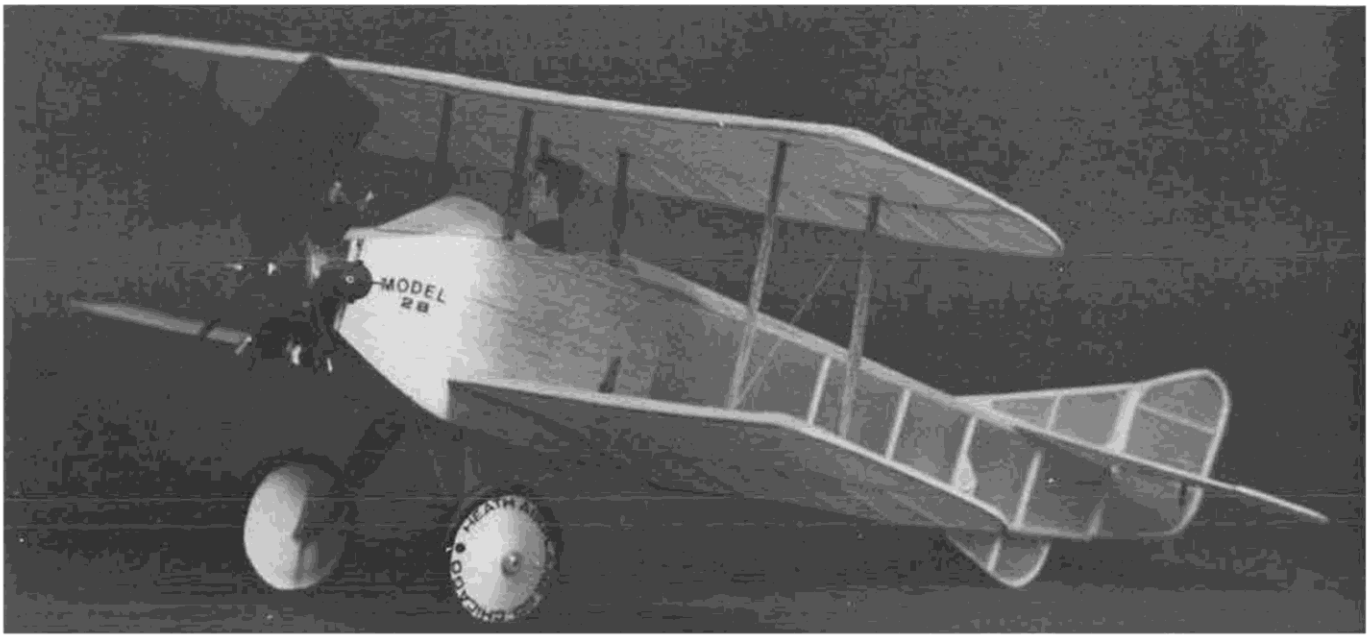


HEATH 2B

PEANUT SCALE

By HOBY CLAY . . . First of several fine new Peanuts by the author, he has followed Walt Mooney's three-views of Ed Heath's tiny biplane in every structural detail, and it flies well to boot!

When Walt Mooney had his work on this obscure Ed Heath design published, I was completely captivated. The article was well-researched and the bird satisfied all my requirements for a Peanut Scale model. Matter of fact, I'm surprised Walt didn't do it first. The plane is not well-known, has reasonably good moments and scales to over ten-inches long. The documentation (probably the only information ever published) satisfies the needs of all but the most scrupulous scale modeler and the AMA Scale rules.

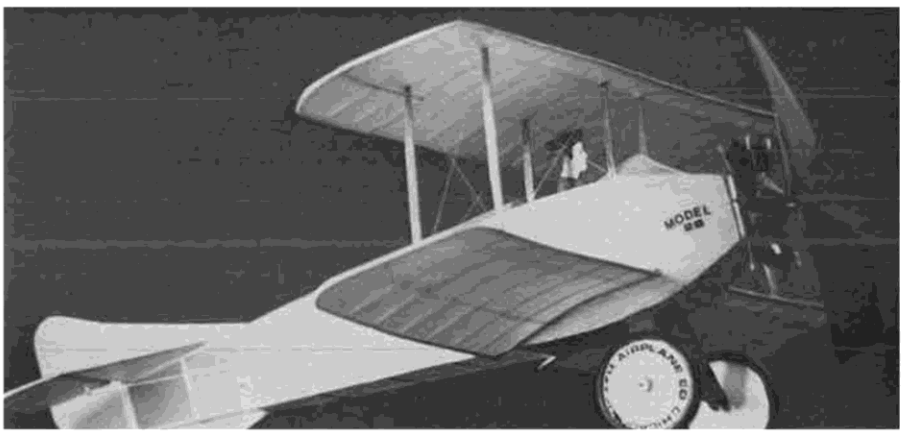
The wind blows pretty regularly in my part of the Southwest, and I get much more flying time indoors than out. Consequently, my models are built light. This one will easily do forty seconds indoors. Putting in about a quarter-inch dihedral under each wingtip will give better gust-stability, although it does quite well in stable air.

