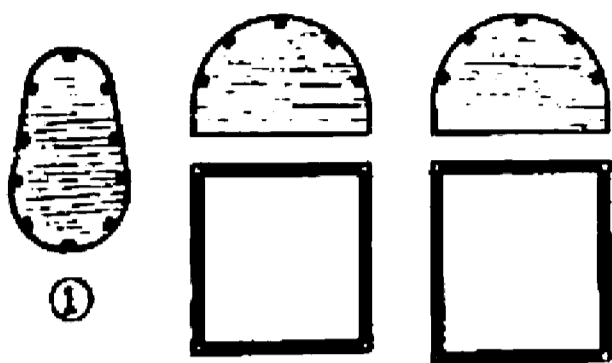
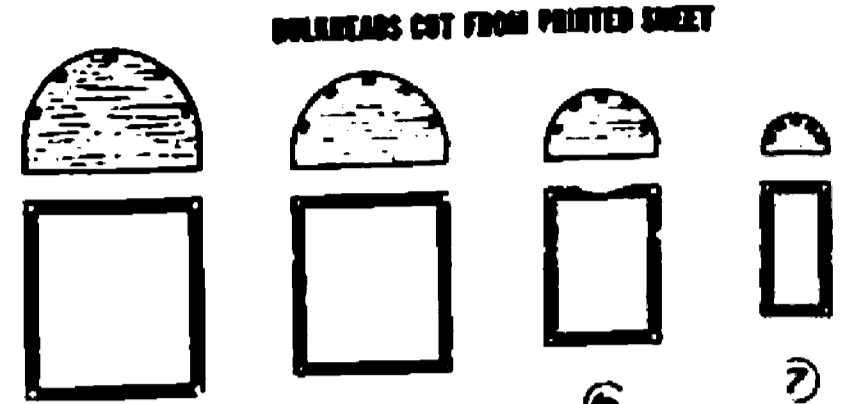


