

Howard Huntington's 1914 "Clam"

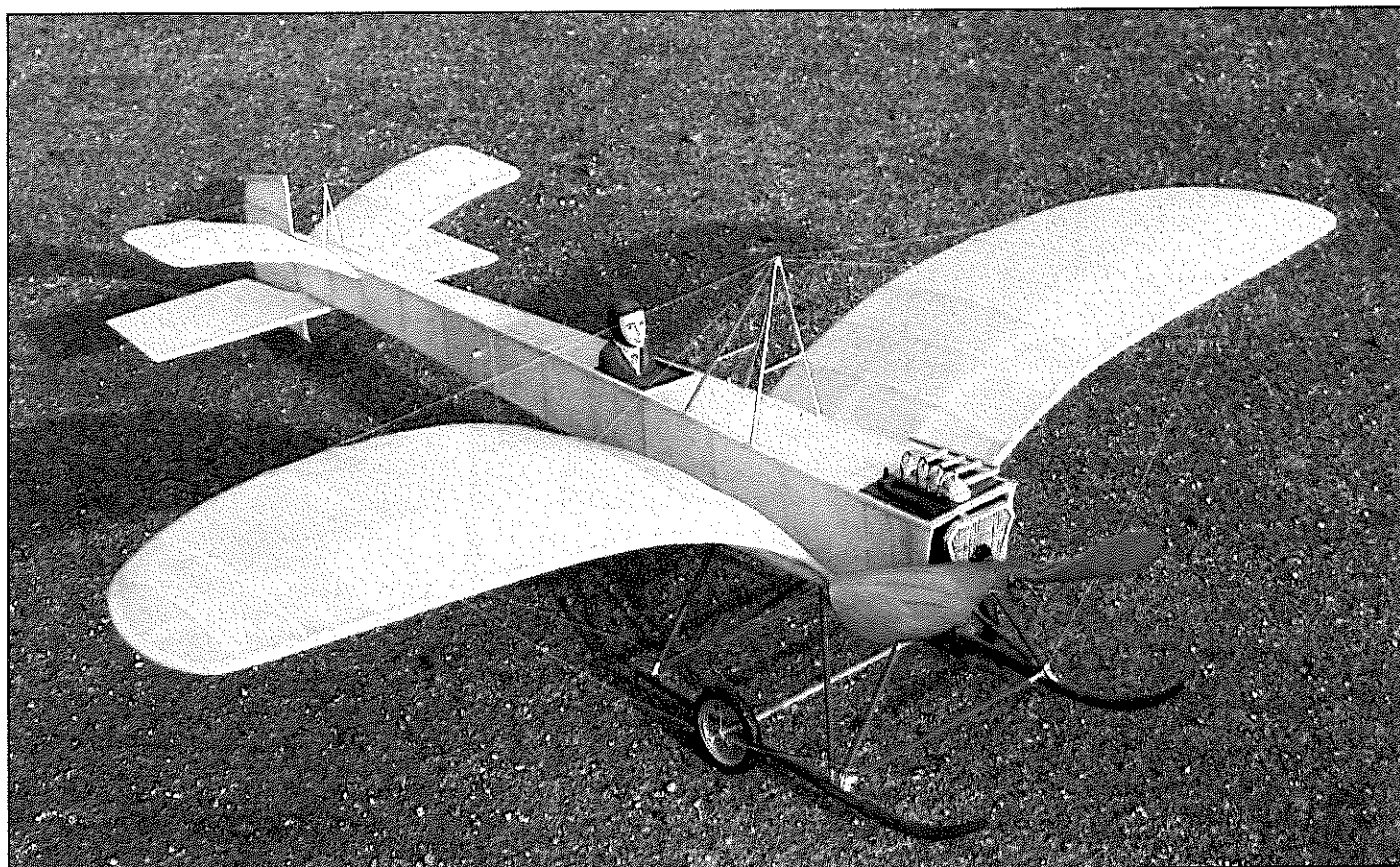
If it's an obscure subject, our author likes it; the Clam fills the bill and is a fine flier, too. Don't let that elliptical dihedral scare you away—it's really not as difficult to build as you might think.

