

Homebuilt aircraft lend themselves to a modeler's world. This Free-Flight parasol delivers some great performance.

PHOTOGRAPHY: TOM MEYER



While thumbing through the pages of Air Progress Homebuilt Aircraft, Fall and Winter 1966-67, I came across a double page photo spread of the cute little Jungster II, designed by Rim Kaminskas of Monrovia, California. The aircraft is a fully aerobatic homebuilt airplane with a terrific rate of climb due to its light weight and the brute power of the 180 h.p. Lycoming O-360-A-1A. Looking over the photos I noted the ideal

proportions for a Free-Flight rubber powered Scale model.

After sending to K&S Aircraft supply, 4623 Fortune Rd. SE, Calgary 23, Alberta, Canada for their illustrated brochure and good three view drawings, I designed and built the model and it proved to be even more than I had expected. With its 15° sweepback, no dihedral is needed since 5° sweepback equals 1° dihedral and due to

the sweepback, the center of pressure or balance point is so far back that the model balanced perfectly with no added nose weight so commonly needed on most scale models. This is one model that flew right off the board the first flight with no adjustment whatsoever.

Construction Techniques

Build the fuselage first in the conventional manner, using 1/16" hard balsa for the longerons and crosspieces. Construct both sides, one on the top of the other. After they are dry, cut them apart with a razor blade. Put the crosspieces as shown on the top view. Laminate enough sheets of 1/32" soft balsa (two pieces 1/32" sheet, grain 90° to each other) to make all the bulkheads as shown on the plans. Install the bulkheads at the correct stations. Note! Do not notch the bulkheads until they are installed, but they should be marked for the stringer locations. After the bulkheads are installed, make up a sanding stick of 1/16" balsa with a strip of sandpaper on the edge. Next, notch the top and bottom bulkheads for the 1/16" balsa stringers and install them. Clip out the 1/16" cross member on the top of the fuselage. This is necessary to clear the rubber motor. Make a 1/32" sanding stick and notch the bulkheads for the 1/16"x1/32" stringers one at a time. Notch for one stringer, install it, then notch and install another.

Make up the landing gear as shown on the plans. Install 1/16"x3/8" cross members

A Rubber Scale Jungster II by George W. Meyer

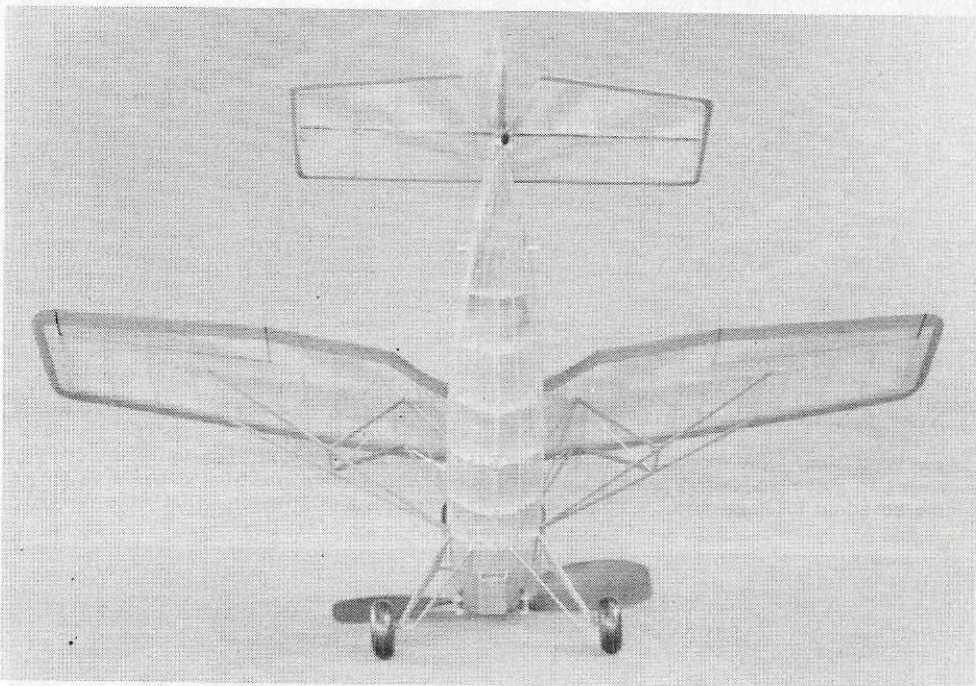
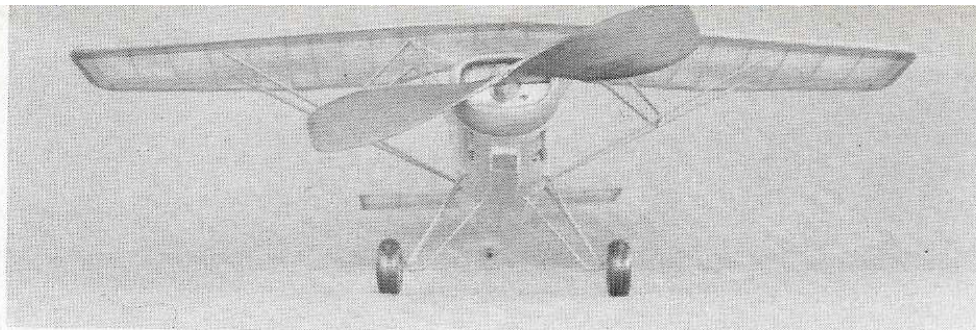


