The Midget in a low, slow fly-by.

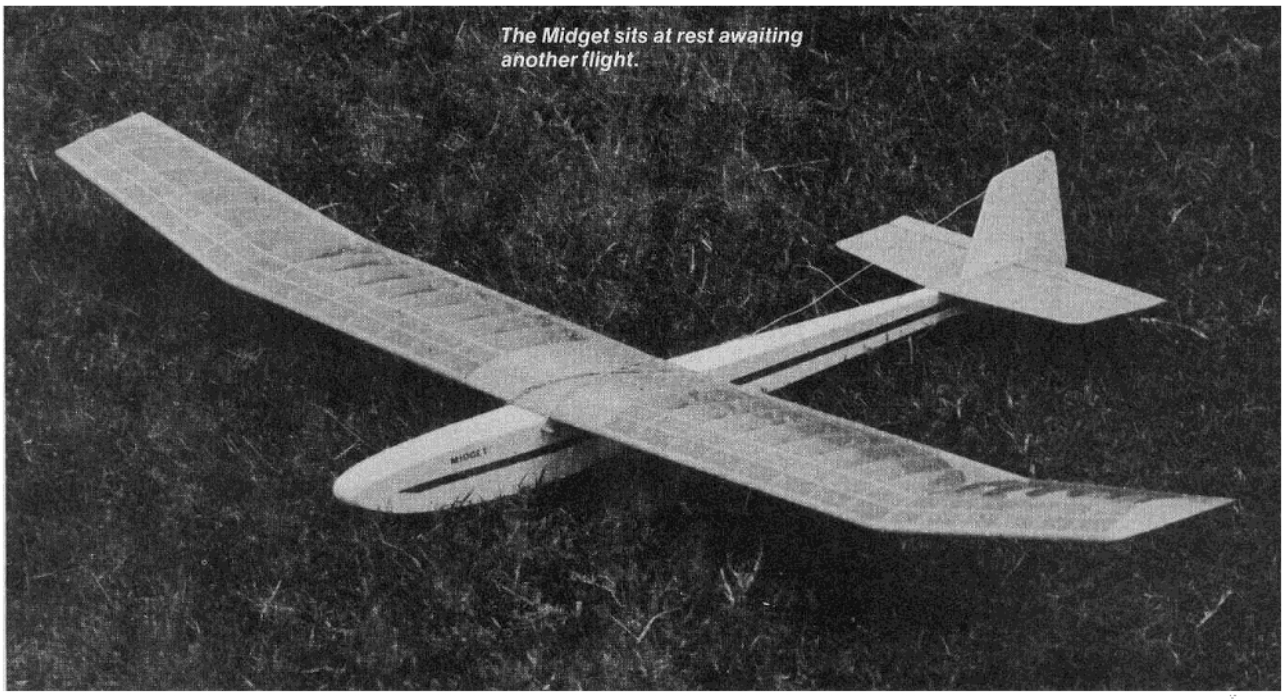
MIDGET

By Randy Wrisley

How about a sailplane and hi-start for about $10.00? The Midget is the answer. Spanning 50 inches and weighing in at 8 ounces, it's a relaxing joy for after work flying at a local schoolyard.

Midget is a small sailplane. How small is it? Well, it's so small you can fly it just about anywhere! That schoolyard or public park close to home becomes your private flying site. No more gas guzzling drive to and from the club flying field. After dinner, just stroll down to the park and fly up a storm. The crankiest neighbor can't complain about the noise, cause there isn't any! No glow fuel mess or spinning prop either. Small means less expensive too. When was the last time you spent around 10 bucks for a model, including the powerplant? Midget's "powerplant" is a simple homemade hi-start. 50' of Sig 1/4" flat rubber is tied to 150' of 6 lb. test nylon fishing line. A screwdriver is used for a stake, and a paper clip for a ring. 3' of crepe paper makes a dandy streamer.

I have to give credit to my friend Randy Heydon for the hi-start idea. He not only made up the first one, but also ate the oatmeal which used to occupy the box the hi-start now resides in! Midget climbs swiftly to the top of the line and turns in consistent 3 minute flights. She also thermals easily but goes out of sight fast. For this reason it's best to stay over the field. It's no fun to retrieve your Midget from the neighbor's pool because you got too low on final! The prototype uses a Cannon super-mini radio controlling rudder and elevator. I'm sure an Ace single channel unit could be used too. Just increase the decalage and move the CG up a bit. My Midget



The Midget sits at rest awaiting another flight.

weighs 8 oz. ready to fly. I have flown it ballasted up to 10 oz., with little loss of performance. Remember, the lighter it is, the better it flies. Now for the best part. In addition to all of the above, Midget is also a snap to build! Here's how . . .

