

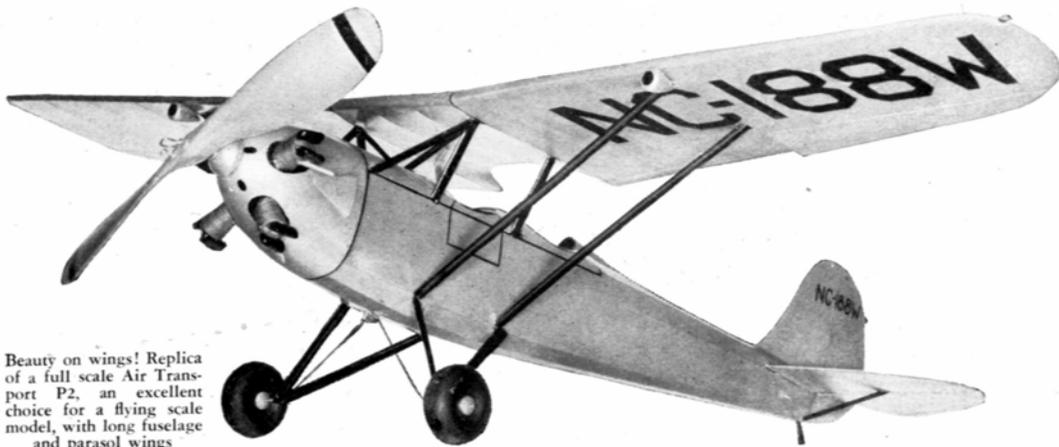
NATIONALS WINNING MINIATURE AIR TRANSPORT

The contest flying scale model that was first and second places at the 1941 national meet

By Walter S. Eggert, Jr.

IN SELECTING data and other information preliminary to building a good flying scale model many things have to be taken into consideration. First select a ship, one not too modern, that has a rather long fuselage and large tail surfaces. Then look through all the airplane magazines and get as many details as possible; or if it is a modern ship, you may be able to get information from the company that builds the ship.

The Air Transport P2 scaled down to half-size makes a very fine indoor as well as outdoor flying model and many indoor meets have been won with it. The entire structure can be scaled down directly if desired. On a half-size model most of the extra bracing and wire landing gear may be omitted for lightness. A full color doped model has averaged 45 seconds indoors.



Beauty on wings! Replica of a full scale Air Transport P2, an excellent choice for a flying scale model, with long fuselage and parasol wings

The P2 makes a wonderful flying model due to its long fuselage, extra large tail surfaces, parasol type wing and slow flying speed. It is the model that helped the author win

"The Philadelphia Flying Scale Model "Championship three years in a row, and another model built from original drawings took 2nd place at the Nationals, flown by Ray Beaumont, of Philadelphia;

This ship is not one of those lucky combinations that cannot be duplicated: four or five have placed consistently at various meets. Anyone with a little experience in scale model building who builds a model of this ship from the following plans can be a threat at any meet.

You will notice the model is built very sturdy: designed to fly outdoors in almost any kind of weather, and to turn in consistent flights of over a minute.

Just like a big ship in flight



Fuselage: First make a full scale layout of all necessary parts. Be sure to lay these out accurately in order to make templates for the wing ribs and tip pieces fit' properly. When cutting out parts, be sure to make all joints square. Do not be afraid to use a little sand paper. This is important; a model will not look any better than the woodwork underneath the covering. Be careful not to use too much cement as this adds additional weight, does not increase strength and only makes it harder to get a good covering job. If the model is for competition remember that good workmanship and finish means a lot of additional points.

Start building by making both fuselage side frames in conventional manner, being careful not to put pins through any main structural member, and while these are drying work on the nose block, as that is part of the fuselage. Cement the two blocks together with very little cement as this is only a temporary joint, to be cut open again to hollow

out the block. Carve the block to shape and give it a rough sanding. After this cut the blocks apart; hollow out the block by drilling about 1/2" diameter hole, using a small gouge or chisel to hollow out the remaining area. The wall thickness on the finished block should be about 1/2" all around. Do not hollow block too much as weight is needed in the nose.

Now drill or cut a hole in the forward block to allow rubber to be pulled out the front. This hole must be at least 3/4" diameter and be sure it is centered and square. Now cement the blocks together and give final sanding with very fine sand paper.

