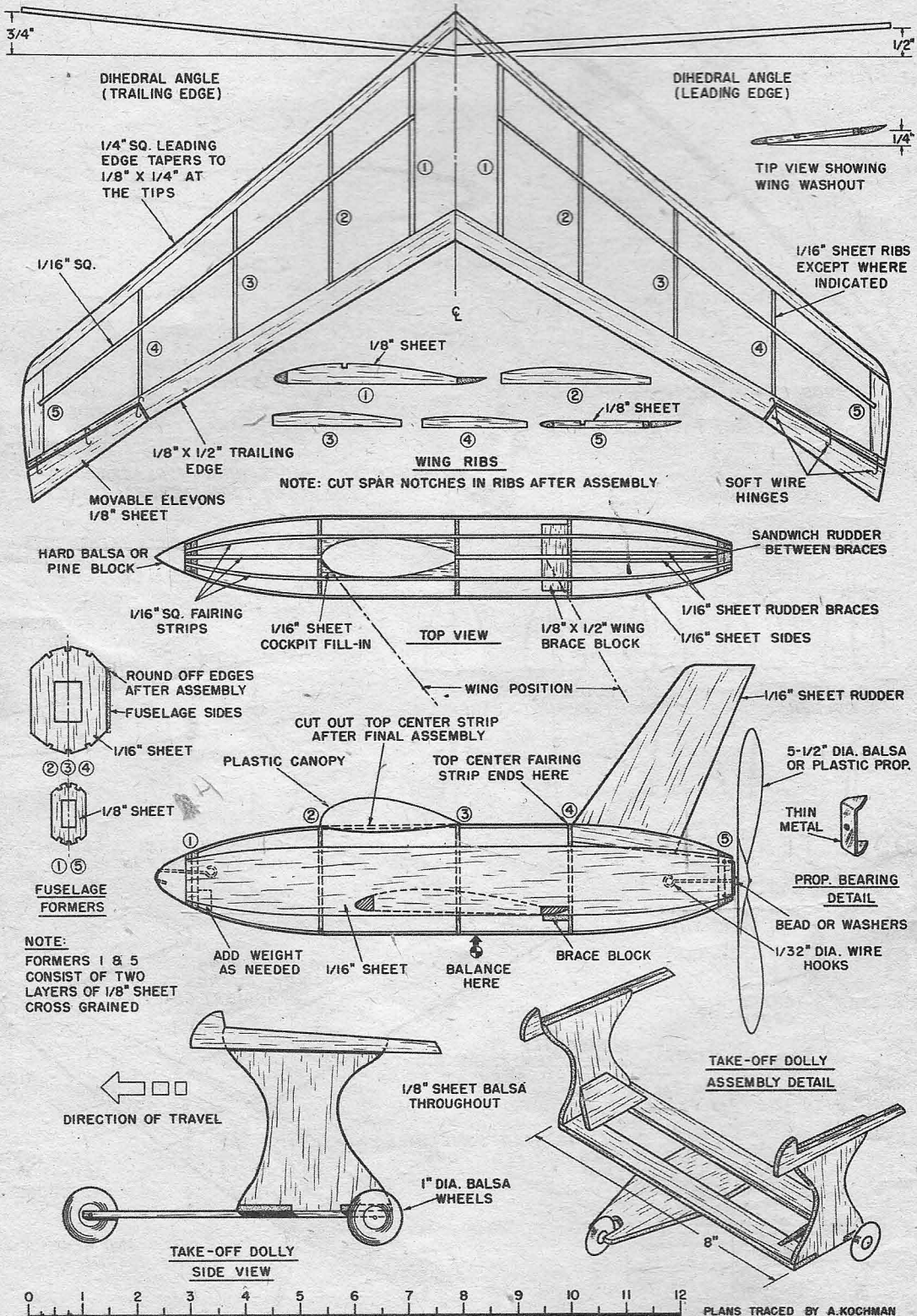


Build your own X-4! Substitute a prop for jet, but otherwise she's close; plans are one-third

Supersonic



Sue

By HOWARD G. McENTEE

■ Nowadays all the exciting new planes are supersonic, or at least jet-propelled, and in the single-seater category, flying wings are coming more and more into prominence. An effort to see what sort of a practical model "wing" of really scalelike appearance we could make ended up as you see here. This little tailless ship was patterned closely after the Northrop X-4 job, with a few concessions to insure simple construction and reasonably good flying characteristics.