My plans incorporate all the scale structure Walt showed. Separate ailerons and tail surfaces were built to improve the scale appearance of this plain-Jane. These really help in getting her adjusted for flight. Mine came out at a quarter-ounce (7 grams) without the motor, which I consider acceptable for an indoor Peanut with a small amount of detail.

Begin construction by stripping out the sticks for the fuselage longerons and cross-members. I use one of Jim Jones' adjustable balsa strippers for this. It's a precision tool and Jim has made, in my opinion, a real contribution to our hobby by building it and making it available to us. I recommend obtaining one if you haven't. You'll wonder how you got along without it. Stripping your own wood has a number of advantages. All pieces come out the same width throughout their length. You can select the proper strength and weight wood much better by evaluating a relatively large sheet of wood, and the strips will match in weight, strength, and stiffness, where this is important.

Good quality precision balsa sheets can be obtained from a number of places if you look around. I get most of my lumber from Mike Mulligan, who has taken over Oldtimer Models from Jim Noonan. His sheets are less expensive than the shops which cater to the indoor builders, and are larger. He will select hard, medium, or soft, if you specify. A lot of hobby shop 1/32 sheet is really closer to 0.040 inches thick than the specified 0.031. Careful selection of a light, straight-grained sheet will yield a nearly lifetime supply of longerons for light Peanuts.

The curved parts of the tailplane outlines and the wingtips are laminated from strips of 1/64 balsa soaked in ammonia solution and bent around waxed cardboard forms using diluted white glue adhesive, in the conventional manner. Hinges are made from fine steel wire, obtained by untwisting a length of stranded electric wire. This is light, plenty stiff to hold adjustments, but won't twist the structure out of shape when making them. Install the 1/64 ply control horns after the surfaces are



Puzzle . . How did Ed Heath get in and out of his little biplane!? Hoby Clay's model is right on the mark. Interesting idea for a prop to fly lightweight Peanuts.

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covered.

Make a rib template from thin aluminum sheet and slice a batch of top and bottom rib strips. Select a reject top and bottom strip and glue together as shown on the plan rib section. Check the required spar depths before cutting them. Every template will vary slightly and this procedure helps assure a good spar fit without building in stress in the rib parts. Fit small sheet gussets at all strut-mount points on the bottom of the upper wing and the top of the lower wing. Make up the ailerons by adding the extra pieces to the structure after it is all assembled and before it has been removed from the building board.

A frame of about one-half inch thick pine such as is used for garden trellises or similar material should be made in a rectangular shape just large enough to take a sheet (or half sheet) of the covering material you are using, if you don't have one. Gusset the corners well and fasten it together with Titebond and small nails. If made well, it will last for years and will be used to pre-shrink tissue and to spray on dyes and tints when you can't find tissue in the colors needed. This is really a must when using condenser tissue and a good idea for any tissue used to cover light model structures. Carefully dope the tissue around the edges of the frame to attach, mist with water. When dry and shrunk, you have an un-wrinkled piece of tissue which will probably not twist your structure out of shape with humidity changes over time.

I used condenser tissue on my Heath. It is light-weight and the plane has a bunch of surface area. The color is about right to match the clear-doped linen used during the period it flew. If you don't pre-shrink or need to touch-up a few tissue sags with a light alcohol mist, be sure to pin down the surfaces and cure well.

