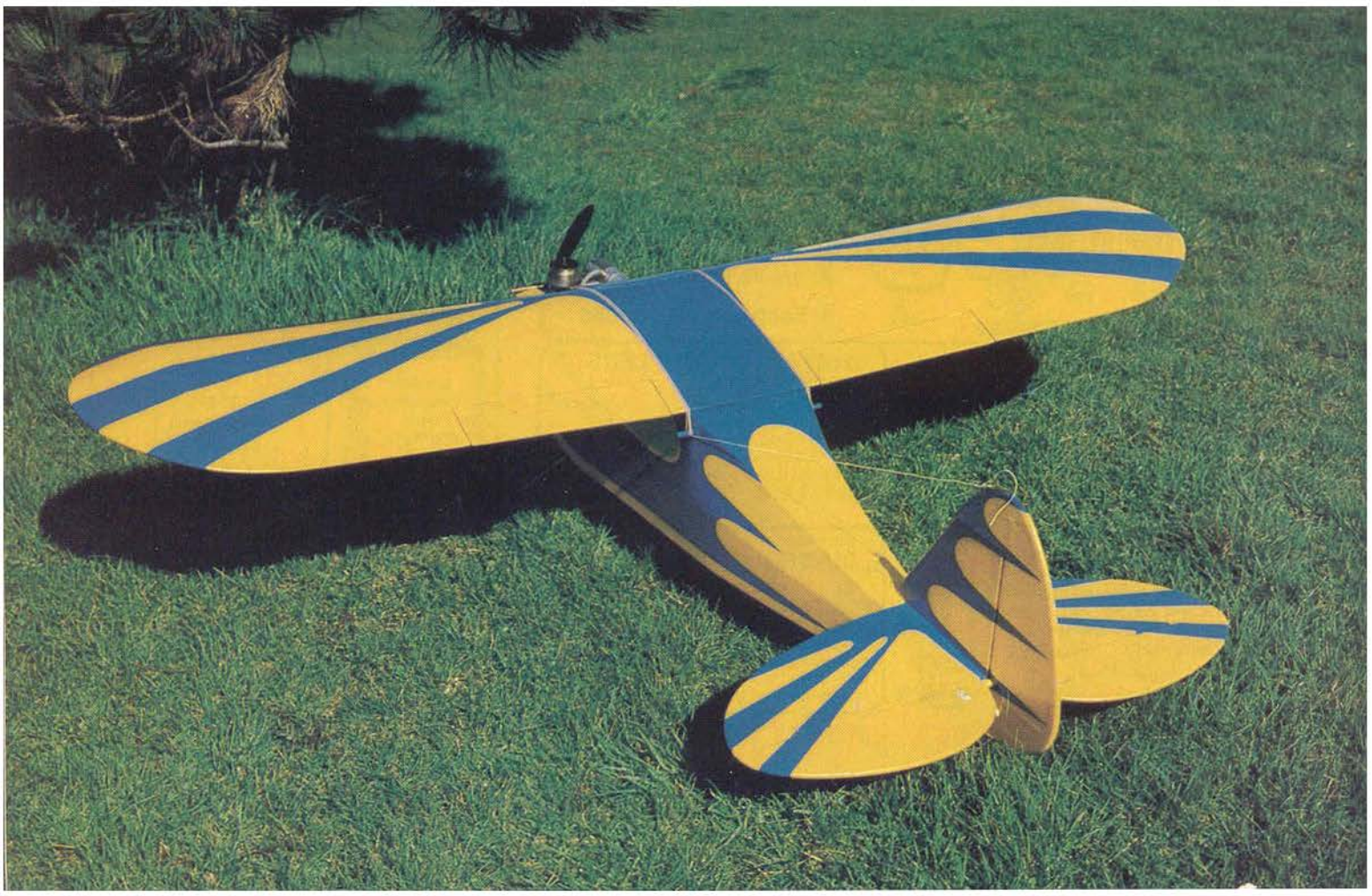


GUPPY

Steep vertical ascents and descents with positive control at all times, characterize this STOL aircraft. Designed for flying from confined areas, the Guppy is an all-around sport ship where fun is the name of the game. By Bob Thompson.