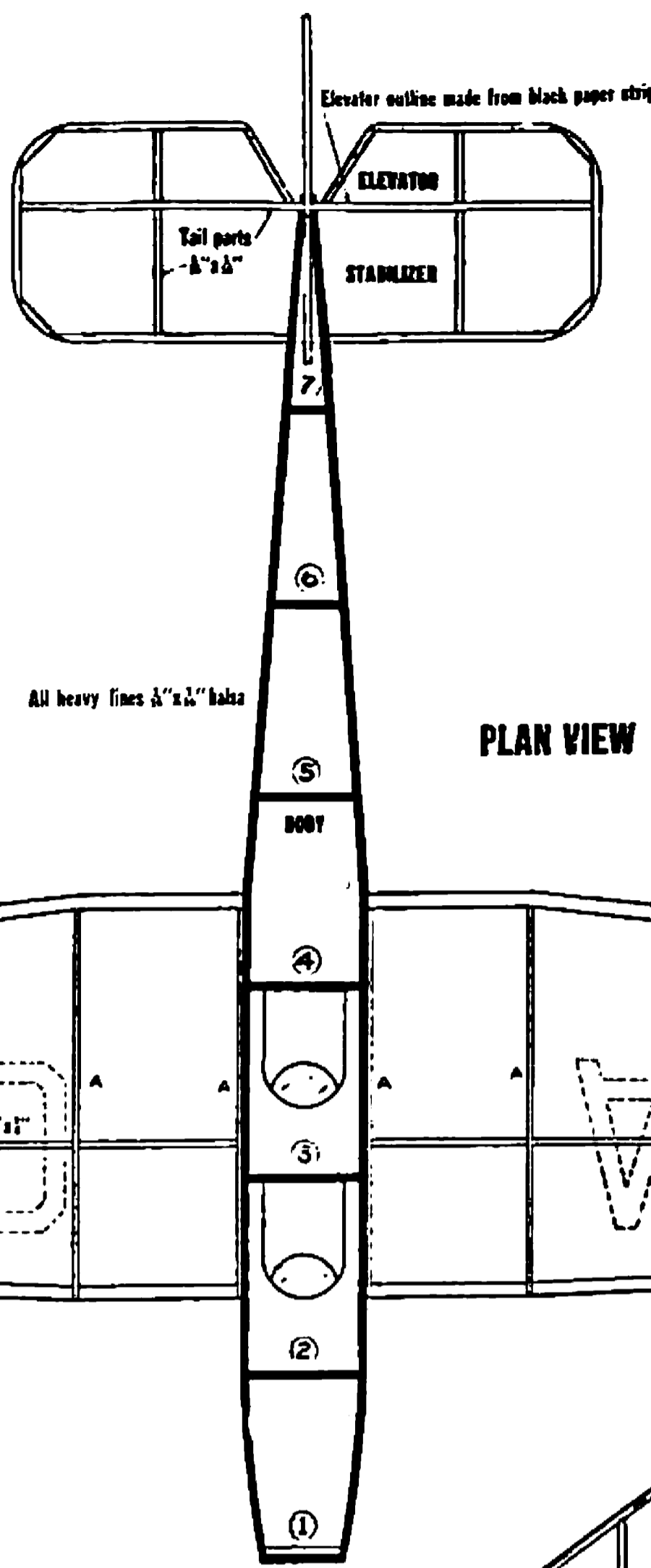
WING RIB SECTIONS



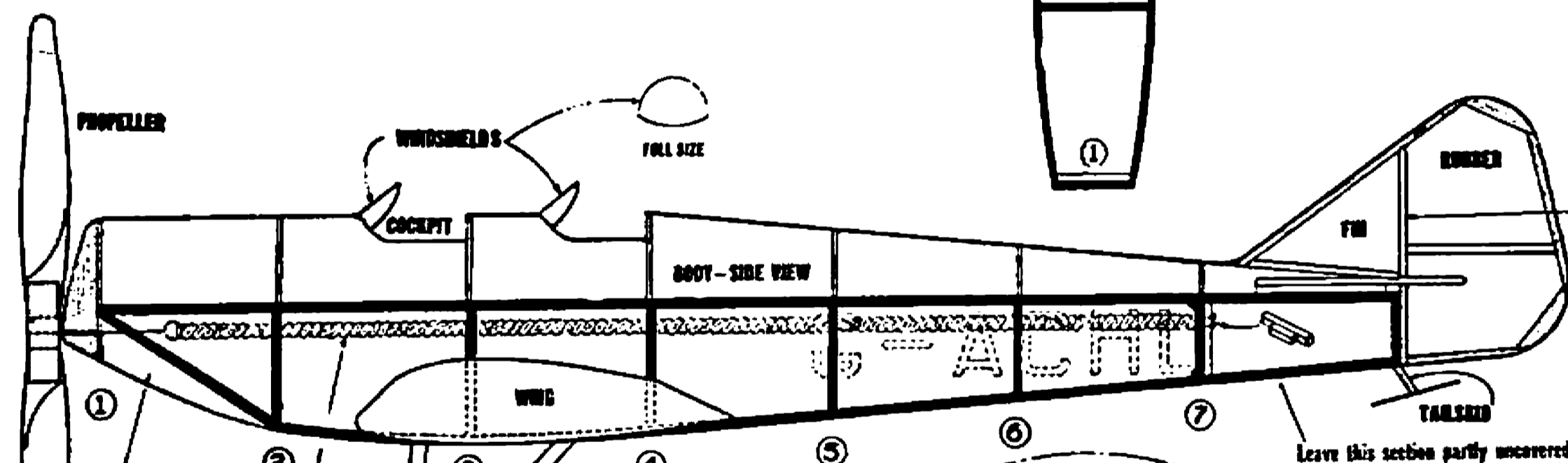
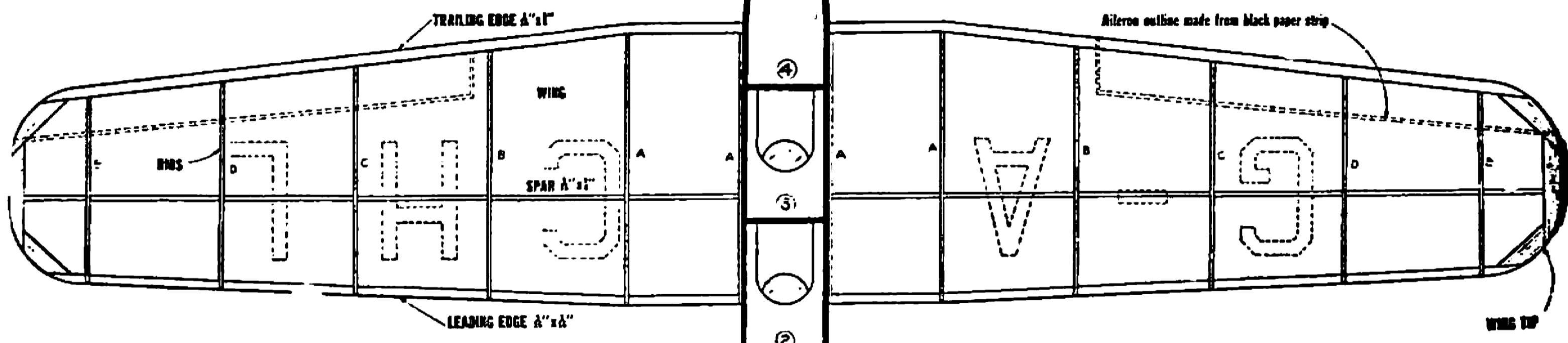
BODY CROSS SECTIONS



