



MONOPLANE
NOTICE THE CANTILEVER
WING AND TAIL WHEEL SUCH
AS USED ON PRESENT DAY PLANES.

oughly before attempting model construction. Time and patience are required to make this exact scale model. Always bear this in mind. As only one part of the plan will be used at a time, the remaining portion can be folded over for added reference and study during the process of assembly. The following few additional tools and materials, other than those supplied, are necessary to build this airplane model: A razor blade (preferably one with a heavy rounded back); a small drawing board upon which to work and cement parts; about fifty amall thin pins; a pair of pliers for bending shaft; some small pieces of sandpaper; and a piece of waxed paper 12"x36".

## STEP 1 . RE-ENFORCED PRINTED SHEETS

Printed balsa rib sheets are supplied. But, when stronger models are required, plain sheets of white writing paper can be pasted to backs of rib sheets. Apply library paste to paper and attach to back of each rib sheet. Paper re-enforcements eliminate possibility of cracking balsa along the grain. While drying, place pasted parts between two flat surfaces and apply weights to them (some old magazines or books) to prevent warping. Do not remove paper re-enforcements from various pieces after they have been cut from rib sheet.

## STEP 2 . SANDPAPERING

Material: Wood Block and Sandpaper (not furnished) For sandpapering obtain a small block of wood and fold sandpaper tightly around it. Rub sandpaper covered block with an outward mo-tion LIGHTLY and SQUARELY on all balsa strips. Avoid rounding

close or tight fit requires less cemen . Consequently, less weight will

#### Material: Sanded Balsa Strips STEP 3 . SPARS, ETC. From the sanded strips select the correct sizes as required on the plan for leading edge, spar and trilling edge. Do this before any notches are cut in ribs so that fit will be very close or tight. A good

## STEP 4 . WING-RIBS-WING TIPS

Material: Printed Baisa Rib Sheets With a razor blade cut out illustrated ribs and wing tips from printed rib sheets as they are needed in the process of building the wing. This will prevent pieces from being lost. Begin assembly by working over the wing in the top view. It is advisable to place a piece of waxed paper over plan to prevent wood parts from adhering to and tearing or soiling plan when they are removed.

While working over plan hold down balsa parts with small thin pins. The wings are assembled in two units, namely, right and left panels. Place spars and trailing edges in position. Insert ribs beginning with A, B, C, etc. After all ribs are in place, fit leading edges in position and complete wings by inserting wing tips. Cement all joints carefully and when they are thoroughly dry remove wings from STEP 11 • MOTOR COWL AND COWL COVER

## STEP 5 . ELEVATORS AND STABILIZER

## STEP 6 . FIN AND RUDDER

Material: Balsa ½ sq., ½ x/e and Printed Rib Sheet

Cut required parts from printed rib sheets. Assemble rudder in one

A machine cut propeller is Work over side view. Rudder is assembled in the same manner as stabilizer. Allow cement to dry thoroughly before removing

#### Material: 16" sq. Balsa STEP 7 . BODY-SIDES Cover side view of plan with waxed paper.

Assemble body sides over side view. First pin down longerons. Next put in upright members. Start at front and work toward rear. Cut up. STEP 13 • BEARING, ETC. rights to size and apply cement to ends before dropping into their correct positions. Now put in diagonal braces. When thoroughly dry, remove body side from plan. As two such sides are required, replace waxed paper over plan and make another similar ody side.

## STEP 8 . BODY-SQUARE

Material: 18" sq. Balsa and Printed Rib Sheets The second body construction step is the assembly of the two sides into the completed frame. Work over top view. Start construction by cutting out formers and cross braces to size. Start at rear and work toward front. Crack or bend longitudinals where necessary. Cement all joints carefully. After all formers and cross braces are in place and ment is dry, check trueness of body by holding frame so that it can be viewed from front to rear along center line. Check corners to be sure they are at right angles and perfectly aligned. After the body has been assembled into a square frame, cut out stringer notches. Make them a trifle smaller than the printed outlines to assure a

## STEP 9 . BODY-STRINGERS

The same kind of materials are used for both longerons and stringers. STEP 15 . COVERING oth with sandpaper, cut to required lengths and cement into positions indicated BY NOTCHES IN FORMERS as stringers are purposely not shown on plan. They run lengthwise along outside of body to help round out body and support covering.

