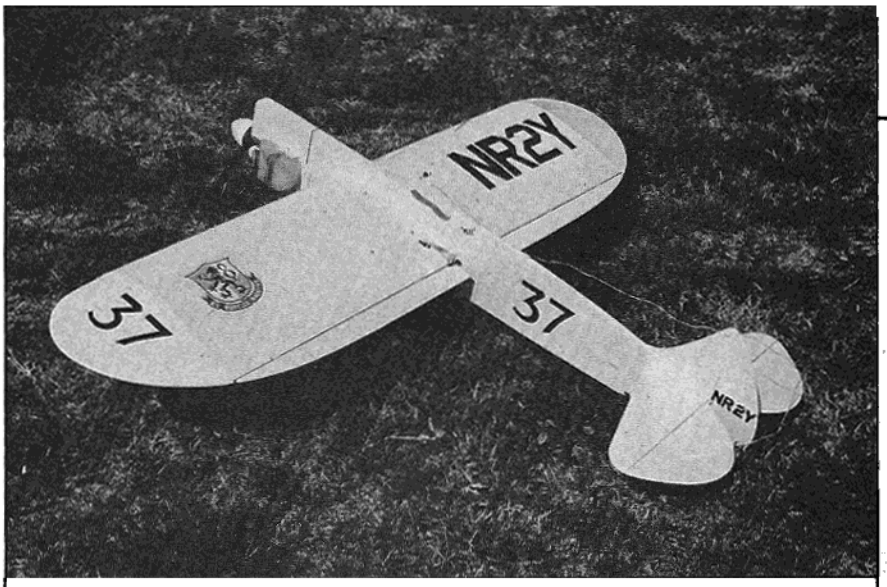
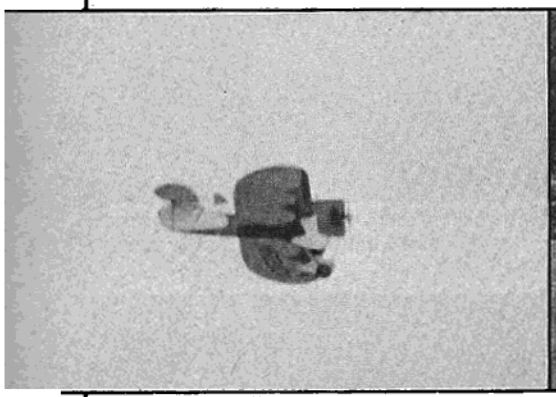
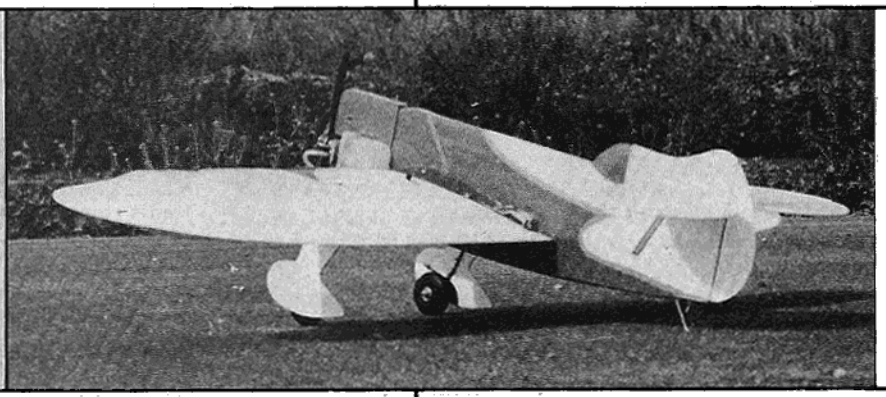


PROJECT

PROJECT PROFILE
Designed By : Randy Wrisley

TYPE AIRCRAFT
Sport Profile
WINGSPAN
36 Inches
WING CHORD
9¼ Inches
TOTAL WING AREA
312 Square Inches
WING LOCATION
Mid-Wing
AIRFOIL
Symmetrical
WING PLANFORM
Constant Chord
DIHEDRAL, EACH TIP
None
OVERALL FUSELAGE LENGTH
22¼"-28½"
RADIO COMPARTMENT AREA
(L) 7" x (W) 3" x (H) 2"