Several years ago, while working as an artist at the *Los Angeles Times*, I dropped in at an employee book sale. I spotted an interesting-looking aviation book which was sitting atop a set of rather boring technical books. The title read *The*

Picture History of Aviation on Long Island—1908-1938. But before I could pick it up, a young woman tugged at my sleeve and informed me that she had already bought the book. Later I met up with her in the elevator and we began to chat. When she told me that she had bought the book for her

boyfriend, I offered twice the price for it, and wound up taking the book home.

Years later, while searching for an unusual subject to build, I remembered the Long Island book and leafed through it. I found what I was looking for on a page that contained two photos of the efforts of



Free flight scale guys are masters at coming up with unusual subjects, this curvaceous pre-WWI flying machine being a good example. Ken happened to have a pair of 1-3/8 inch Hungerford spoke wheels on hand for his model, but for those less fortunate, a pair of Peck-Polymers 1-1/2 inch black tire/clear plastic hub wheels (#PA101, \$3 per pair) would be a good substitute.



Our author definitely leans toward the weird and wonderful. Ken is best known for his offbeat models—ornithopters, flying saucers, autogyros, flying wings . . . and Clams.

Mr. Howard Huntington in 1914. The top photo showed a six-winged aircraft, while the other revealed a later version featuring only one wing. The similarity was that both had wings with elliptical dihedral—shaped sort of like a clamshell. The later aircraft was in fact called the Clam. I decided to draw up and build both airplanes.

Of the two, the multi-wing plane was much more difficult to trim. It was grossly tail heavy and required moving the rubber motor forward. Eventually it flew rather well, considering. I was happy with the results.

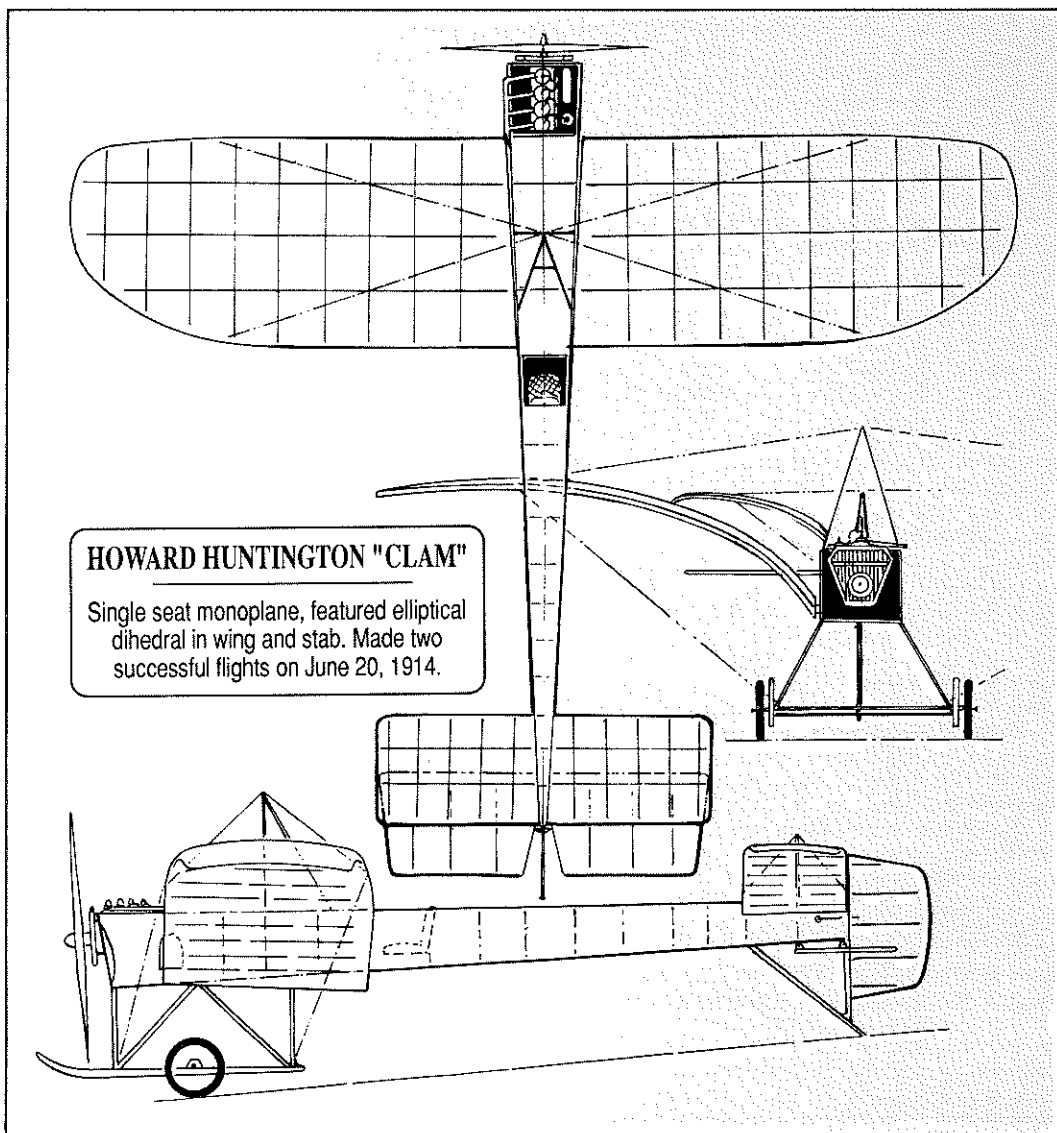
The single-wing Clam was also fun to build but flew much better. Besides the unusual wing, the plane had a keystone-shaped radiator in front of the engine; the propeller shaft ran through the radiator. A tall metal bracing mast held the wings in position. The horizontal stab was similar in shape to the wing and used the same elliptical dihedral. The center of gravity on the model was at about 65 percent of the wing chord. A higher-pitch propeller was also used.

