



The little "big" plane that won at the 1941 Nationals, with its striking appearance and performance.

Nationals Flying Scale "Champ" **Not Only National Winner but a Realistic Plane That Flies Two Minutes Consistently**

By HENRY STRUCK



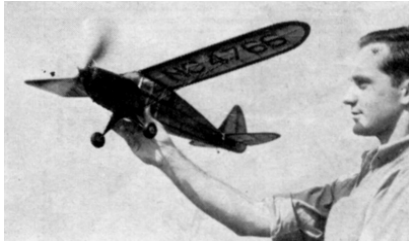
It flies like a duration model

THE apathetic performance of the average flying scale model is largely responsible for the patronizing attitude of both spectators and contestants toward this event. This condition may be traced directly to the lure of a "fancy" ship, which frequently drives all consciousness of the requisites of a good contest flier from the builder's mind. Selection of a design demands careful consideration of the inherent stability, external structure, balance - in fact the original must be as similar to an endurance model as possible and built from authentic plans.

Therefore with the perspective gained from experience with a number of previous scale designs, a replica of the Interstate Cadet, a trim tandem lightplane, was built for the 1940 National Meet. As usual time was at a premium so the ship was scarcely flight tested. However, the excellent flight

characteristics the model showed were borne out when it placed second. This year time was even more limited (fortunately) and it became impossible to construct a new model. So the old Cadet, whose flight adjustments had been perfected, was recovered and recommissioned to serve in this year's event. The value of the FLYING in the phrase "Flying Scale" was conclusively proved for despite the reduction in the number of points available for best time, and a corresponding increase in points for workmanship, the veteran took first place with an average of 2' 38".

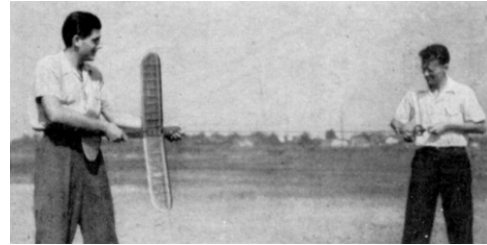
In building the Cadet take the care necessary to turn out a neat, colorful replica; flight test the ship thoroughly, and your ship will catch the eyes of the judges on the ground and the support of the thermals in the air.



Ogilvie launches the ship on a test flight



It makes a perfect takeoff gaining altitude quickly



Many turns can be stored in its powerful motor



Built light but to scale it looks and flies like a real plane

Construction

The plans are drawn full size wherever possible, with actual size templates for all cut-out parts. The model is of straightforward construction, light and strong.

Join Plates I and II. Pin the longerons of 1/8" sq. hard balsa in place and install the uprights of 1/16" x 1/8" stock. Build both sides together, one atop the other to get them exactly alike. Separate the sides and connect with crosspieces of identical length as far as the rear of the cabin. Pull the tail together and fit the remaining crosspieces. Cement the stringers of 1/16" x 1/8" balsa in position, two on each side and one down the center of top and bottom. Build up the cabin windows with wedge-shaped fillers. Fit the rear window frame and the windshield top former of 1/16" sheet. Cement formers F-1 and 2 on the nose and cover with sheet balsa.

Form a pair of landing gear struts of .040 wire. Mount them in the fuselage bottom, reinforcing this point with cross members of 1/8" sheet. Add side fillers of 1/16" sheet to simplify covering around the landing gear. Bind the axle to the landing gear apex and solder the joint. Fit the fairing L-1 between the struts and sand to a streamline section.

Install a small panel of 1/16" plywood, drilled to fit a 3/16" diameter hardwood dowel rubber hanger, between the side stringers at the fuselage rear.

Glue up the nosing, employing 1/2" sheet for the top and sides, and a block 1-1/2" sq. x 2" for the bottom. Shape the blank to approximate section with knife and rough sandpaper. Cement it to the fuselage, blending the lines into the fuselage. Cut the face of the nose plug from 1/4" sheet and cement a rectangle of the same stock to the rear, fitting it snugly in the

nosing and drill a 1/16" hole for the prop shaft to give 2 or 3 degrees right thrust.

Carve the propeller from a medium hard block 1-1/8" x 1-3/4" x 10-1/2", shaping the blades to outline given and undercambering the back 1/8" at the widest section. Finish the prop with fine sandpaper and several coats of dope. Cut the prop blades free. Form the hinge pins of .040 piano wire and slip a set of sheet brass hinge straps on them. Cement this unit to the blade so that the trailing edge of the hinge pin lies on the front face, and the leading edge on the back. Cut the hub away to fit the span of the hinge straps and anchor them with plenty of cement, replacing the small segments on each side.

