EASY 100

By Laddie Mikulasko

Photo above shows 4½ year old Sarah Roberts with the Easy 100. Fujichrome by Studio One.

After thirty years of designing many types of aircraft, and twenty years in R/C, I decided to build myself something that I haven't done in a long, long time --- a basic, high wing trainer.

I gave a lot of thought to what, in my eyes, this type of model should be like.

Good flying characteristics were, of course, the prime objective. Equally important was ease of construction. To make the model more versatile, provisions were made to have it as a taildragger, tricycle gear or float plane.

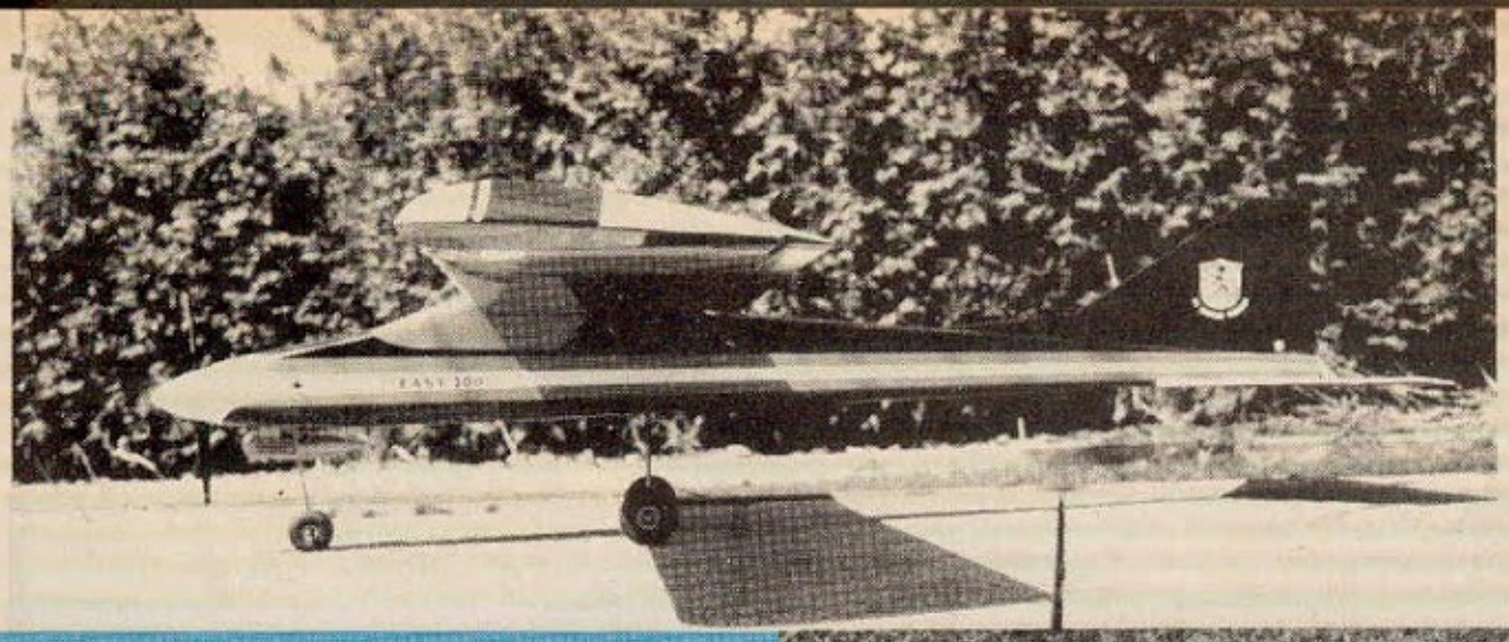
The model has a thick Clark Y airfoil, 1½" dihedral, and zero angle of attack. The stabilizer is set at zero angle of attack as well. To make sure that the model does not climb at wide open throttle, I gave the engine 3° of downthrust.

This set-up has an added benefit and it is that when flying upside down, no down elevator is required to hold level flight.

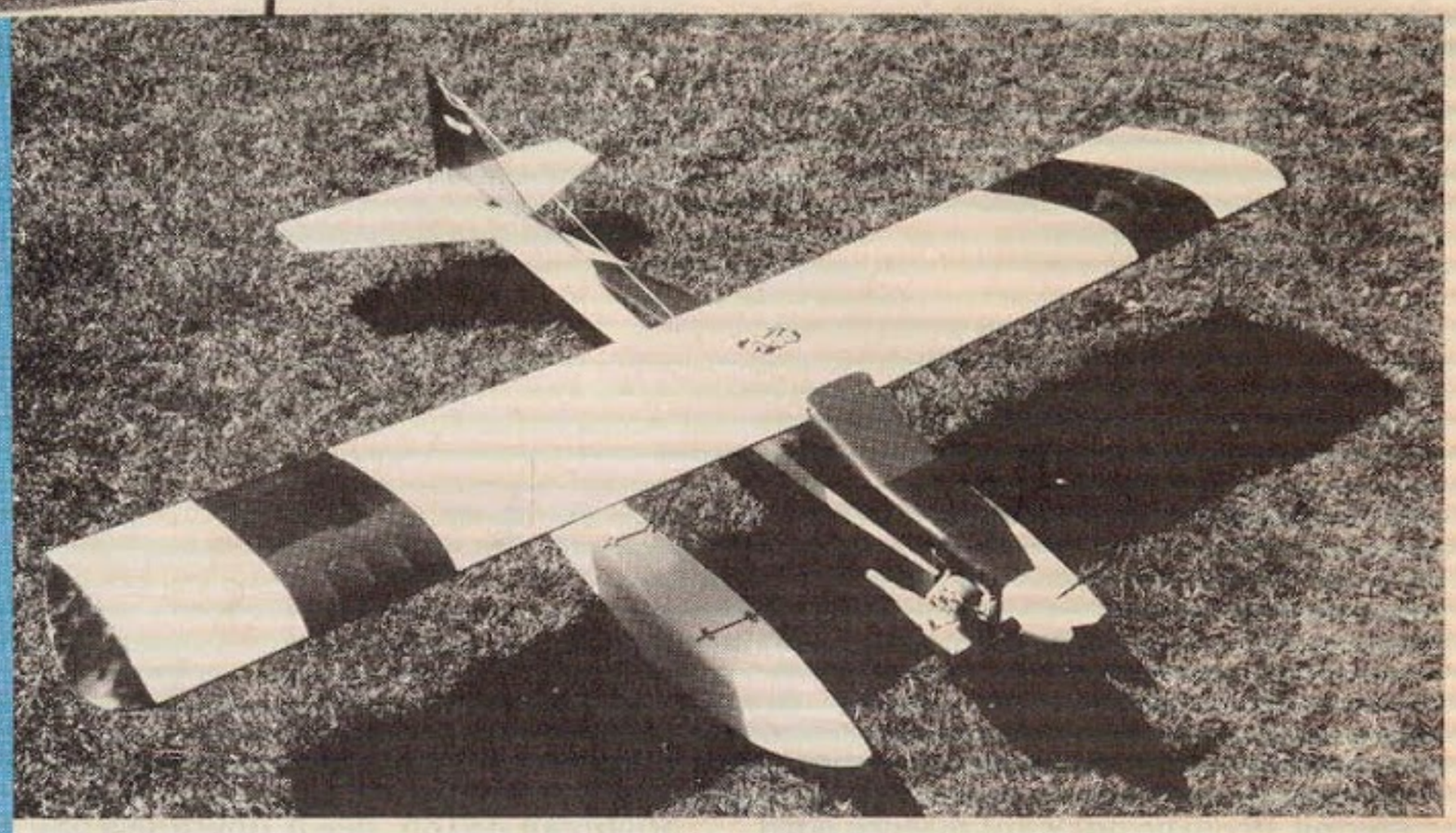
Even though I was sure that the model would fly well, I was pleasantly surprised by its characteristics. With its streamlined body, the model is fast when flying wide open, yet, when throttled back, it flies and lands almost at walking speed. When stalled, it will drop the nose a little bit and continue flying. All of the controls are very effective. The model can do all of the basic aerobatic maneuvers with ease, except that it will not spin.