The struts are cut from the ply, stained and sealed. The axle is 0.015 wire slipped through a piece of plastic insulation from telephone wire. Ed Heath didn't use a windshield, but did mount a small cowl to help deflect the airstream. I shaped the appendage on my antique Mattel Vacuform. If you're not into vacuforming, it can be carved from foam or soft balsa. To get it light, hollow it out as thin as you can and get the aft edge especially thin to simulate the sheet metal. Paint with bright aluminum enamel before mounting.

Cut open the spar and leading edge pockets for the lower wing on the fuselage sides and mount the wing. Hoepfully you have left stubs on the inner ends of these members when the wing was cut apart. This method assures accurate wing location and incidence. Block up the assembly and measure for none or the desired dihedral. Set the top wing on the centersection struts. When the cement has partially set, eyeball from several angles and adjust the wing to get the best possible alignment.

The pre-moulded engine cylinders look the most realistic, but they are packaged in groups of five. This twin-row, three-cylinder beast used six. Thread-wrapped balsa dowels or the flexible section of a plastic drinking straw will both be lighter weight. Turn the crankcase from styrofoam and paint flat metallic gray. Walt's drawing and the photos give all the engine details.

I turn my wheels from foam, using a piece of 1/8-inch birch dowel for a spindle, which just fits my Mototool chuck. Drilled 1/32 before cutting-off gives a good axle bearing. Styrofoam chips easily. The best shaping tool I've found is an emery board and light pressure. Prime with several coats of thinned white glue, sanding between coats. This strengthens the wheel, sets the small fuzz created in shaping, fills small depressions, and protects the foam from attack by the solvents in most paints. Discs are off-white to match the tissue, and tires are flat black, or better, Grimy Black Floquil.

No Heath airplane is complete without the trademark wheel-disc lettering. Cut out rings of the proper diameter and width from some of Bob Peck's clear mylar material. It has a peel-off adhesive backing. Letters are Chartpack Helvetica Medium 10 Point/100CL available at artist or drafting supply stores. After the letters are rubbed onto the mylar, cut the ring once across to allow it to conform to the disc cone, remove the backing, and press into place. The adhesive will allow a couple of tries if you need them. The cowl lettering is done similarly. The word "MODEL" will look more nearly scale if done with 12-point letters.

The nylon monofilament makes good rigging material, except you have to look closely to spot it. Waxed fine gray silk thread looks more realistic, but the nylon can be tightened with a judicious application of heat from a cigarette or soldering pencil placed near the strand. Don't forget to punch or drill small holes at all the right places at the strut ends and control horns before assembly, if you plan to rig.

The toughest and lightest Peanut prop I've found is the one shown. Cut out the blades and drop them into a small bottle of water laced heavily with household ammonia. Let soak overnight. Stack them together and strap on a small can or bottle about two-inches in diameter, at 15° forward skew to get some twist, with cotton strips. Bake in a 200° oven a couple of hours. Drill the toothpick hub and spot-glue an 0.020 wire shaft at right angles. Slip the shaft in your jig and lightly fasten the blades with model cement. When the assembly has set-up, remove from the jig and run a narrow epoxy fillet along each side of the blade-hub joints. Also smear a little on the shaft where it contacts the hub. When this has cured, the joint and hub can be shaped with an emery board to clean it up. Blend the parts together and balance the prop.

I have used 0.085 Pirelli and 3/32 Peck rubber on this model with about equal success. Loops should be 15 to 18 inches in length. Balance after the power loop is installed. Flight adjustments are made by tweaking the movable surfaces a little bit at a time. Go easy on the rudder. The surfaces are set-up to give a couple of degrees resultant downthrust. My biplanes do best flying in as wide right circles, against torque, as the site will allow.

Sources for Peanut Scale materials and inspiration:

1. Indoor Model Supply, Box C, Garberville, CA 95440. Catalog $1.00. All kinds of indoor supplies and kits.
2. Jim Jones, 366311 Ledgerstone, Mt. Clemens, MI 48043. Balsa and rubber strippers, etc.
3. Micro-X Products, Inc., Box 1063, Lorain, OH 44055. Catalog $1.50. Indoor supplies, kits, and plans.
4. Oldtimer Models, P.O. Box 913, Westminster, CA 92683. Catalog $1.00. Rubber model supplies and plans.
5. Peck Polymers, Box 2498-MB, La Mesa, CA 92041. Catalog $1.00, Rubber model, especially Peanut kits, plans, and supplies. •