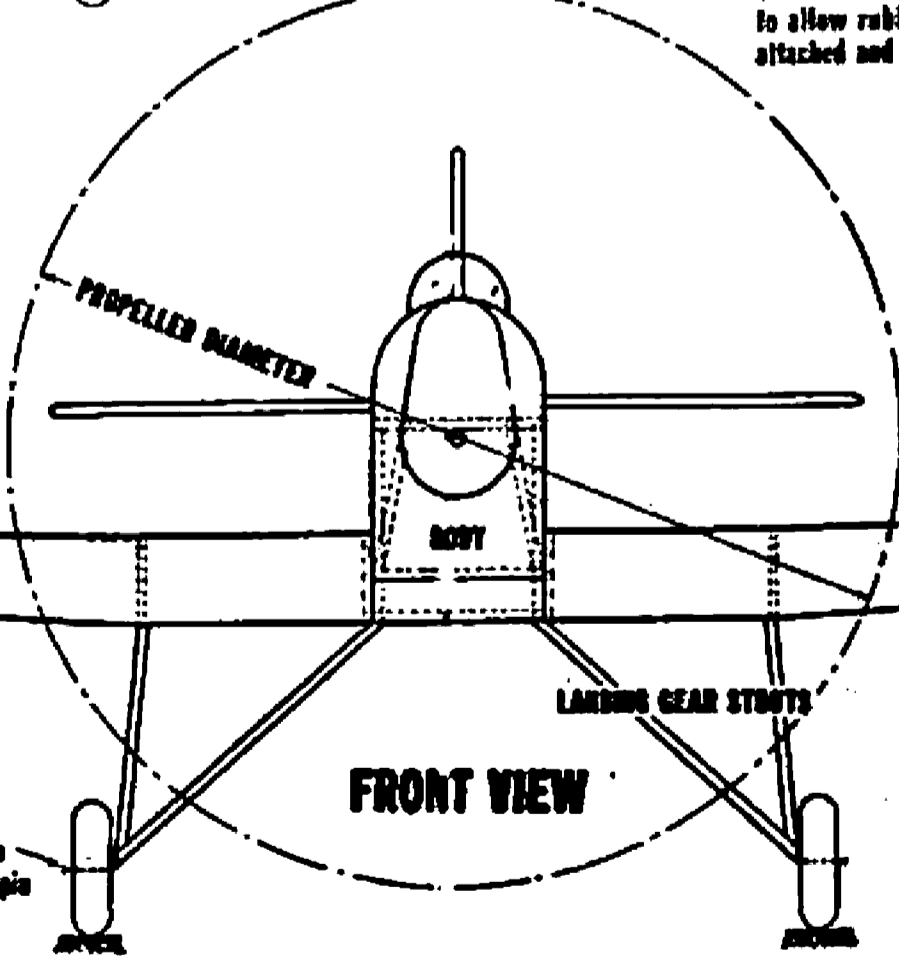
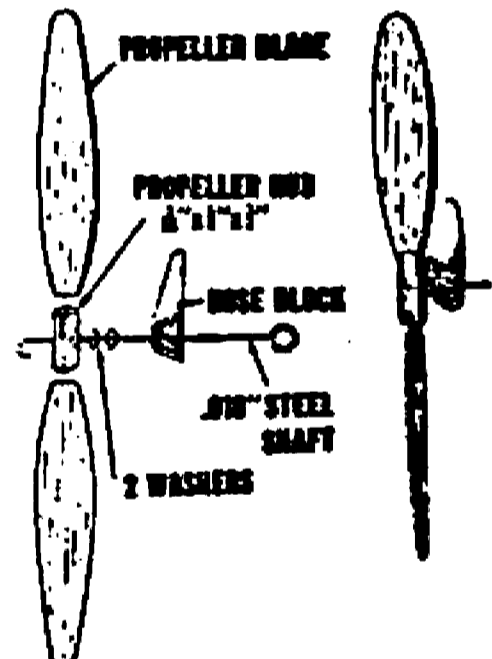
BODY CROSS SECTIONS