Inverted flight is most amazing. All of the high wing models that I have flown, with flat bottomed wings and dihedral, did not want to stay inverted and required constant correction. The Easy 100 is different. If trimmed correctly, it will stay on its back for a long time with no control movement needed. I guess even a simple model design can teach me something new.

The model performs very well on



Good flying characteristics and ease of construction were Laddie's prime objectives on the Easy 100. In the final result, he had them both.



EASY 100
Designed By:
Laddie Mikulasko
TYPE AIRCRAFT
Sport, Land & Water
WINGSPAN
70 Inches
WING CHORD
11¾ Inches
TOTAL WING AREA
822½ Sq. In.
WING LOCATION
High Wing
AIRFOIL
Clark Y (Mod.)
WING PLANFORM
Constant Chord
DIHEDRAL EACH TIP
3/4 Inches
O.A. FUSELAGE LENGTH
54¾ Inches
RADIO COMPARTMENT SIZE
(L) 11" x (W) 4½" x (H) 3"
STABILIZER SPAN
20 Inches
STABILIZER CHORD (incl. elev.)
9½ Inches
STABILIZER AREA
130½ Sq. In.
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Bottom of Fuselage
VERTICAL FIN HEIGHT
7¾ Inches
VERTICAL FIN WIDTH (incl. rud.)
13 Inches
REC. ENGINE SIZE
.40-.45 2-Stroke,
.40-.60 4-Stroke
FUEL TANK SIZE
10 Oz.
LANDING GEAR
Conventional,
Tricycle or Floats
REC. NO. OF CHANNELS
4
CONTROL FUNCTIONS
Rud., Elev., Throt., Ail.
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa & Ply
Wing ..... Balsa, Spruce & Ply
Empennage ..... Balsa
Wt. Ready To Fly .... 5 Lbs. 10 Oz. (90 Oz.)
Wing Loading ..... 15.8 Oz./Sq. Ft.

floats as well. As you can see on the plans, the tailwheel has a water rudder extension on it, so steering is no problem. Converting the model from land plane to float plane is less than a ten minute job.

Enough bragging about the Easy 100. You can be the judge by building and flying one.

Before construction begins, I would suggest that you cut out all of the parts. Because of the long nose moment, be sure to cut out the lightening holes in plywood doublers (24), as shown on the plan, and don't hesitate to use medium-hard balsa for the ailerons and tail surfaces.

Cover the plan with clear plastic so it is not damaged when building the Easy 100 on top of it.

CONSTRUCTION

Start building the fuselage first.

Take the fuselage sides (23), and glue the longerons (27) to the left and right sides. When done, glue on the plywood doublers (24) with contact cement or other glue.

Next, place the fuselage sides upright over the plan and glue in all of the formers, making sure that the centerline of each former aligns with the plan. Use 5-minute epoxy to glue formers (F-1), (F-2) and (F-3).

Glue on the top sheeting (26) ahead and behind the wing saddle.

Flip the fuselage on its back and, with 5-minute epoxy, glue on the hardwood landing gear blocks (29), (30) and (31). Blocks (29) and (30) should have double width grooves cut into them ahead of time. Glue on bottom sheeting (25).

The fuselage can be sanded now. For aesthetic purposes, round the corners of the fuselage to about 1/2" radius.

Again with 5-minute epoxy, glue in the hardwood blocks (32) for the wing bolts.

Tail:

Glue together and sand the tail surface sheeting. On the stabilizer (17), cut out a square opening, as per the plan, to glue in a small plywood block (22) to hold the tailwheel tubing. Once glued in place, drill a 3/32" dia. hole in it.

Glue the stabilizer to the bottom of the fuselage. Cut the 1/4" wide slot in the fuselage sheeting (26) to accommodate the fin, but do not glue it in yet.

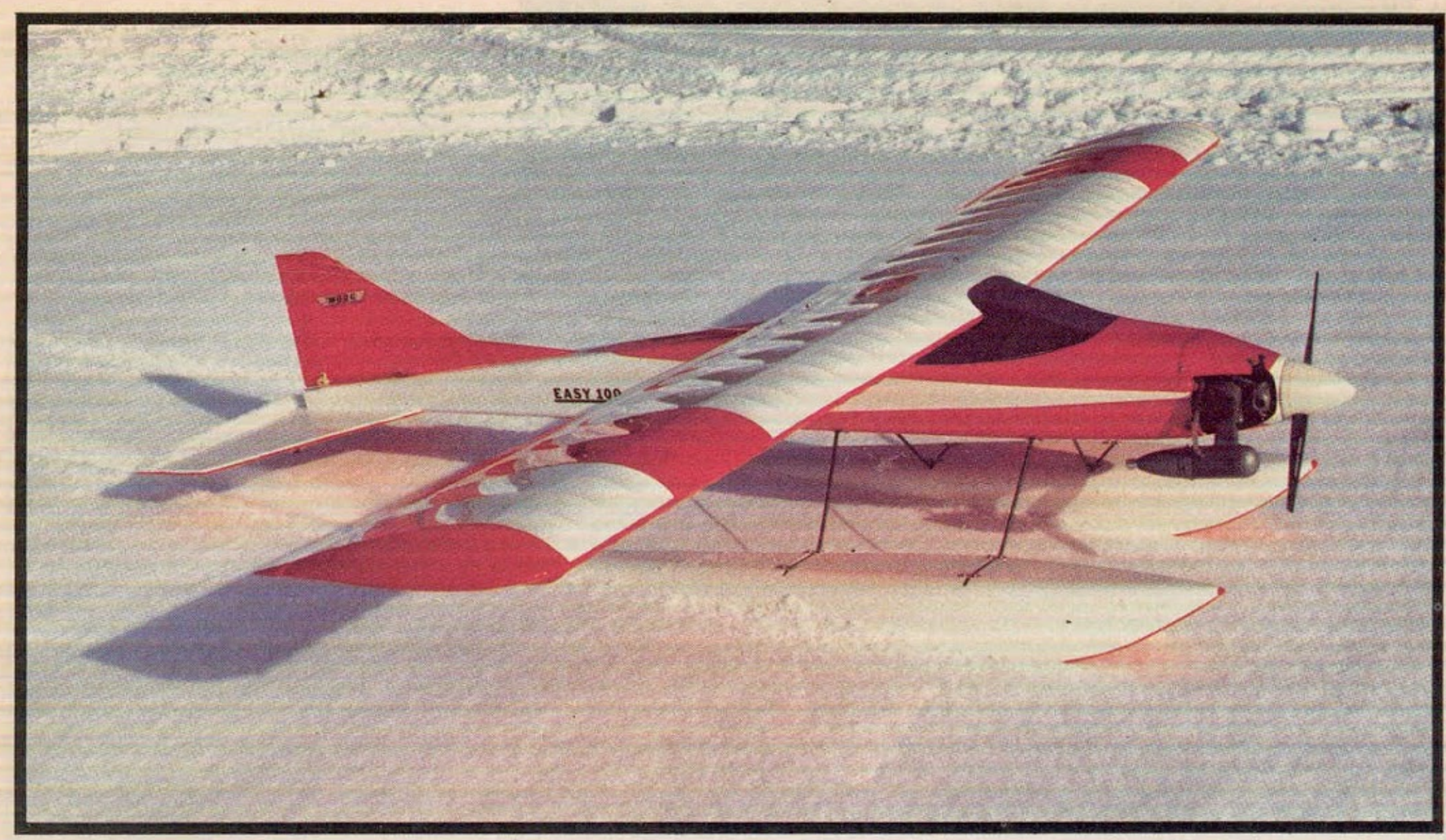
Landing Gear:

The next step is to make the tailwheel assembly.