● Funk & Wagnall's Standard Dictionary defines a guppy as "a small, tropical, fresh water fish, valued as an aquarium fish for the brillant coloring of the males, and for mosquito control." Which leaves me with something of a problem . . .

As with most things in our world, Guppy came to life as the result of a need. Our fields are getting ever smaller as every open area sprouts housing development signs. Add to this the ever increasing cost of getting to a flying field and it is evident that something is needed that can operate out of whatever we have close by.

An article in M.A.N. by Peter Russell (Nov. '74) entitled "The STOL Machine" provided the idea. The problem then became one of finding something to hang those flaps on. This was solved by, and Guppy patterned after, an article and plan by Bryce Peterson in the July '72 edition of RCM.

Once the initial set of plans were drawn up, several new ideas evolved. Why not install a camera, why not a set of slats a la Pete Russell's ship? They remain just ideas, however, as it's been too much fun just flying it. Anyone who does come up with enough drive to carry them through would give me great happiness if they would communicate their results to me c/o RCM.

Now to the construction.

Wing:

The wing is quite straightforward, however, building as outlined will insure a true wing.

Start by pinning down and gluing the 3/32" bottom sheeting, capstrips, and leading edge. Following this, glue and pin down the front and rear lower spars. Next all W1 and W2 ribs. The last part of this operation is installing the front and rear upper spars. Give everything a final check for trueness and allow to dry overnight.

At the same time as the wing is being constructed, you may also lay up the wing tip. Begin by fitting and gluing the outer 1/4" pieces together, however, insure that you in no way connect it to the wing proper. Lay out the lower capstrips, then the front and rear lower spar pieces. Follow this with W3 and allow to dry. With the better aliphatics you should have sufficient tack in two hours to remove the pins and gently remove the tip from the plan. Using a convenient 1/2" piece of scrap to achieve the proper tip angle, glue the tip to the wing panel.

When both wing halves have been constructed to the point described, glue together using the dihedral as noted on the plans. It should be noted that no dihedral braces are used, however a 2" width of Silastic is a must once the wing is sheeted. The purists may grunt about the Silastic showing but Guppy is a sport model and this method puts the strength where it does the job. If you don't have access to Silastic, be sure to install full depth 1/8", 5 ply plywood spar braces extending out 2½" to 3" beyond the fuselage sides.

GUPPY
Designed By: Bob Thompson

TYPE AIRCRAFT
Sport STOL
WINGSPAN
52 Inches
WING CHORD
11 Inches
TOTAL WING AREA
572 Square Inches
WING LOCATION
High Wing
AIRFOIL
Flat Bottom
WING PLANFORM
Constant Chord
DIHEDRAL, EACH TIP
3¼ Inches
O.A. FUSELAGE LENGTH
42 Inches
RADIO COMPARTMENT AREA
(L) 10½" X (W) 5" X (H) 7½"
STABILIZER SPAN
22 Inches
STABILIZER CHORD (incl. elev.)
8" (widest point)
STABILIZER AREA
150 Sq. In. (approx.)
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
7¾ Inches
VERTICAL FIN WIDTH (incl. rudder)
8" Average
REC. ENGINE SIZE
.30 Cubic Inch
FUEL TANK SIZE
6 Ounce
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
4
CONTROL FUNCTIONS
Rud., Elev., Throt., Flaps
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa, Ply, Spruce
Wing ..... Balsa & Spruce
Empennage ..... Balsa
Weight Ready-To-Fly ..... 72 Oz.
Wing Loading ..... 18.1 Oz./Sq. Ft.

At this point cut out for, and install, your flap servo compartment. For the beginner, the following method works well:

I use KPS-12 servos, so if yours differ, insure that the installation is adequate for your servo. Start by cutting an opening 2¼" x 3" just to the rear of the main spar in the bottom sheeting with the 3" measurement going spanwise. Next, cut a piece of 3/32" plywood to the same measurements. Following this, cut two pieces of 1/8" balsa 1¼" x 3". Remove the piece of the center rib showing in the wing opening to a depth of 1⅛" measured from the bottom of the wing. Now for a trial fit.

Place the plywood floor into the opening. When it bottoms, place the 1/8" balsa pieces at the front and rear of the opening. It shouldn't take much imagination to realize that when this whole mess is glued up you have a first class servo compartment. The side walls can be fitted once the servo has been mounted and all the fussing is over with.