## STEP 10 . TEMPLATES

All stiff paper templates are shown in full size on plan. With carbon paper trace these templates onto stiff paper. Cut out traced forms to exact size, bend to required shape and cement into position during the process of assembly. Apply cement to proper edges and hold or pin into position until cement is thoroughly dry.

# Material: Balsa Block and Template "A"

Out motor cowl from balsa block. Out around outside printed circle with razor blade or scroll saw. Sandpaper edge until smooth and cir-Material: Balsa & "sq., 'x" x //s" and Printed Rib Sheet cular. Next cut around inside circle to a depth of 1/6 inch and remove The tail is assembled in one unit, namely, stabilizer and elevators.

Work over top view. Sandpaper all strips as explained in Step No. 2, appearance when dummy motor is inserted. Peel off paper template before cutting to required lengths. Use waxed paper and pins in assembly. Cut cross members and cross braces to required sizes and shape shown in top and side views. Trace cowling cover template from cut curved tips from rib sheet. First, place cross members and then front of plan onto stiff paper. Bend into a cylindrical form, overlap

A machine cut propeller is supplied. However, it is not completely finished. Sandpaper corners and edges round. Propeller must be bal-anced. Do this by piercing propeller center with a very thin pin which In turn is stuck to the edge of a board, thus permitting propeller to revolve freely. When propeller is properly balanced, it will remain stationary on its shaft, in any position.

## Sandpaper heavier blade until balance is attained

The bearing, shaft and washers are all furnished ready to use. The shaft is placed first through the bearing, then through the washers and next through the propeller. Bend shaft over into a "U," pull back into hub of propeller and cement securely. Be sure shaft is aligned properly with blades so they will revolve truly. As tension of rubber motor will hold nose bearing in position, DO NOT cement it to motor cowl. This will permit unit to be readily removable from front of ship. When greater space is needed a small bead may be placed between the

## STEP 14 . LANDING GEAR AND TAIL WHEEL

Material: Wheels and 1/8"x1/8" Balsa Each landing gear strut is made from two pieces of 16"x1/8" balsa cemented together to form one strut 1/8 "sq. Sandpaper strut round as shown. Use small thin pins for axles, push through wheel hubs, bend to required shape and cement to landing gear strut. The tail wheel is made from three separate pieces, cross-grained for strength. Cement the pieces together and when dry sandpaper to a tire shape. been completely covered with tissue.

Printed on Plan

Material: Tissue All individual complete parts are to be covered. Cover wings and elevator on top side only and remaining parts all around or on both sides. First sandpaper all rough edges and make all corners slightly rounded. Fit tissue paper first, a section at a time, then apply cement and finally attach tissue and allow it to dry. Cover all pieces completely and apply as much tissue paper in one section as possible without undue wrinkling. With a fine atomizer or insect gun, spray entire covering of framework very lightly with water. In order to prevent the various parts covered with tissue from warping out of shape, it is advisable to pin them upon some flat surface and to permit them to dry. Unless the wings and elevator are covered on both sides, do not whink the covering on these parts as it is apt to warp them.

When shrinking tissue on rudder, wet BOTH sides at the same time,

pin down and allow to dry thoroughly. This gives the parts a smooth tightly stretched covering. When parts are completely covered and dry they are ready for decorations.