at the landing gear attach points. Wax the wire where it crosses the fuselage, then bind and glue the wire to the cross members with thread. When dry, move the gear back and forth to break the glue loose. This forms a pivot so the gear can move back on hard landings. Build the front coil shock with hooks on the ends for the front part of the landing gear strut. Bind and glue the bottom of the coil only so it can move when dry. Hook the front of the gear to the hooks of the shock coil. Note the center wire is not attached to the fuselage, but allowed to flex on landing. Believe me, this is a worthwhile addition for Flying Scale models as this gear will take a real beating. Split some $\frac{1}{16}$ " plastic tubing and glue to the landing gear shown on the plans. I use plastic tubing used for model railroad structure because it glues easily with model cement. Fair in the rear landing gear with $\frac{1}{16}$ " sheet balsa.

Make up the wheels, using balsa and plywood laminations on a $\frac{1}{4}$ " dia. dowel and turned on a lathe or drill press and install. The hub caps are of $\frac{1}{16}$ " sheet balsa.

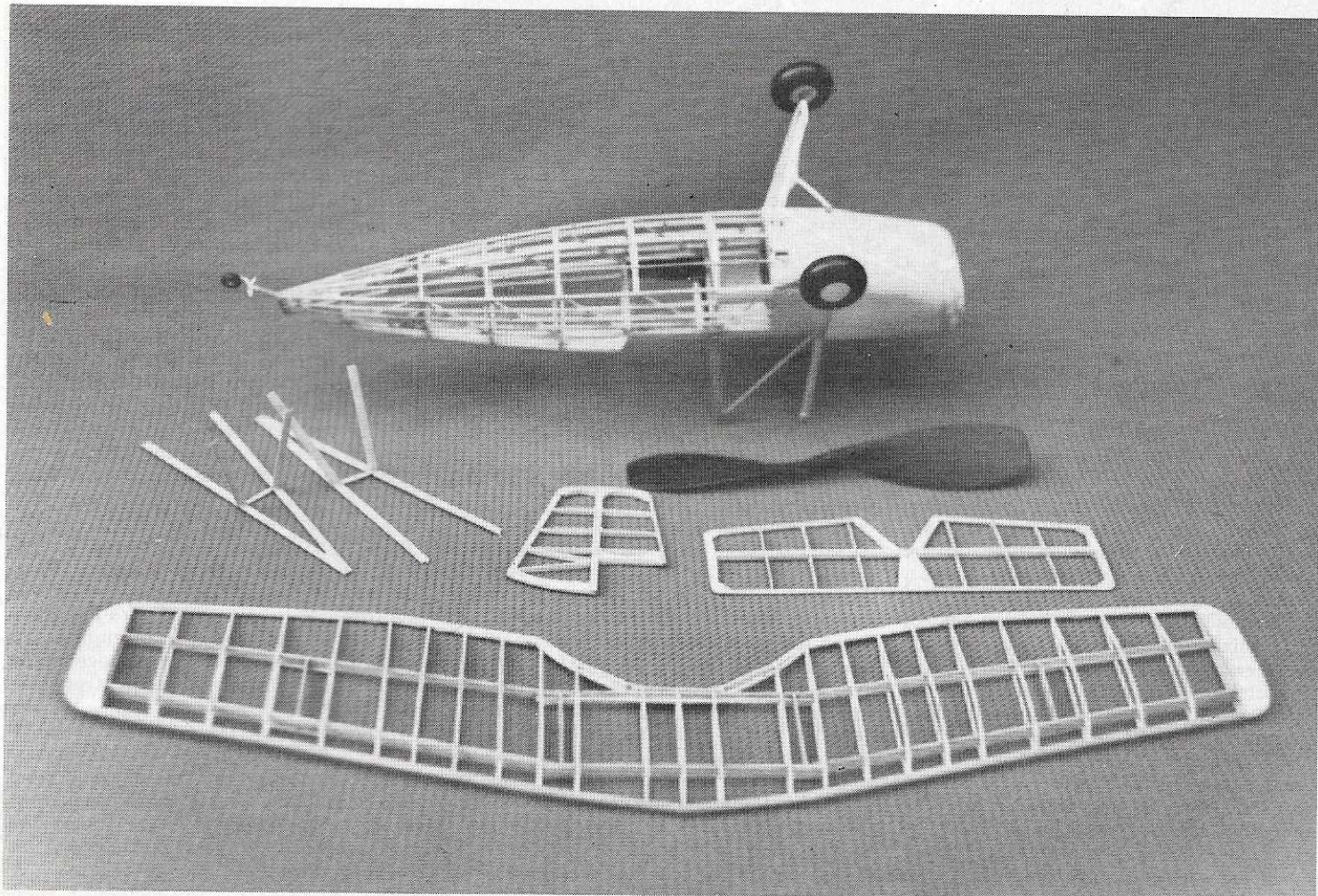
Install $\frac{1}{32}$ " sheet balsa on the fuselage on the areas shown on the plans, the back pieces first, then add the gill pieces (No. 11). Cover the front part of the fuselage with $\frac{1}{32}$ " sheet over the engine sections.

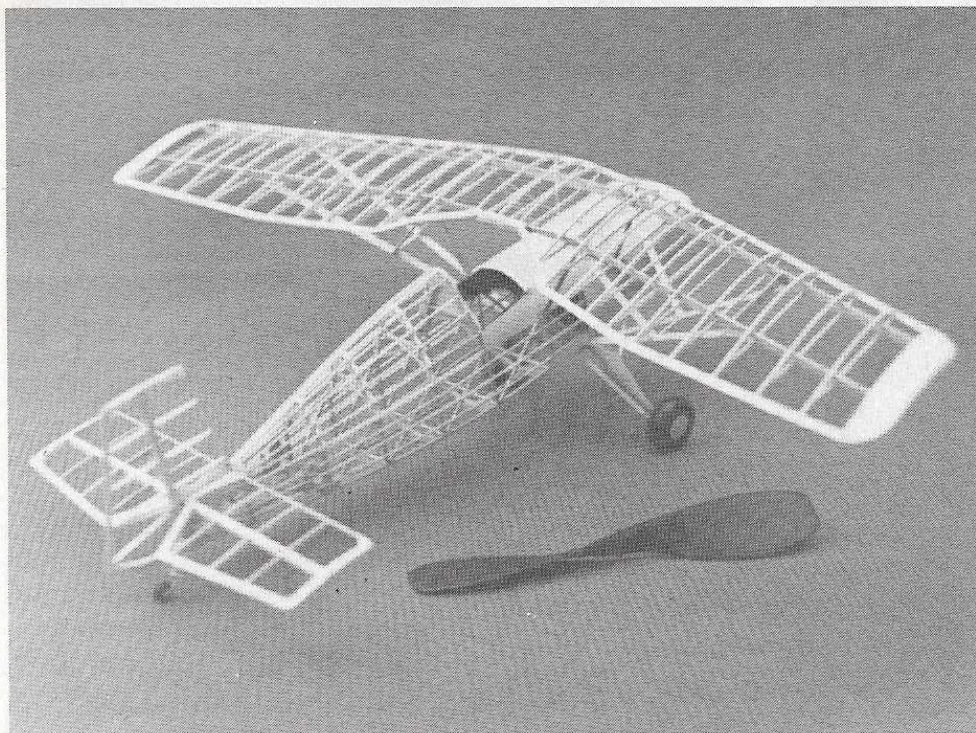
Build the nose block as shown on the drawing. Make two boxes—one for the fuselage and one for the nose block, making sure they fit each other perfectly so the nose block won't fall out when the rub-