PLAN VIEW



SIDE VIEW



FRONT VIEW

FULL SIZE
16" MILES HAWK
FLYING SCALE MODEL

This plan of the Miles M.2 Hawk is from Whitman kit #3901, the first of the 1935 16" plans by Joe Ott. This is the front "blue print" side of the plan.

(Courtesy Jim Alaback)

image reversed to save ink
is from Dec 1997 Wingovers and Wallbangers

REPRODUCED AND
REVISED FROM THE
ORIGINAL BY
DICKIE, WASHINGTON

16" MILES HAWK

Detailed Instructions by Joe Ott

Study plans and perspective sketches before starting any of the actual model work. As only one part of the plan will be used at a time, the remaining portion can be folded over for reference and study during the process of assembly. A small drawing board will be suitable upon which to assemble the model airplane.

STEP No. 1

Body Sides Material: Balsa 1/16"x1/16".

All construction work is done directly over or on paper plan. To prevent wood pieces from sticking to plan, obtain a piece of waxed paper, place it over the plan, and then pin the wooden strips directly over the lines which show through waxed paper. The heavy outlines represent the main part of the body. This part should be constructed first. A side view of the body is illustrated in the sketches. Make both sides nearly alike by placing another piece of waxed paper directly over the first set of wooden parts and building the other body side directly on top of the first.

STEP No. 2

Body Top Material: Balsa 1/16"x1/16".

After the cement has thoroughly dried, separate the two sides. The two sides are then assembled on the Plan View to the correct widths as shown in the view of body sections. The method of doing this is also illustrated in the perspective sketches.

STEP No. 3

Formers Material: Printed balsa rib sheet.

The four body formers are illustrated in full size on the plan and are also printed in outline on the rib sheet. With a razor blade, cut out body formers and fit them to the top part of the body. Check their correct positions by referring to the Body Cross Sections.

STEP No. 4

Stringers Material: Balsa 1/16"x1/16".

The semi-circular shape on the top of the body is secured by the formers. To fill out the roundness of the body, longitudinal stringers are placed in the small square cut-out sections of the formers. The stringers, as a rule, are always a trifle smaller than the main body longitudinal members. Sandpaper the stringers before notching formers, and then make snatches fit pieces.

STEP No. 5

Cockpits Material: Printed paper outline on plan.

The two cockpits are illustrated in full size on back of plan. They may be cut out and used as shown, or, if plan is to be preserved, trace the outline on a stiff piece of paper to use as a guide for cutting.