Install bearings, consisting of washers with bushings inserted in the back of the hub and the face of the nose plug. Form the winding 'eye' in the .049 piano wire shaft and push the shaft through the prop, cementing the spur to the spinner. Slip a spring of .028 piano wire on the shaft, push it through the nose plug, add the stop and rear bearing of .020 sheet brass and form the rubber hook, leaving a generous spur to engage the stop. Set the nose plug in place and fold back the prop blades. Determine the position where they best fit the body sides and cement the stop in place to guarantee this position after the rubber has unwound.

The wing and tail are shown half size and should be enlarged to full size to speed assembly. Shape the trailing edge to a wedge-shaped cross-section and pin it on the plan. Cut the wing ribs of 1/16" sheet; 4 of W-4 and 16 of W-5. Set the tip and root ribs in place, pin the leading edge of 1/8" sq. against them and install the remaining ribs. Attach the wing tips, assembled from three sections cut of 1/8" sheet. Cut the leading and trailing edges at the center

section, raise the tips 2" for dihedral and reglue the joints. When dry remove the frame and insert the spars, reinforcing the center section with auxiliary spars and gussets. Cover the leading edge with 1/32" sheet to complete the wing.

Cut out the stabilizer and rudder outline sections and assemble them on the plans. Pin the spars in place and fit the ribs. The stabilizer is cambered in section but the rudder is flat. Cut the rudder apart and rejoin with hinges of scrap sheet aluminum.

Covering and Assembly

Sandpaper the entire framework thoroughly to remove any bumps that may mar the smooth lines of the finished job. Install the cabin windows and windshield of thin sheet celluloid.

Practically any color scheme desired may be used on the ship. The original had a blue fuselage with a red stripe and red surfaces with blue leading edge borders. Attach the tissue with as little dope as possible to avoid, sticking to anything but the outlines. Spray the surfaces lightly with water and apply a couple of coats of dope when dry. Use many coats of dope on all solid wood parts to protect and polish them.

Cement hooks of bent pins on the fuselage where shown to hold the wing and tail rubber bands. The front wing hook is formed of .028 wire and set in the top windshield former. With rubber bands, mount the wing and stabilizer on the fuselage. Cement the rudder to stabilizer top and fit a soft balsa fairing at the leading edge to continue the lines of the fuselage. The wing struts are of 1/16" x 3/16" hard balsa sanded to a streamline section. Cement them to the bases provided in the wing, bracing them with short struts of 1/16" round balsa to the fifth wing rib. The struts are NOT to be attached to the fuselage in any way, in

order that the wing may be shifted for adjustment and removed for transportation.