Cut a piece of 1/16" i.d. tubing to the proper length (see plan), and slide it, together with a wheel collar, onto 1/16" dia. piano wire. Bend the wire to shape, as shown on the plans, and slide this assembly through the hole in plywood block (22). Glue the tubing in with 5-minute epoxy. The wheel collar will prevent the wire from sliding up when the plane is landing. With this set-up, the tailwheel is connected to the rudder directly.

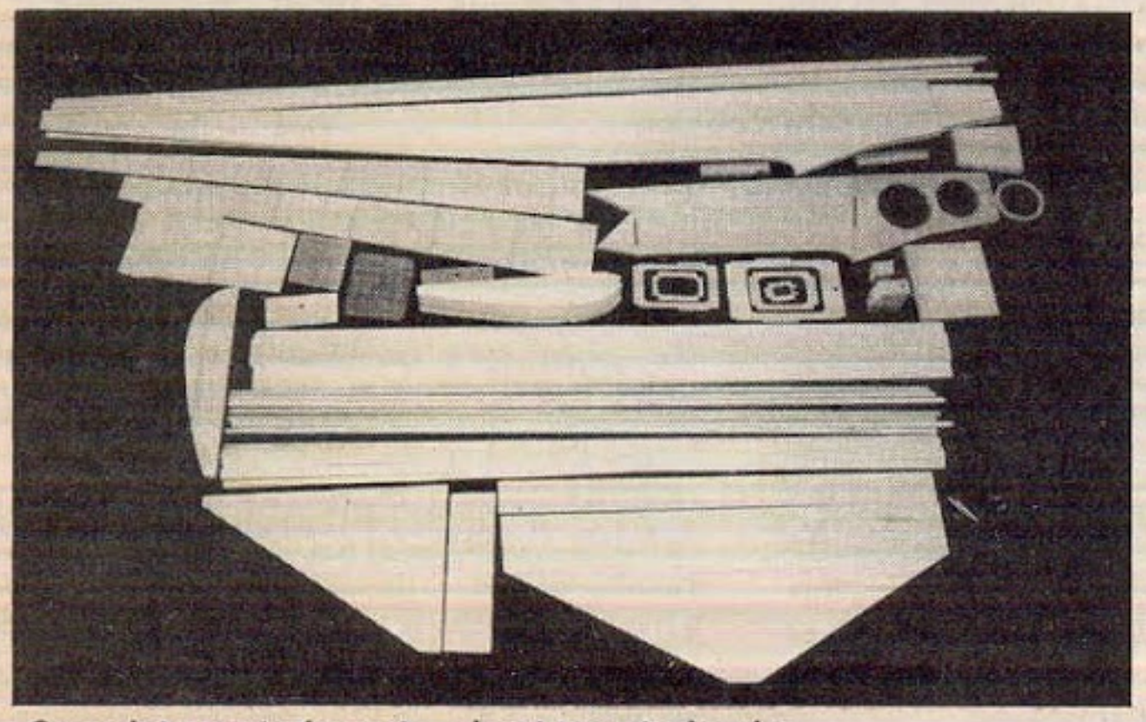
Now, glue on the fin (19). Just in front of former (F6), cut out a 1/4" x 1" slot in the top sheeting (26) for the rudder pushrod to exit.

To make the model look better, I strongly recommend a cowl for the

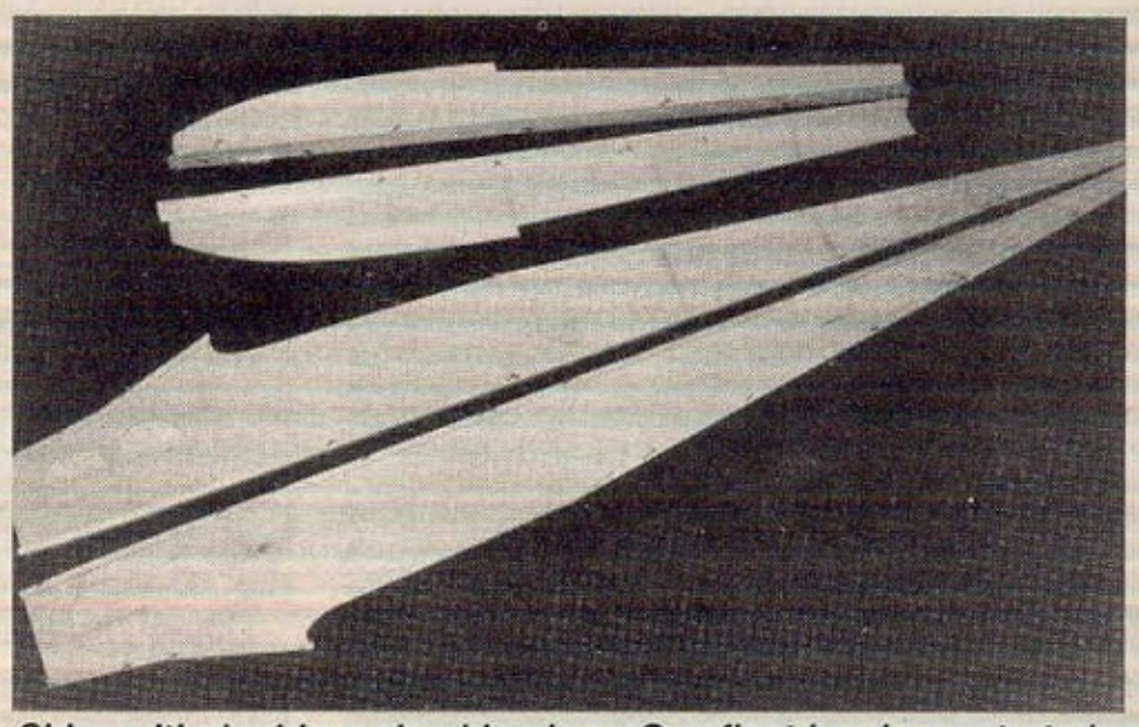


engine. If you do not want to work with fiberglass, the plans show a balsa version as well. T & D Fiberglass Specialties, 30925 Block, Garden City, Michigan 48135, has a fiberglass one available.