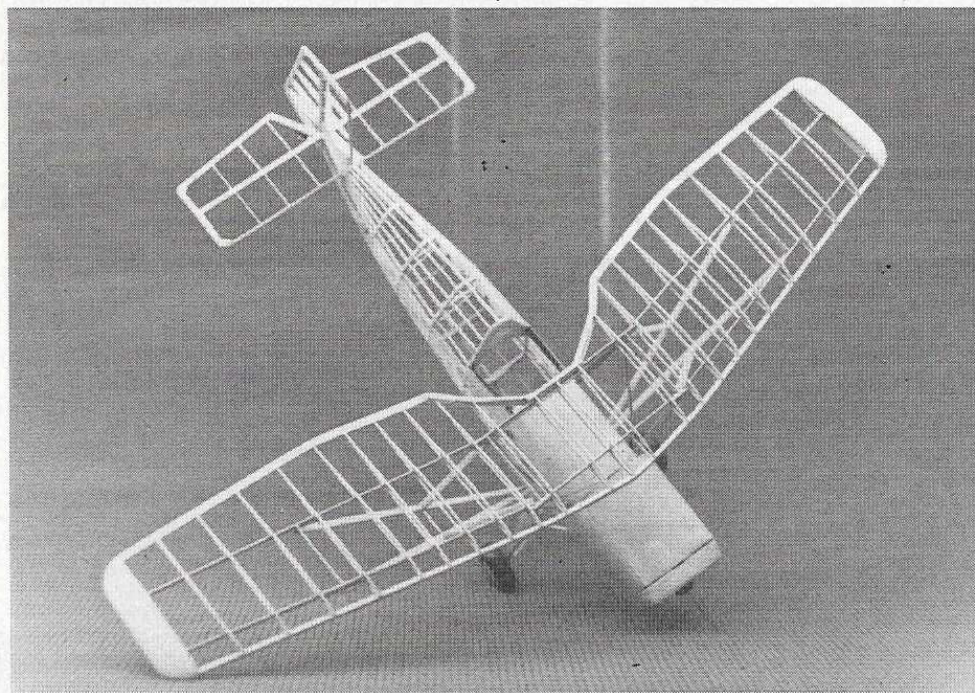
A parasol type wing mount, it's good training for the biplane in your mind. This shot displays the ample proportions, the design is a natural flyer. **Top:** A $9\frac{1}{2}$ " plastic prop supplies the thrust. No need to hand carve one.

Photo below: The skeleton revealed. Neatness counts, as does good wood. Airfoil, wing edges, struts and everything should be carefully trimmed. The balance point is important to good performance, ballast if need be.





Hollow wing ribs, light in weight, internal spars. They look difficult, but in reality it is an easy wing to assemble. Cut airfoiled strips from sheet with a template, trim to length required. Simple boxed-up fuselage. Later it's fancied up with formers and stringers. That's the fun part.



ber is unwound. Make a dummy crankcase out of a balsa block and drill for the nose bearing. I used a drilled $\frac{1}{8}$ " rivet, but a plastic bearing or aluminum tube can be used. Note the fuselage is built with down thrust and right thrust built in but still can be shimmed if necessary. Add the rest of the fuselage details such as carburetor scoop, exhaust pipes, etc.