STEP No. 6

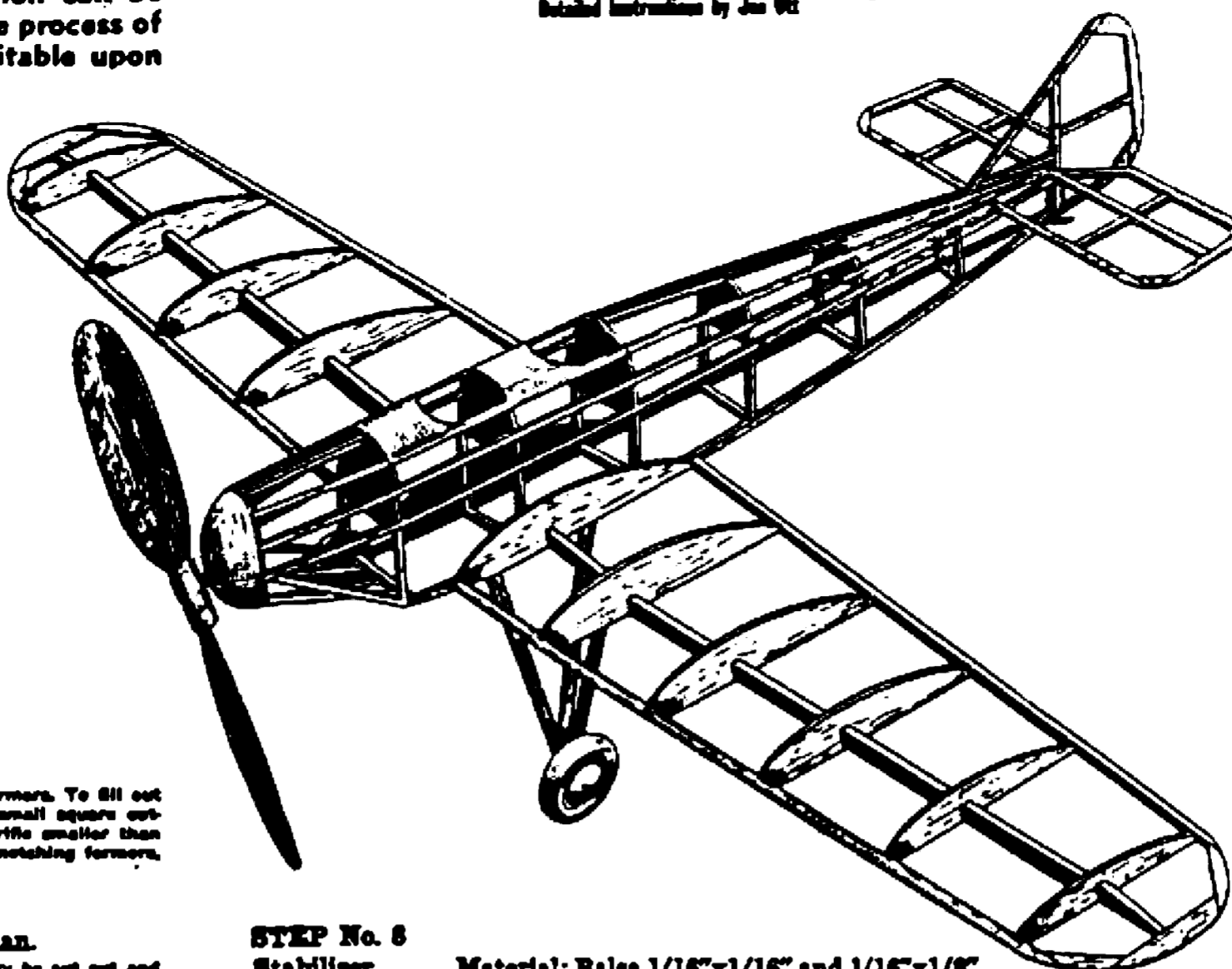
Windshields Material: Transparent material.

A full size layout of windshields is illustrated on front of plan. The transparent material should be cut to size and then formed. Then cement them to front of cockpits as shown.

STEP No. 7

Wing—Ribs Material: Printed balsa rib sheet.

Cut out all ribs as illustrated. Notch them for assembly to leading edge, spar and trailing edge. The wing should be assembled and cemented in one piece across the Plan View, then cut in two. Use waxed paper underneath wooden parts. The beeline of the wing toward the tip is called dihedral. It helps to give the model airplane inherent stability.



STEP No. 15

Covering Material: Tissue.

Cover body first. Fit tissue over a section before cementing down. Be economical with tissue as only enough is supplied to cover model. For sticking tissue to framework use a VERY THIN solution of flour or library paste, or ordinary glue thinned with water. Apply paste to a small portion of the framework and then place tissue on same. Be careful not to tear tissue when damp or wet with paste. The covering procedure is the same for both wing and tail units. (In some cases only small portions of the body or other parts can be covered at a time without wrinkling.) Tissue joints can be readily made without making the plane look rough. If the covering is sprayed very lightly with an atomizer containing clear water, the tissue, after drying, will shrink smoothly over the entire framework. It is not necessary to soak the tissue. Practice on the rudder. Note results before spraying entire model.