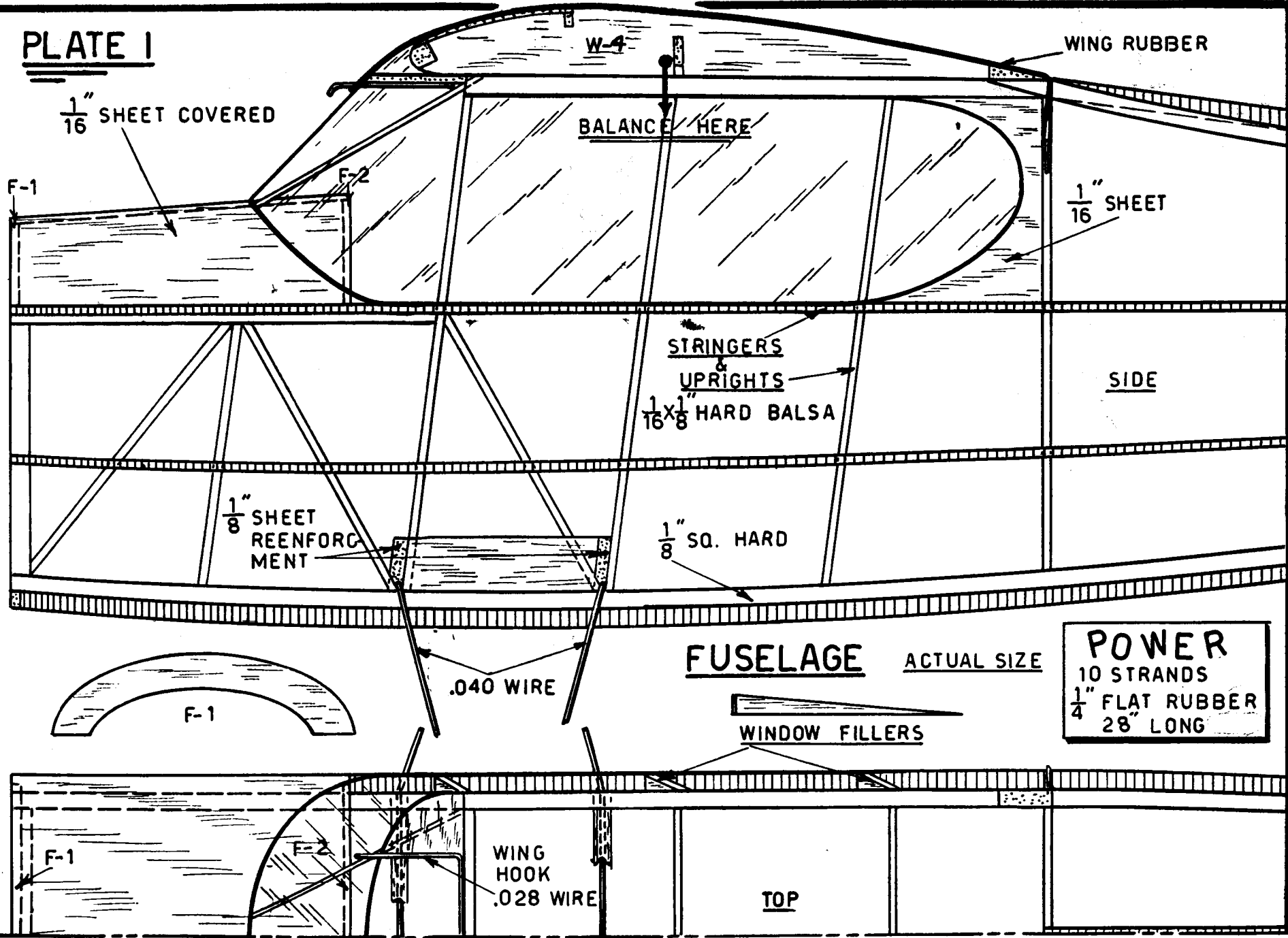
Details such as the exhaust stacks can be made of scraps of material that every modeller has in profusion. The front of the nose plug may be recessed and fitted with a dummy grill of bamboo strips. Decorative detail such as license numbers, control markings, striping can be neatly cut from tissue and doped in place.

Flying

The Cadet is powered by a 10 strand motor of 1/4" flat rubber 28" long and well lubricated. About 1000 turns can be packed in this length, providing a long prop run and steady climb. Wind up the motor and allow to unwind till the tensioner spring stops the prop in order to take up the slack. Attach the wing and tail and check the ship for balance. Add weight in the nose if necessary until the ship balances at the point indicated on the plans. Glide the ship over tall grass and adjust to get a smooth descent by slipping a wedge under the spar of the stabilizer if the angle is too steep or under the leading edge if stalling. Put about 150 turns in the rubber and hand launch. Perfect the glide, adjusting the rudder to fly the model in right circles of about 40 to 50 feet. Increase the number of winds adjusting the ship to fly in right circles of similar diameter under power by placing thin slivers between the nose plug and the nosing to tilt the thrust line in the desired direction. After familiarizing yourself with the characteristics of the ship stretch the rubber to about four times its length and wind to capacity with a geared winder. The performance of the Cadet under full power may be disappointing -- but pleasantly so, for some modeller or spectator will be quite apt to remark, "That's a pretty flying endurance job, isn't it!"