CONSTRUCTION

Fuselage:

Cut the sides from soft balsa and the formers from hard 3/32" balsa. Cement the 1/8" x 1/8" balsa stiffeners to the sides and mark the former locations. Glue the tail together and install F-1. When dry, cement the rest of the formers in. Plank the bottom with hard 1/16" balsa, applied cross grain. The 1/8" dowel pushrods should be fit in place before you plank the top aft end of the fuselage. Plank the nose with some more 1/16" balsa and make the hatch from the same stuff. Cement a block to F-1. Carve it to shape and sand the rest of the structure smooth. Epoxy the 1/4" x 1/2" spruce tow hook mounting block in place as shown on the plan. Drill two holes in it at the locations shown in the top view. Bend the top of the hook, push it through the holes and Hot Stuff it. Now bend the bottom of the hook to shape. You can install the 1/8" dowels now or after covering.

Wing:

Pin the L.E. and T.E. into place. Do the same with the bottom spars noting which is spruce and which is balsa. Use a template and cut twenty-eight W1 ribs and six W2 ribs from light 1/16" balsa. Cement the center section bottom planking in place. Fit the center section ribs next. Angle the two center ribs out about 1/32". Cement the rest of the ribs in, excepting the ones over the polyhedral joints. The tip ribs have their aft ends cut down to make them shorter. Glue the 3/32" square strips to the T.E. between the ribs and allow the wing to dry on the board overnight.

Cut the three polyhedral braces from 1/32" plywood. Raise each tip 2" off the board and cement the tip braces in their places! When dry, raise one of the center panels 3/4" and install the final brace. Cement the last two ribs in over the poly breaks. At this point you can add the top spars and plank the rest of the center section. Now glue the tips in place. With a sharp X-Acto, a sanding block, and a little patience, carve the aft end of the tip ribs down to the T.E. You might as well sand the L.E. to shape while you're at it. Cover the wing with lightweight plastic film and crank about 1/4" of washout into each tip.

Tail Group:

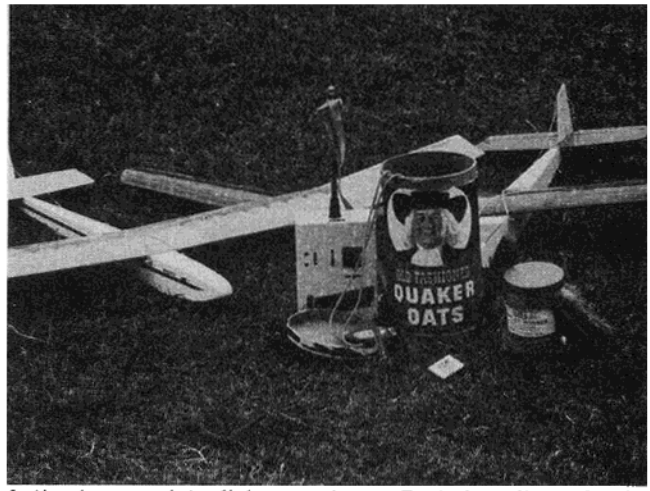
All the surfaces are made from medium 3/32" balsa. The elevator joiner is bent from 1/32" music wire. The control horns are bits of 1/32" plywood. They are Hot Stuffed into slots cut in the control surfaces. Sand the outside edges round and cover before assembly.

Assembly:

Cement the stabilizer to the fuselage. Attach the elevator to the stab using good old sewing thread hinges. Glue the vertical fin in and hinge the rudder in a like manner. Don't forget to install the sub-rudder. Stick the servos in with foam tape. Hook up the pushrods and try the controls. Remember the whole system was designed to move the controls of an 8 oz. glider. It is light, and there is some flexing. Once you have installed the receiver and battery pack with respect to the CG, you can control a lot of the flexing with some foam rubber used as packing. Mount the switch in a convenient spot and charge up the batteries. Make up your mini hi-start as outlined at the beginning of the article, and you are all done!