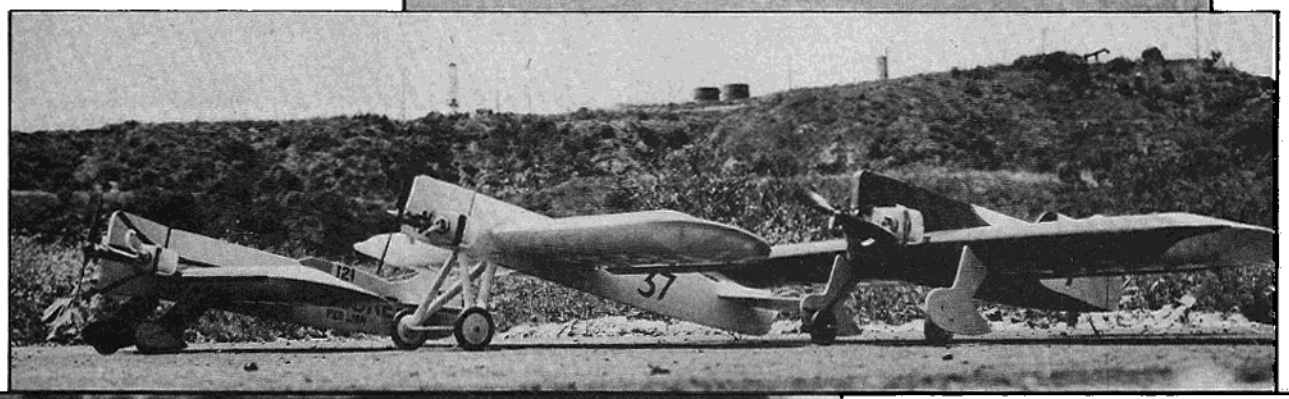
PROFILE

STABILIZER SPAN
12"-14"
STABILIZER CHORD (incl. elev.)
4¼" (Avg.)
STABILIZER AREA
52 Square Inches
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Mid-Fuselage
VERTICAL FIN HEIGHT
4"-7"
VERTICAL FIN WIDTH (incl. rud.)
2"-6"
REC. ENGINE SIZE
.15-.19 Cu. In.
FUEL TANK SIZE
2 Ounce
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
3
CONTROL FUNCTIONS
Ail., Elev., & Throt.
BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Balsa & Ply
Wing	Balsa
Empennage	Balsa
Wt. Ready-To-Fly	25 Ounces
Wing Loading	11.6 Oz./Sq. Ft.

You, too, can be a sporty or racy airplane driver by using this quick and easy construction method.

Did you ever see a picture of an airplane that really turned you on? Finally, like me, you locate a 3-view only to find the bird just doesn't have good model proportions. This is true for most of the air racers of the 20's and 30's. Almost all of them are not easy projects to build, or fly. What I wanted was an easy to build sport model that I could fly every weekend, and that sort of looked like an air racer. What I did was design a profile R/C model. Using my most aerodynamic tennis shoe I developed an airfoil thick enough to hold an entire 2 or 3 channel radio. A built-up fuselage wasn't necessary, so why go to the trouble? The completed models are compact, strong, and fly just as well as their flat fuselage brothers. In flight the flat fuselage isn't even obvious except in overhead passes. Duplicating the real aircraft's color scheme is easy with the many colors of plastic film available. If you're not crazy about a Gee Bee, Pete or Wedell Williams, just use the wing and build your own fuselage! The list of subjects is endless. Why not a P-26, or a Mister Mulligan? How about a Cessna, or a Mono Sport? The thought has crossed my mind that these machines would make a neat plyon racer. Picture a Pete, a Gee Bee, and a Laird mixing it up at pylon #1! I'll list a few suggestions to get you started:



(1) Use the wing as shown, no changes.