A word on the servo mount. The Kraft aileron servo mount can be fitted by drilling four holes in the outermost corners. I use the small screws supplied to mount the servo to the servo mount. Once you have the holes drilled, place the unit in the appropriate spot and mark the hole locations on the plywood base. Drill with a small bit and tap with the screws you will be using.

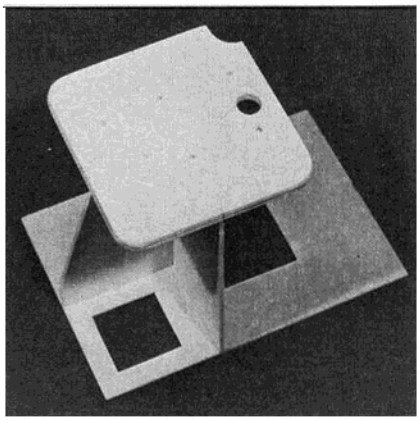
You now have a wing requiring the upper trailing edge sheeting. This allows you to cut out and install the flaps while the rest of the upper sheeting is absent.

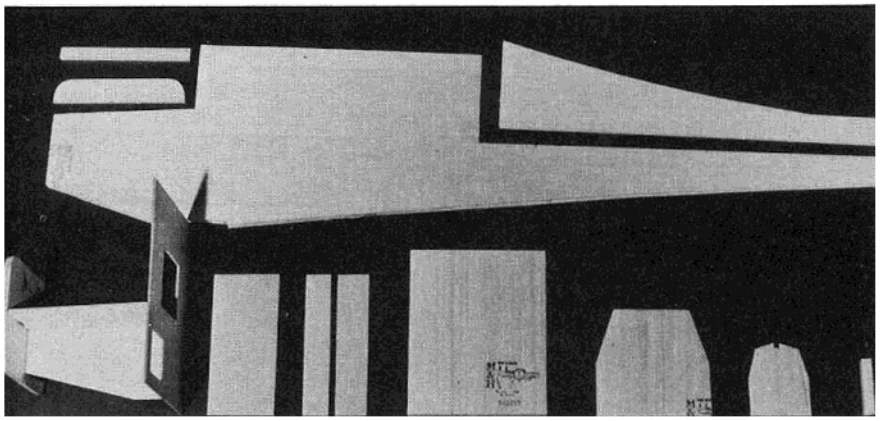
Place the wing on any flat surface capable of accepting pins. Measure, cut and glue on the upper trailing edge sheet. Once dry, remove and pin down the other side of the wing, repeating the process.

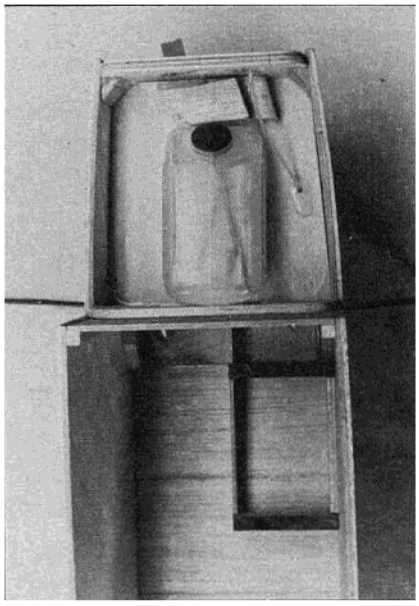
Mark out the flap locations then cut through the top and bottom sheet only. Once cut, slip your cutting blade through the top and bottom cuts. Now proceed to cut through the appropriate ribs. Complete the cuts and remove the flaps.