The single-wing Huntington Clam is the model I've chosen for this article. I know you will enjoy building and flying it. Believe me, it will draw a lot of interest at your next scale contest. A scale three-view drawing of the plane is provided here for scale documentation.

CONSTRUCTION

Begin with the fuselage. It is fairly straightforward if not simpler than most models. Use straight, medium-hard 3/32 square balsa for the longerons, and 1/16 balsa sheeting at the front and at the area where the bamboo rubber motor peg goes through the fuselage. The second fuselage side is built directly over the first. When dry, remove the sides from the plan and add a small piece of 1/16 balsa (cross-grain) under the sheeting at the motor peg to add strength.

Assemble the fuselage into a box. Note on the top view that the fuselage sides are a straight taper from the nose to the tail; they do not curve. Add the top and bottom sheeting at the nose and the motor peg. Also add gussets where the wing joins the fuselage, and



HOWARD HUNTINGTON "CLAM"

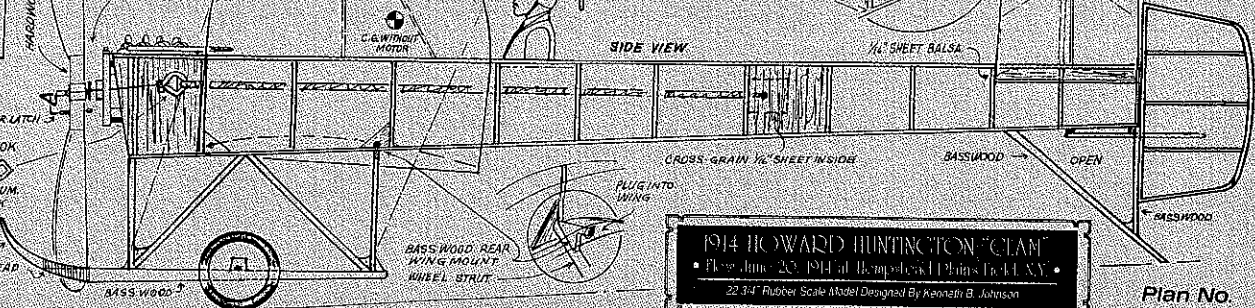
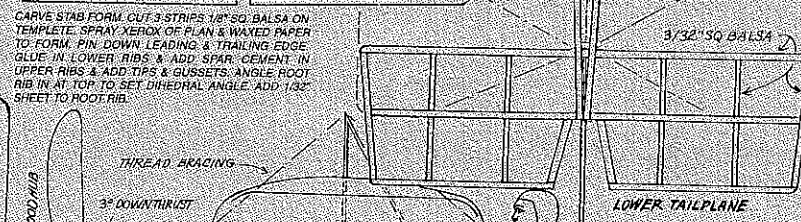
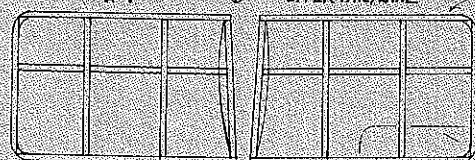
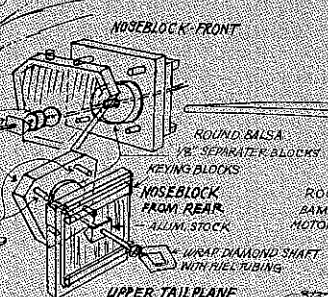
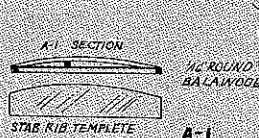
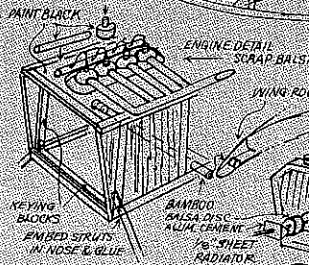
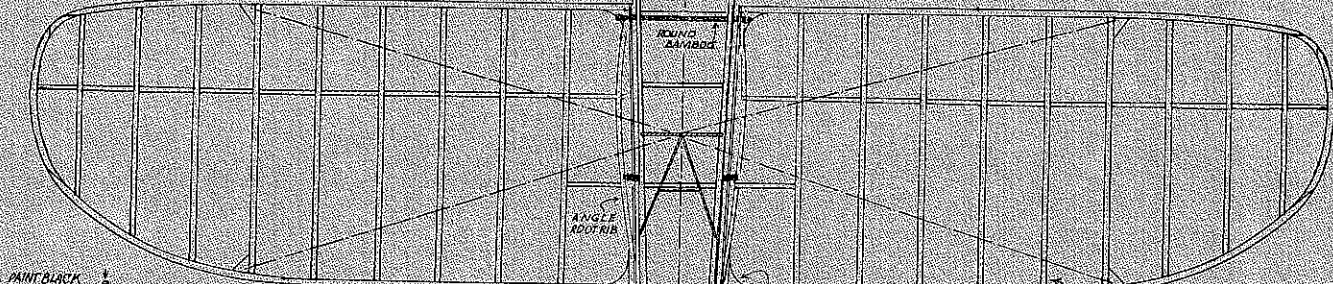
Single seat monoplane, featured elliptical dihedral in wing and stab. Made two successful flights on June 20, 1914.

Howard Huntington's

MODEL BUILDER magazine

POWER - 1/4" LOOP RUBBER
WT. WITHOUT RUBBER - 26 GRAMS

WINGS & TAILPLANE ARE BUILT ON CURVED FORM. MAKE BUILT UP FORM FOR WING & SAND SMOOTH. SPRAY CEMENT XEROX OF 1/2 OF WING PLAN DOWN ON FORM. NEXT SPRAY GLUE WAXED PAPER OVER PLAN. SOAK 3 STRIPS OF MED SOFT 1/8" SQ. BALSA IN HOT WATER. PIN DOWN ON PLAN. THIS WILL BE LEADING & TRAILING EDGE. GLUE IN LOWER RIB STRIPS & PUT SPAR IN POSITION & CEMENT. GLUE TOP RIBS IN POSITION & ADD WING TIPS. ANGLE ROOT RIB FOR DIHEDRAL & ADD 1/2 SHEET BALSA OUTSIDE ROOT RIB. ADD GUSSETS.