(2) Models must resemble early air racers.

(3) Plain bearing sport .15's only.

(4) Winner will climb out and do a victory roll.

Remember if you don't keep it simple, the event will go over like an AT-6 race! The thick wing should make the race a fun for all flying contest.

Now that I've convinced you that you can't live without a profile pylon racer of

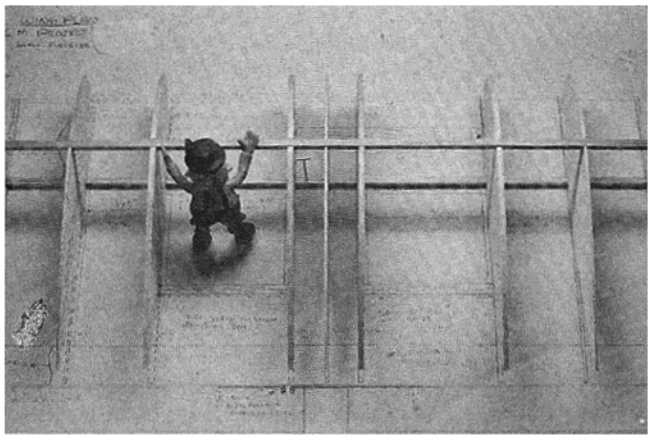
BILL OF MATERIALS

Fuselage:
1 - 3/8 x 4 x 36 - fuselage.
1 - 3/8 x 5/8 x 10" - hardwood bearers.
2 - 1/16 x 6 x 12" ply - doublers & pants.
1 - 5/8" streamline tubing - L.G.
1 - 1/16 x 1/2 x 12" T-6 alum. - L.G.

Tail Surfaces:
1 - 1/8 x 3 x 36 - stab & rudder.
1 - 1/8 x 3" dowel - elevator joiner.

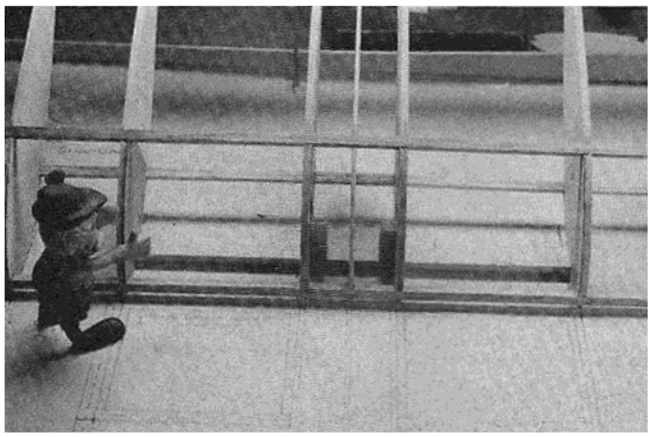
Wing:
3 - 3/16 x 3/16 x 36" - L.E., spars.
1 - 1/16 x 4 x 48 - 1/16" ribs.
1 - 1/8 x 3 x 36 - 1/8" ribs & tip braces.
3 - 1/16 x 1/4 x 36 - capstrips.
2 - 1/16 x 1 x 36 - T.E.
3 - 1/16 x 3 x 36 - planking.
1 - 1/8 x 3 x 36 - ailerons & tips.
1 - 1/64 x 2 x 12" ply - 1/2 ribs.
1 - 1/4 x 1/2 x 10" spruce - L.G. blocks.
1 - 1/32 x 3 x 8" ply - hatch
1 - 1/8 x 1/4 x 15" spruce - hatch hold-downs

Misc.:
1 pr. - 2" to 2½" wheels.
1 - 3/32 m.w. - L.G. legs.
8 - small wood screws.
1 - 1/16 m.w. - pushrods & tailskid.