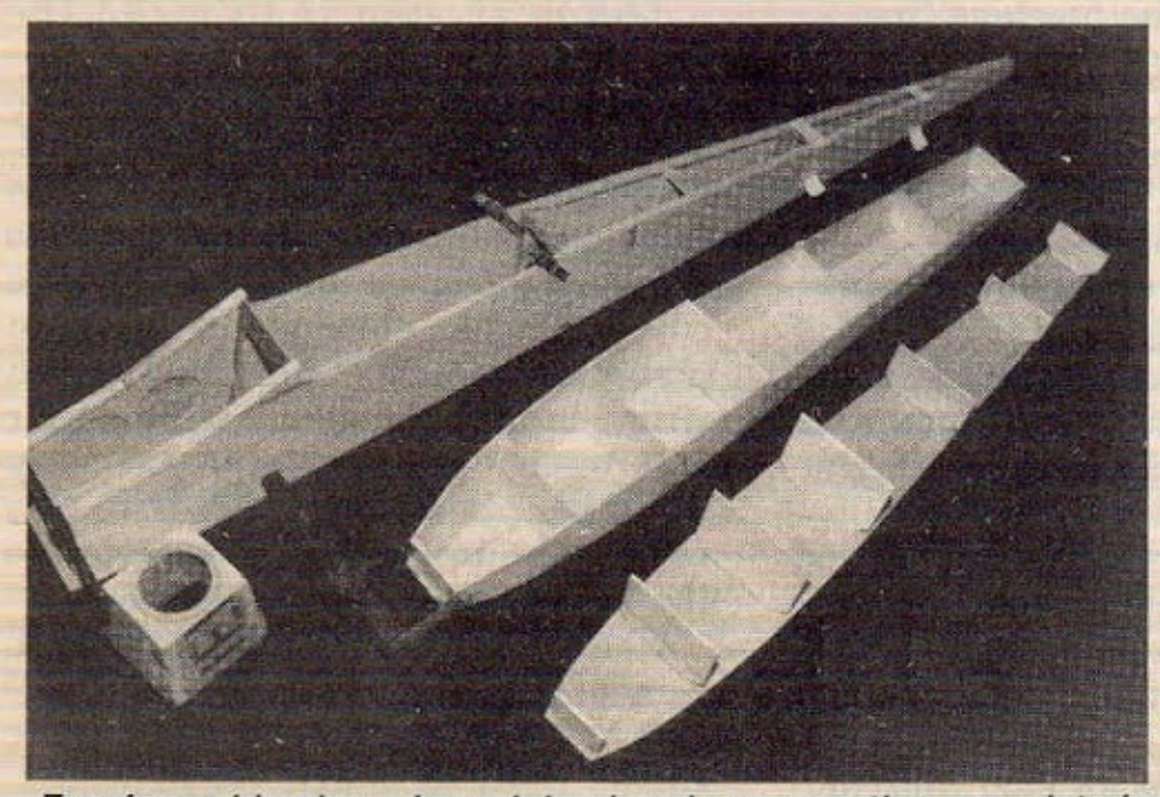
Make two identical landing gear legs. Drill holes in the vertical blocks (31). These holes have to be offset, so that both wires can lay side-by-side in the bottom slot. For the tricycle version, plug the main gear into the



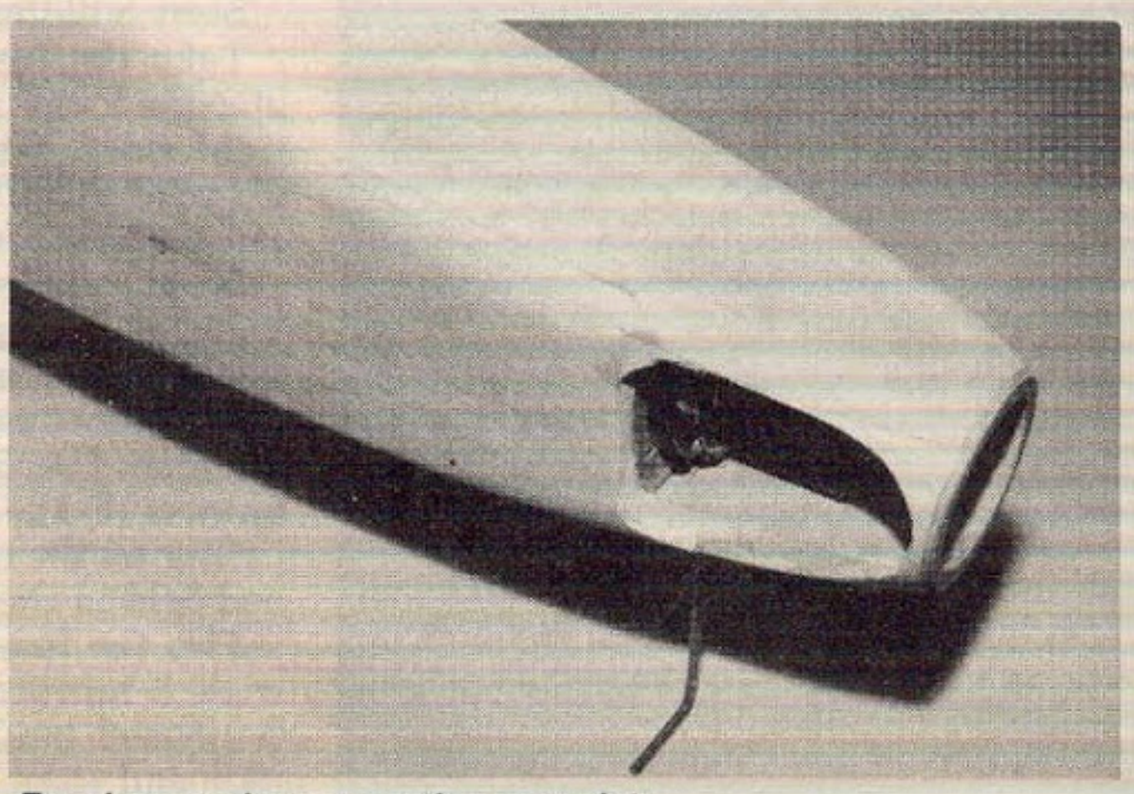
Complete parts layout — best way to begin.



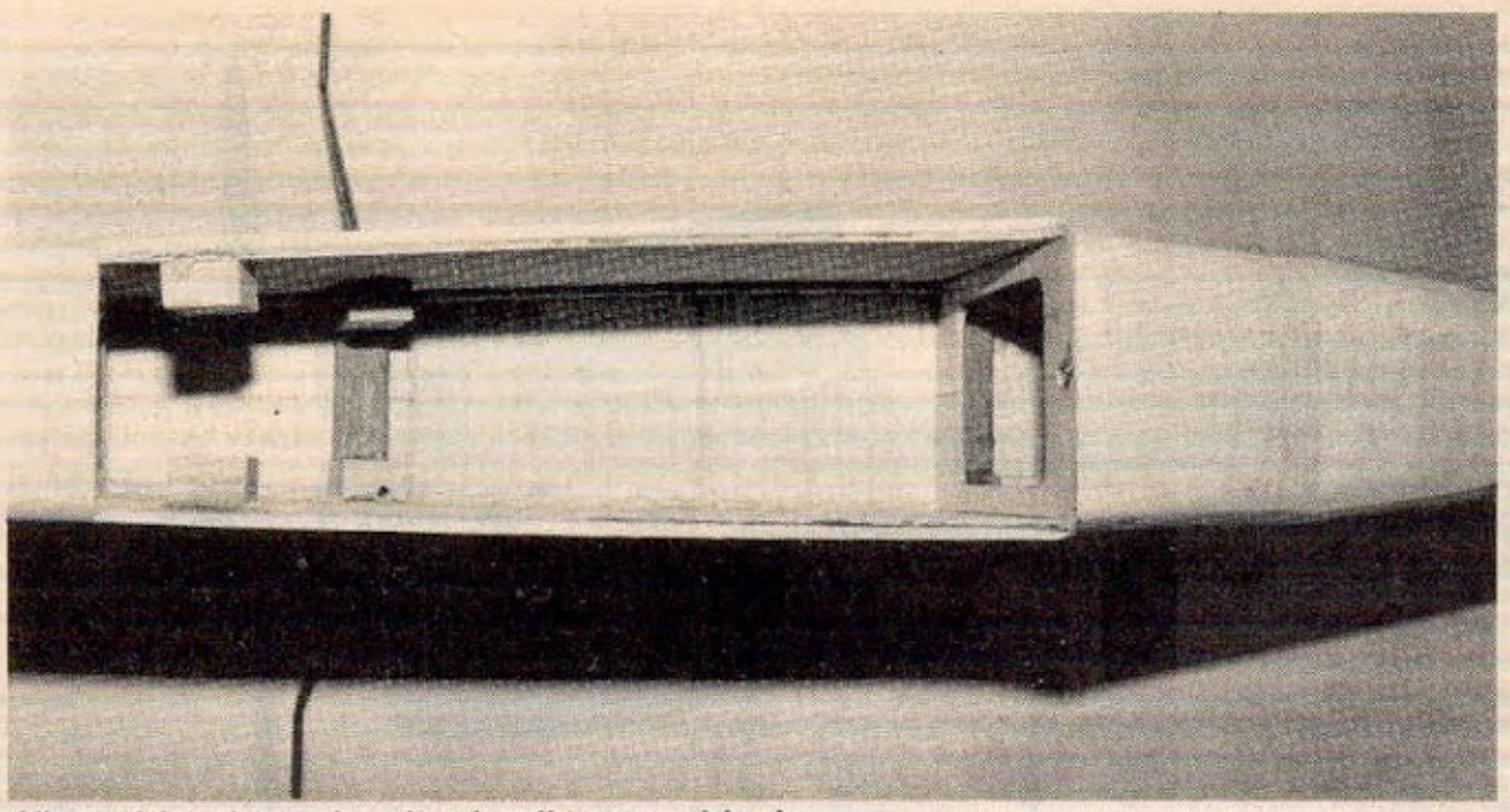
Sides with doublers glued in place. One float has been started.