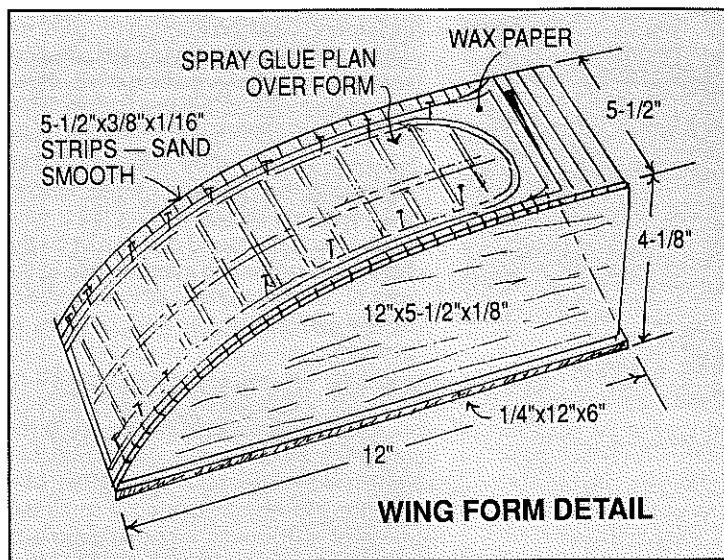


CARVE STAB FORM. CUT 3 STRIPS 1/8" SQ. BALSA ON TEMPLATE. SPRAY XEROX OF PLAN & WAXED PAPER TO FORM. PIN DOWN LEADING & TRAILING EDGE. GLUE IN LOWER RIBS & ADD SPAR. CEMENT IN UPPER RIBS & ADD TIPS & GUSSETS. ANGLE ROOT RIB IN AT TOP TO SET DIHEDRAL ANGLE. ADD 1/2 SHEET TO ROOT RIB.

1914 HOWARD HUNTINGTON "GLAN"
Flown June 20, 1914 at Hampton, Virginia, U.S.A.
22.34" Rubber Scale Model Designed By Kenneth B. Johnson

Plan No
496

1914 "Clam"



sheet the area at the rear where the stab attaches.

The nose assembly is shown graphically on the plan. The dummy engine is made from scrap balsa. Paint it silver and don't forget the key blocks that position the noseblock in the front of the fuselage. See the plan for details on the propeller and noseblock areas. A plastic prop could be used, but I hope you'll build the one shown on the plan.

Make the front landing gear struts from round bamboo; the other struts are 1/16 round hard balsa. Check the alignment to make sure they're at the correct angles before adding the

cross-members. The axle is .025 music wire and is cemented along the bottom of the round cross-piece. The basswood gear skids are wrapped with thread where the parts are glued.

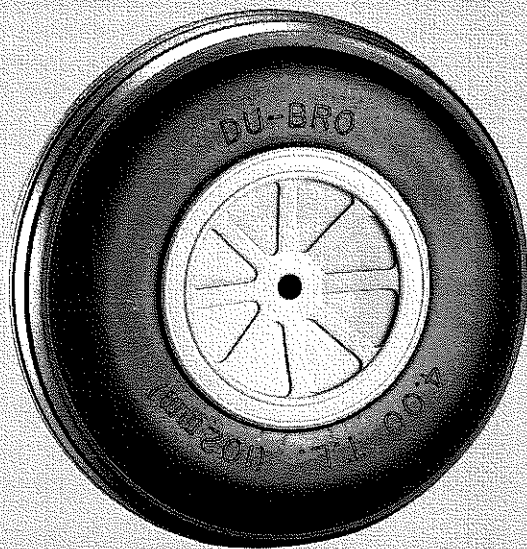
Since it's so easy, build the rudder next. Poke a row of pinholes through the plan and into a piece of 3/32 balsa to get the curved trailing edge.

The wing is built on a curved wing form—refer to the sketch. Get a Xerox copy of both wing plans and cut them out carefully; spray glue the back of one of the plans and burnish it to the wing form. Spray glue a piece of waxed paper over the plan.

Choose several lengths of

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TL SERIES Technical Info.

Width	Tire Dia.	Tire Width	Tire
			(Metric)
400TL	4" (102mm)	1.150"	29.21mm
450TL	4-1/2" (114mm)	1.325"	33.65mm
500TL	5" (127mm)	1.500"	38.10mm
550TL	5-1/2" (140mm)	1.700"	43.18mm
600TL	6" (152mm)	1.850"	47.00mm

400TL - 600TL Tires have a 3/16" (5mm) Axle Dia.