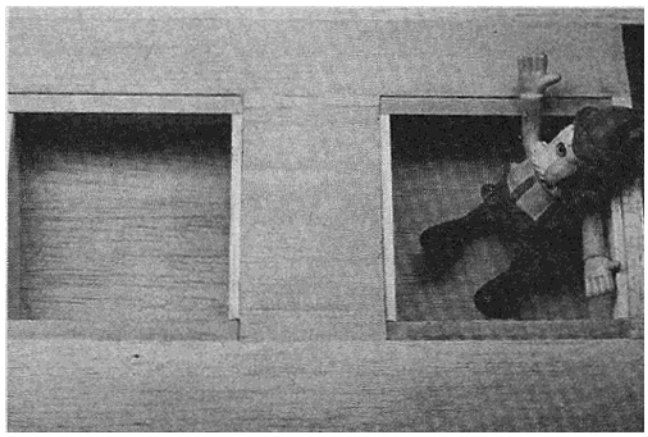


First step in wing assembly.

Upper and lower trailing edge sheets are added.

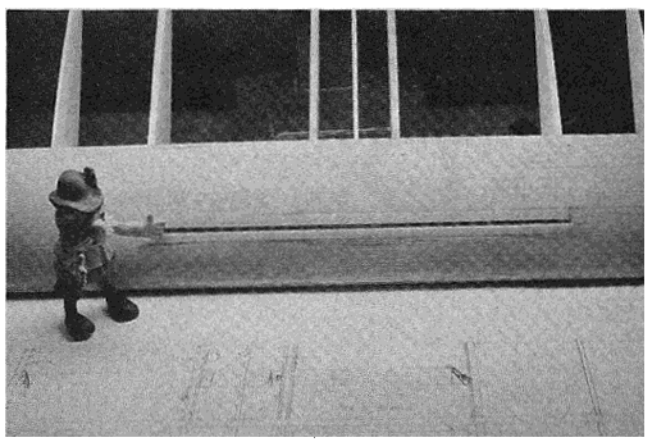


Install 1/64" plywood half ribs as shown.



Radio compartment box details.

Radio compartment side contour piece (req'd.).

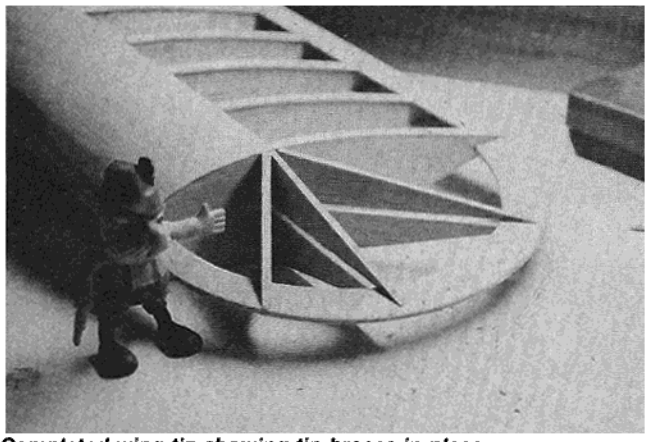


Landing gear mount for Gee Bee and similar configurations.

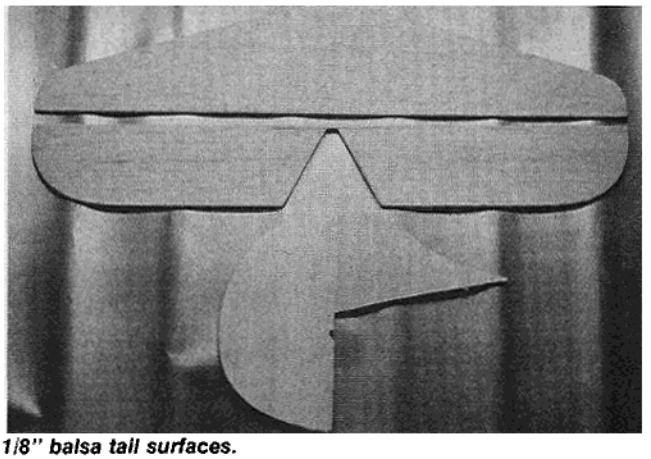
your very own, send off for a set of full size plans, **fast!** I hear Dewey's goldfish ran away from home and he needs the bucks to buy a replacement! If you'll read on, here's how . . .