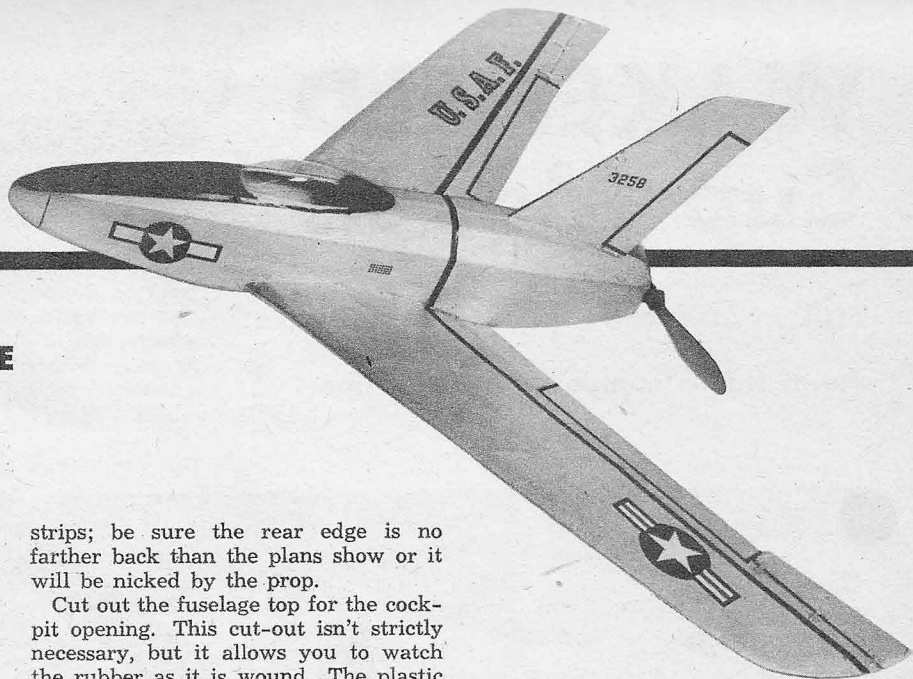
Of course, the X-4 has no propeller—this is our main concession. Otherwise *Supersonic Sue* is a true tailless speedster and a very nice flyer, too. The propeller can be either at nose or tail; we chose the latter position as the rear prop seems less conspicuous and the plane looks "faster" when so equipped. Actually, the model balances better with the prop in front, and because no balancing lead is required, it is lighter and flies a little better. So take your choice. For our money the tail prop won out on looks alone.

The fuselage is built up on a basis of two balsa side sheets and three main formers. Cut these parts from soft 1/16" sheet. Before starting assembly, it is wise to pre-bend the side sheets at both ends, as this makes it lots easier to install the end formers. Just dip your finger in water and rub it on both sides of the wood, then lay the two pieces on a flat surface with weights to hold down the portions that should remain flat (from former 2 to former 4), and blocks 1/2" high to raise the ends. When dry, assembly can be started.

Pin one side piece to your assembly board, run a line of cement along both edges of formers 2 and 4, put them in place, then lay the other side on top. This assembly will not remain upright, of course; you will have to put dope bottles at each end to support it. Before the cement sets, align the four balsa pieces as accurately as you can, using a small triangle. Former 3 goes in next, followed by 1 and 5. Note that the latter two should be beveled on the edges so that they will fit snugly against the pre-bent sides.

The upper three fairing strips, the cockpit sheeting, and the rudder braces can go in now. Do not install the lower three fairing strips until after the wing is in place.

The rudder fits between the two brace



strips; be sure the rear edge is no farther back than the plans show or it will be nicked by the prop.