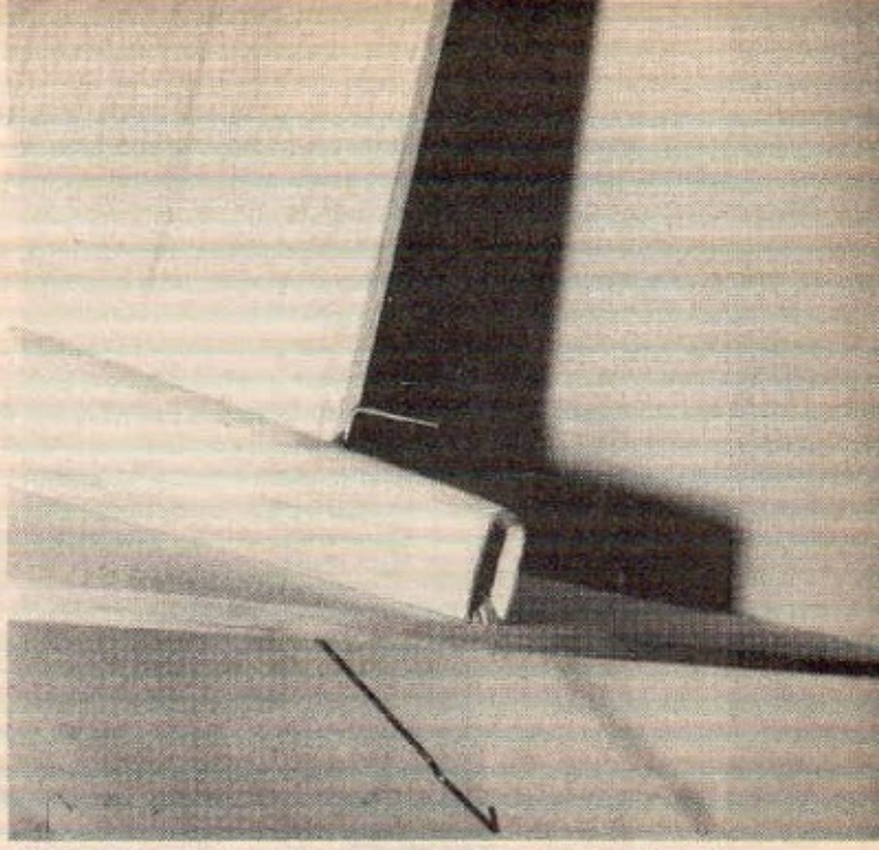
Fuselage sides have been joined and nose section completed except for shaping. Floats are in process of being assembled.



Fuselage and nose section complete.



View of fuselage showing landing gear blocks.



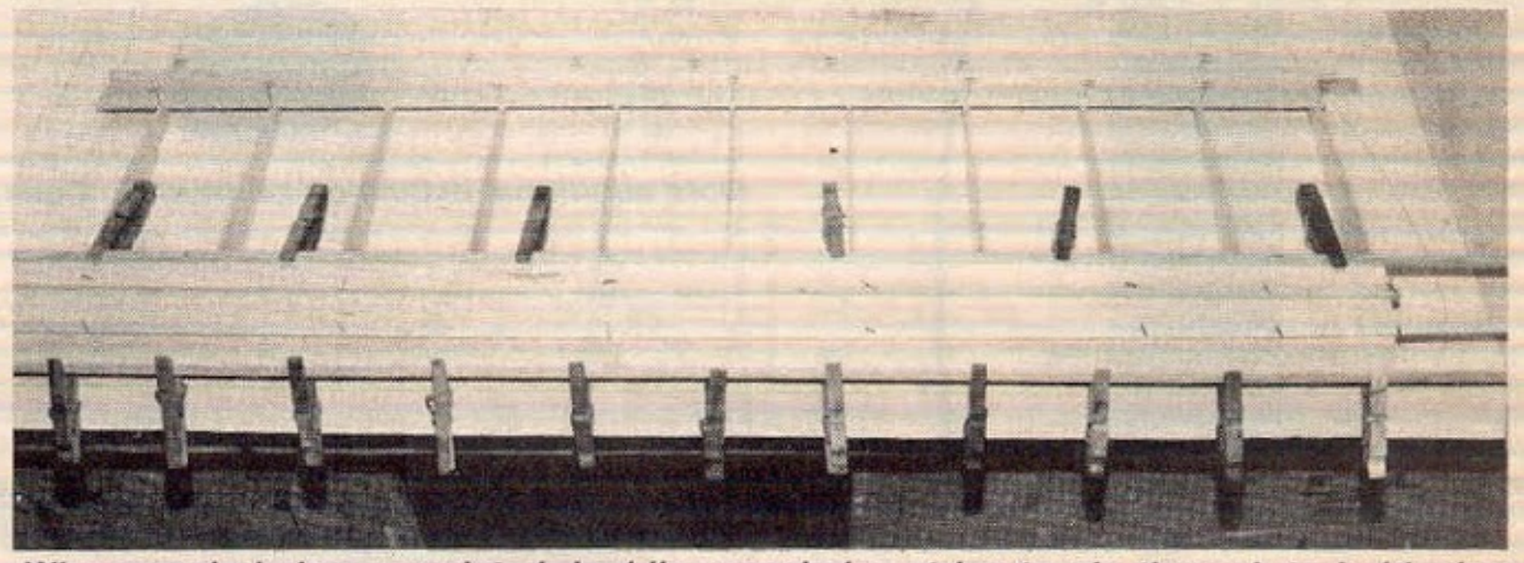
Aft end of fuselage showing tail wheel wire.

rear blocks and fit a nosewheel to the firewall or use an engine mount with the nose gear bushing already included in it. This is my preference.

