Note the aluminum tube rudder spar. This serves as a pivot hinge and also as a roll-over structure. The stabilizer and rudder have laminated outlines which are formed over waxed corrugated cardboard forms. Soak the balsa strips in hot water for an hour and bend the first strip around the form. As you bend the strip around the form, pull the strip to keep it in tension as you round the curves. This will keep the balsa from breaking. Give the second strip a light coat of white glue and pull it around the form, too. Continue for the remaining strips and then set it aside to cure overnight. The stabilizer spar is made from a hardwood dowel and is notched Lincoln Log style to fit over the fuselage longerons at assembly. Hinge the stabilizer to the elevator using tin strip hinges epoxied in place. After final sanding on the bare wood, give the frames two coats of dope, sand and set aside.

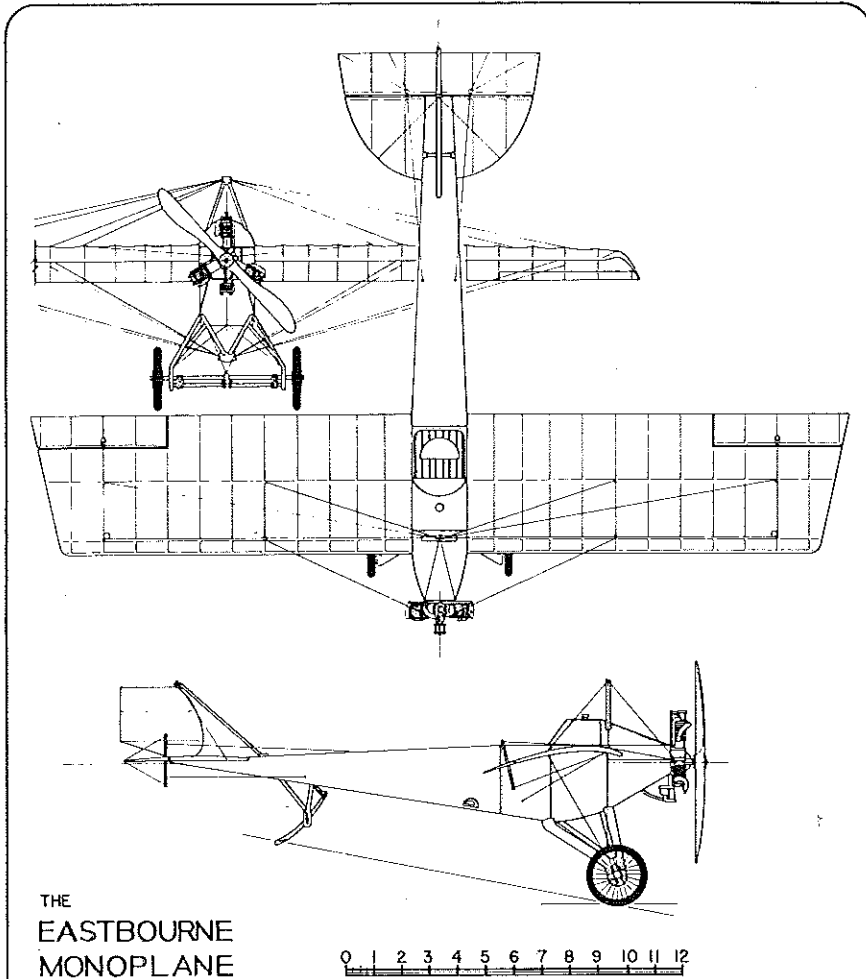
You will find it easy to build the wings over a form as shown on the plans. Build the form on a

flat board and cut out all of the wing parts. Laminate the leading edges over a flat surface to make them straight. When they are dry, pin them in place over the form and cement the leading edge, ribs, and trailing edge together. Add the top spar and let the panel dry overnight. Next, add the bottom spar and aileron parts as shown. Install the rigging blocks using epoxy along with

the vertical webbing. Check the wing wire location to ensure a proper fit in the fuselage tubes, and then epoxy and thread-wrap the wires in place. The reason for putting the wires in the wing is that the wing section is not thick enough to hold the tubes and retain enough strength. This method is just as good and stronger. Finish off the wings by adding the horizontal webbing between the



Awaiting the judges, the EAC often is mistaken for a Caudron Monoplane, which is similar but not as clean or advanced for the same vintage. As per typical box construction, fuselage sides both are built at the same time, one over the top of the other—ensures identical sides.