***Scanned From January 1942
Model Airplane News***

PLATE I



$\frac{1}{16}$ " SHEET COVERED

BALANCE HERE

WING RUBBER

$\frac{1}{16}$ " SHEET

STRINGERS & UPRIGHTS
 $\frac{1}{16} \times \frac{1}{8}$ " HARD BALSA

SIDE

$\frac{1}{8}$ " SHEET REINFORCEMENT

$\frac{1}{8}$ " SQ. HARD

FUSELAGE ACTUAL SIZE

POWER
10 STRANDS
 $\frac{1}{4}$ " FLAT RUBBER
28" LONG

.040 WIRE

WINDOW FILLERS



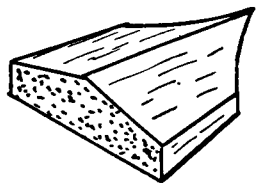
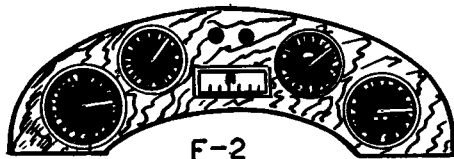
WING HOOK
.028 WIRE

TOP

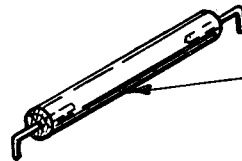
F-1

F-2

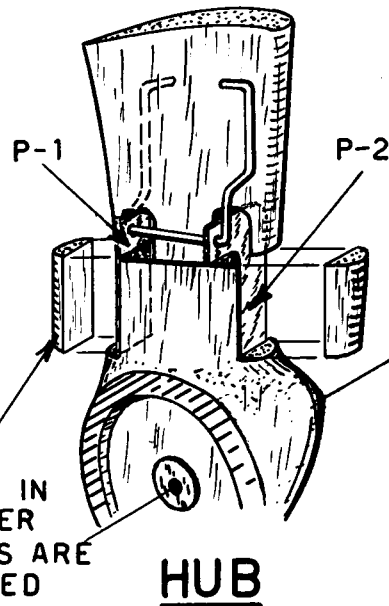
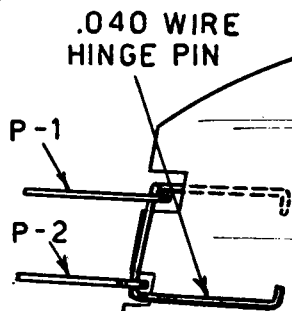
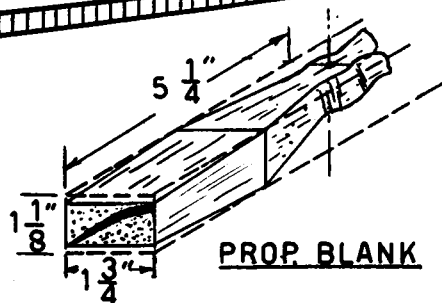
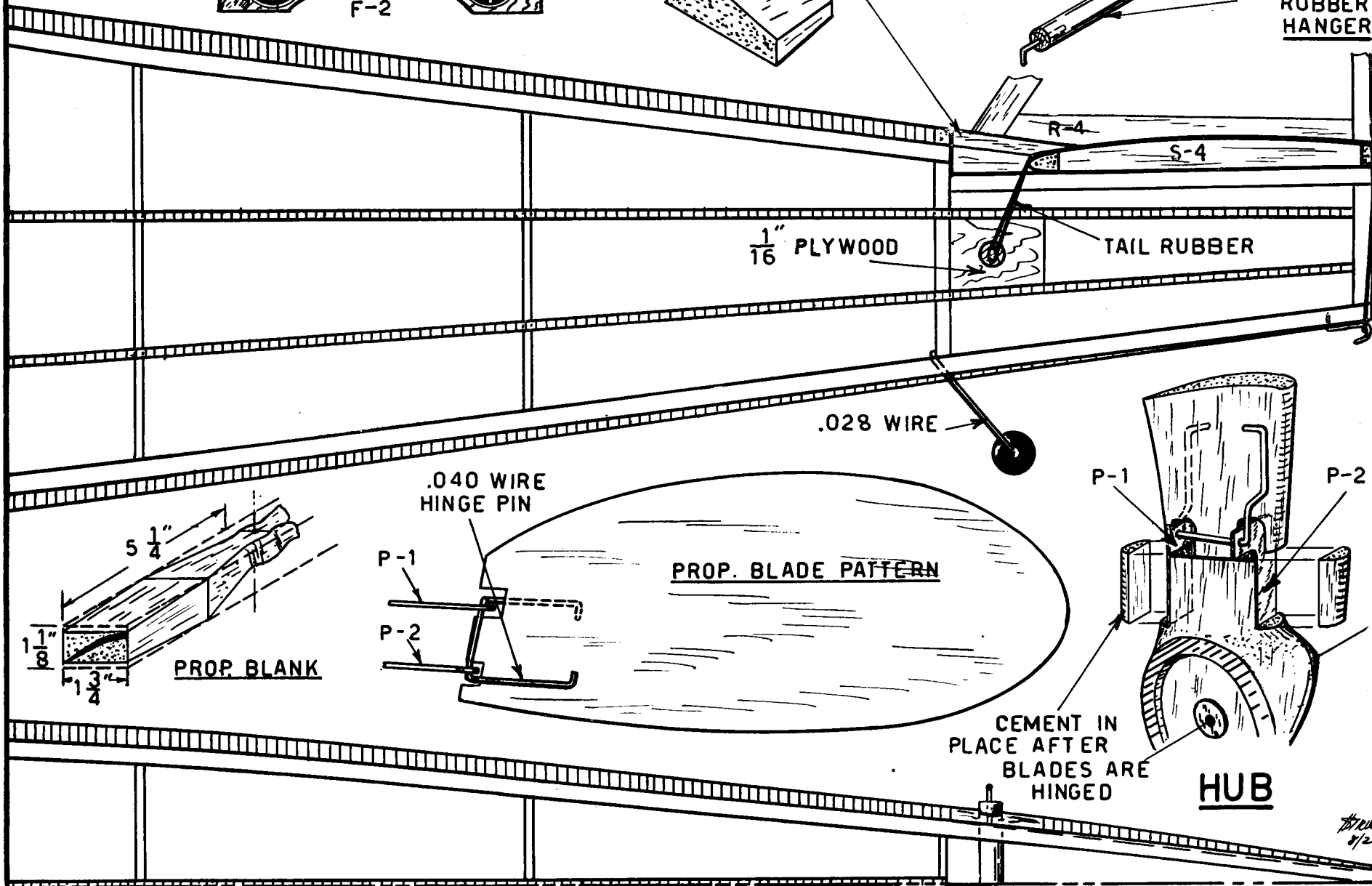
PLATE II