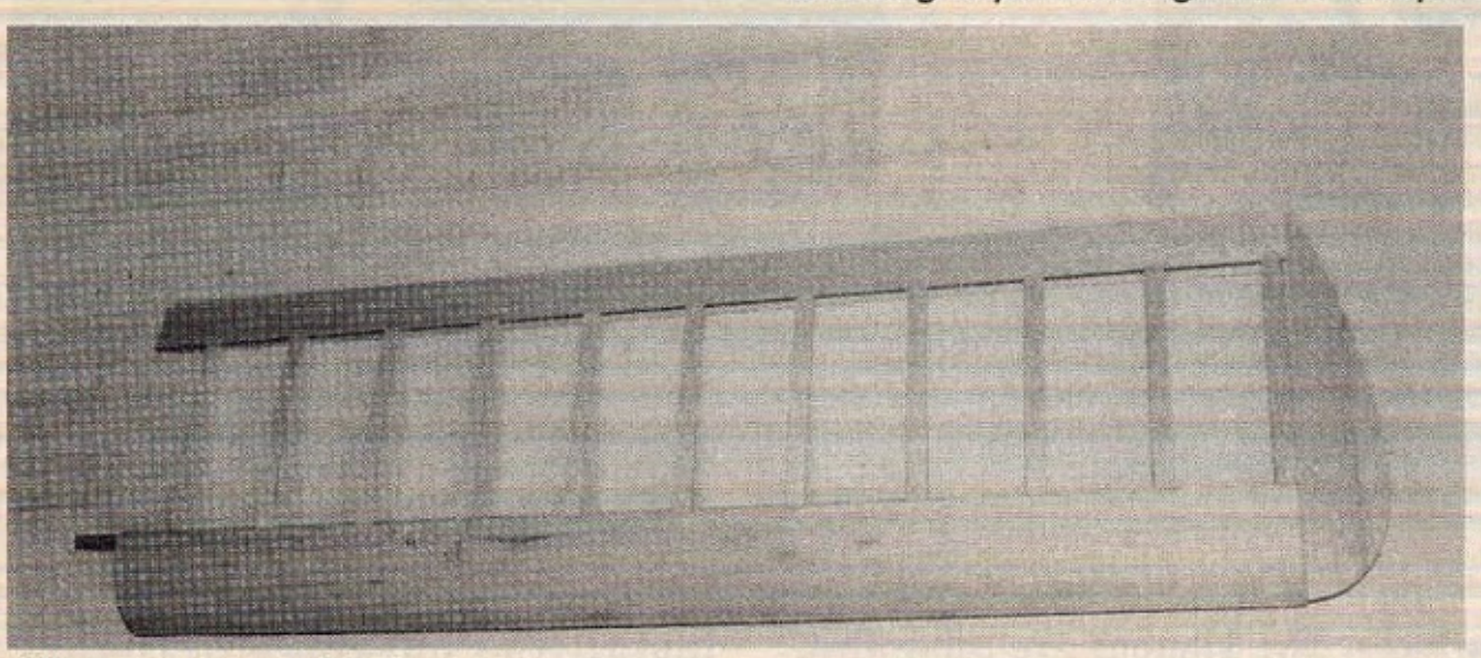
Wing:

The wing is built in two halves, to be joined later. Again, build right on top of the plan.

Pin the bottom spar (2) and trailing edge (4) to the building board. Glue each rib in place, making sure that they are square to the building board surface. Glue in the top spar (2) and



Wing panels being completed. Laddie uses balsa strips to pin through to hold wing sheeting in place along with clothespins.



Wing panel completed.

leading edge (1). Glue on the trailing edge sheeting (9), leading edge sheeting (8), and capstrips. Glue on the wingtip (12) and its triangular support (13).

Remove this half from the building board. Glue on the bottom leading and trailing edge sheeting and all of the capstrips.

Build the other wing half exactly the same way. Make sure that you build a right one and a left one!

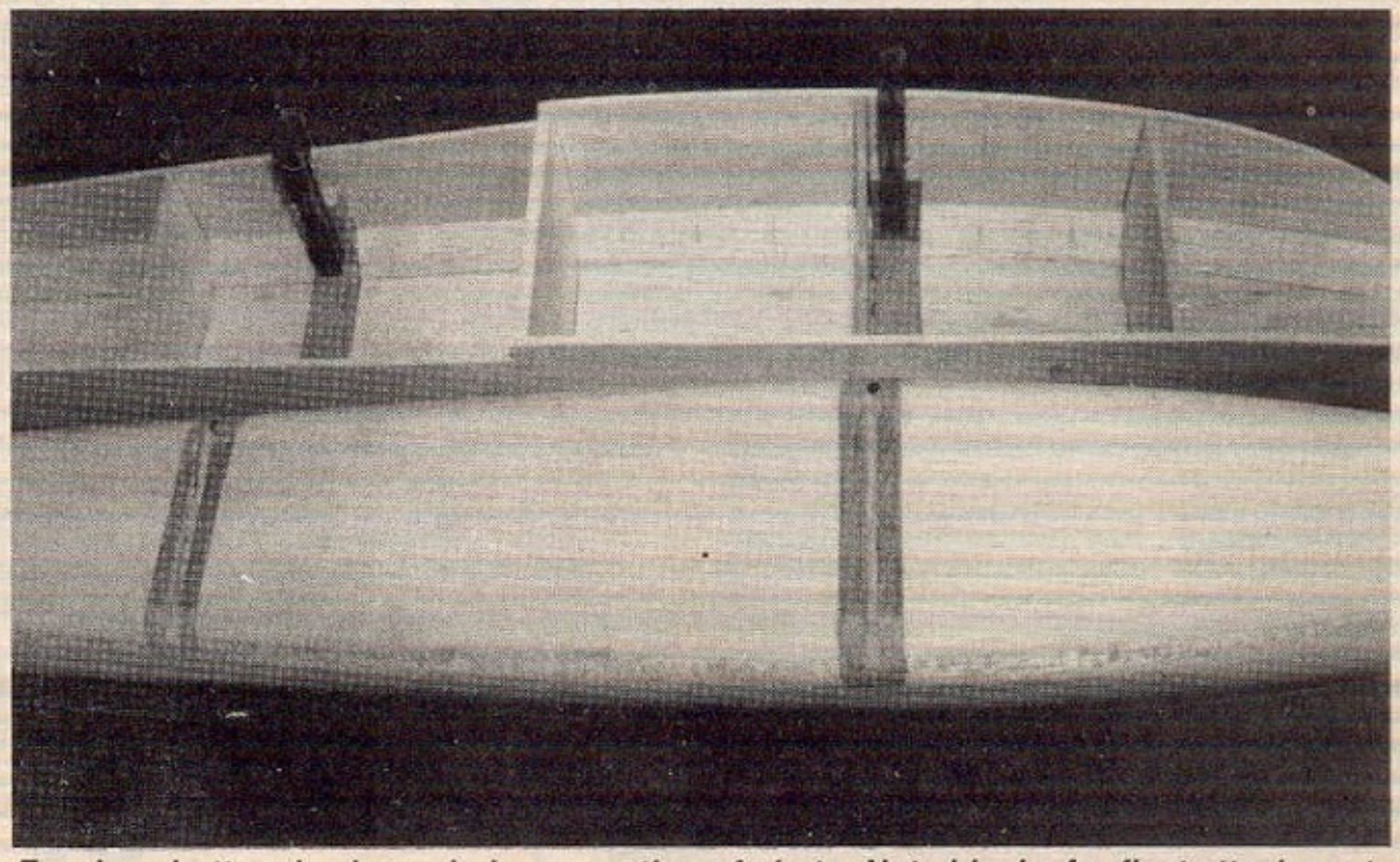
To join both wing halves place one half flat on top of the building board and pin it in place. Place the other half so that the root spars are touching each other. Insert a 1½" high block under the tip rib of this panel.

With 5-minute epoxy, glue in the plywood dihedral brace (6) and, at the same time, glue on the plywood doubler (7).