STEP No. 16

General Assembly Material: Various finished parts.

Cement stabilizer in place on top of longerons at rear. Cement stringers over and on top of stabilizer. Rudder is then to be cemented in place.

Landing gear and wing struts can now be attached in their proper places over covered tissue sections.

The most important point to keep in mind when assembling, is the relation of the leading edge to the trailing edge of the wing. In any event, the under surface of the wing should be nearly parallel to the center line of the body. The position of the wing can be checked best by sighting the entire model from the side during the assembly process. It is safe to place the trailing edge of the wing 1/16 of an inch lower than the leading edge. This is done by slightly shortening the rear wing struts.

STEP No. 17

Pilot Material: Sketches on Plan.

Printed pilot's heads are furnished on back of Plan. Cut them out and paste a left and right side together. Then cement to a small balsa cross brace and cement in position in cockpit. The instrument panel should also be cut out and cemented in place in front of the cockpit on the former provided for it.

STEP No. 18

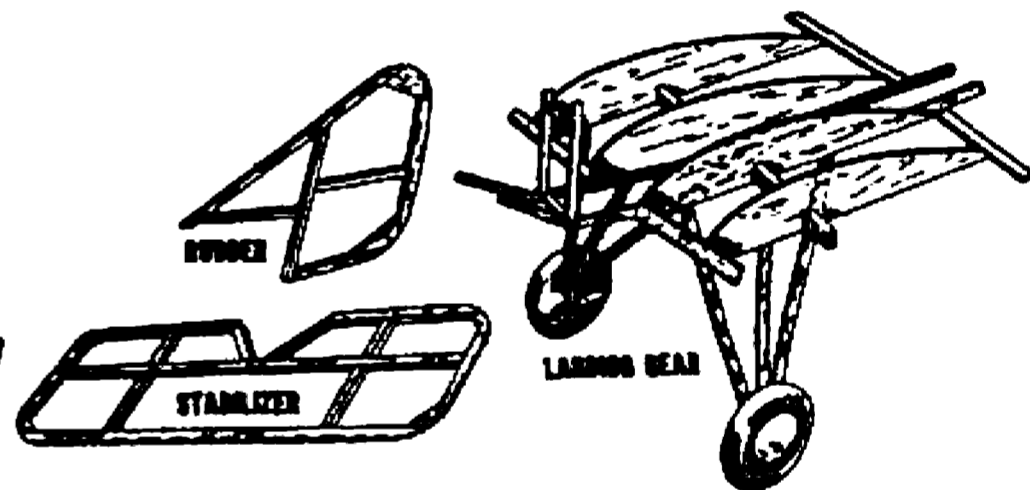
Motor Material: Rubber Band 1/32"x3/32"x7".

The rubber band is held in front by hook in shaft and at rear by hard balsa cross brace. Band can be easily inserted by threading or pulling into position with a piece of string. A small opening in the side at front and at rear of body should be left uncovered for inserting rubber. DO NOT crush plane while affixing rubber.

STEP No. 19

Decorations Material: Numbers and black lines on Plan.

All commercial ships are licensed by their governments. This model is a copy of an English lightplane. In order to identify them, the government issues numbers or letters which are recorded with name of owner so that proper ownership is known at all times. Letters to fit this plane are provided on the plan. Cut them out and paste on plane as shown. (Or trace them and make copies if plan is not to be cut.) Near the edge of the plan is printed a set of small black lines. Cut them out and use them for outlining ailerons, elevators, and rudder.



STEP No. 8

Stabilizer Material: Balsa 1/16"x1/16" and 1/16"x1/8".

Two sizes of balsa are required for the stabilizer. The wider pieces are used for the curved parts. Assemble to outline illustrated in Plan View.

STEP No. 9

Rudder Material: Balsa 1/16"x1/16" and 1/16"x1/8".

Material and construction are the same as used for stabilizer. Make part over side view as illustrated on Plan and in sketches on back of Plan.