STEP 16 • DECORATIONS (Controls) Material: Printed on Plan Control outlines, pilots, motor and instrument panel are printed on back of plan. Pilots' heads must first be cemented together and then inserted in cabin. Insert instrument panel, motor and control outlines in their proper positions.

cemented joints to dry thoroughly. Cement landing gear units into proper positions on wings and then cement wings into positions shown in side view. Block up wing tips to produce proper dihedral and allow cemented joints to dry thoroughly. Be sure everything is aligned properly. When these parts are dry, cement tail wheel in place.

STEP 18 . SCALE PROPELLER Material: Not Furnished Views of the scale propeller are shown on front of plan for those who do not wish to use the two-blade propeller supplied.

STEP 19 . MOTOR Material: Rubber 表"x表"x7" (2 strands) A large rubber band is supplied. Attach rubber motor between pro-peller shaft and rear motor brace as shown in side view. Rubber motor can be easily inserted by threading or pulling into position with a piece of string dropped through body if held in a vertical position. A small opening in the tissue covering is required at rear of ship for inserting rubber motor.

## STEP 20 . FLYING

When model has been completely assembled it must be checked for center of gravity balance BEFORE a trial flight is attempted. Place the forefingers at the midpoint of the wing tips and lift model to see whether it balances. If tail has a tendency to drop, it denotes tail heaviness which may be overcome by adding a little weight to nose of ship. If nose has a tendency to point downward, add a little weight to tail. Use this procedure until proper balance is attained. Tacks or pins can be inserted into front or rear of model to produce proper balance. When plane remains horizontal, while suspended on tips, it can be considered balanced. A few short trial glides should be made AFTER the model has been properly balanced (not before). In gliding, if nose of ship has a tendency to climb and if ship does not make a gradual glide downward, it indicates that tail is still a little too heavy. This must be offset by additional weight at front of model. To be certain that model is correctly balanced, hold it, unwound, in position for launching and if the glide after leaving the hand is steady and consistent and goes forward 10 or 15 feet, ship can be considered

Model is now ready for its trial flight. When gliding the ship do not launch it upward. Launch it with the nose pointed slightly downward which permits gravity to take effect. Before trying a powered flight it is advisable to test motor by winding propeller with right forefinger. Permit rubber motor to unwind completely, two or three times. At this time check trueness of propeller rotation. While turning propeller and thus winding rubber motor, hold model firmly by its nose block. The proper number of turns for rubber motor is attained when its coils or twists are fairly small or tight.

STEP 21 • SAVE YOUR PLAN AND COLORED PORTRAIT ON BOX Although your model is finished your plan PROPER is still complete or intact. That is, no parts of templates should have been cut from it. Therefore, it can be looked over for small, possibly forgotten details. Carefully remove the colored portrait from packing box. With razor blade, slit rear of plan along dotted diagonal lines in DETAILED INSTRUCTION section. Insert corners of colored portrait into slits

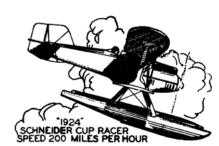
as you would a photograph in an album. Sav-A-Plan can now be filed away for future reference.

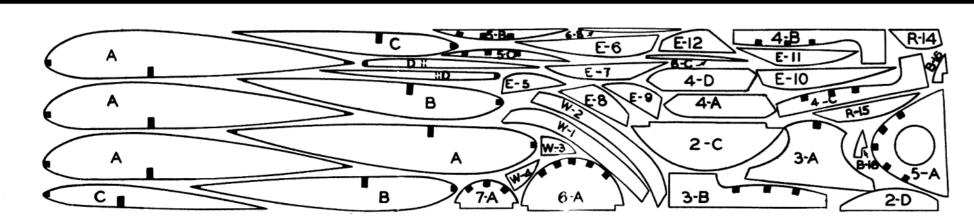
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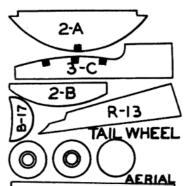














## NOTE

For convenience of model builder all ribs, formers, etc., as shown on printed balsa sheets are duplicated on this plan for use in final checking, repairing and for the building of additional models.