A suggestion on how to arrive at a good finish is to use cement, slightly thinned, as a primer. Give the block four coats of cement, sanding all the bumps off between each coat. Then give the block one coat of clear dope and finish with the back of the sand paper rubbing rapidly until the paper feels warm. This gives a high luster. This is all done before cementing the block to the fuselage.

Now continue to build the fuselage in the conventional manner by cementing both aft ends together and cementing the nose block in place. Next add 1/8" square cross members and all formers. There are no formers used on the fuselage sides. Build stringers out away from the fuselage of small blocks varying from 1/32" to 3/32", as shown in prospective drawing.

The next step is the landing gear, made of .047 diam. piano wire and soldered together. Be sure to use plenty of flux, as these joints must be good. It is then bound to the fuselage with fine thread and plenty of cement. Now make the landing gear struts. Be sure to notch struts to receive the wire; this can be done very easily with a broken razor blade. Sand and finish the struts, same as the nose block. Cement them in place and bind top and bottom, to make it a permanent job, as shown in the prospective drawing. Now complete the fuselage by adding cockpit covers and stringers. Be sure to give the fuselage a good sanding round all stringers and longerons, sanding lightly with a large sanding block and fine sandpaper.

When covering fuselage cover both sides first. Dampen paper slightly with water, using a spray gun which enables you to cover the sides with one piece of paper for each side. Cover the top in the same manner, one piece from the cockpit back and one from the cockpit forward. Cover bottom, being careful not to form wrinkles around landing

gear. It may be necessary to cover the bottom in a number of pieces to prevent wrinkles. Now spray the entire fuselage with water and let dry. If any wrinkles occur they can be removed by wetting the paper at the wrinkle, provided it is not too big. Be sure to finish the top of the fuselage back to the rear cockpit in the same manner as described for the nose block. Now paint the nose and fuselage top silver, applying about three coats until the finish is very shiny. Use masking tape on the silver and spray remaining parts of the fuselage with colored dope. A red or yellow fuselage makes a beautiful model, it trimmed properly in black. We used an ordinary mouth spray to spray the dope which should be well thinned out with thinner, about 50% thinner and 50% dope. Give the model about 3 or 4 coats to bring a smooth color, do not put on too much dope because it increases weight.

Tail: Now make the rudder and stabilizer. This needs little explanation because it is very simple. Sand carefully using the same large block; fair edges carefully and cover. Be careful not to get warps. We would advise pinning all flat surfaces to a flat board while water-shrinking and doping. Use silver dope for the stabilizer; two coats should be enough. You should be able to see a little light through the tail, when holding to the light. Cut slots in fuselage to receive stabilizer and cement stabilizer and rudder in place. Use sharp razor to slot the rudder and stabilizer to receive aluminum hinges.

Wing: It is essential to make good joints on all the wing's leading and trailing edge. Tip pieces should be bent up at a slight angle. Be very careful when shaping the wing tips and trailing edge section at the wing center. These should fair smoothly into the airfoil section. Cement the dihedral in place by using blocks under each wing tip; all dihedral joints must match each other perfectly. No gussets are required because the wing struts take most of the flying load. Make wing in one piece including the ailerons. These will be cut out later. Sand with fine sandpaper and a large block. The leading and trailing edges should be very well faired, important from the workmanship standpoint. Now cut out the ailerons. Cover wing and ailerons separately, being very careful to avoid warps. Cover upper wing surface first. Cement tissue to the high camber point of the airfoil at the center of the wing and pull out toward tip. Cement in place at point about 40% back from leading edge. Now cement trailing edge down working from the center outward; be careful to avoid corner wrinkles.