STEP No. 10

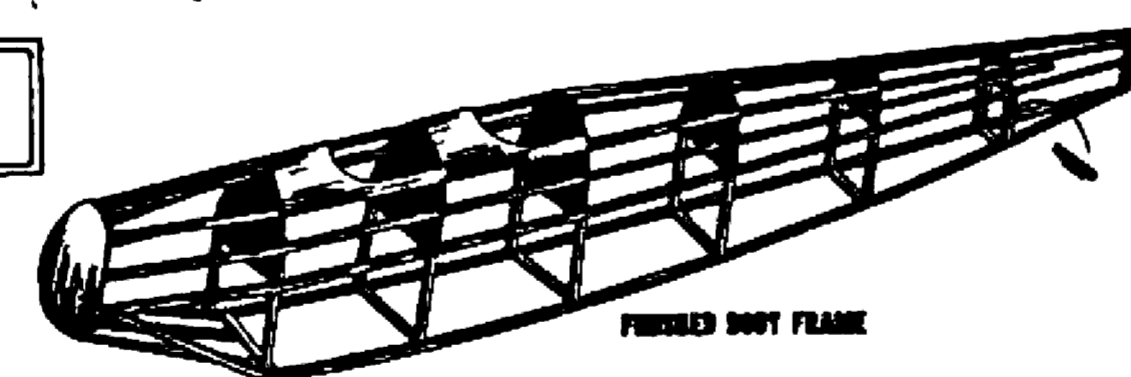
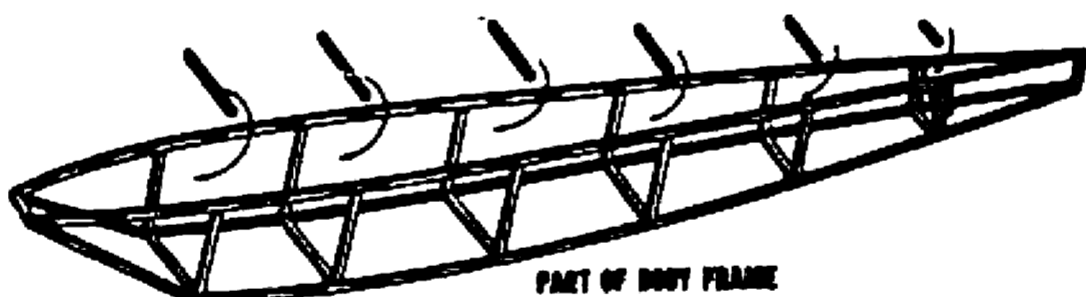
Propeller Material: Printed balsa rib sheet. Hub 3/16"x1/4".

The blades of propellers are cut from the printed rib sheet. Outlines only are shown. Corners only should be sandpapered lightly to a rounded shape. Make hub from a 3/16"x1/4"x3/4" piece of balsa. Be sure that material furnished is cut down to the exact hub size. This size will give the correct thickness for proper propeller blade angle. The propeller blade SLOTS, in opposite ends of hub, should be at nearly right angles when viewed from end of hub. Cement blades into place. It may be advisable to use a thin coping saw blade to cut the slots.

STEP No. 11

Nose Block Material: Balsa 1/4"x3/4"x1-1/8".

Cut nose block to shape illustrated in front view of plan. Then shape it as shown in



side view. The general appearance of nose block is semi-circular as viewed from both top and front. Its outside dimensions should conform to the front shape of the body. Study sketches for final assembly.

STEP No. 12

Shaft Material: Steel wire—.018".

After propeller has been assembled and nose block carved to fit front of body, insert propeller shaft through nose block, slip 2 washers over shaft and then push shaft through propeller hub. (Before pushing shaft through hub, make a small hole with a pin or needle slightly thinner than the shaft diameter.) After assembly has been completed, push shaft farther through hub and bend protruding end over as illustrated in propeller sketch. Pull hook back into the hub, cement securely and ALLOW TO DRY. This complete nose block unit should later be cemented to front of body.

STEP No. 13

Landing Gear Material: Balsa 1/16"x1/8" strip.

The landing gear design is very simple. Its construction should be started from side and front plan views and also from sketches. Correct lengths should be copied from the plan views. Finish this assembly only after body has been completely covered with tissue.