Field Testing Reports

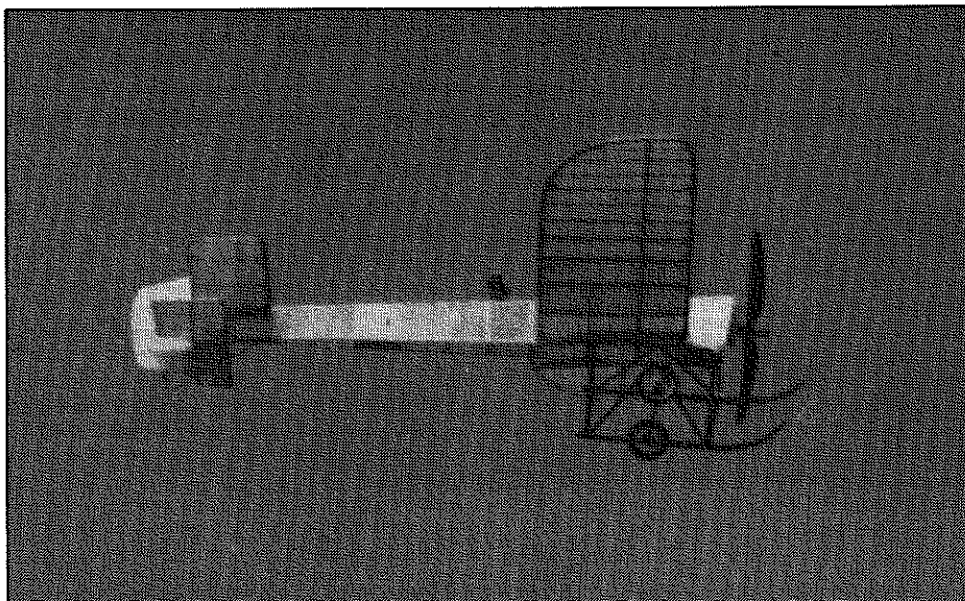
Dan Webb, 1st Place Winner of the Post 1935 Military class competition at Bomber Field, notes:

"Your new tires are the answer to a scale builders prayer! I thoroughly tested your 6" treaded lightweight wheels before entering my 39 lb. P-47 airplane in the competition at Bomber Field. I now have over 75 take-offs and landings on these wheels - all on concrete. You can't even tell they've been out of the package."

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Despite its unusual appearance, the Clam is actually a fine flying model. Sure to turn heads at any flying field.

medium-soft 1/8 square balsa for the wing outlines and spar. Soak them in hot water for 30 minutes, sponge-dry with a paper towel and carefully pin the leading and trailing edges onto the wing form. Use care with this because the wood is bending around a compound curve. Pinhole the wingtip outlines through the plan, cut out and cement in position.

Select a number of 3/32x1/8 soft balsa strips, cut to the size shown for the lower wing ribs and cement in position. Take another of the soaked 1/8 square strips and pin it down lengthwise to become the spar. Add small 1/16x1/8 balsa spacers on top of the spar at each rib position. Use a template to cut the wing rib tops from 1/8 sheet balsa and cement them in position at each station. Note that the root rib top piece is angled to make it parallel to the fuselage.

Sheet the outside of the root rib with 1/32 balsa. Add the short spar at the root. Cut and cement the gussets where shown.

Remove the wing from the plan and prepare the form and repeat the building process with the other wing half. Make sure the halves are identical in curve and shape.

The upper tailplane is also built on a form, this one cut from a 3-inch wide soft balsa block. Make a template to the shape of the dihedral curve of the stab and use it to cut six pieces of 3/32-inch thick balsa 3/32-inch wide; these will be the leading and trailing edges and the spar. Xerox the stab plan halves as with the wing, then cement to the form, one half at a time. Add waxed paper. Pin down the leading and trailing edges you have cut and assemble as with the wing. (If you think this is laborious, imagine what fun I had doing this

with 12 wing halves for the Multi Clam!) Add the tips and the gussets. Cement a piece of 1/32 sheet balsa to the outside of the root rib and sand flush top and bottom. Remember to angle the root rib to line up with the fuselage side. Repeat with the other stab half.