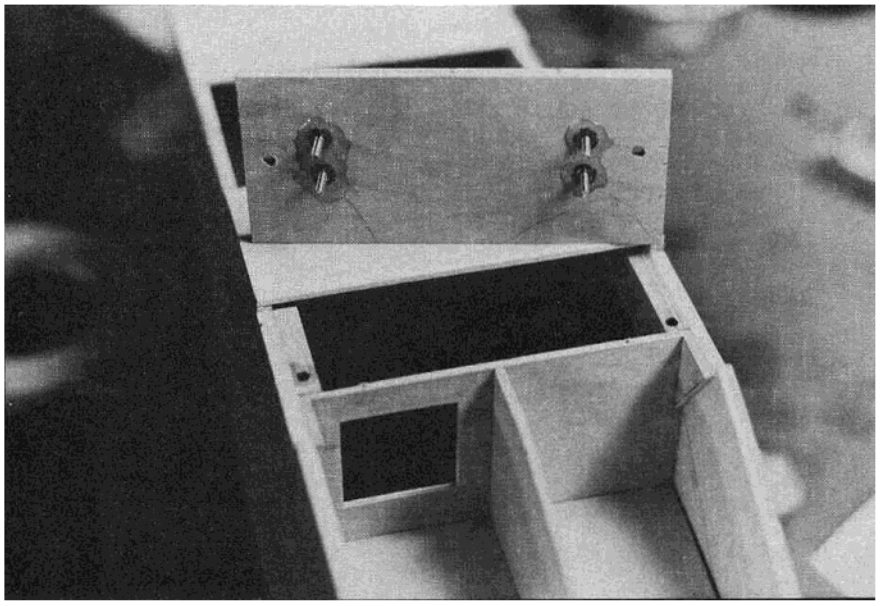
Fill in the area between the upper and lower sheet in the wing flap area with 3/32" scrap and do the same with the flaps. After sanding you should have approximately 1/16" clearance all around to allow for covering material and still have decent clearance on the working aircraft.

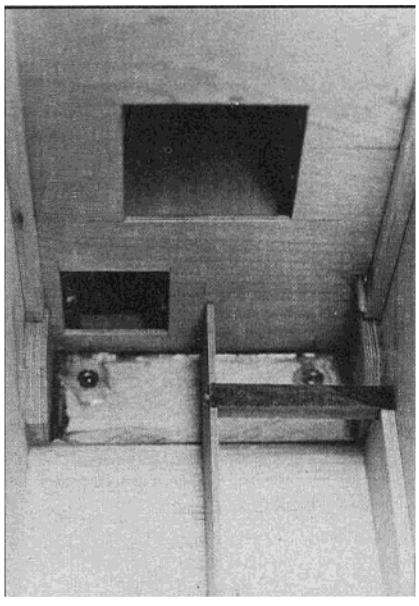
From here it is very much straight ahead. As noted in the photograph of the completed horn installation, reverse the horns and use Z-bent pushrods. The reversed horns allow for better control in the full flap position and

