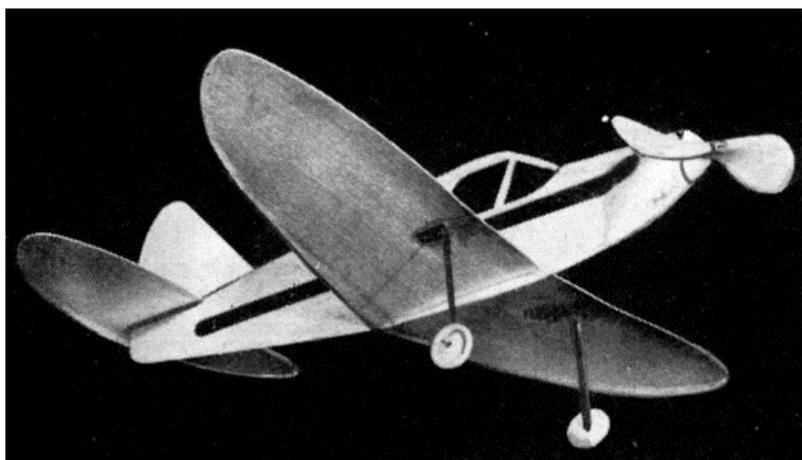


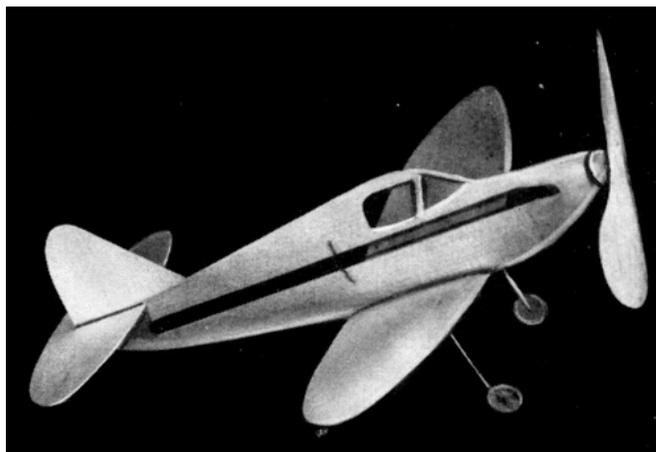
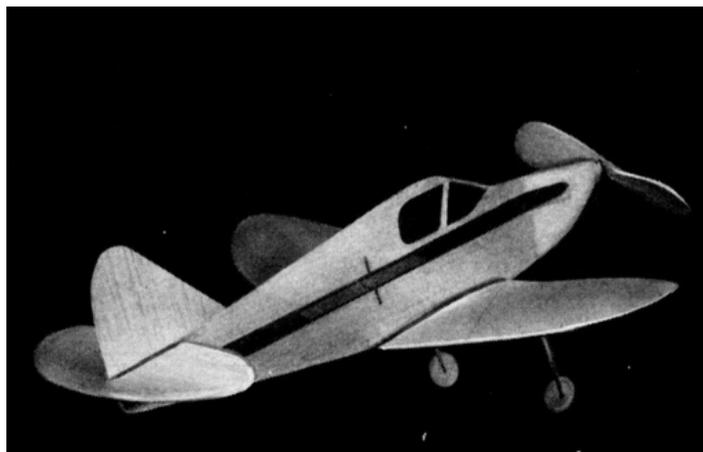
FLYING SCALE FOR BEGINNERS

A simplified flying scale model of a Culver Cadet sportplane that can be built ready to fly in less than three hours.

by **REX HALL**



The model in flight (it is easily repaired when broken)



The completed model less rubber motor, with balsa sheet wings, tail and fuselage embodies only a few simple operations

OF ALL the sportplanes now gaining popularity the new Culver 41 two-seater rates high in its class. Powered with either a 75 hp. Continental or 80 hp. Franklin its performance is exceptional.

Other features are: electric starter, hydraulic brakes and retractable landing gear. Performances obtained by the 80 hp. engine are as follows: High speed, 140 mph; climb at sea level, 800 ft. per minute; service ceiling, 17,500 ft.; landing speed, 45 mph.

To simplify the model and to save the builder time and expense, the Culver has been reproduced in profile form. This does not take away from flying capacity but instead adds to flying hours with minimum repairs.

The model is accurate in all respects, except for those usual changes that are vital to good stability. Indeed, the performance of the Culver in model form is characteristic of the original ship.

CONSTRUCTION: Begin by constructing the fuselage. First, the fuselage pattern may be transferred on a piece of 1/16" sheet of hard balsa. Buy wood of a stringy grain; this is usually stronger. When the true fuselage contour has been cut out, lay it down on a flat surface and cut out the sections indicated on the drawing. Sections which have to be cut out are the cabin, wing and motor channel.

