



Real plane or model? Can't tell, eh? Only the cylinder head of the inverted engine is the tip-off. Wings and struts detach; are fly-off.

THE HEATH PARASOL



Sometimes scale has its advantages; here, the long wing of the Heath produces smooth turns and nice recoveries. The weight including the .099 engine is just 40 oz., ideal for RC original design.



Candid camera catches the author busily engaged with replacement of escapement rubber.

by ED YULKE

Most famous sport plane of its day, this open cockpit ship makes good scale RC or, with .075's, an unusual free flight subject. Sturdy as well.

Structural design provides easy access to engine and, through cockpit, to the receiver, batteries and escapement. Note thin plywood doublers.



► The Heath Parasol RC model shown here represents the realization of a long dream for the writer—the first “real” flying scale model in 27 years of modeling. Rubber flying scale meant either thin, aniline dye dope for a finish, most details left off, or too heavy a model to fly properly. Half-A flying scale still left too much to be desired: the writer has a heavy hand with a paint brush!

The Heath shown here, with four coats of fuelproof colored dope and all details, including faired music wire struts, weighs just 40 oz. With an .099 engine this is just 400 oz. per cu. in. power loading and the 17 oz. wing loading means she has enough “solidity” in the air to make a practical ship for a bit of breeze: she won't blow away.

The Heath has a smooth turn because of the long wing, good recovery stability stemming from low CG, yet good maneuverability through a generously sized rudder—in this case, the *scale rudder!* The Heath will turn in a mean precision pattern on its rudder-only control and is able to do a few of the aerobatics.

We refuse to state that the construction is simple. No RC model is simple to build, even from (*Continued on page 48*)

The Heath Parasol

(Continued from page 12)

a die-cut kit. Construction is conventional, with a few more parts to make, like struts, windshield, and numerals for authenticity.

The writer first tried making the wings in two panels, with dowels in one panel going through "eyes" in the cabane struts and into tubing in the other panel. This knock-off feature was thought to be the berries until it was assembled and the ship picked up by the wing tips. The play in the dowels mating with the tubes threw all the weight (or lift) on the wing struts. We had wanted the struts to be true knock-off: just rubber bands through the fuselage stretched as the wings flexed and no matter how tight they were, one good pull-out of a spiral would have been the end of the Heath.

The set-up shown here has been through a few rough landings and has proven much more practical than two panels. The one-piece wing sits on a flat cabane top runner, is held on with rubber bands that are hardly noticeable on the ship and the struts still "pop out," if required. Actually all the "load" is carried to the plane through the cabane or center-section struts; the wing struts merely stabilize the fuselage on turns and the load, if it can be called that, is in compression. When a wing is low in a turn, the struts push the fuselage out to match the turn.

Internally, the wing is conventional. Simply slip the ribs on the spars, add leading and trailing edges, join the spars and the leading edge with gussets, add the tips and sheeting and you're almost in business. One word of caution at this point: cover the bottom of the wing first, add the wing strut attachment fittings which are actually U-control hinge halves, then cover the top of the wing. Getting the cement into the wing to hold these parts in place, after covering, becomes a bit difficult. You'll notice that the antenna is shown cemented on the leading edge of the left-hand panel, cemented and doped in place.

Speaking of covering, we definitely recommend against paper covering because of the ease with which it is punctured, even with six or eight coats of dope. Nylon is a bit heavy for this size airplane but we found silk to be ideal (light, modeling silk, not the heavier, "loaded" silks found in textile stores).

The tail surfaces gave us a good deal of trouble at first. Sheet balsa in any grade less than petrified stock will warp with many coats of colored dope. We found it best to let them warp; then, after the parts were completely doped, we steamed them flat. The steam from a kettle will soften the dope and balsa through heat, rather than moisture, as you'd first suspect, and gives you a chance to bend the surfaces to where you want them. On cooling, they stay put. Stubborn warps may require bending past where you want them until cool, then they'll spring back. Try a bit at a time and see how simple it is.

A good grade of sanding sealer and some 400 wet-or-dry paper will give you a good base for colored dope. No clear dope will be needed on the tail if you use sealer, but the rest of the ship should have two or three coats of clear, then two or three thinned-down coats of colored dope. All dope should be fuelproof!

Now that we've built the wing and tail, let's try the fuselage. How do you get the plywood sides inside the longerons? Simple! Lay the longerons down on the plan, with the 1/16 in. thick plywood sides inside them, all pinned in place and run cement along the mating edges. Two coats are best. The rest is a matter of cutting out bulkheads while the cement is drying and starting assembly at the tail. Join the back ends of the longerons together, insert one bulkhead

at a time with light rubber bands to hold the front together and you can work all the way to the back of the cockpit until you have to wait for the cement to dry. Add the plywood bulkheads up forward and the engine mount plate, if you use a beam-mounted engine, and you can start adding the outside balsa blocks as shown. Cut out the upper cowl pieces and cement them in place until the final sanding is completed; the contour matches that way. The cabane struts of 1/16 in. dia. music wire are added before the stringers and sheet balsa decking. Assemble the struts to the fuselage as individual pieces, then bind and solder where shown. Caution—clean the surface of the wires all over with emery paper or a small file before installing them! You'll want the surfaces clean for soldering, also for adding the pine or hard balsa fairings. Once the cabane is built up, with three coats of cement where the five ends join bulkheads, add the turtledeck stringers and decking. The side stringers and bottom ones should be left off until the wiring and controls are added.