TAIL FAIRING
SOFT BALSA



$\frac{3}{16}$ "
DOWEL
RUBBER
HANGER



TRUCK
8/2/41

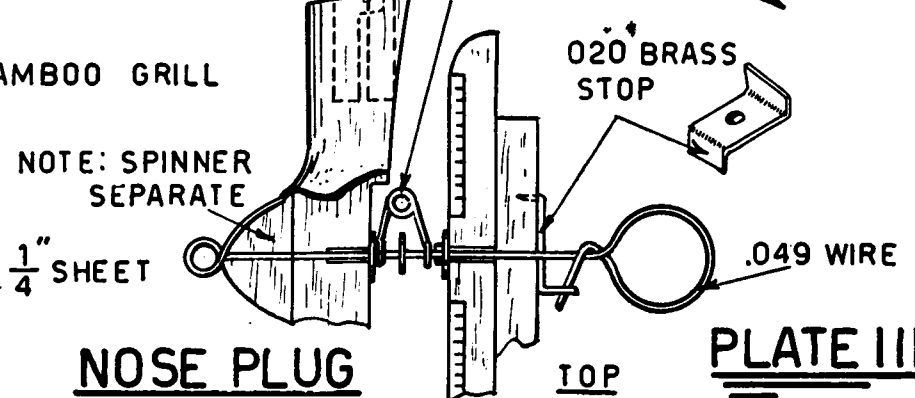
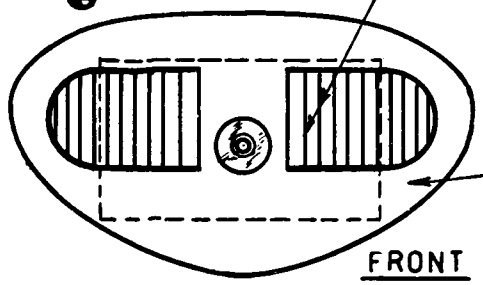
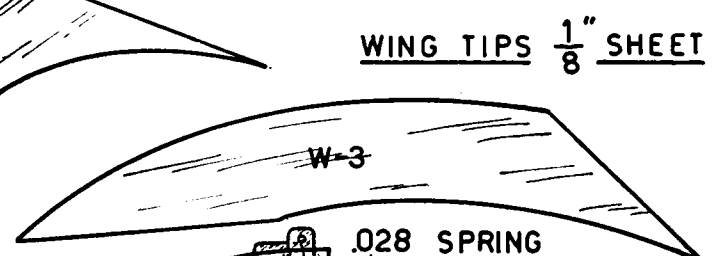
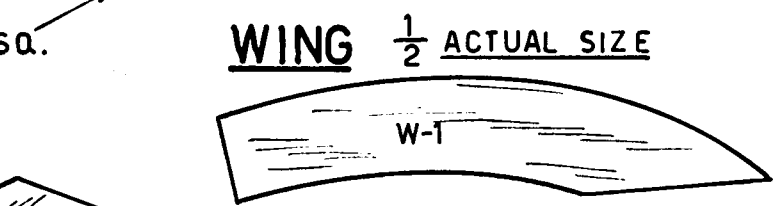
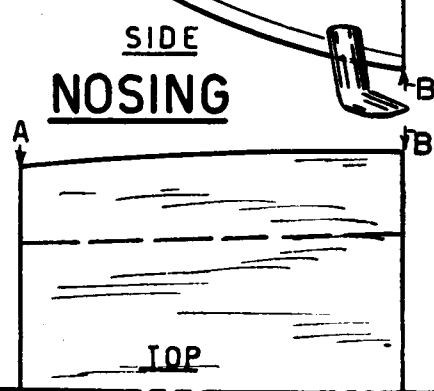