Flying:

Run down to the park and hand chuck your Midget a few times to check the glide. The surfaces are set at 0°-0° so you'll need some up trim. To penetrate better, or drop out of that "boomer", just take out the trim. Midget goes up on her hi-start like she was on rails. To me, a hi-start launch is sort of like a tail dragger taking off. Whatever you find is necessary to do with the rudder is best done in small amounts! Go real easy at first, and don't use any elevator control during the climb-out. Once the model reaches the top, turn away from the stake and feed in a slight amount of up elevator to pop off the line. In lift, you can stay up as long as your eyesight holds out. If you don't find any lift, practice 2 minute precision flights, catching the model instead of landing in a spot. I hope you have a simply great time flying your simple, little sailplane. □



Author's complete flying package. Text describes simple inexpensive Hi-Start.

BILL OF MATERIALS

(1) 3/32 x 3 x 36	**fuselage & formers.**
(2) 1/16 x 3 x 36	**wing ribs & planking.**
(1) 3/32 x 4 x 18	**tail group.**
(2) 3/32 x 3/32 x 48	**spruce wing spars.**
(4) 3/32 x 3/32 x 36	**balsa wing spars.**
(1) 3/16 x 1/4 x 48	**balsa leading edge.**
(1) 1/8 x 1/2 x 48	**balsa tapered trailing edge.**
(1) 1/8 x 36	**dowel pushrods & wing hold-downs.**
(1) 1/8 x 1/8 x 26	**fuselage stiffeners.**

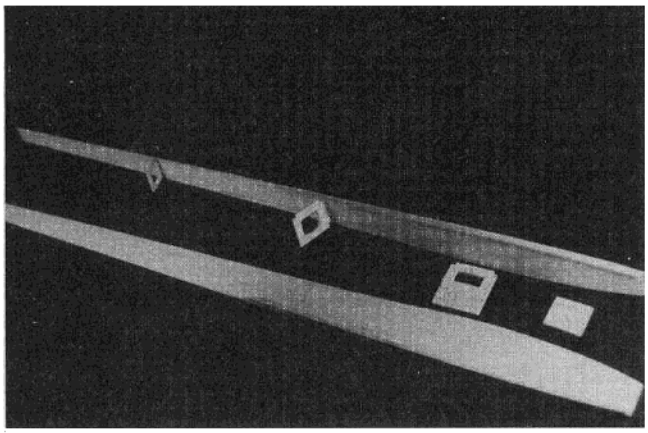
Miscellaneous:

2" — 3/64" M.W. tow hook.
10" — 1/32" M.W. pushrods.
1/2" — plastic skid material.
3' — plastic film covering material (26" wide).
a bit of spruce and ply.
Use scrap wherever possible.

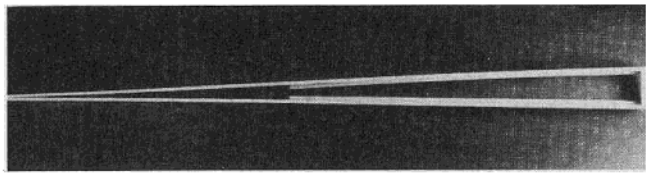
Hi-Start:

150' to 200' 6 lb. test nylon monofilament fishing line.
50' Sig 1/4" rubber.
(1) med. screwdriver.
(1) paper clip.
3' crepe paper, any color.
(1) 42 oz. box (empty) "Quaker Oats" to house hi-start.

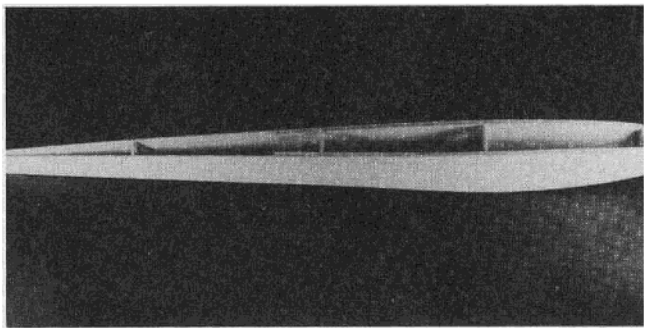
Midget coming home to Randy. It really knows how to behave.