Wing:

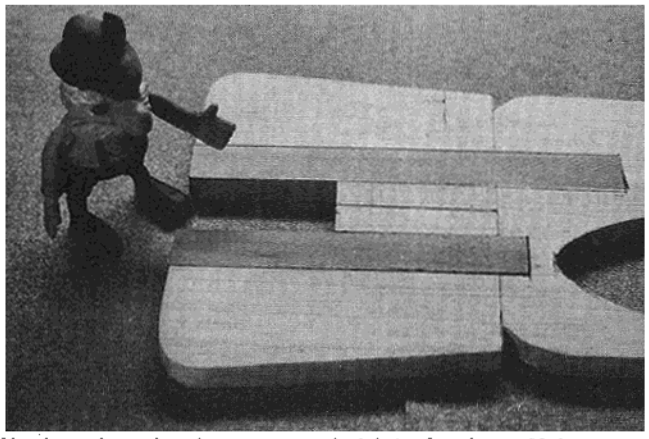
After making the usual template, cut out the ribs. You will need eleven 1/16" ribs, and four 1/8" ribs. If you intend to mount the landing gear in the wing, you will also need four 1/64" ply half ribs. It is most important to cut a hole in the three center ribs to pass the wire harnesses back and fourth. With all the parts cut out, pin the 3/16" x 3/16" spar down on the plan. Cement the ribs to it, using a triangle to align them. Install the top spar and leading edge. When all that dries, pin the 1/16" x 1" balsa trailing edge bottom down on the plan. Raise the L.E. up until the ribs rest on the T.E. and cement. Follow by installing the top of the T.E. If the landing gear mounts in the wing, epoxy the 1/64" ply half-ribs into place as shown on the plan. Cut the notches for the long block, and install the short blocks with epoxy. The long block goes in after the wing is sheeted. Begin sheeting the wing by cementing the 1/16" x 3" top and bottom pieces in place from the spar to the L.E. Do both sides at the same time to avoid warps. Next do the bottom center section overlapping the outside 1/8" ribs by 1/16". Install the aft radio compartment walls. You can shift them around to suit



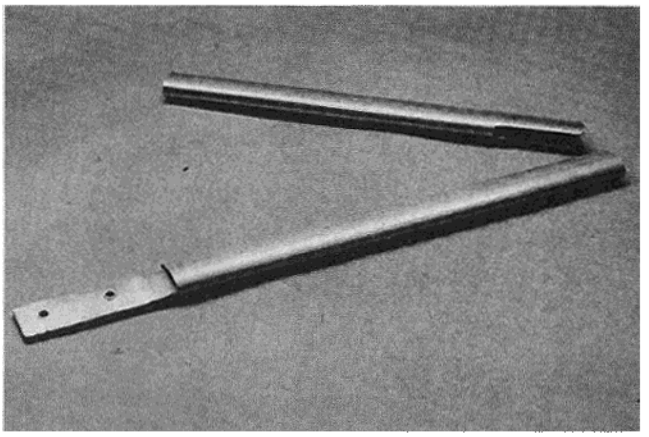
Completed wing tip showing tip braces in place.



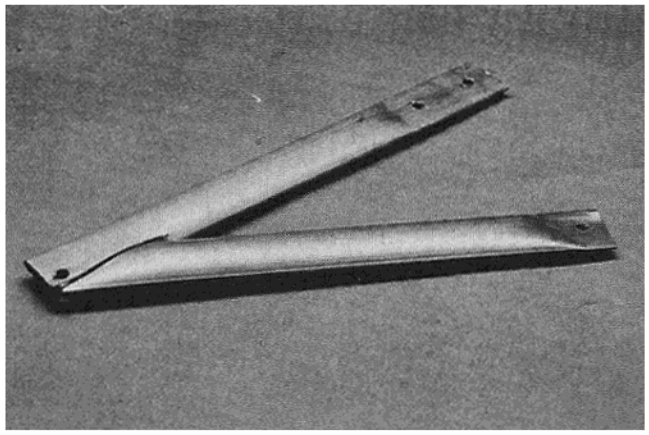
1/8" balsa tail surfaces.