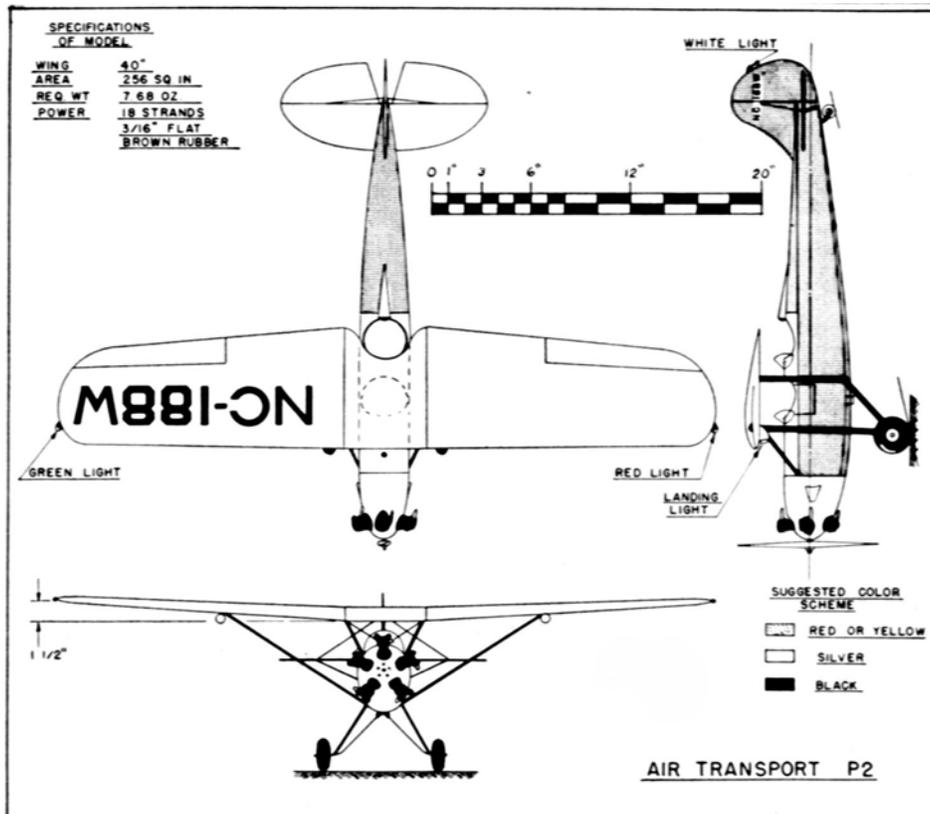
Finish covering the wing top by cementing the leading edge in place, cover the bottom in the same manner. Water-shrink the wing and pin on a flat board, use blocks every 4" or so out to the wing tip to avoid warping. Cover ailerons and shrink paper. Now install aluminum hinges using a broken razor to make slot for hinge and cement ailerons in place. Spray wing with 2 or 3 coats of silver dope to get desired color. Pin down between each coat.