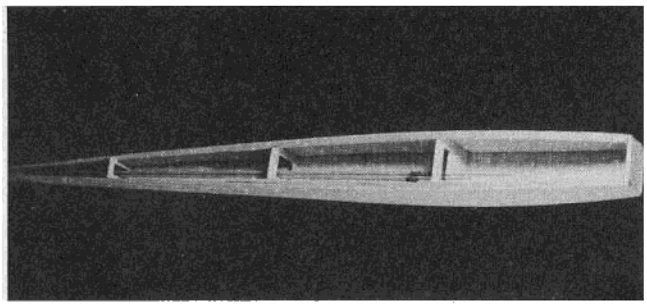
(1) Fuselage sides & bulkheads ready to join together.



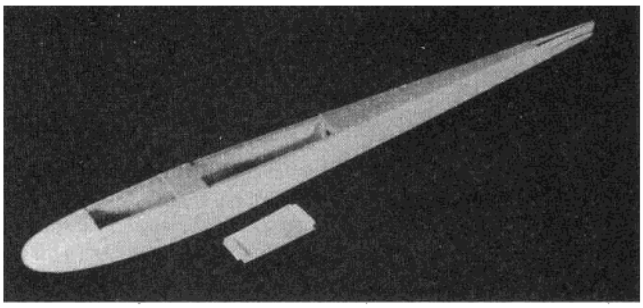
(2) First step completed. F-1 in place with tail pulled together and glued.



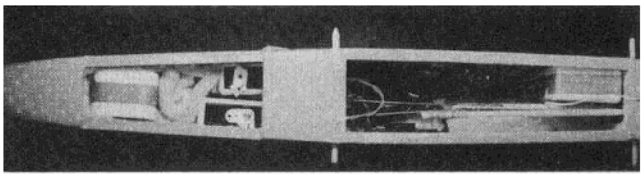
(3) Install the rest of the bulkheads.



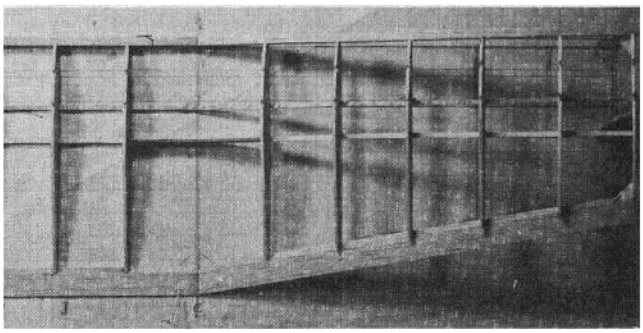
(4) Bottom planking added and 1/8" dowel pushrods installed.



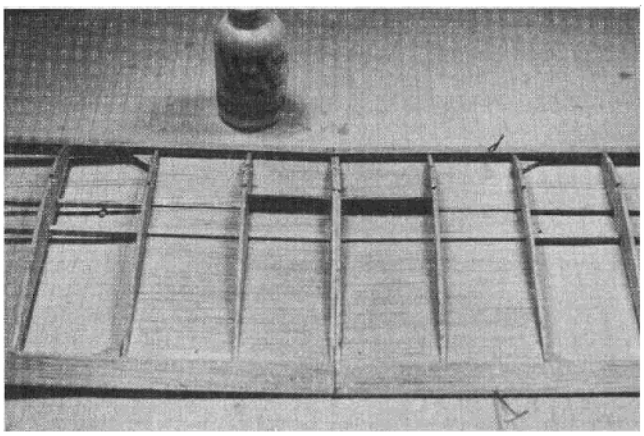
(5) Fuselage completed and ready for covering.



(6) Completed fuselage with radio installation. Cannon radio used in prototype.



(7) Polyhedral being added to center panel.



(8) Center panels joined together and ply brace added. Top spars to be added.