THE  
EASTBOURNE  
MONOPLANE

BUILT BY THE EASTBOURNE AVIATION COMPANY OF EASTBOURNE, SUSSEX, ENGLAND IN 1912.  
SPECIFICATIONS: WING SPAN 29'-2", LENGTH 21'-0", WING AREA 135 SQ. FT., ENGINE - THREE  
CYLINDER 35HP ANZANI RADIAL., FLYING SPEED 50 M.P.H. DRAWN BY DAVID HAUGHT 1978.

root ribs, adding the cap ribs, and giving them a final sanding and two coats of dope.

I covered the original model with lightweight silkspan. Since the EAC was linen-covered, I tinted the clear dope with a transparent brown fiberglass dye. When applied in four or five coats, the dye gives the model a slight tan tint common of aircraft of the era.

I suggest covering the model with wet tissue. Begin with the fuselage and tail feathers to get into the covering groove. Cut out the tissue for the wing panels and start covering the wings with the bottom. Be sure the tissue is well stuck to the ribs before covering the top of the wings. Reshrink the tissue on the wings, and when dry give the components four or five coats of dope. Pin the wing panels to a flat surface between coats of dope, and after the final coat pin down the panels for a week or so to let them cure.

Attach the stabilizer and elevator to the fuselage with epoxy. Check to make sure it's aligned and square. Drill a 1/8 dia. hole in the rudder mounting block and insert the rudder post into the hole. Flare the end of the tube that extends out of the hole to ensure a tight fit. Fabricate the rudder brace strut from aluminum tube with flattened ends. Drill clearance holes for the small sheet metal screws and fasten it in place. Make and glue the 1/8 dowel elevator horns into place and attach elastic thread to simulate the control cables. Bend the rudder bracing wires from light music wire and affix with epoxy.

The real EAC Monoplane had aluminum sheeting on the nose. This can be simulated by using aluminum tape or aluminum foil glued on with a contact adhesive. Simulate the anchor screws by sharpening a piece of 1/16 aluminum tube and impressing the tool into the foil surface. Then scribe the screw slot on with a pin and you have it. Now do it at all the lapped seams. Real aluminum looks sharp on the nose and is well worth the effort.

Make all of the landing gear fittings and assemble them as shown in the front view. Slip the brass tube axle into place and secure it in the center with a brass strip soldered to the lower spreader tube. Wrap the elastic bands at the ends as shown. This gives the landing gear a working shock system that helps in the hard landings. Locate a pair of spoked vintage wheels and mount them on the axle with light wire cotter pins.

Back to the wing. Make the aileron horns and install them, noting the angle in the side view. Here, again, the control cables are made from elastic thread. Four pulleys need to be made from small grommets and cemented in place. Run the cables in to the root rib and wrap them back under the root rib to the other end of the control horn. This way, when the aileron setting is changed, the cable is in even tension.

Snip out the 16 tin strips for the wing wire fittings and punch the holes as shown. I used fine railroad modeling bolts 1/2-in. long to fasten the fittings together through the wing. They look quite authentic and are quite functional as well. Since the wing wires are functional, it pays to make sure they fit well. Bend the wire pylon fittings and begin making the flying wires. They are made from .007 music wire (from 1/2 A Speed lines). Make the top (flying) wires first. These wires help hold in the dihedral and, along with the lower wires, help to keep the wings from warping. Be careful not to pull in any warps as you fit the wires. Fasten the ends of the wires with the fake turnbuckles shown on the plan.