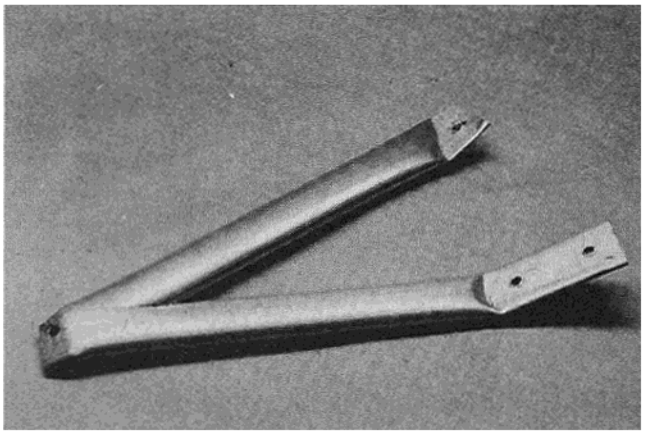
Hardwood engine bearers epoxied into fuselage. Make sure spacing is correct for engine used.



Landing gear struts made from 5/8" streamline aluminum tubing. Bottom strut shows 1/16" x 1/2" hard aluminum fitted inside tubing.



Landing gear struts assembled and ends flattened.



Final bends and landing gear is ready to install.

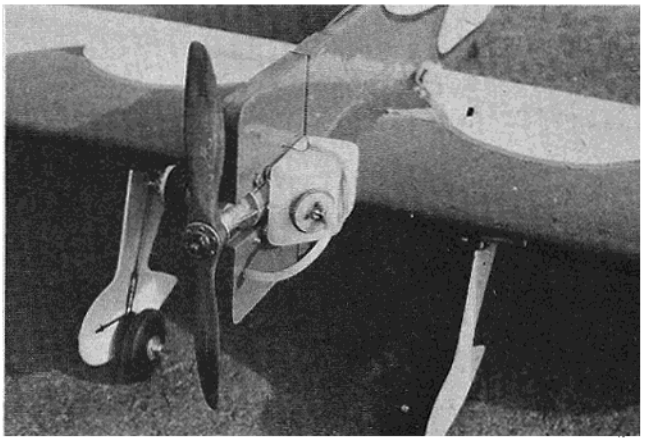
your radio size if necessary. Start the top by sheeting from the T.E to the aft walls. Overlap the outside ribs by 1/8". Finish the top by sheeting the area between the inside 1/8" ribs.

Cement the tip parts together and while they dry you can add the capstrips to the wing. Glue the tips to the wing and put the braces in place. Sand the completed structure to shape, rounding the L.E., T.E., and tips. Install the 1/8" x 1/4" spruce hatch hold-down blocks fore and aft in each radio compartment 3/64" below the surface. Follow by adding the 1/8" sheet balsa contour pieces to each side. The hatch covers are simply pieces of 1/32" ply held in place with four small wood screws. Make up the ailerons from 1/8" sheet balsa. The horns are standard hardware but both must wind up on the left side of the fuselage. The completed ailerons are not installed until the wing is mounted on the fuselage. You can cover the wing now, or wait as I did until its mounted on the fuselage.

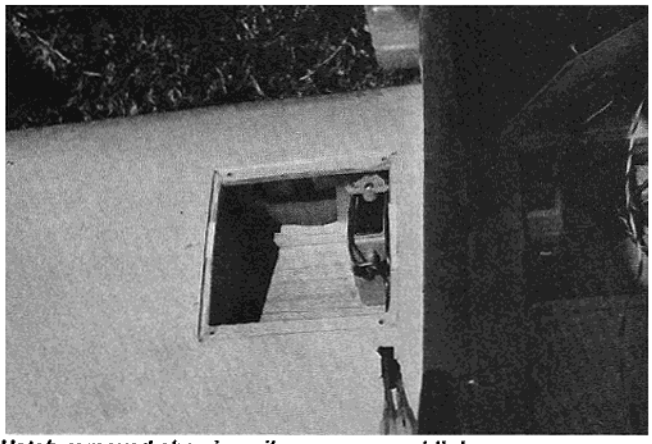
Fuselage:

