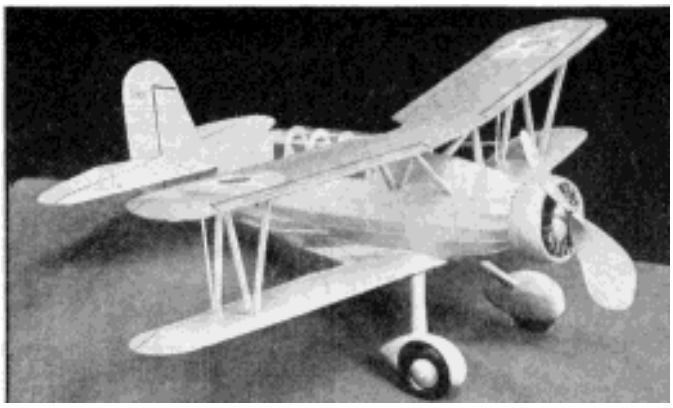



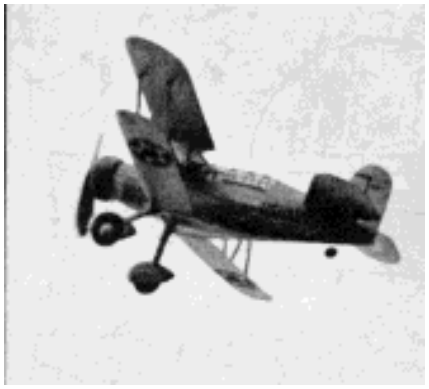
It is realistic in appearance yet it possesses design qualities that make it a steady flier

How You Can Build and Fly the SOC-1 Scout

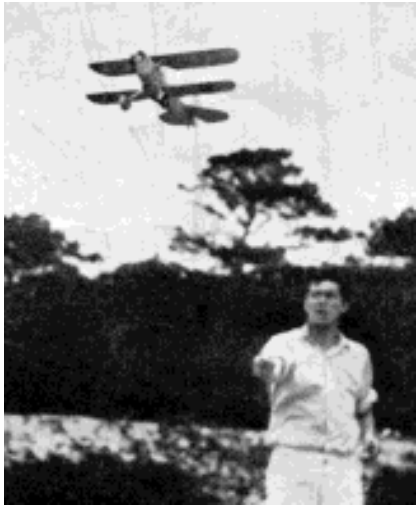
How You Can Create a Model of a Curtiss "Navy Scout" That Flies With Great Precision

By WILLIAM WINTER

A side view of the completed model



In flight, steady and stable



Climbing after it is launched

Banking in actual flight

THE Curtiss SOC-1 is the latest scout-observation machine built by Curtiss for the navy.

As such, it is designed to meet the strenuous requirements of operation from battleships and cruisers. The ship is already noted for its ruggedness of structure and versatility of performance. Prominent among its many praiseworthy features are the low landing speed, excellent handling qualities and the inherent safety for the crew

The SOC-1 is pleasing to the eye both from the standpoint of appearance and proportions. For that reason it makes an interesting model to build and fly. Because of the fine design of the large ship, you will find that the model will fly as readily as a duck takes to water.

The constructional methods with one exception are conventional in our model. The fuselage is constructed by assembling the bulkheads on four master stringers already cut from sheet balsa. By adhering to this practice, all chance of error is eliminated.

Fuselage

Trace the side outline of the fuselage on a piece of 3/32" sheet balsa and cut two master stringers to the depth shown in black on the top view of the fuselage. The top and bottom master stringers are cut from sheet in the same manner. Mark on all the master stringers the positions of the bulkheads.

Cut the bulkheads as shown from 1/16” sheet. Cut only the notches for the master stringers marking the positions of the auxiliary ones until needed.

Cement bulkheads No. 2 and No. 6 in place on the side master stringers. When dry, locate the remaining bulkheads. Cement the top and bottom master stringers in place.

Cement the 1/16" sq. auxiliary stringers in place, cutting the notches already marked as the work progresses.

