

The Topsy

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leading-edge planking is applied.

The elevator hinges are simple and fool-proof and simulate scale appearance of the elevator. Make them by bending loops of about 1/16" inside diameter in heavy bank pins or 1/32" music wire, and interlock the loops in pairs. Each pair constitutes a hinge. Press the ends of each hinge into the elevator and stabilizer spars respectively, and bend the ends back into the spars and apply several coats of cement. This must be done, of course, before the tail is covered.

The control system is basically the conventional type, but several comments are in order. Note that the bell-crank is mounted approximately 50 percent aft of the leading edge; this provides ample line stability with a model c.g. that must be between 18 and 25 percent aft of the leading edge in order to maintain good maneuverability with a relatively small elevator. (The c.g. location on the drawings is a forward limit; those who like loops of 20-foot diameter should locate the c.g. 2-1/4" behind the leading edge of the wing.) The push-rod is a 1/4" diameter birch dowel with 1/16" wire "joggled" ends. The dowel should be one inch shorter than the distance between the bell-crank and the control horn. The wire ends should be pressed into the dowel and thoroughly bound with heavy thread and cemented. This type of push-rod is light-weight and durable, and is deflection-proof without guides. The elevator control horn is made of 3/32" plywood and is cemented to the elevator spar with Weldwood glue. Paint the horn and the center section of the elevator spar with Weldwood and rub in with the fingers. This joint should be carefully checked for strength; there is no gyration the fier can go through to save a control liner with a broken elevator horn. The half-inch-square rear wing mounts provide positive stops for the bell-crank. By notching the mounts 1/16" deep, 30 deg. up and down elevator will be obtained. Do not use more than 30 deg.; a tail will stall out just like a wing, with excessive elevator deflection.

The firewall of 1/4" plywood is cemented to the fuselage sides with Weldwood and the joint is reinforced with gauze. 1/2" sq. balsa aft of the firewall will further strengthen the joint. The engine is mounted on short metal mounts, flush against the firewall. These mounts can be made by shortening a pair of the commercial variety. If thin mounts are used, place a piece of hardwood 1/4" thick between the mounts and the engine lugs; this will help damp engine vibration and bending of the mounts. Paint the front of the firewall with Weldwood for fuel- and fireproofing. Tighten all engine mounting bolts securely to prevent having to go into the top of the cowling. The author's ship has only the bottom of the cowling removable for plug access. However, the design adapts itself well to an all-removable cowling if you prefer this.

The wing fillets are installed after the ship has been covered and given eight coats of clear dope thinned 50 percent. If installed earlier they might tend to buckle or wrinkle. The fillets are made of heavy manila drafting paper or the equivalent. The entire ship is covered with gas-model *Silkspan*, including all planking, such as fuselage sides and the leading edges. This is important from a finishing standpoint and for strength—especially the latter. All planking should be given two coats of wood-filler prior to covering. The entire ship should be sanded lightly between all coats of dope. Six coats of colored dope thinned 50 percent should yield a good finish. If possible, spray the colored dope. If not, use a soft one-inch brush. Fuel-proof the model unless fuel-proof dope is used. However, if either of the latter finishes are used watch tendency to "pull" at sharp-angle joints.

For all scale details, see the three-view of the *Topsy Junior* by Björn Karlstrom, which appeared in the January 1952 issue of M.A.N. The author's ship is painted the colors indicated on this drawing, but has British license numbers. The landing-gear fairing and forward cockpit-coaming are duplicated with rubber tubing split down one side. Aileron and rudder seams and cowling divisions are simulated by black lines painted on, or by Trim-Film. A "false floor" is installed in the cockpit, clearing the bell-crank bolt by 1/16". The inside of the cockpit is painted gray or black, and an instrument panel, seat, and dummy controls installed.

One and one-half ounces of ballast are placed in the outboard wing-tip to position the c.g. laterally. No side-thrust is necessary with this arrangement. The author's ship is flown with a 10-6 Rite-pitch prop, and is rather fast in level flight. If you prefer a little slower ship that will have cruising speed more nearly equal to speed through maneuvers, use a wide-bladed 10-4 prop.

On the first test flight, hold about half-up elevator when the ship is released for take-off. This is necessary to overcome the pitching moment established by the thrust line above the c.g., but the tendency is apparent only near zero velocity. You will find that after the ship has travelled 10 or 15 feet you can neutralize the elevator and then ease the ship off the ground smoothly. One thing certain, though—you will never have to worry about the ship jumping off the ground when it is released. The rest of the flight is easy to handle—not only the full AMA pattern, but "The Nightmare"—the 1952 Mirror Meet pattern. END