Fabricate the tail wheel spring of $\frac{1}{32}$ " dia. wire. Glue to the fuselage and add a strip of paper on top to simulate a flat spring. The tail wheel is a $\frac{1}{8}$ " slice of $\frac{3}{8}$ " dowel. Build the tail surfaces as shown on the plans. I made movable surfaces on mine, but I do not think it is necessary on this model. Note the stabilizer and elevator is a lifting surface. Leave the bottom flat

and sand the ribs to airfoil shape after assembly.

Next build the wing. Laminate the trailing edge of three (3) pieces of $\frac{1}{16}$ " sq. balsa. Be sure to soak the strips well in hot water, then coat with Titebond glue and pin these into place over the plans. Do not forget to cover the plans with wax paper. Soak a piece of $\frac{1}{8}$ " balsa in hot water and pin over the plans. Make some little 45° blocks to hold the $\frac{1}{8}$ " strip at the correct angle. Slice the ribs of $\frac{1}{32}$ " balsa. I used an aluminum template. With the leading edge and the trailing edge pinned on the wing plan, glue the upper portion of the ribs to the leading and trailing edge of the ribs to fit. The center-section of the wing will require balsa filler pieces on the trailing edge

so the wing will stay flat on the top and will not sag in this section. I used Titebond glue for most of the structure on this model.

Remove the wing from the drawing and install the bottom section of the ribs. The bottom center-section trailing edge will also need shimming the same as the top. Install the $\frac{1}{32}$ " sheet balsa spars in the correct location. Add the $\frac{1}{16}$ " sq. filler piece at the strut locations and the $\frac{1}{16}$ " sq. compression members between the spars as shown on the plans. Make the wing tips of very soft, light balsa. After they are fitted, hollow them out to $\frac{1}{32}$ " thick and glue to the end ribs and spars.

Cover the entire airplane with yellow lightweight Japanese tissue. Be sure to coat all ribs with glue. I used 50-50 Titebond and water for paper cement. This is necessary to keep the ribs from warping when the wing is doped. Dope the paper with alcohol. When dry, give covered surfaces and fuselage one coat of 20% Titebond and 80% water. This adds very little weight and makes it possible to get a little gloss when you dope with nitrate dope. Dope the entire model with one coat of 50-50 nitrate dope and thinner. Now carefully make the trim of red tissue as shown on the plans. Place two pieces of red tissue under a copy of the numbers for the side of the fuselage. Tape well to a cutting board and carefully cut them out with a sharp knife or razor blade. Glue the red tissue trim and numbers on with thinned nitrate dope. The fin and rudder is checkerboard. Slice enough squares of red tissue and starting at the tail post, glue the squares on in the proper order, then add the red outline on the fin and rudder. Note that the wing and stabilizer have sunburst on the top surface and red outline only on the lower surface.

Now assemble the tail surfaces on the fuselage. Make a paper fillet from the fin to the fuselage and cover with yellow tissue. The tail wires are Cortland flat monofilament fishing line through $\frac{1}{32}$ " dia. holes in the fin and stabilizer. Glue in place with Hot Stuff. This way no knots are needed.

Glue the wing to the center-section struts with Duco Cement. Make up the rest of the wing struts. Cut them to proper length and glue to the fuselage and wings with Duco Cement. Add the jury struts from the center-section struts to the wing struts. Also the cross wires, of flat monofilament fish line, glued on with Hot Stuff. Paint the wing struts and landing gear with Floquil Caboose Red model railroad paint and the tires of the wheels with flat black.

Make up the prop shaft of .045 dia. hard wire, clip the $9\frac{1}{2}$ " Peck-Polymers prop to 8" and leave the tips sort of square with the leading and trailing edges rounded off on about an $\frac{1}{8}$ " dia. radius. Carefully balance the prop by scraping the back side with a knife, then sand with fine sandpaper. Paint the prop with black or silver plastic paint and check for balance again.

Power the model with four strands of $\frac{3}{16}$ " flat rubber 18" long.

Head for the tall grass and give the model a couple of hundred turns for a test flight, then use a winding tube and wind for a real flight. This is an ideal contest model and will give the competition a run for its money. I am sure you will enjoy this model as much as I have.