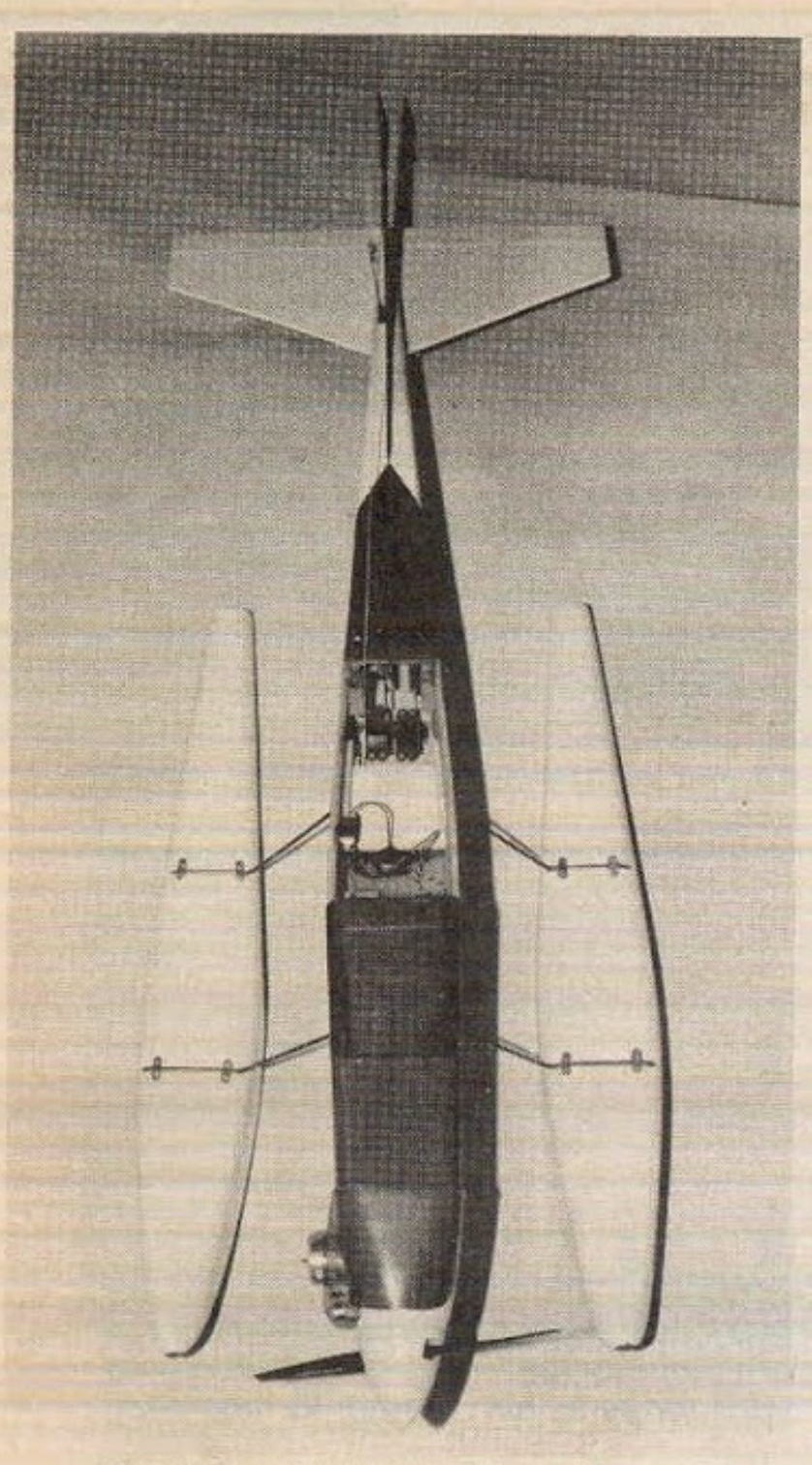
Sheet the center section of the wing between the leading and trailing edge sheeting. Sand the wing to your satisfaction. Glue the plywood fairing plate (10) onto the top sheeting of the center section.

Insert the 1/4" hardwood dowel into the hole in the plywood leading edge joiner, but do not glue in yet. Place the wing on top of the saddle on the fuselage, with the dowel going through the hole in former (F2). Check alignment of the wing. If satisfied, glue the dowel into the wing permanently.