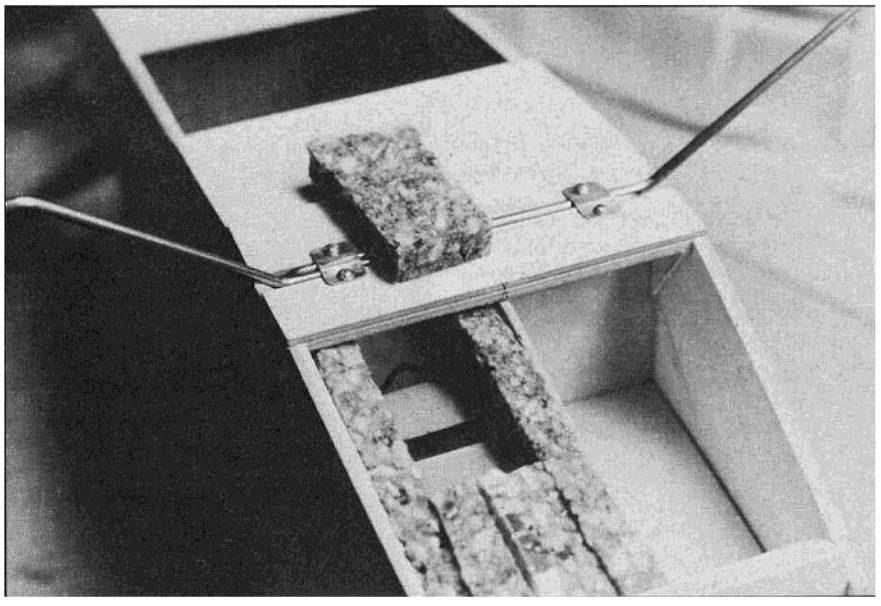




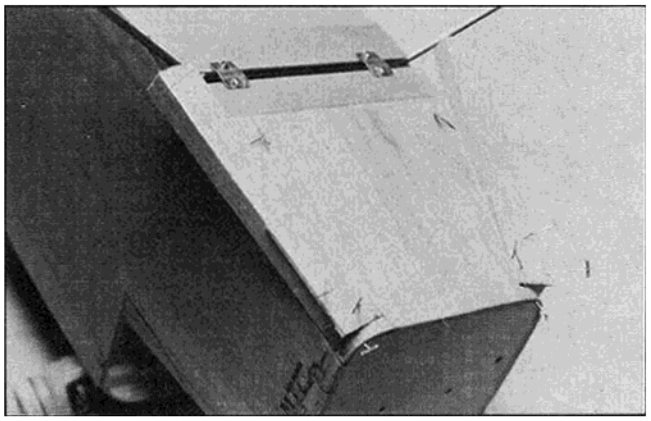


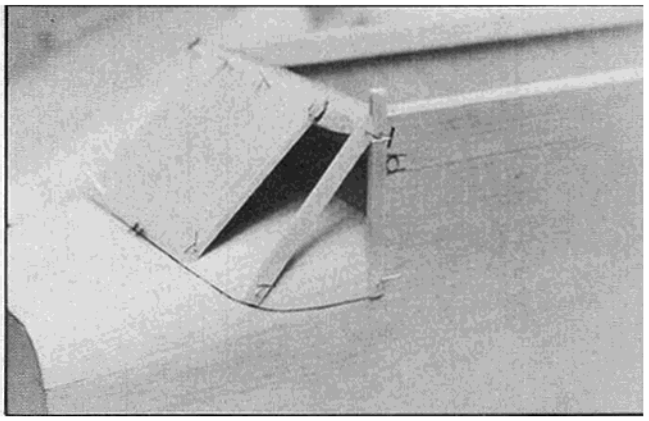


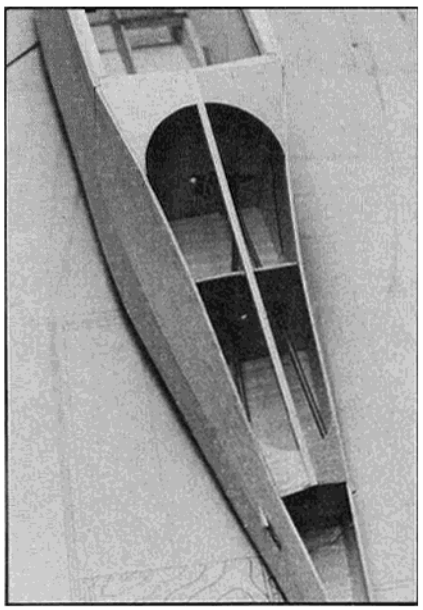


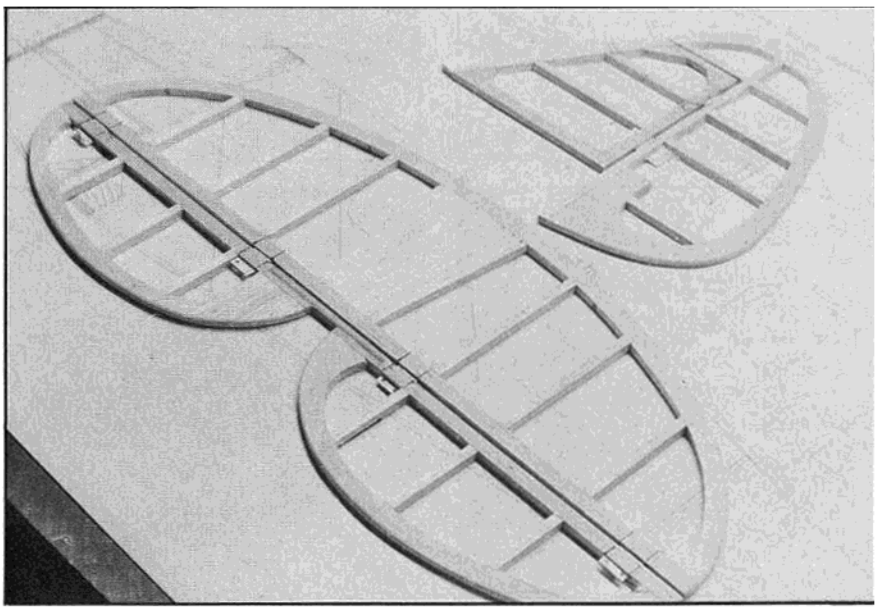


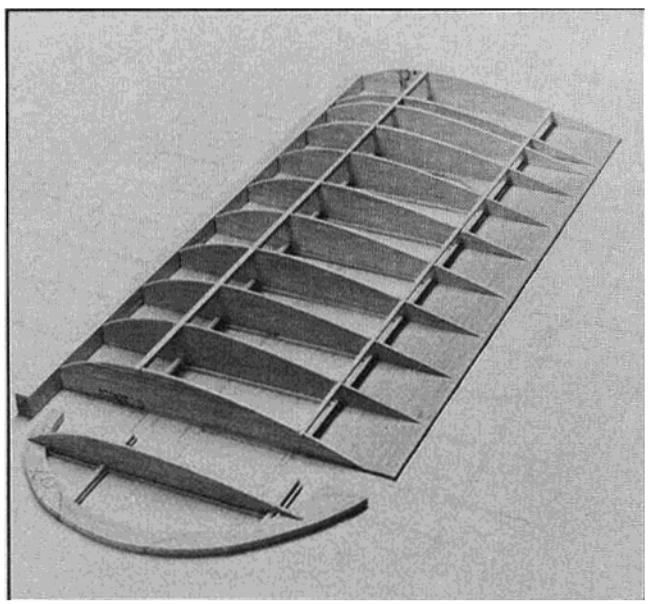
FIRST ROW, LEFT: View of the forward section. Note the hole between the motor mount. Feed all fuel lines through, then plug with Silastic. RIGHT: Photo of the basic fuselage components. SECOND ROW, LEFT: Tank compartment. Note scrap block to ensure that tank does not slide forward, pinching fuel lines. Throttle control cable tube at right. RIGHT: Plywood landing gear mount with blind mounting nuts in place. THIRD ROW, LEFT: View showing desired location of servos - - low and forward. Note throttle cable tube mid-right. RIGHT: Method used to construct a foam socket for the battery pack.