Cut the outline to shape from medium hard 3/8" balsa. Epoxy any necessary splices for extra strength. Space the 3/8" x 5/8" hardwood bearers to fit your motor and epoxy in place. I found it wise to trial fit the wing before you install the 1/16" ply doublers. Once the wing fits, epoxy the doublers on and taper the aft end of the fuselage down to 1/8". Sand

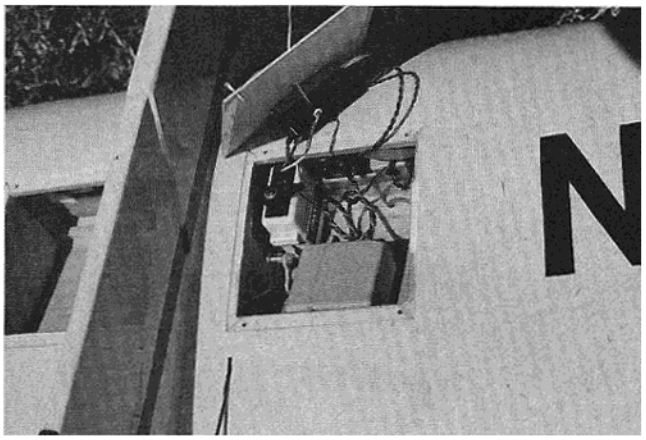
Landing gear installed. Note throttle pushrod at L.E. of wing, left of muffler.



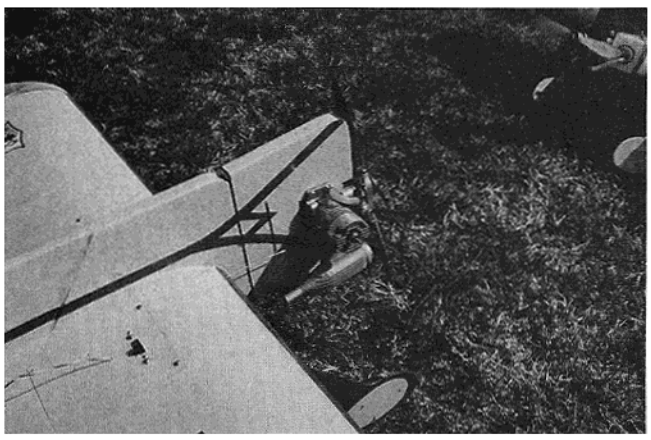
Note wire on landing gear strut to hold simulated wheel pants.



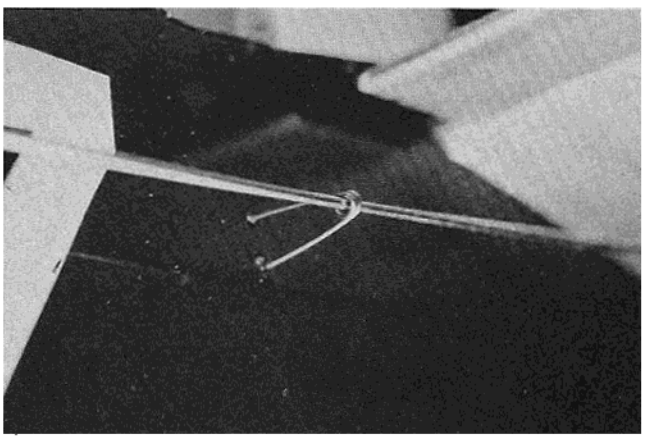
Hatch removed showing aileron servo and linkage.



Right wing compartment houses elevator and throttle servos along with receiver, battery pack and switch.



Switch and antenna wire protrude thru hatch cover. Note throttle pushrod at L.E. of wing.