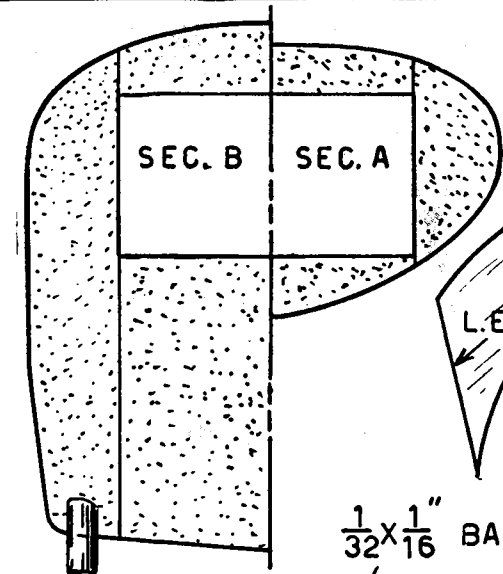
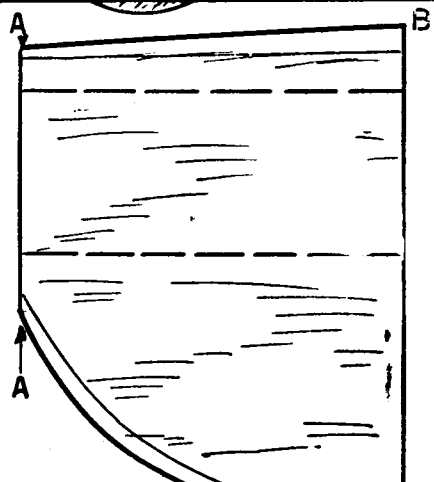
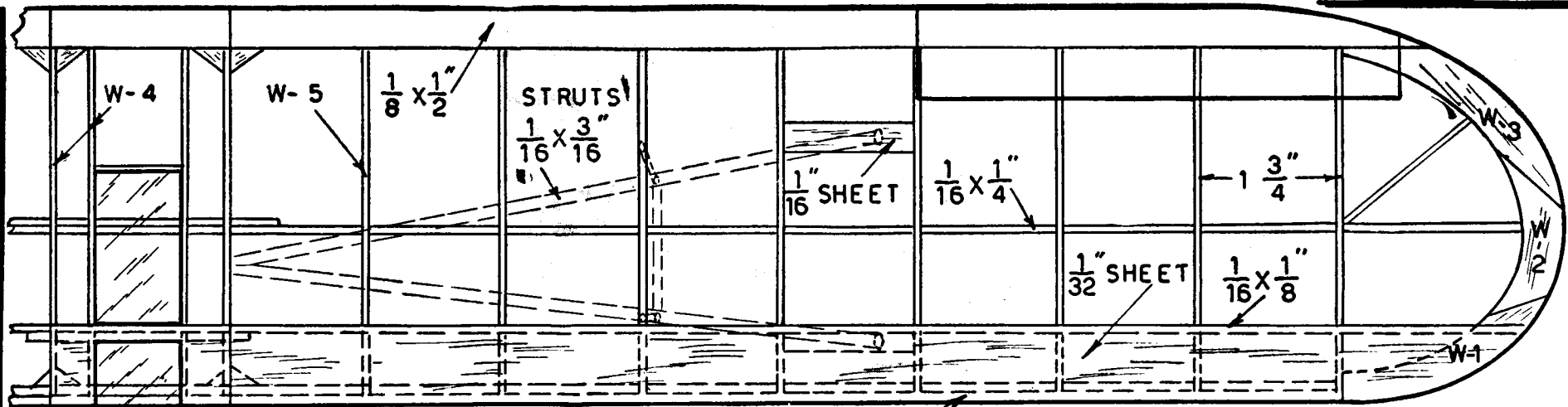
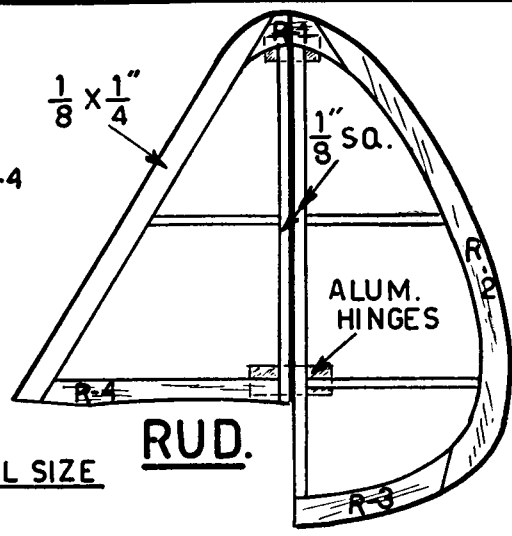
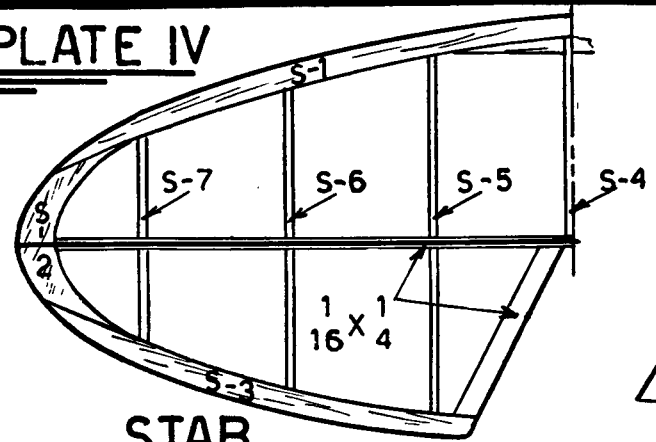
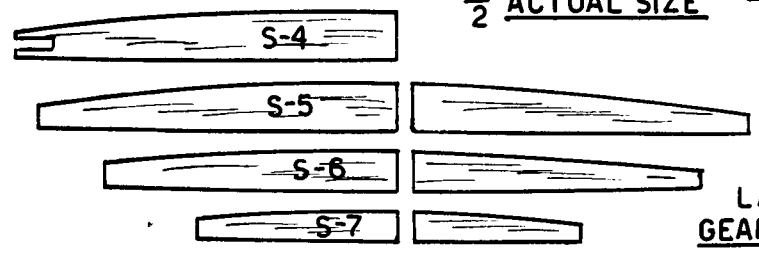