The model is basically finished. Install your engine and fabricate a needle valve extension and fuel line access holes to suit your methods. The original model was powered by a nearly worn-out Cox Golden Bee turning a Top Flight

The tailskid works, and it is simple as well. Attention to details, such as aluminum skid plates and simulated screws, are good for extra points. Rubberband used for shock absorber.

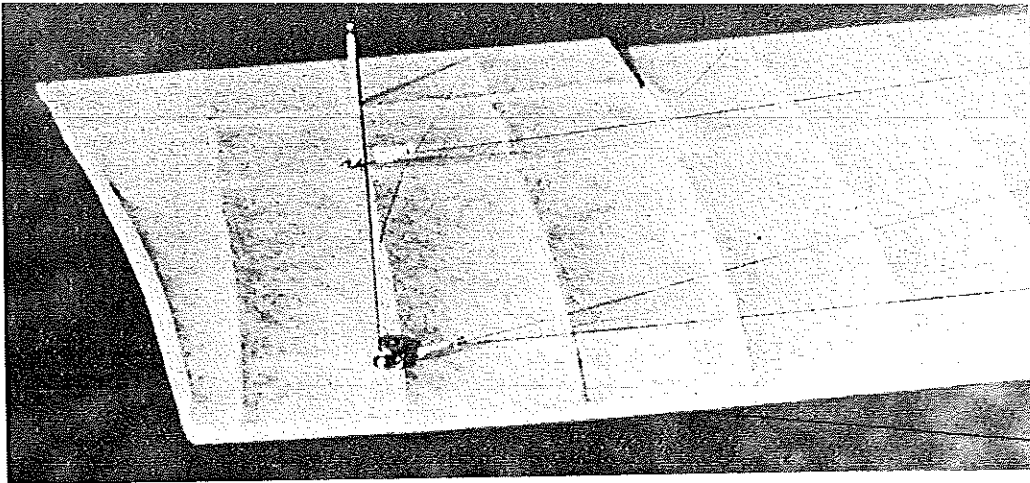
8-4 wood prop. This is adequate power as the model is lightly loaded. A Davis Diesel conversion would be right at home here. Be sure the engine you use is broken in well and reliable.

The scale engine is all that is left. I suggest that you test and trim the model before adding the scale engine since it is in the fuel and oil a lot. I vacu-formed the dummy cylinders from an .049 crankcase and cylinder and then carefully fitted them together as shown in the front view. If no vacu-form unit is available, the plans show an alternate method. Whichever you use, secure it well to the nose of the model.