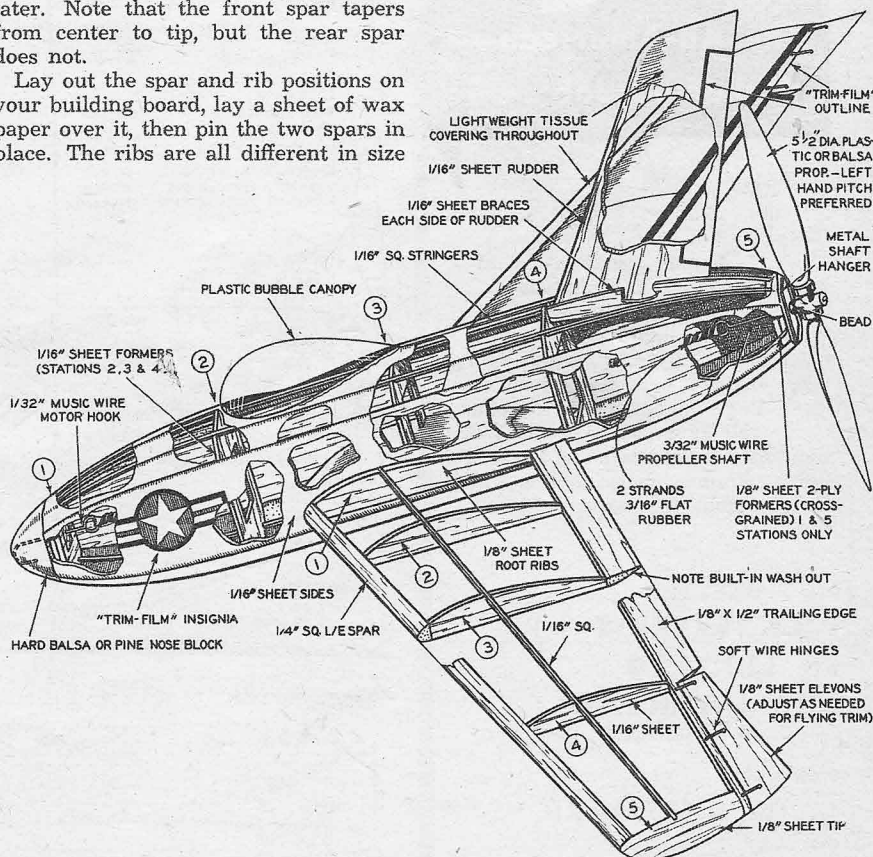
Cut out the fuselage top for the cockpit opening. This cut-out isn't strictly necessary, but it allows you to watch the rubber as it is wound. The plastic canopy we used was from an inexpensive kit. If your hobby dealer hasn't one of the proper size, or a larger one you can cut down, carve a dummy canopy from soft balsa, and cement it over the fairing strips.

The wing is assembled on a board, then transferred to the fuselage. You will note that very little dihedral is used. This is practical because sweepback has such a stabilizing effect that little or no dihedral is required. It is wise to cut both the wing main spars roughly to cross-sectional shape before starting assembly—they can be finished later. Note that the front spar tapers from center to tip, but the rear spar does not.

Lay out the spar and rib positions on your building board, lay a sheet of wax paper over it, then pin the two spars in place. The ribs are all different in size

and shape. We suggest that you cut them roughly to shape, but leave them all a little oversize and about 1/8" longer than shown. Cut and trim each rib to fit as you cement it in. Note that ribs #1 are not put in at this stage, nor are the top spars.

The wing halves are built with all components flat against the board—the "twist" shown on the plans is put in when the halves are joined at the center. Since the (Continued on page 66)



3

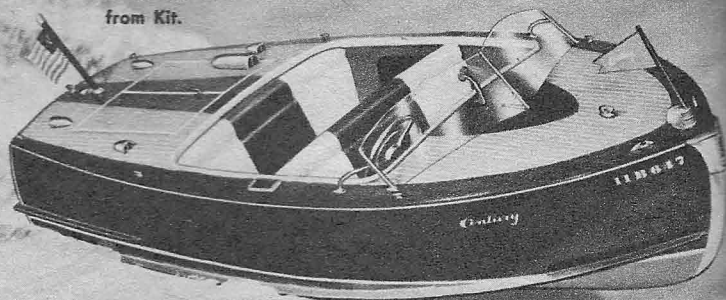
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Actual photograph of model, built from Kit.



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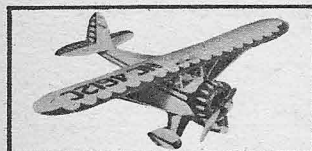
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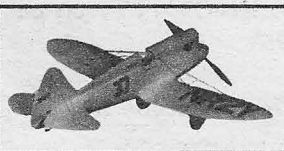
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Supersonic Sue

(Continued from page 41)

twist is vital to proper flying, take real pains to make it right. Cut the inner spar ends so they fit together at the correct angle, then pin the forward spars flat to your board, but raise the rear spars 1/4" at the tips. Smear the two joints liberally with cement and allow several hours for drying.

The fuselage sides must be cut out for the spars and the latter must slip snugly between formers 2 and 4. When you have things fitted satisfactorily, cement the wing in place. It is wise to place the fuselage bottom on a flat surface and block the spar tips up, so they won't shift if the center joint cement softens during this operation.