Next, the cabin contour may be completed by adding the 1/16" x 3/32" piano wire brace and celluloid windshield pieces, one on each side.

The nose blocks are constructed of 1/4" sheet balsa, placed on each side of the nose, and later cut to the correct contour. The nose plug may be cut from 1/4" sheet balsa, using very hard balsa. The correct nose plug shape is obtained by lightly gluing on a piece of 1/4" sheet balsa. Let this piece dry, then cut the correct contour. Later remove this piece and add a piece of 1/16" sheet to form the rear end of the plug through which the propeller shaft extends. The slot marked A on the drawing may be removed by wrapping a piece of sandpaper around a nail and using it as a rat-tail file.

Make two clips of No. 14 size piano wire; these are cemented to each side of the fuselage spanning the motor channel. These braces hold the fuselage in position when the model is fully wound. The propeller shaft is bent to the required size on the drawing, using No. 14 wire. The rear hook is also of No. 14 piano wire; use a little more glue than usual on this when fastening it to the body.

WING AND TAIL SURFACES: The wing is of simple construction, cut from a piece of 1/32" sheet balsa. Trace the pattern onto the balsa. Wings are cut out in two sections which are later joined at the center: it's best not to join them until ready to assemble. Be sure to sand each wing panel thoroughly, then lay it aside and start on your next assembly.

The tail assembly is also constructed of 1/32" sheet medium-hard balsa. Take care while cutting out the sections to prevent splitting the wood. The rudder is simply cut, the bottom matching the fuselage contour.

The stabilizer is made in one piece, a small notch is cut out in the center enabling the stabilizer to be slipped in position at the fuselage rear. A complete plan view and method of assembly is shown on the drawing.

LANDING GEAR: The landing gear is shown on plate 1, consisting of two single pieces of No. 14 piano wire. Place the required size wire over the plan view and bend into correct position, using a small pair of pincher-nosed pliers. The land gear top view is shown under the wing panel; this indicates the method in which the gear is held in position. Wheels are not added until the plane is completely assembled.

MOTOR: The propeller is carved from a balsa block 1/2" x 1" x 6" and finished smoothly. A slot is removed on the rear side of the prop to enable free motion. If you are a beginner you should obtain a machine-carved propeller at any model shop or supply store.

Power consists of two strands of 1/8" flat brown rubber. If your model is too heavy for two strands, try three; this should be sufficient power to make your ship perform. As you know, this model is lightly constructed, which enables it to fly efficiently on very little power.

ASSEMBLY: The assembly starts only after all sections have been sanded down to required sizes, so take your time and better results will follow. First add the cabin structure and celluloid. Next add tail surfaces, which are in two pieces. The rudder is simply placed on top of the fuselage. The stabilizer is slipped in position and glued, having -- 1° angle of attack. These should be put in perfect alignment and allowed to dry.

The rear hook may be added next by merely cutting out a notch and inlaying the hook, using plenty of glue. Before starting on the next assembly it's best to add the two strengthening clips one on each side of the fuselage as shown on plate 1.

From there we go to the wing, which is in two pieces, both glued in position at the same time. Be sure the wing bed has the correct amount of incidence. Notice the wing contour; this curved shape takes place when the wings are set in position. The wing can be held in position by the use of pins. The correct amount of dihedral is shown on plate 2; add this, then set aside to dry.

The landing gear comes next; take one leg at a time and glue firmly under each wing panel. You can hold the legs with the fingers until the glue has set. Later the 3/4" hardwood wheels are added, which completes it. The propeller and nose plug can be added last-and this completes the picture.

Painting the model should be discouraged because of excess weight and warping. A few small parts may be painted; such as nose, wheels, aileron and tail surfaces outlined on the drawing. The tail surfaces, parts and ailerons are painted with India ink; this will not warp the surfaces.

FLYING: Select a calm day, when it is best to study the flying characteristics of your model. Test glide your plane and readjust if necessary until you obtain a nice smooth glide. To obtain correct balance add weight to the nose or tail; or adjust the tail surfaces.

Once the glide is satisfactory, try short power flights. If the model does not perform well change the thrust line by adding a piece of wood at the top of the nose plug tilting the thrust line down; this method may also iron out any other fault it may have. The model should have a steady climb, circling to the left and gliding in the opposite direction.

One good method of storing energy is to use a winder. Use an S hook at the rear, also winding it from the rear. Since the model is very light and has little head resistance very good flights can be obtained by using this method.

A little patience and care will greatly reward you with a realistic and fine flying plane.