MIDGET

Designed By : Randy Wrisley

TYPE AIRCRAFT
Small Sport Sailplane
WINGSPAN
50 Inches
WING CHORD
5½"
TOTAL WING AREA
250½ Square Inches
WING LOCATION
Shoulder Wing

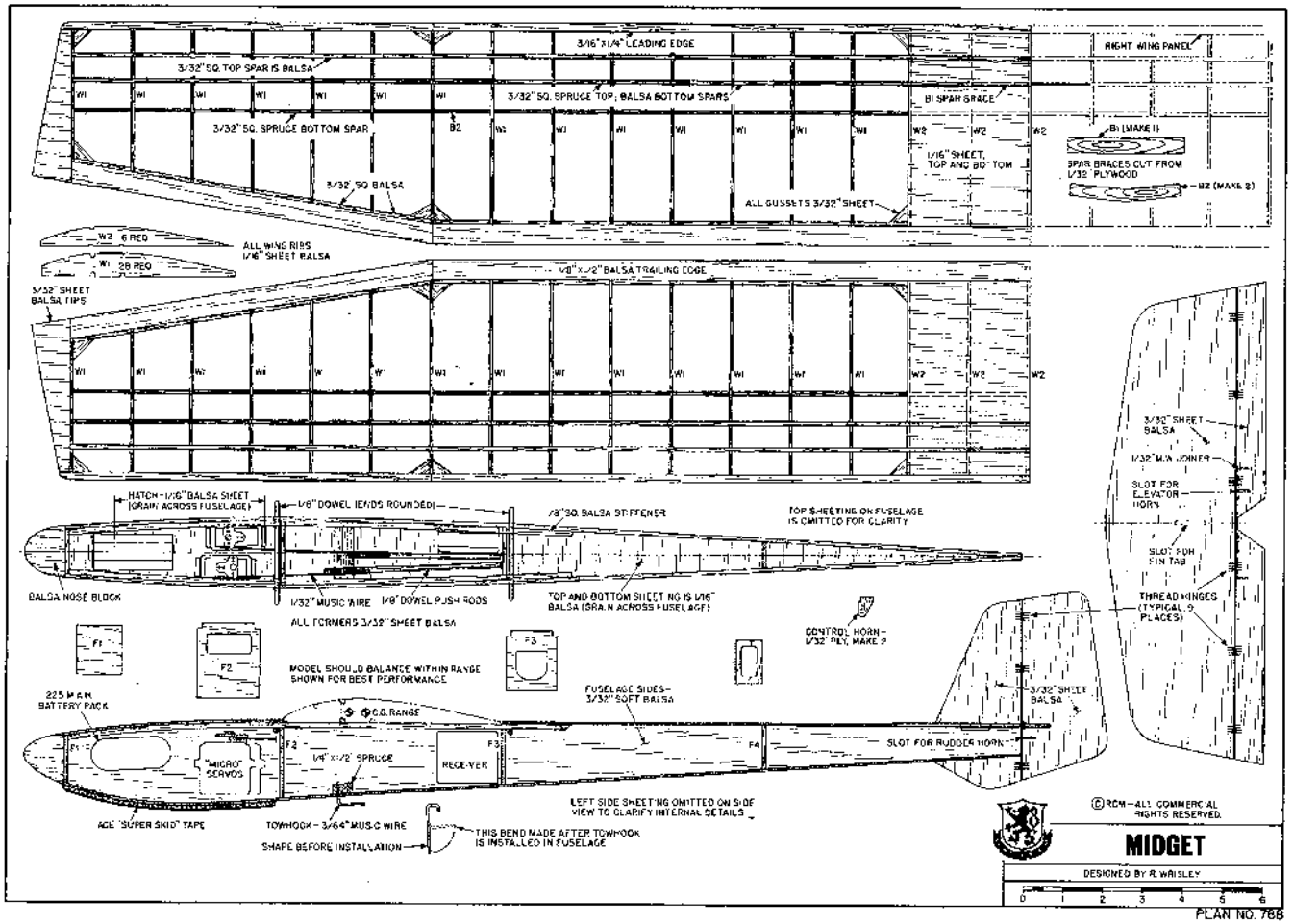
AIRFOIL
Flat Bottom
WING PLANFORM
Constant Chord Center Sec.
Tapered T.E. Tip Panels
POLYHEDRAL, EACH TIP
2⅜ Inch
OVERALL FUSELAGE LENGTH
25 Inches
RADIO COMPARTMENT AREA
(L) 13" x (W) 1½" x (H) 1½"
STABILIZER SPAN
12 Inches