Install the three fuselage bottom fairing

strips and the #1 ribs. Sight along the ribs from the tip of the wing to rib 1 on each side. The wing cross-section should change smoothly from the moderately cambered rib 1 to the tip rib 5, which is flat on top and bottom. The actual wing shape is not too important as long as it is about as specified at rib 1, and flat at the tips. Shape the front spar and rear spars as shown on the rib drawings.

The wing tip "elevons" act both as elevators and ailerons; they are of 1/8" thick soft balsa, hinged with soft copper wire to the wing rear spar. They should be attached before the wings are covered.

All that remains now is to make the nose block, which may be of hard balsa or pine. Fit a rubber hook to it and make a prop shaft, both of about 1/32" diameter music wire. The prop bearing plate is of thin metal—preferably aluminum to save weight—held by two tabs to former 5.

A 6" plastic prop trimmed down to 5 1/2" was fitted on the original plane. It gives fairly good results, but is relatively heavy. Better results could be had from a light balsa prop of higher pitch. One of the 6" semi-carved props carried by many hobby shops should be ideal.

Assemble the model and check for balance. If the balance point isn't as shown, cement solder to the rear former 1.

Before covering, go over the entire plane with sandpaper to remove rough edges, lumps of cement, and to round off fairing strips, etc.

Lightweight paper, held on with full-strength dope, is used for covering. We covered the entire model, including rudder, fuselage sides, nose piece and elevons. While it isn't really necessary to paper over the wood areas, the model looks much neater, when doped, if you do. When covering the wing, be sure the paper is

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Actual photograph of model, built from Kit.



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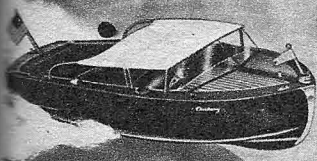
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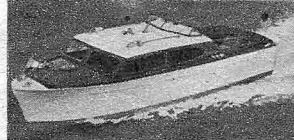
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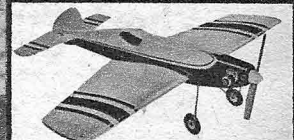
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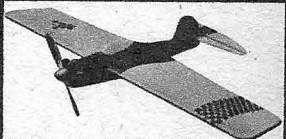
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firmly fastened to the entire upper surface of the rear spar (or wing trailing edge).

After covering is complete, spray the entire model *lightly* with water, using an ordinary medicinal atomizer. It is wise to block the model up on the bench again until this dries, as the wings might untwist a bit when the covering tightens.

We gave the test model three coats of aluminum dope, thinned 50%. This mixture does not add much weight and gives a bright shiny finish. All details and decorations were put on with Trim-Film and other decals.

The motor of our job is two strands of 3/16" flat T-56 rubber. Try a few glides, after again checking to make sure the balance point comes within an eighth inch either way of that indicated. Move the two elevons up or down the same amount to correct for a stall or dive; when you have the model gliding evenly, you can adjust

for turns by moving only one.

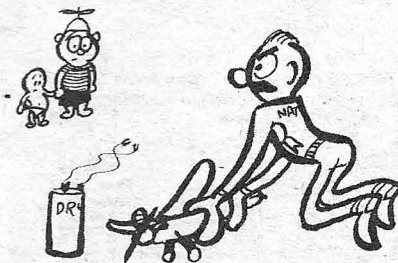
You will probably find your ship a bit awkward to launch at first, but practice will take care of this. If you prefer to make first flights R.O.G., build a launching dolly

similar to that shown here. It need not be very strong, since it stays on the ground and doesn't have to absorb landing shocks.

The finished test model weighs .8 oz. (less dolly), and we find that the rubber motor will safely take 200 turns. How far will *your* "Supersonic Sue travel on this many turns?

Bill of Materials—Supersonic Sue

- 1 pc. ½" x ⅜" x 36" med. balsa, trailing edge.
- 1 pc. ¼" sq. x 36" med. balsa, leading edge.
- 4 pcs. 1/16" sq. x 36" med. balsa, top spar, fairing strips.
- 1 pc. 2" x ⅜" x 18" med. balsa (includes enough for dolly).
- 1 pc. 2" x 1/16" x 36" light balsa.
- Scrap of pine or hard balsa, 1" x ¾" x ¾", nose piece.
- 4" of 1/32" music wire.
- 1 plastic canopy.
- One 6" propeller, plastic or balsa.
- 20" 3/16" flat rubber.
- 3 wheels for dolly.
- Covering paper, cement (small tube), dope (2 oz.), pins, decals, dope thinner (2 oz.).



"Here—you start it!"