PLATE III

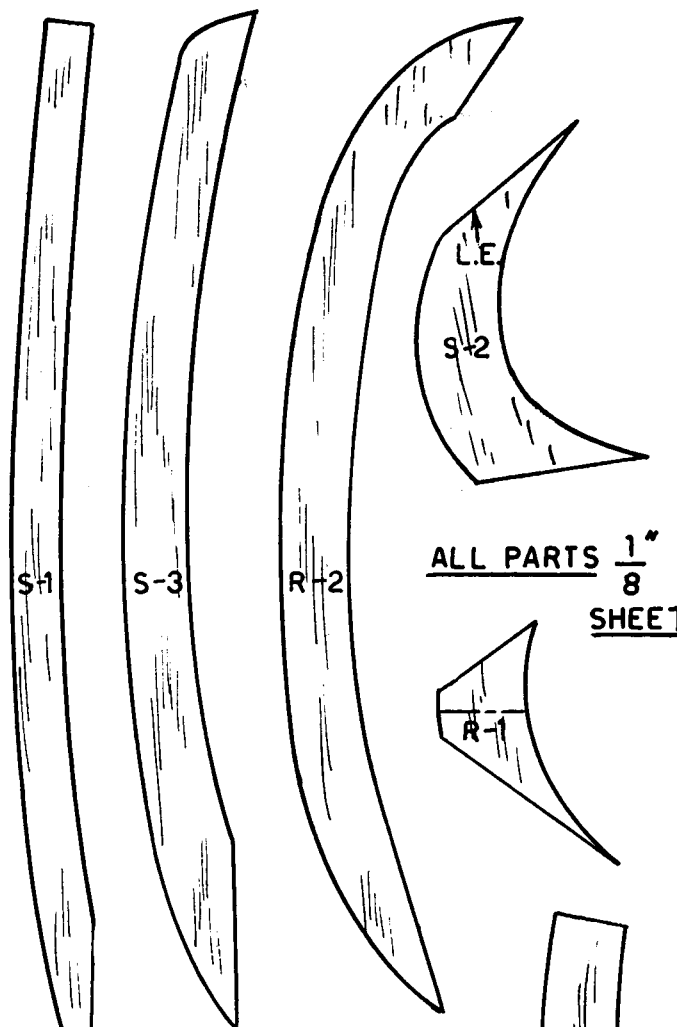
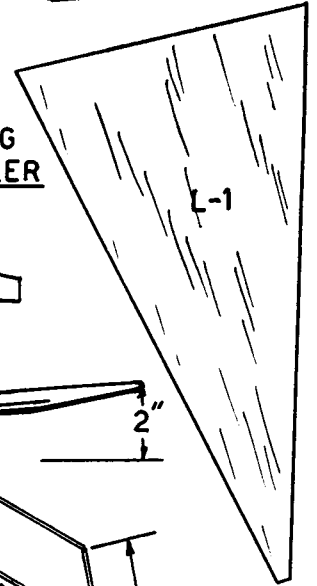
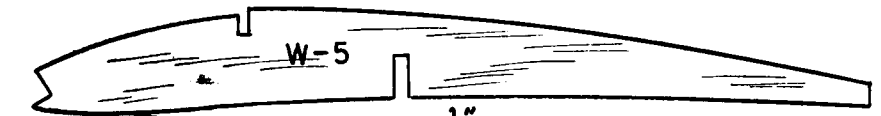
PLATE IV



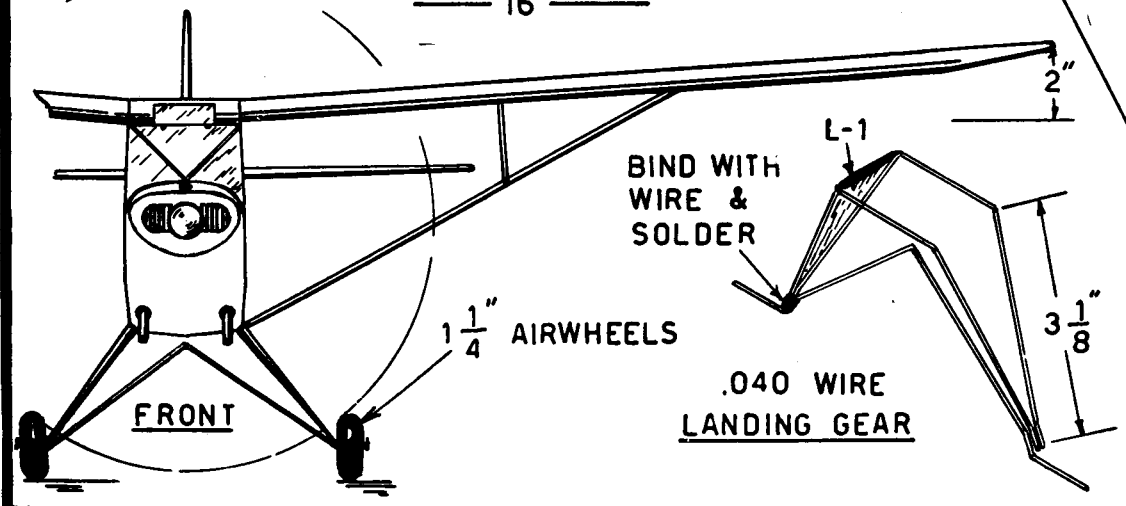
$\frac{1}{2}$ ACTUAL SIZE



LANDING GEAR FILLER



ALL PARTS $\frac{1}{8}$ SHEET



.020 BRASS PROP HINGES