Sand the entire model carefully and cover with Oldtimer tissue. It is off-white in color and can be purchased from Micro-X Products, Box 1063, Lorain, OH 44055. The wing and stab are covered one section at

a time to assure a good clean look in the covering. Because of the curves in the wing and stab, it is much better and easier to cover in this manner. After all of the parts are covered and water shrunk, spray on one coat of Aerogloss clear dope.

ASSEMBLY

Attaching the wings to the fuselage is a little tricky. Cement a piece of 1/16-inch round bamboo through the fuselage where the front of the wing attaches; cut corresponding holes in the root rib sheeting. Mount each wing with 3-1/8 inches of dihedral under the tip, measured level with the bottom of the fuselage. When dry, make the basswood wing support that cements to the rear landing gear strut. Match the round dowel part on the basswood support to a round hole in the root rib toward the rear of the wing. Set at the correct angle and cement in position.

Make the wing bracing mast. String the flying wires on the wings. I prefer smooth, hairless nylon thread from the local fishing fly-tying store. I thread a small sewing needle and pass it through the wing where the gussets are located; a small dab of cement will hold the thread in place. Draw the bracing wires taught but don't warp the wing by overtightening the wires.

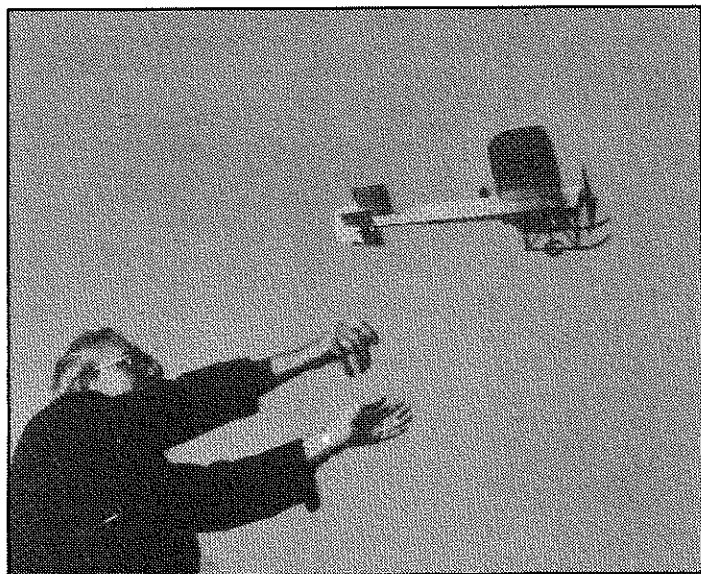
Mount the stab halves by cementing each to the balsa sheeting on the sides of the fuselage. The dihedral is 1-1/8 inches on the stab. Make the stab bracing mast from hard balsa sanded round. Cement the mast to the fuselage top at the center of the stab. String the wires like the wings.

Build the lower horizontal elevator and cover it. Mount it to the fuselage using the small spacer blocks shown. Make sure the elevator is square to the fuselage.

The propeller blades are cut from 1/16 medium-hard balsa. The blanks are soaked in hot water for 30 minutes and taped around a 3-inch diameter can at a 15-degree tilt from vertical (top to left) and baked at 300 degrees for 30 minutes. The hub is made of basswood. Drill the center hole and cut the pitch angles on each side, align the blades and glue them to the hub.

FLYING

The Clam should be ready for flight testing now. Check to make sure the surfaces are free of warps. The balance should be at about 65 percent of the wing chord (with no rubber in the plane). Make up a motor of 3/16-inch rubber, one loop 14 inches long, lube it and insert in the model. Test fly on about 300 winds. My model needed only a 1/32-inch shim of downthrust to make it fly. Add clay where needed. Test-fly over high, soft grass if possible. I don't like rebuilding models that come down on hard ground or rocks—I trust you feel the same. When you take the Clam to a contest, don't forget to take along the three-view to authenticate it. Good flying! **MB**



Our author launches for another great flight. The scene is Mile Square Park in Fountain Valley, California, and the occasion was the Flightmasters 49th Annual Free Flight Scale meet this past December.