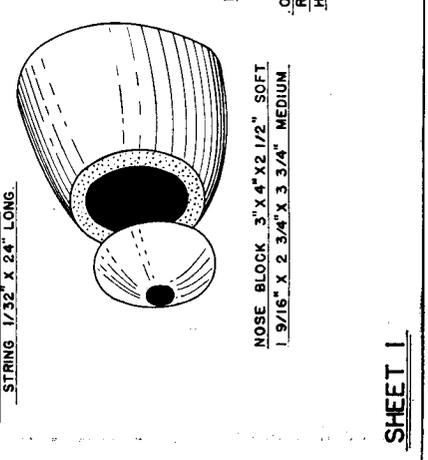
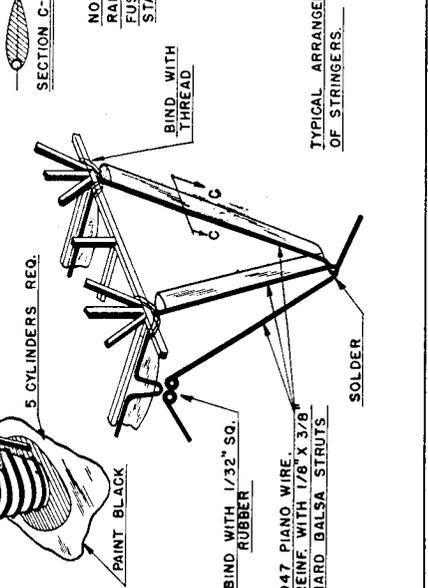
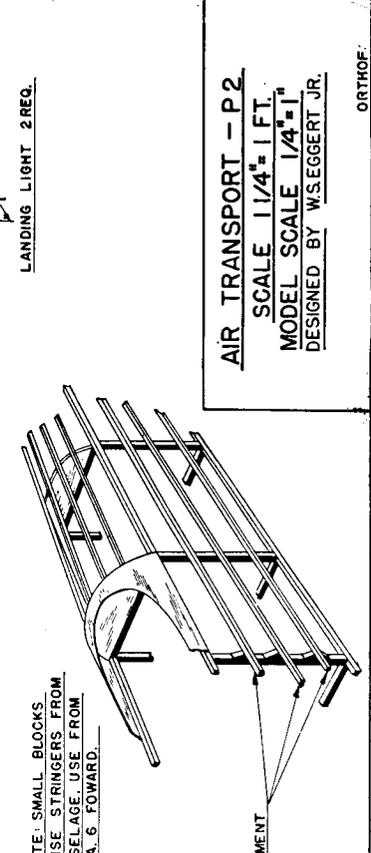
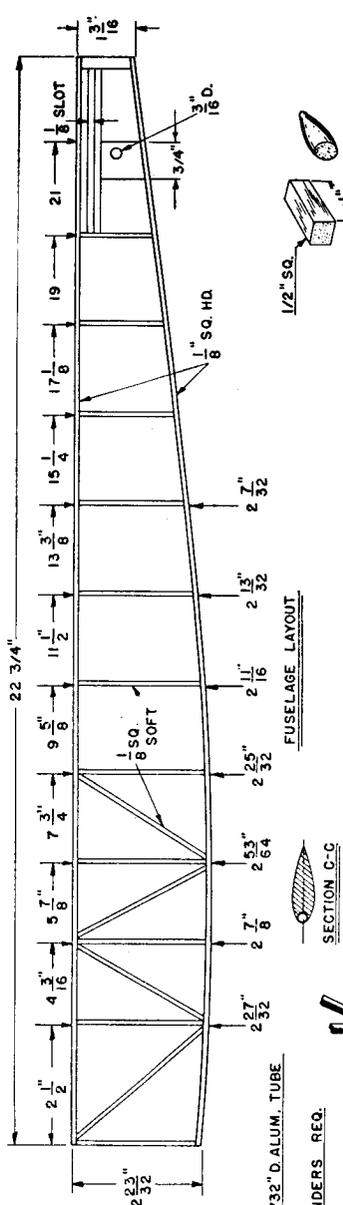
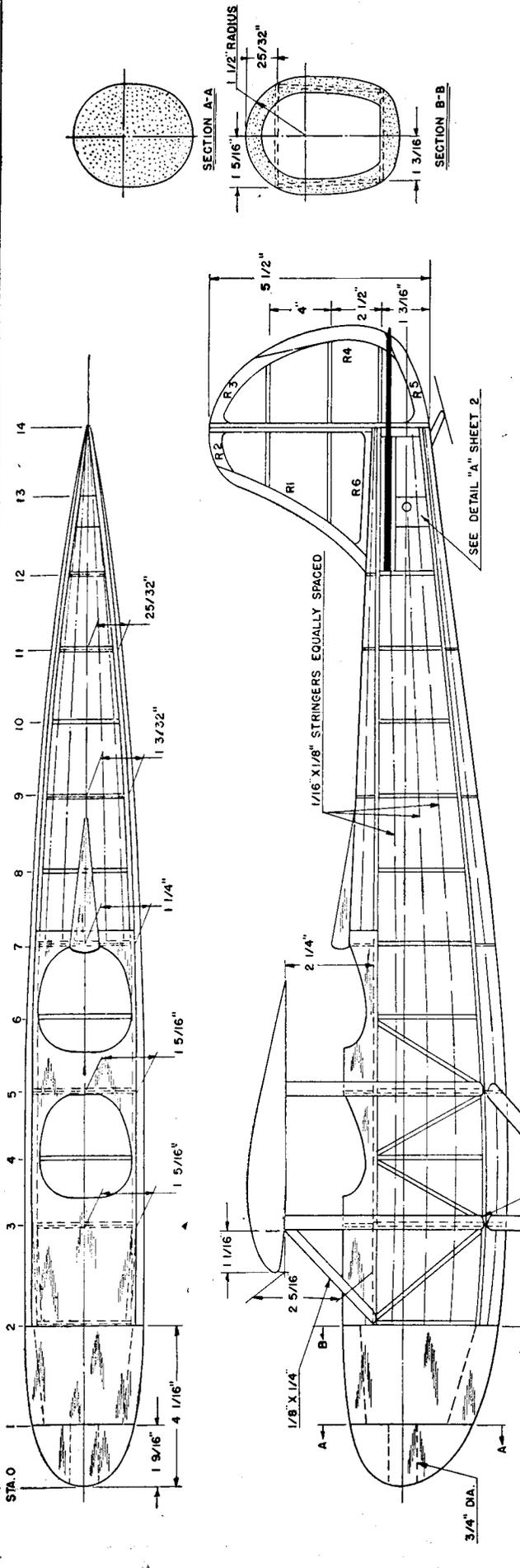
Now make all the wing struts from 1/8" x 3/8" and 1/8" x 1/4" hard balsa. Fair struts and finish the same as the nose block. It is a good idea to sand trailing edge of each strut before cutting into strips. This is done by knifing a sheet of 1/8" hard balsa with razor and sandpaper block. Then cut into 3/8" or 1/4" strips and sand leading edge round. You will find this a very convenient method. Now cement fuselage struts in place as shown on the prospective. Be sure they line up and that the wing sets on at the proper angle of incidence. Trim the struts to suit. Now cement the wing in place, but first cut away the paper at each joint using a broken razor blade. *This is essential! A model is no stronger than its weakest joint.* Cement all the struts in place. Add engine detail as shown on the plan. All parts should be painted before assembling. All details unless otherwise shown are black; India-ink may be used for striping, but if black planefilm is available a much better and cleaner job can be done. Cut strips of planefilm 1/16" wide and apply in place with thinner. Numbers can also be applied in this manner. Be very careful to get strips or numbers in proper position for once thinner is applied it is impossible to move the planefilm. The model uses a 13" diameter propeller carved as shown. If the model is not for competition, use two inch air-wheels. In scale model competition, you must make every part of the model yourself except for bearings including the wheels. See A.M.A. rules governing scale models.