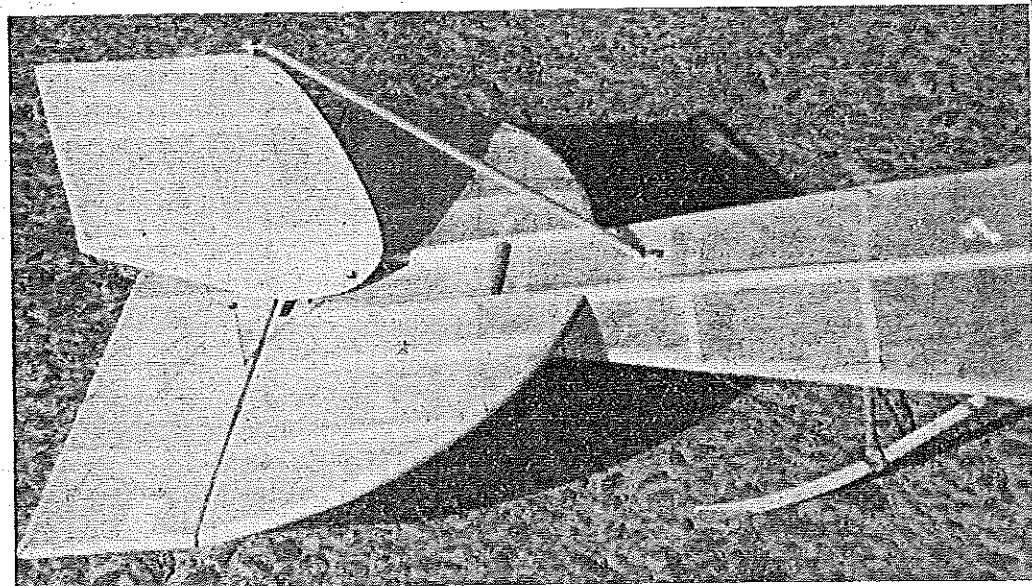
Balance the model as shown and check it for warps. Test glide the EAC over the fabled "long grass." The original had a 30-degree glide angle due to the excessive drag of the wires, so don't be disappointed if it doesn't float. Begin power tests by metering fuel into the tank. Time the engine run on various amounts of fuel. Start with about a 4-sec. run as slow as the engine will run evenly. The model should be trimmed to fly in lazy, wide circles to the right. Use thrust offset to turn the model, as the rudder is rather sensitive and should be used in moderation. Any tendency to roll-in should be countered with aileron trim to lift the inboard wing. Use both ailerons in small amounts, as too much aileron deflection begins to act as drag and will tighten the turn the wrong way. Should this happen, give the inboard wing a few degrees of wash-in, zero your ailerons and retrim the model. When you are satisfied with the trim, fill the tank half full and turn it loose.

Before taking off to the next contest with your Eastbourne Monoplane, study the rule book and prepare your scale documentation. You'll need a small portfolio to hold the scale drawings and notes to the judges. Don't forget the scale ruler outlined in the rule book. Remember that a neat, complete presentation is better than a cluttered mess that will probably just confuse the judges and cost you points.

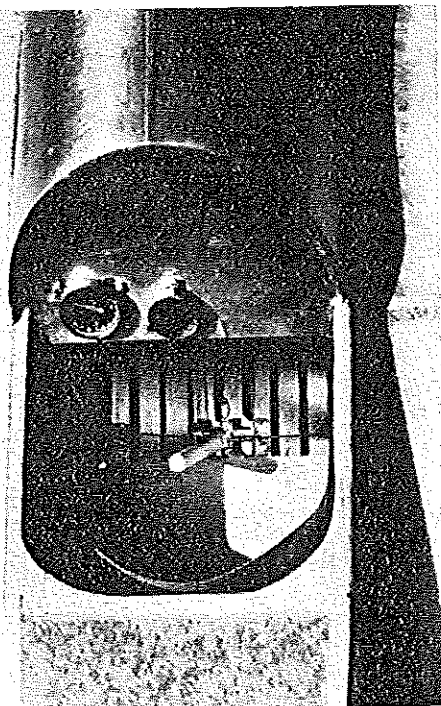
I hope you will enjoy your Eastbourne Monoplane. It is a rugged and consistent model that will perform. Further information can be found in the May 5, 1913 issue of *Flight* magazine. Check your local library; you might be surprised at what you find.



Simple and clean details stand out in this pic. Note the aileron pulley, horn, wing wire attachment fittings, and swaged turnbuckles. This was an early monoplane to use ailerons, and they are functional on the model as well. Use of too much deflection may reverse desired effect.



Leading edges of rudder and stabilizer are laminated from four layers of 1/32 x 1/8 balsa. Soaking strips in hot water for an hour, and careful bending/gluing as per text, assures success.



Cockpit detailing is a nice touch. Note floorboards, stick, aileron pulleys. Instrumentation in skimp, so gauges of period used.



Detailing seen from below includes the step, aluminum panels, and black thread cross-wires in the fuselage—fair amount of work, but looks oh so good when the model is circling lazily overhead.