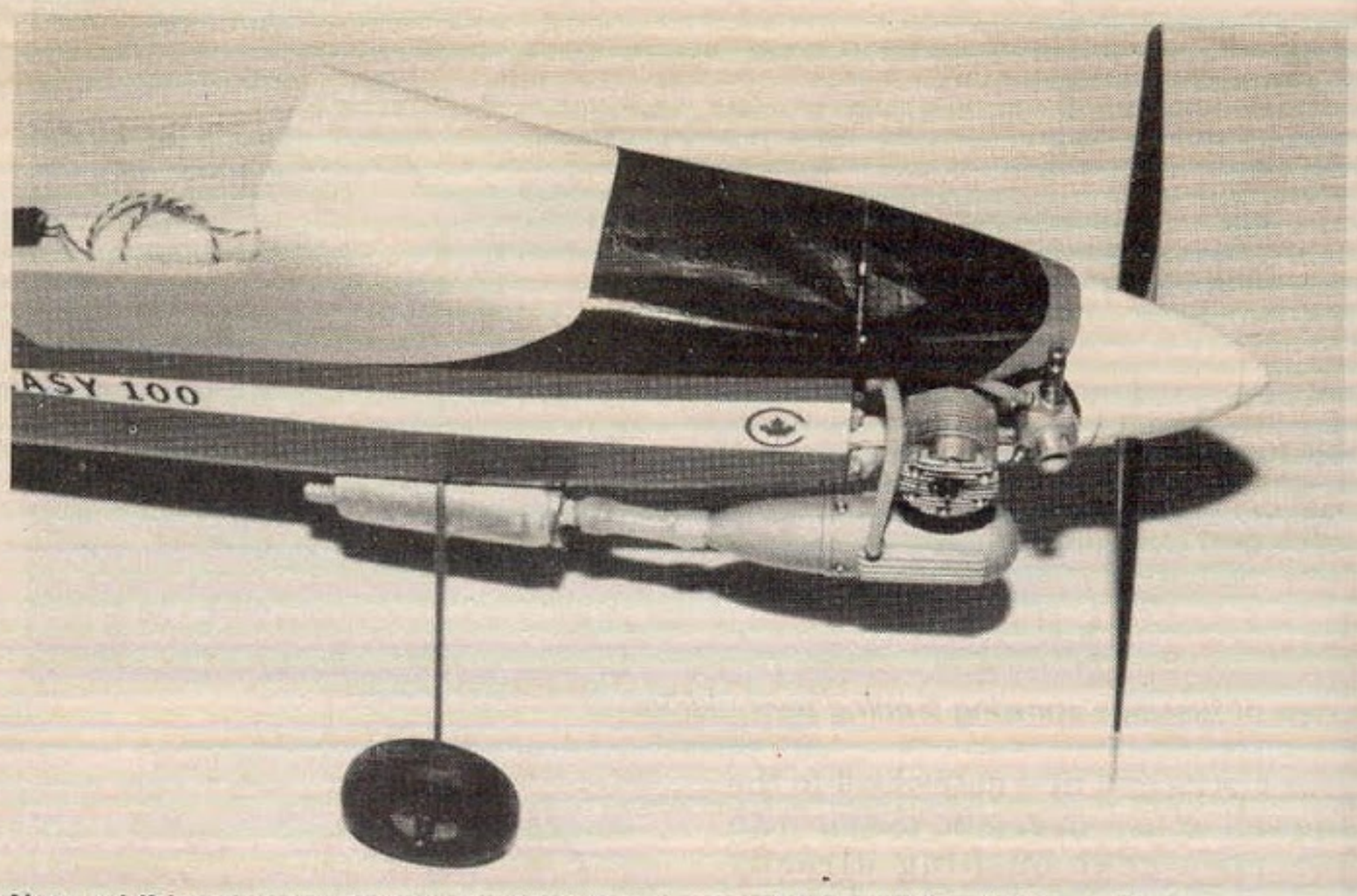
With the wing correctly aligned on



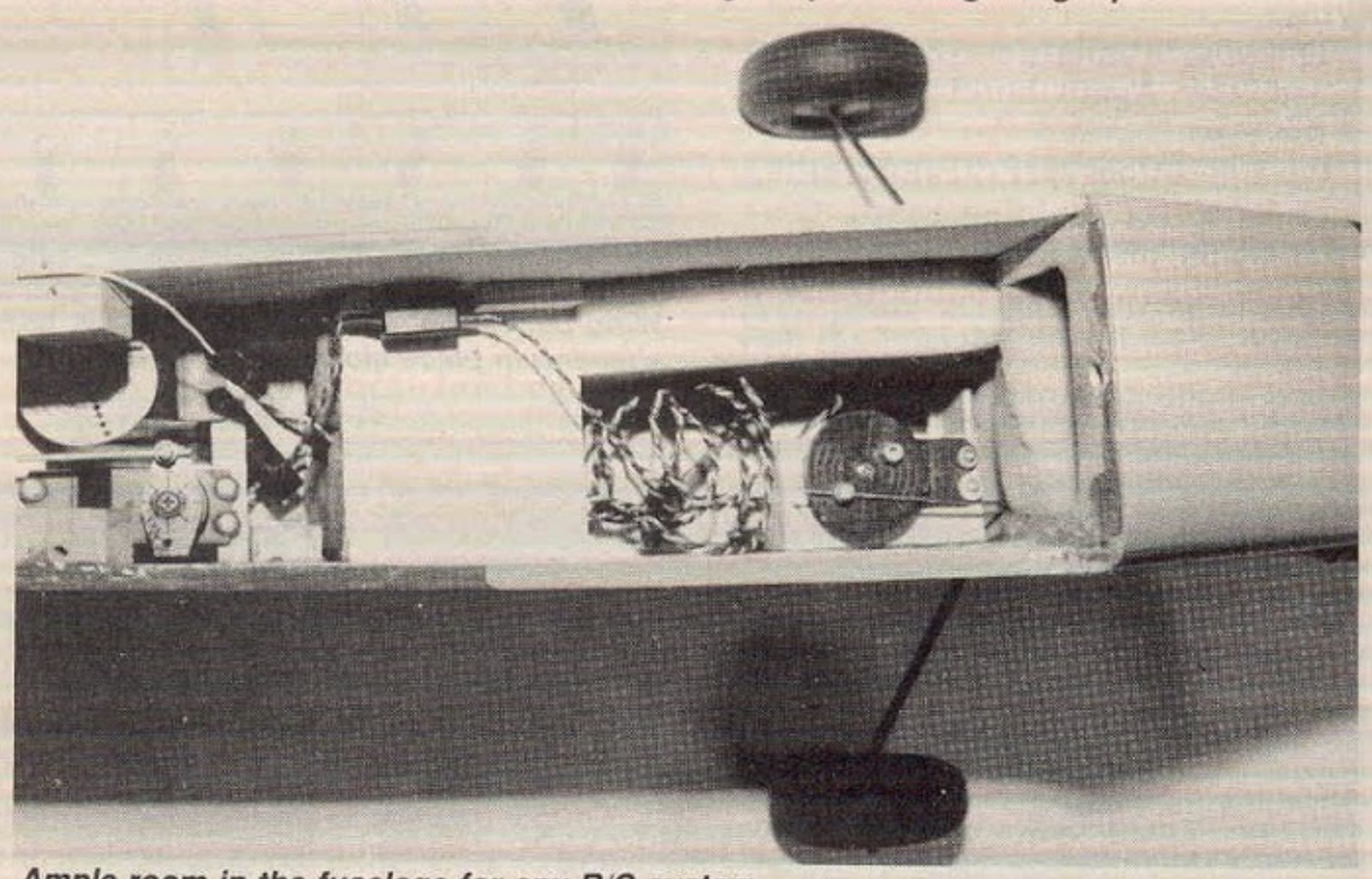
Fuselage bottom is shown in lower portion of photo. Note blocks for float attachment.



All set up with floats attached.



Note additional extension on muffler. Does a good job making things quiet.



Ample room in the fuselage for any R/C system.

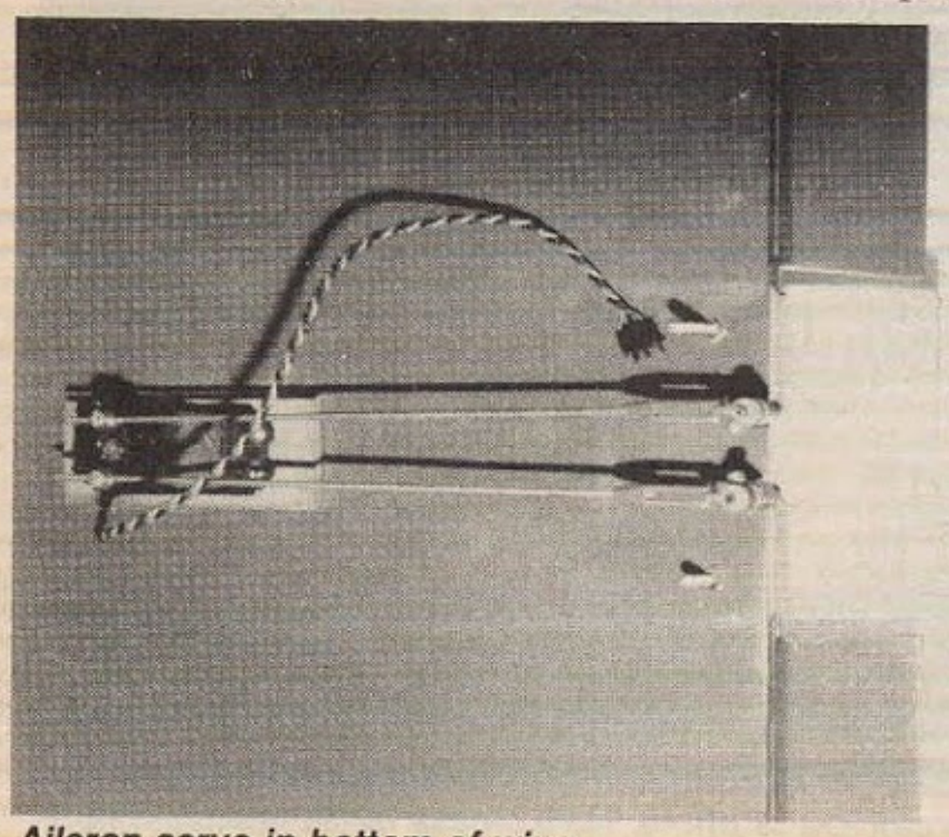
the fuselage, drill two holes through the plywood trailing edge fairing, right into the hardwood blocks (32). I use 1½" #6 self-tapping screws to hold the wing on the aircraft, but of course you can drill and tap the blocks for wing bolts if you prefer.

While the wing is still in place, glue on a small balsa fairing at the leading edge of the wing and sand it to the contour of the fuselage.

Covering and Finishing:

Give the model one light coat of clear dope. When dry, sand lightly. Cover the model with the material of your choice.

Install hinges for all of the control surfaces. The ailerons are controlled by torque rods. You can use Du-Bro type or make your own by slipping aluminum tubing onto piano wire. Bend the wire to the shape shown on the plans. Epoxy the tubing in place.



Aileron servo in bottom of wing.

Install the pushrods to control elevator and rudder, as well as the NyRod for the throttle.

Engine:

The fuel tank and engine can be installed now. Any .40 to .45 sized engine can be used. If you are planning to use a 4-stroke .40 or .60, you may have to add weight to the tail to balance the model.

Radio:

Install your radio equipment. The elevator and rudder servos should be installed as far back as possible. The battery and receiver should sit just in front of the rear landing gear block. The throttle servo is attached to the fuselage side.

Check the movement of the control surfaces. The elevator should be set to have 1/2" movement, both up and down. The rudder has 3/4" deflection each way. Ailerons should be 1/2" either way.

Balance:

Check the Center of Gravity with