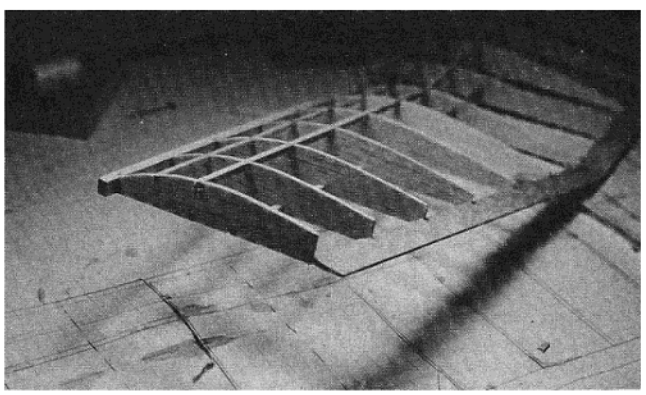
STABILIZER CHORD (incl. elev.)
3⅝" Average
STABILIZER AREA
36¾ Square Inches
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top Of Fuselage
VERTICAL FIN HEIGHT
3½ Inches
VERTICAL FIN WIDTH (incl. rud.)
3½" Average

LANDING GEAR
Plastic Skid
REC. NO. OF CHANNELS
2
CONTROL FUNCTIONS
Rud., Elev.,

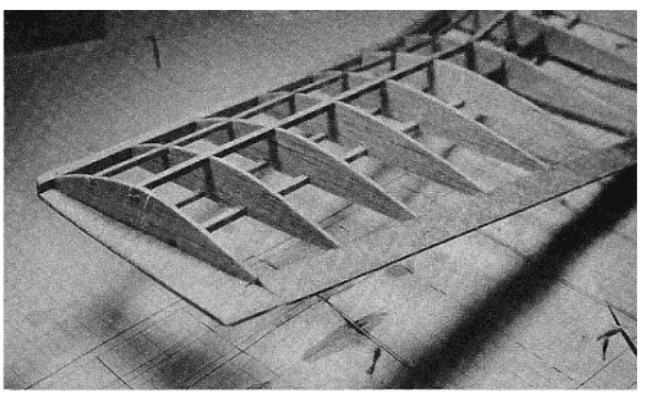
BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Balsa and Spruce
Wing	Balsa and Ply
Empennage	Balsa
Wt. Ready-To-Fly	8 Oz.
Wing Loading	4.6 Oz./Sq. Ft.

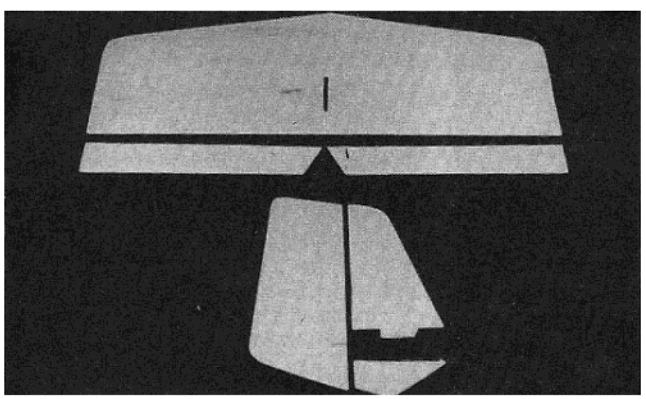




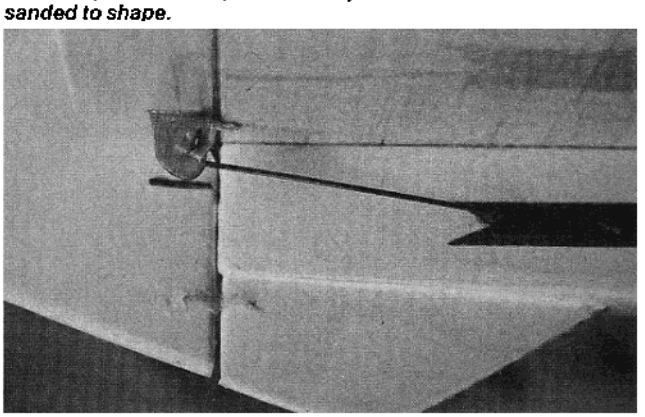
(9) Outer wing panel before tip added and ribs carved to shape.



(10) Completed outer panel with tip added and ribs carved and sanded to shape.



(11) Tail group cut from 3/32" medium balsa.



(12) Close-up showing 1/32" ply control horn Hot Stuffed in place.