Flying the Model: Test fly the model on a calm evening on a field where there is plenty of high grass and room. The hole in the nose plug is drilled crooked to vary thrust adjustments slightly by turning the plug around. Be sure to get the plug back in the proper position after winding. The model should balance about 40 to 50% back from the wing leading edge. Hand glide, making adjustments to the controls until the model glides in a smooth flat glide with a slight turn to the right. Now give the propeller a few hand winds to feel out the model's characteristics. On each flight gradually increase the number of turns, finally to full power.

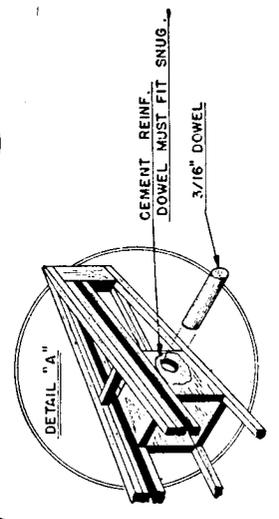
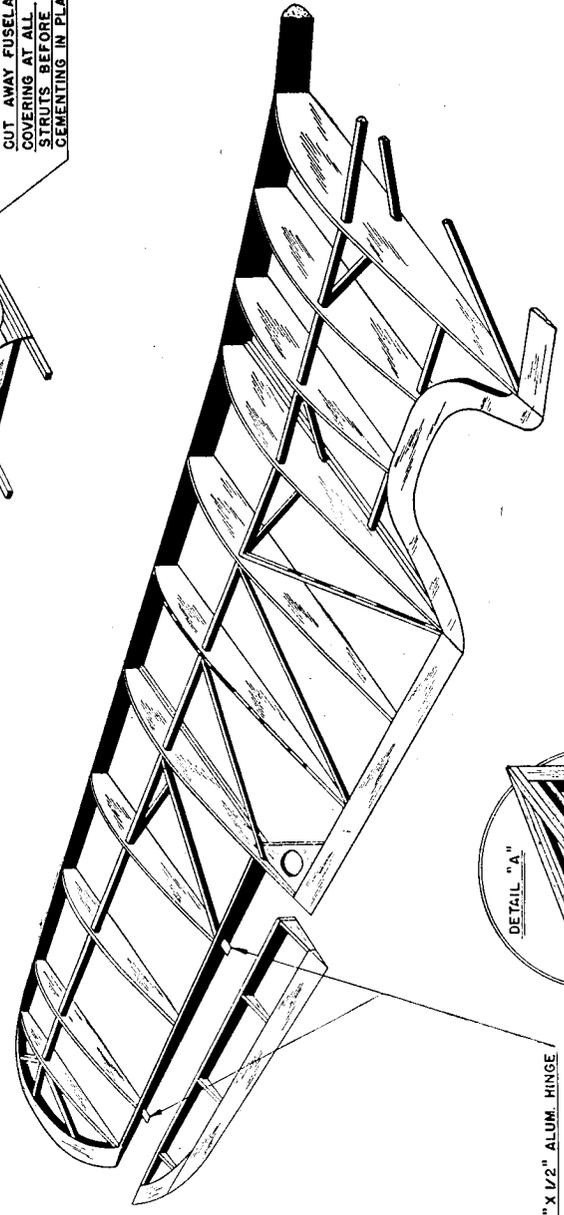
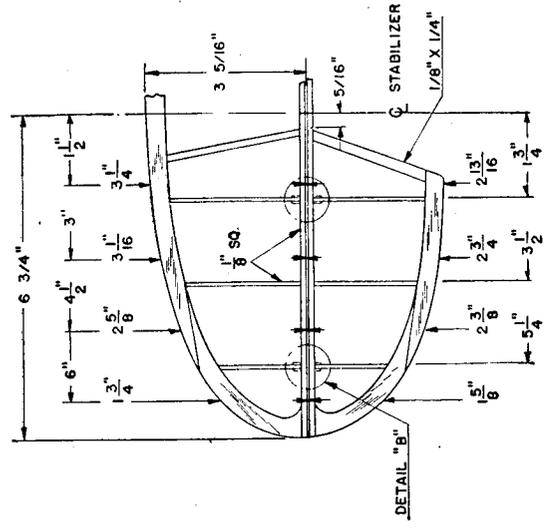
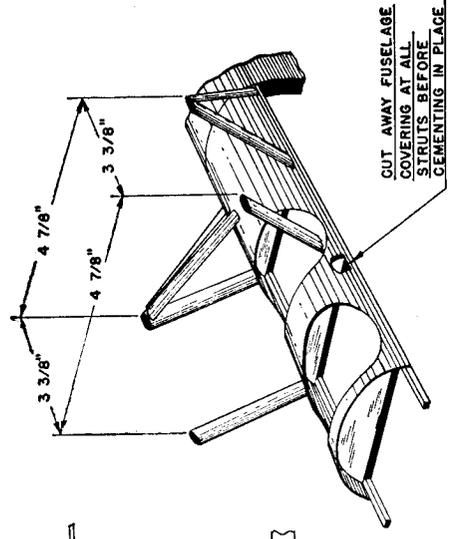
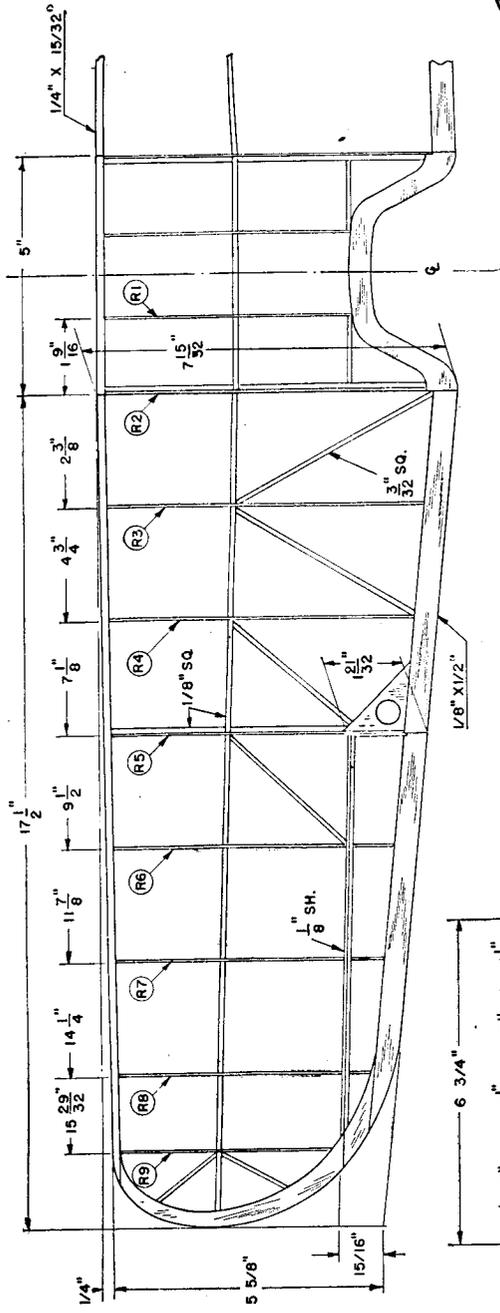
Wind with a winder about 50% of full power. If model does not act properly make proper adjustments of the controls and try again. After getting the desired flight, give model full winds with a winder and you will be surprised at its performance. The model uses 18 strands of 3/16" flat brown rubber. It may be made lighter by omitting color doping and controls, acting more like a commercial than a scale model, climbing very rapidly and gliding extremely well. It will also stand abuse better because it is lighter. You will get a real thrill seeing a scale model floating around in a thermal. But you may also get a depressing feeling when it passes out of sight—so be careful what time of day you fly unless entered in a contest. It should turn in flights of over 1-1/2 minutes consistently, flying in a large circle with torque under power and in a small circle to the right in glide. When all adjustments are made put a drop of cement on all controls to prevent them from coming out of adjustment. You will have much success with this model and the author will be glad to hear from everybody who builds one.