Wire pushrod guide for elevator epoxied into fuselage side.

the outside edges round. Slosh a coat or two of Balsarite on the structure, and cover with your favorite plastic film.

Tail Surfaces:

Simple soft 1/8" sheet structures will suffice here. A length of 1/8" dowel is used to join the elevators. Sand the finished pieces smooth and cover before assembly.

Assembly:

Slide the wing on the fuselage and epoxy well. Use a triangle to align it. Cover the wing if you haven't done so already and install the ailerons. Cement the stab on, hinging the elevator in place before you install the rudder. Drill holes for blind mounting nuts and bolt the engine in place. The tank goes on the other side. Bend a piece of 1/32" wire into a "U" big enough to fit around the 2 oz. square tank. Center the tank with respect to the engine's center line. Drill a 1/32" hole above and below the tank clear through the fuselage. Push the "U" through those holes and bend a hook on each end. Now you can rubber band the tank in place. If the fuel line kinks going through the engine cut-out, drill a 1/4" hole below the engine and route the fuel line through it. Set the model some place where you won't step on it till you get some wheels under it.

Landing Gears:

If the gear mounts in the wing, bend up the struts from 3/32" wire. Solder a 3/32"

wire "L" to each strut, facing forward. The "pants" are cut from 1/16" ply and held on the struts with a bit of soft copper wire. The finished units are held on the wing with small straps and sheet metal screws. There are two ways to make the gear of a fuselage mount model. I used 5/8" streamline tubing for the legs; a piece of 1/2" x 1/16" hard aluminum was fitted inside the front leg on each side for strength. I then drilled a hole for the axle, and bent the gear units to shape in a small vise. After bolting the units to the fuselage, I made a spreader bar from small brass tubing with a headless 4-40 bolt soldered into each end. You could, however, cut each side from a piece of hard 1/16" aluminum and use a bolt for an axle without any spreader bar. Plastic 2½" wheels are available and look just right. I chose to use Perfect 1⅞" streamline wheels because they cost less. Sometimes they throw a tire on landing, but since I gave up free-flight I find the resulting chase and hunt brings back fond memories. You could glue the tire to the hub but it wouldn't be as much fun. At any rate, once the gear is on, bend a tail-skid from 1/16" wire to set the tail on and get ready to install the radio.

Radio Installation:

Slip the battery pack under the sheeting on the left side. The receiver fits under the sheeting on the right side. Use pushrod connectors on side mounted servos. Stick the servos in place with 1/8" foam tape. Route the pushrods from the control horns to the pushrod connectors. Use a small pair of needle nose pliers to tighten the set screw. If you're afraid the connector isn't tight enough, solder a small washer to the pushrod on each side of the connector. Now it ain't gonna move! Check control movement with the hatch covers in place and correct any binding. If the elevator pushrod flexes, make a keeper from a safety pin, slip the pushrod through it, and cement the keeper to the aft end of the fuselage. The switch fits nicely on a hatch, and the antenna routes out the same place to the rudder. Throw the finished product on charge tonight, and tomorrow I'll tell you how to fly it.

Tomorrow At The Flying Field:

Before attempting flight, balance the model. It is also important not to have a heavy wing. Shift movable components or add tip weight as necessary. Fire up the engine, point into the wind and let go! Even with no rudder control, the far forward landing gear placement makes these models track straight and true. The tail should come up of its own accord in about 25'. Add a touch of up to get airborne and climb for altitude. If your model tends to turn and needs lots of aileron trim, you have a warp, or a heavy wing. All my machines are sensitive to elevator. Once you're used to the model's habits, you'll enjoy flying it that way. Loops use up all of 10'. Rolls are best done at full throttle — into the wind. Inverted flight is a snap. Pylon turns are really neat too. When it comes time to land, keep the speed up. The thick wing isn't real good at gliding. Just set up a fast approach and flare gently for landing. That's about it folks --- have fun. Here's wishing you luck racing towards that checkered flag, real or imaginary. □

From RCModeler Aug. 1979