STEP No. 14

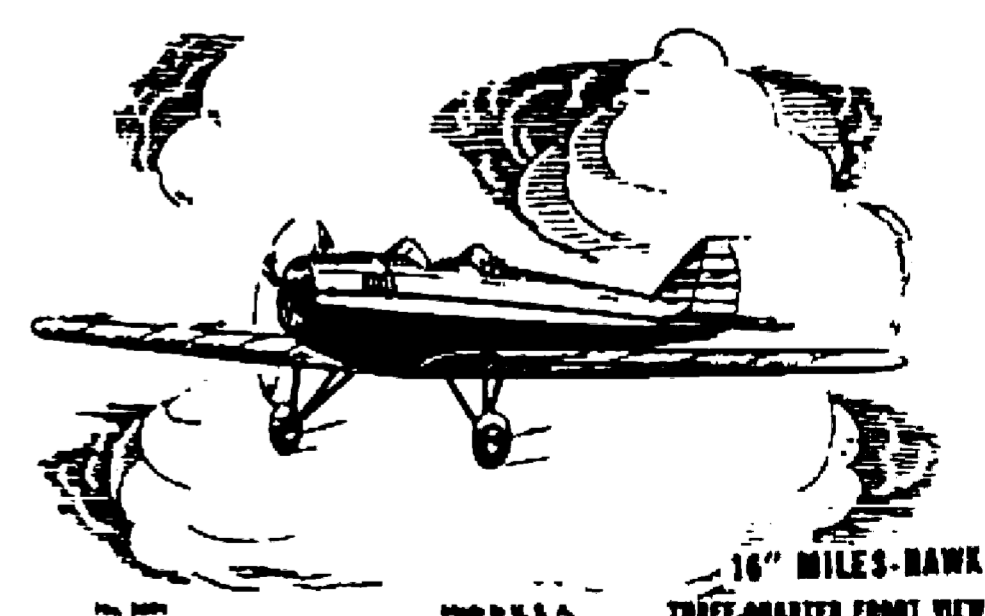
Tail Skid Material: 1/16"x1/8" strip.

Cut a small piece of balsa to correct shape and length, and cement it at rear underside of body. See drawing in side view of plan.

STEP No. 20—Flying.

When model has been completely assembled, it should be checked for center of gravity balance before any trial flight is attempted. Place the forefingers at the midpoint of the wing tips and lift the model to see whether it balances. If the tail has a tendency to drop, it denotes tail heaviness, which may be overcome by adding a small bushel or a few heavy pins or light-weight nails to the nose block on the lower side. If the nose has a tendency to point downward, the procedure for balancing is reversed (that is, the tail should be slightly weighted.) When the plane remains horizontal while suspended on the fingertips, it may be considered balanced.

A few small trial glides should be made AFTER the model has been balanced, and not before. In gliding, if the nose of the ship has a tendency to climb, and if it does not make a gradual glide to the floor or to the ground, the tail is still a little heavy. This must be offset by additional weight at the front part of the ship. To be certain that the model is balanced correctly, hold it ready for launching upward, and when the glide after leaving the hand is steady and consistent, and goes forward 10 to 15 feet, it may be considered a normal glide. The model is then ready for its first trial flight. When gliding a model do not launch it upward and forward. Instead, launch it with the nose pointed slightly downward, permitting gravity to take effect. Before trying a powered flight, it is advisable to test the motor and trueness of propeller and shaft by turning the propeller with the right forefinger and permitting the rubber to be unwound two or three times. While winding the propeller be sure to hold the model firmly directly behind the nose block. Always grasp the model at a point where there are cross braces. The proper number of turns for the rubber may be checked by looking through the space in the cockpit. When you see that the coils or turns are fairly small and tight, after approximately 100 to 150 turns, the motor is wound up enough for flying.



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PAPER COCKPIT
CUT OUT OR TRACE



INSTRUMENT PANEL



16" MILES-HAWK
THREE-QUARTER REAR VIEW

CUT OUT BLACK LINES BELOW TO USE IN OUTLINING CONTROLS

No. 3901
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16" MILES-HAWK
THREE-QUARTER FRONT VIEW