The cockpit overhang is 1/32" sheet balsa. The lower portion of the body between the No. 3 and No. 4 bulkheads is also covered with 1/32" sheet to provide a support for the fillet block. The rudder post is a piece of 1/8" x 1/4”. Bend the rear rubber hook to shape from .028 wire and attach. Reinforce the auxiliary stringers that support the center section struts with pieces of 1/16" sheet.

The cockpit formers are cut to shape from 1/32" sheet balsa. The largest marked O and shown on the plan is typical of their shape. Each one progressing rearward is smaller than the one immediately in front. As seen on the plan they are laminated when called for.

The fillet ribs are similar to the first ribs of the lower wing panels and are cemented to the bulkhead extensions forming an integral part of the fuselage. Before covering, cement the tail wheel axle in position.

To cover use narrow strips of tissue to avoid wrinkles. Spray with water and dope. Leave an opening at the bottom to install the landing gear mount.

Use strips of cellophane of a width determined by the size of each space between cockpit formers to cover the enclosure. The shape of the front of the enclosure is easily determined from the top and side views of the fuselage. The sight is a piece of rounded 1/8" stock.

Cut the fillet block to shape from a piece of soft balsa 15/16"x5/8"x7/8" and cement it in position against the front of the extension of No. 4 bulkhead.

Landing Gear

The pants are built up of two pieces, one of which is cut out to receive the wheel. Inspection of the detail will make their construction clear. The 1-1/2" wheels are mounted on .028 wire axles. A joint stiffener also of .028 wire is installed as shown in the same detail. The landing gear leg is cut to size and streamlined from wood 5/16" in thickness. A two-pronged washer of tin is imbedded in the upper joint surface to prevent spreading, of the wood while in use.

The landing gear cross brace or mount supports the upper joint stiffeners permanently as seen on the detail. The wood used is 1/4" sheet. Where the wire stiffeners of .034 wire pass through the wood, two pronged washers are imbedded in the surface. After the stiffeners have been fastened in position at the required angle to receive the struts, the mount is passed through the opening in the bottom of the fuselage and cemented against the rear face of No. 4 bulkhead. Force the landing gear legs on the protruding joint stiffeners and force the spring of .020 wire in place as seen in the detail and on the front view. Align the landing gear and bind the leg joint securely. Also fasten the spring in place securely at the bottom of the fuselage.

Cover the opening after the landing gear work has been completed.

Tail Surfaces

To obtain the full stabilizer plan, trace the half given and invert. The stabilizer is made in one piece.

The spars of both stabilizer and rudder are of 1/16" x 3/16" stock. The cross pieces with the exception of the attachment piece of the fin are 1/32"x 3/16". If necessary, cut these odd size pieces from 1/32" sheet balsa. The edges of both stabilizer and rudder are bent to shape from 1/16" in. sq. bamboo around a candle flame. Sheet balsa may be substituted if desired.

To cover use separate pieces of tissue for each side of each surface. Dope the edges in place drawing the paper as taut as possible without wrinkles. Spray the paper evenly and fasten the surfaces securely to the bench while drying. Once dry, dope lightly.

The stabilizer is slid into the opening cut as seen on the plan for this purpose. Cement the rudder in position. The stabilizer is supported by short braces streamlined from 1/16"x1/8" balsa.

Wings

All the ribs on both upper and lower wings with the exception of the mounting ribs of the lower wing are of 1/32" sheet. The excepted ones are of 1/16" sheet as are the fillet ribs already incorporated in the fuselage structure. The spars of the upper wing are 1/16” x 3/16” while the spars of the lower one are 1/16" x 1/8". The trailing edges are in both cases 1/16” x 3/16”. The leading edges are shaved down to 3/32"x 3/16" before shaping it to fit the rib contour. The top spar of the upper wing is 1/16” sq. The tips of all wing panels are of 1/16” sq. bamboo bent to shape around a candle flame. Sheet balsa may

be substituted however. The top wing is cracked at the outer center section rib for dihedral. While the center is fastened to the bench, support the tips at an elevation of ¾" by blocks. Note that the innermost rib of both lower wing panels is slightly slanted to allow for the dihedral. Between the first two ribs of both lower wing panels are inserted rib braces of 1/32"x1/4".