VICTORY

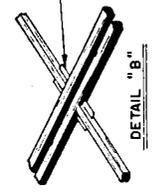




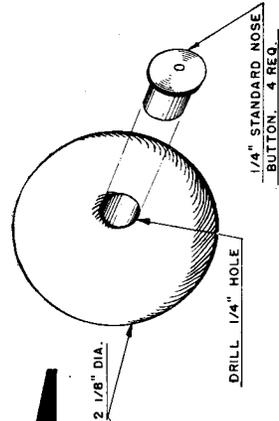
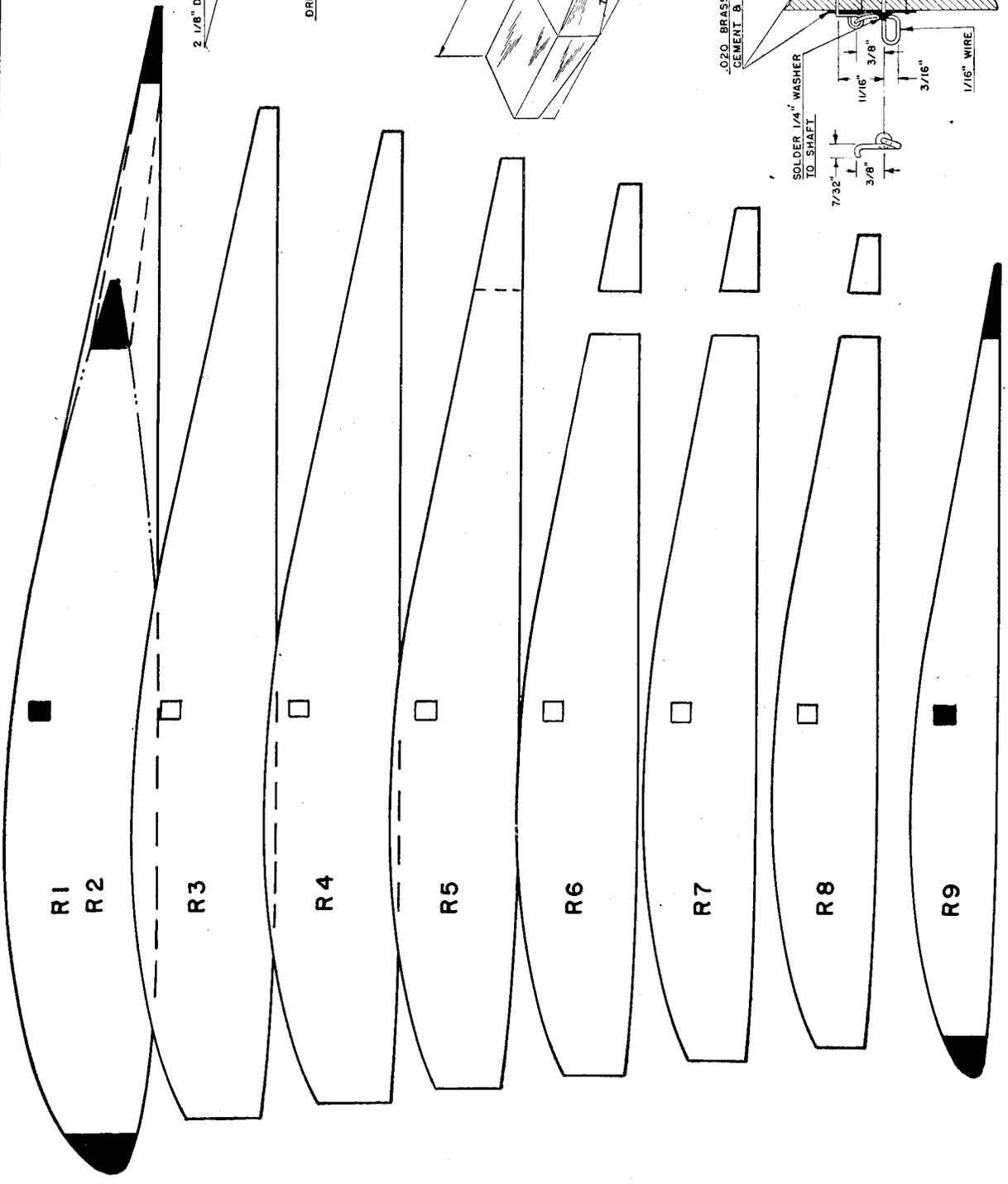
AIR TRANSPORT - P 2
SCALE 1/4" = 1 FT.
MODEL SCALE 1/4" = 1"
 DESIGNED BY W. SEGGERT JR.