BILL OF MATERIALS: (All Balsa medium hard except where otherwise specified).
One piece of 1/16" x 3" x 18" for fuselage. One piece of 1/32" x 3" x 18" for wings and tail.
Small piece of 1/4" sheet for nose.
Two feet of No. 14 size piano wire for hooks, landing gear and cabin.
One prop block 1/2" x 1" x 6" or machine carved.
One pair of 3/4" hard wood wheels.
Four feet of 1/8" flat brown rubber.
Washers, celluloid, sandpaper, pins and glue.

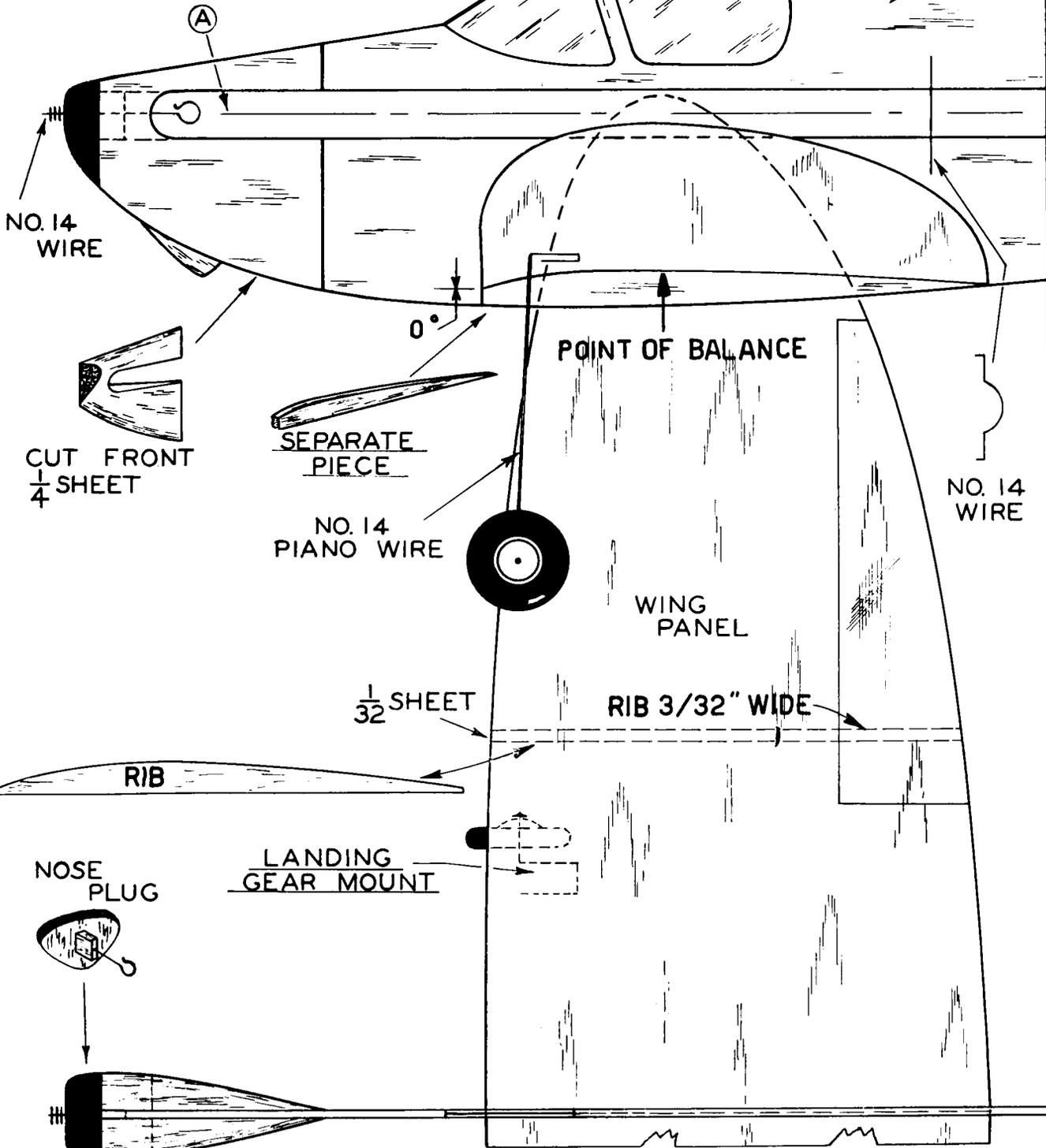
VICTORY

***Scanned from September 1942
Model Airplane News***