To cover use one piece of tissue for the lower surface of the top wing and one each for the same surface of the lower wing panels. The top of the upper wing is covered with three pieces; one for the center section, the others for the outer portions of the wing. The top surfaces of the lower wing panels are each covered with one piece.

In covering fasten only the edges of the paper at first. Spray the paper thus attached and fasten the surface to the bench until dry. When dry, dope lightly. Streamline the center section struts from 1/16" x 3/16" balsa. Fasten them in position as required at the proper slant and angle, When the cement has set, mount the top wing checking carefully for the proper alignment. It would be well to remove small squares of paper wherever the struts come in contact with the frame so that the joints will be secure.

Cement the lower wing panels in place checking the incidence of each relative to the other. Cut the interplane struts to the size seen on the side view from 1/16" x 3/16" strip balsa and streamline before cementing in position. As before, remove the paper at the strut joints.

Cut the landing light from soft balsa and cement on the lower left wing at the strut rib.

Cowling, Propeller and Motor

The cowling is built up of five discs of 1/4" sheet balsa. The first four are laminated roughly and cut out when dry with a jig-saw. The rear ply has the square hole cut in it for the plug before laminating it to the first four. When the complete assembly has had time to set, trim the profile with a razor and sand smooth.

Cement the finished cowling in place on the fuselage.

The crankcase is a block 1" sq. and 1-3/16" deep shaped as shown to support the nine cylinders. Dummy celluloid cylinders are recommended although an alternate construction of alternate paper discs is depicted. The square plug piece is a scrap of 1/4" sheet. The thrust hearing is a tin pronged washer imbedded in the face of the plug.

The propeller is cut in the conventional manner from a block 8-1/2"x2-1/4"x11/16". The tips are rounded after the carving has been finished as shown by the broken lines. Devote care to the precise balance of the finished prop. The shaft is of .028 wire bent at first only at the front end and imbedded in the face of the prop hub. Use a tin, washer similar to the one in the plug for the rear face bearing of the prop. Slide a friction washer, and the plug on the shaft and bend the rubber hook.

The motive power is eight strands of 1/8" flat rubber.

The model is painted silver throughout save for the top of the upper wing. This surface is painted yellow. Star insignias 2-1/2" in diameter fit neatly. Mark the outlines of the controls with black paper strips. The wires are No. 60 black thread located as seen on the side view. The photographs also reveal the pertinent details.

Flying the Model

If possible test your SOC-1 over deep grass. Otherwise fly the ship R.O.G. on a few turns, gradually increasing the winds as the proper balance is attained. A small lead weight may be used for balancing. The original model balanced perfectly the first time out. This job is naturally stable and makes a picture in flight. You are bound to find that the distance covered is far greater than might be expected for this type of ship.

Bill of Materials

8----------1/16" sq. x 36" strip balsa
5----------1/16"x3/16"x36" strip balsa
2----------1/16"x1/8"x36" strip balsa
2----------3/32"x3/16"x24" strip balsa
2----------1/32"x 3/16"x24" (sheet) strip balsa

1----------1/16"x3"x24" sheet balsa
1----------1/32"x2"x24" sheet balsa
1----------1/4"x3"x18" sheet balsa

1----------8-1/2"x2-1/4"x15/16" block balsa
2----------15/16"x5/8"x7/8" block balsa
1----------1" sq. x 1-13/16" block balsa
2----------5/16"x2"x1-5/8" block balsa
2----------2-5/8"x1/2"x1-1/8" block balsa
2----------5/16"x1"x2-1/2" block balsa

Miscellaneous

1----------1 oz. cement
1----------2 oz. clear dope
2----------sheets white tissue
8 ft.----------1/8" flat rubber
1----------pr. 1-1/2" wheels
1----------1/2" tail wheel
wire----------.028, .020, & .034
silver powder or silver dope
cellophane
3----------1/16" unsplit bamboo
4----------2-1/2" star insignias