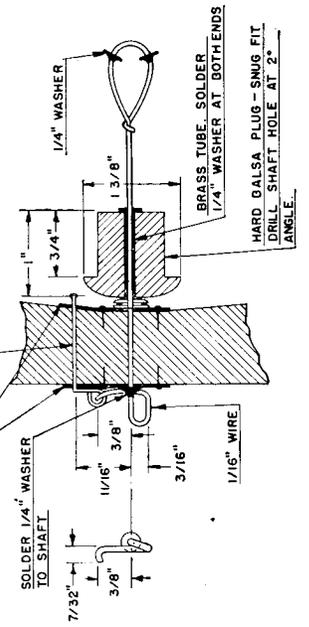
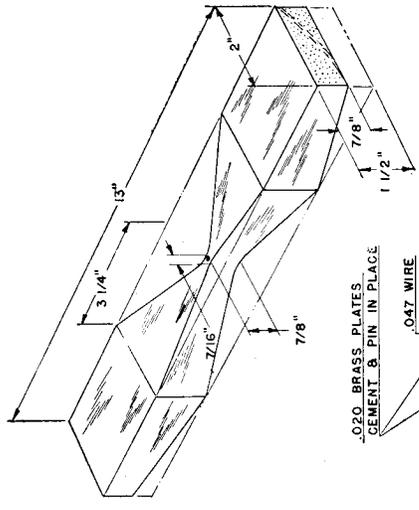
.016 X 1/16" X 1/2" ALUM. HINGE



SCALE 1/4" = 1"



WHEEL 7/8" THICK
SOFT Balsa



ALL RIBS 1/16" SHEET 2 REQ.

NOTE: PARTS 1/8" SH. EXCEPT WERE STATED.

S4 2 REQ.

S1 1 REQ.

S3 2 REQ.

R2 1 REQ.

R1 1 REQ.

R5 1 REQ.

S2 2 REQ.

R3 1 REQ.

W4 2 REQ.

R4 1 REQ.

W3 1 REQ. 1/4" SH.

COCKPIT
TEMPLATE
1/32" SH.

R6 1 REQ.

W2 2 REQ.

TOP

STA. 2-3 & 4

W1 2 REQ.

STA. 7

1/4" SH

BOTTOM
STA. 3-5

STA. 8

STA. 7

STA. 11

STA. 9

STA. 12

STA. 12

NOTE: ALL
FUSELAGE
FORMERS
1/16" SHEET

FULL SIZE