The landing gear is best added at this point. The fittings are simply bent out of tin-can stock and bolted with two No. 2-56 nuts and bolts to the bulkhead. Hard balsa filler blocks should now be added behind the fittings on each side as shown, to take the rearward load in landing. The landing gear is self-explanatory on the drawings: just be sure to wrap the landing gear joints well, have the wire clean, use a good flux and plenty of heat in soldering. The forward end sits in the groove shown and two loops of 1/8 in. rubber connect it to the hook shown on the bulkhead. With this gear, most of the shock load of a rough landing is taken by the rubber, the gear tending to fold rearward as it strikes something.

The escapement goes in next. Mount it on the thin plywood panel shown, cement the assembly in place and make up the control rod. The tail can be added and everything on the tail is straight and flat. The stabilizer sits on the upper longerons flat and the fin is cemented in place absolutely straight with the centerline of the fuselage. Don't depend on a mark on the stabilizer. Pin a straight strip of balsa to the fin and line the front edge of the strip up with the center strut up forward while the cement is drying. Directional adjustments are made by "bending the bend" in the aft end of the control rod after the first flight with the rudder straight.

Install the socket for the battery pack plug in the battery compartment floor (plywood), using the ring provided to lock it. Make up the receiver socket panel (plywood) for the cockpit and you are ready for wiring. The diagram as shown on the plans is good for almost any single-tube receiver unless you are using a gas-tube job; then, a potentiometer must be provided to adjust the idle current. Mount this aft of the jack as shown dotted. It is cut into the plate circuit as shown dotted on the wiring diagram.

This may surprise you, but the wiring can all be done on the bench, if the battery compartment floor is left out until you wire and the lower rear fairing block (at the landing gear) is left off. We missed this point and wired in the airplane. It's simpler out where you can see what you're soldering.

Slip the battery floor through the bottom of the ship at an angle, drop it flat to where it belongs and cement in place. The wires lay along one of the bottom stringers and at this point it is best to add the lower rear fairing block and the bottom stringers. The rear winding attachment is made up of tubing and music wire and installed as shown on the plans; the tubes for the wing strut rubbers are cemented in place, then the side stringers are installed.

The little "console" for the receiver socket can now be cemented in place and the wires soldered to the escapement. Add the 1/4 in. sheet balsa between the bottom stringers. Holes can be cut for switch, jack and pot (if used). Install there when the cement is dry. We used a North American twin-tube receiver and an ECE "JA" in our ship for various flights.

We installed the wing struts last on the basis that they couldn't be checked until the rest of the ship was assembled. Make the struts out of .045 music wire as shown on the plan and solder together. Before the fairings are added, set the ship up on the bench with the wing held in place with several heavy rubber bands, just as if you were going to fly it. Slip the top ends into the wing fittings, then put a hook on a small piece of .020 music wire as a "threading needle." Hook small rubber bands on the front and rear struts on one side, then pull each band through the tubes in the fuselage to the other side, where they are hooked to the remaining struts. Check now to see that the struts keep the wing level with the fuselage and tail. If something seems out of alignment, check the stabilizer and fuselage first. The fairings are made from hard balsa or soft white pine from a packing crate. Fairings should be attached to the wires by wrapping completely with covering silk around the wire and wood, coating with cement, then just doping and sanding until smooth.

If you are using a radial mounted engine, cut a piece of soft pine 1/8 in. thick to give 2" right thrust and 3" downthrust. We tested our ship with the engine straight and added the shim later, since the engine bolts are readily accessible from the top with the cowl off. On test flying, the engine can be shimmed out with washers until you find what is best for your model and power plant, or you can start with the above figures. The cowling hold-down hook should be made and a slot cut for it in the top of the cowl. This is the simplest type of cowl latch we've come across. The cowl can be taken off or put on with the engine running. Simply press the cowl down to put it on, push the latch forward to lift it off.

Cover and dope the fuselage after checking to make sure that all reinforcement blocks, etc., are in place and the rubber motor for the escapement has been installed. Better check the escapement operation, too, before covering. If the control rod catches anywhere, it's best to find it out and correct it before covering. Two or three coats each of clear and colored dope and you're ready for the best part—trimming the plane. We'd recommend masking and dapping all trim in colored fuelproof dope, rather than decals. Hot fuel wrecks havoc with the best of decals, as our tail numbers were wrecked.

The ship can be flown, as ours was, with just the basic color on it, tested and checked, then the surfaces washed down with a rag just dampened in thinner and the details added. Doing this has an advantage, in that if anything must be adjusted in any way, the base color can be matched easily, but patching trim creates all kinds of problems.

The fancy zig-zag color scheme was obtained from the cover of MODEL AIRPLANE NEWS (Dec. '32) done by Stewart Rouse, but instead of red and brown, we used a cream over-all with red struts and trim, black numbers. Since this is a private sport plane, almost any colors can be used, but keep the license number down to four figures and be sure to use "NC"; that was the score back in the early 'thirties when these ships were flying.

The Heath flew smoothly and "right out of hand" the first flight, much to the amazement of everyone around, including the launchee and the writer who was on the

button. The engine was richened until the 8-6 prop was turning over but not very fast, smoke was coming out in gobs and the ship was just "laid on the air." It flew out fairly flat and in a minute or so, when the engine cut, it was all of 75 ft. in the air, all the altitude it could get on that pooped power. Successive flights used more power until now it can be made to climb rather fast, gaining quite a bit of altitude, so the scale bug writing this can enjoy watching the realistic glide. A few times we were so interested in watching the ship, we forgot to pick a landing spot and darned near creamed it.

END