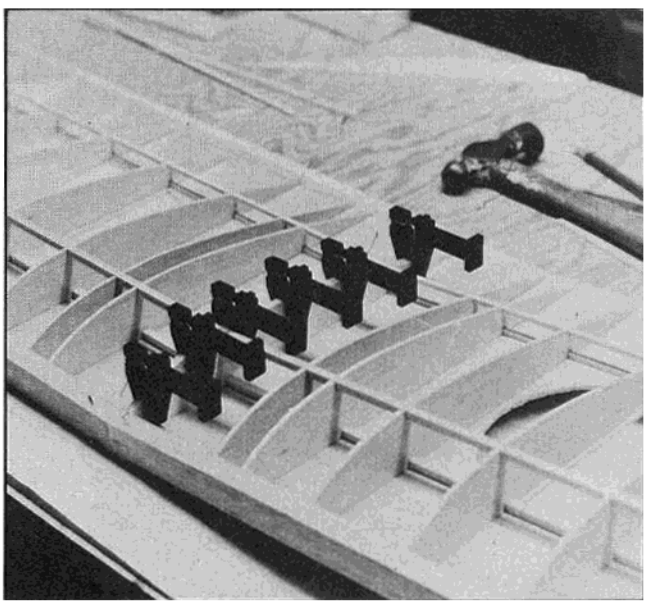












FIRST ROW, LEFT: Lots of scrap balsa is used to round out those corners. RIGHT: The windshield line is drawn on cardboard, then outlined on the model to aid in planking. Finally, the windshield is formed in as shown in this photo. SECOND ROW, LEFT: View of turtledeck area of Guppy. Note that pushrod tubing is installed during construction. RIGHT: Empennage during construction. On this prototype diagonal bracing was not used and the stab warped. THIRD ROW, LEFT: One wing panel is shown being constructed over the plans. RIGHT: Here the wing halves are being joined using clamps until the glue dries.

From RCModeler Oct. 1976