PROFILE CONSTRUCTION
SOLID Balsa Throughout

CELLULOID



NO. 14
WIRE

A

CUT FRONT
 $\frac{1}{4}$ SHEET

SEPARATE
PIECE

NO. 14
PIANO WIRE

POINT OF BALANCE

NO. 14
WIRE

WING
PANEL

$\frac{1}{32}$ SHEET

RIB $\frac{3}{32}$ " WIDE

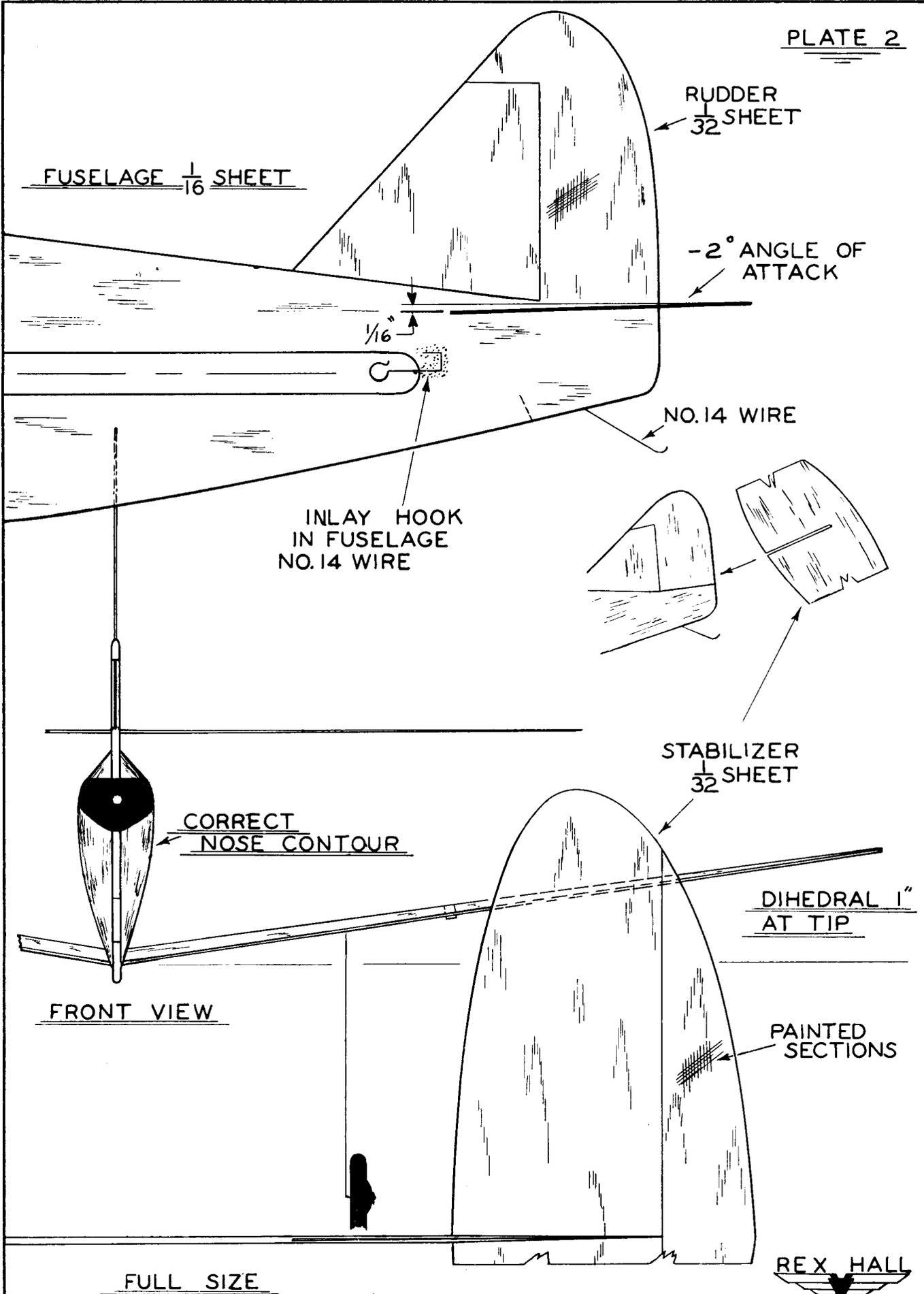
RIB

NOSE
PLUG

LANDING
GEAR MOUNT

FULL SIZE

TOP VIEW



FUSELAGE 1/16 SHEET

RUDDER 1/32 SHEET

-2° ANGLE OF ATTACK

1/16

NO. 14 WIRE

INLAY HOOK IN FUSELAGE NO. 14 WIRE

STABILIZER 1/32 SHEET

CORRECT NOSE CONTOUR

DIHEDRAL 1" AT TIP

FRONT VIEW

PAINTED SECTIONS

FULL SIZE

REX HALL