

The finished model seems raring to go. The wing sweepback and negative stabilizer dihedral show here. The plan shows built-in down-thrust needed to prevent looping when under power. Depending upon the power of your engine, you may need to add more downthrust.

Manta 250

DESIGN DEVELOPMENTS of Free Flight models since the Thirties have been many. With each new innovation, the art has been regenerated. Individuals such as Maxwell Bassett, Carl Goldberg, Henry Struck, and Sal Taibi have implanted new thresholds in design form—each, with acute perception.

This model, the Manta 250, is not so much a new development as it is a bringing

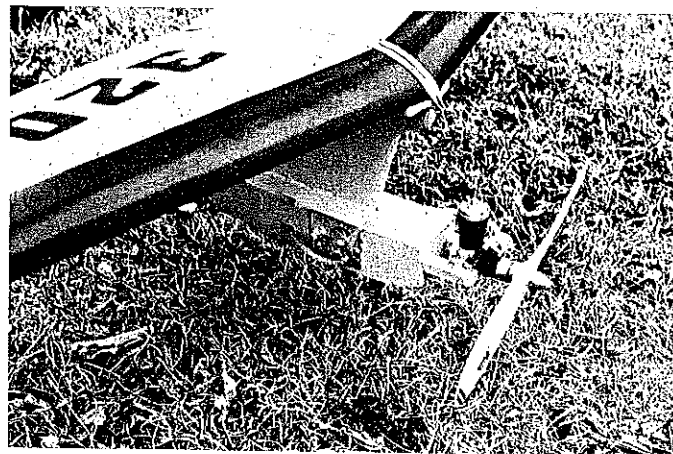
together of past, proven elements in a variant form.

Back in the closing years of World War II, a very efficient wing for piston-engined fighter planes was developed. It featured a sweepback from the leading edge center section and a forward curvature at the tips. It was never developed into a production aircraft due to the advent of jet engines and supersonic flight.

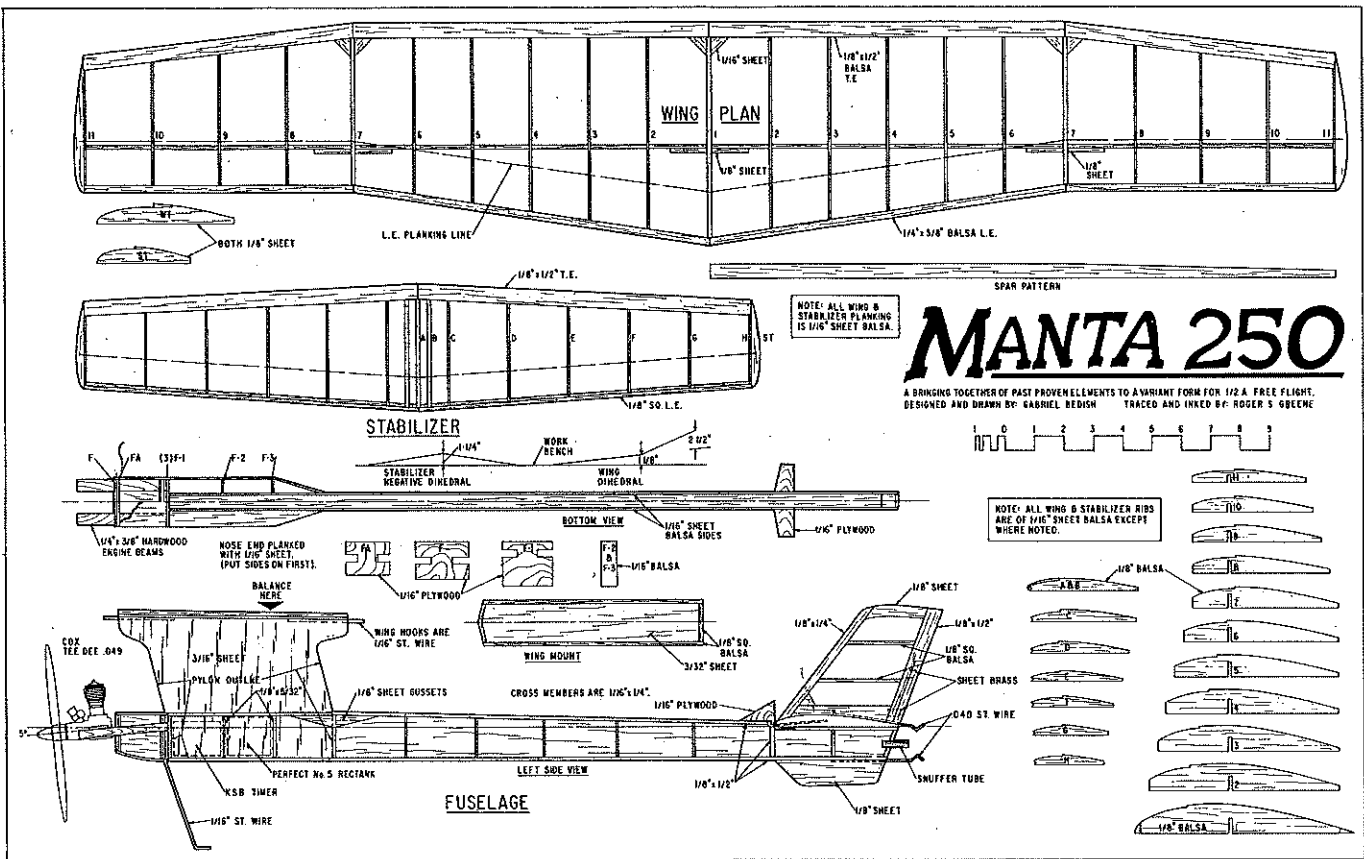
I borrowed the Manta wing idea and applied it to this model. It seems to give great stability and reduced stalling characteristics, and it permits a rearward balance point. The stabilizer anhedral seems to help the model roll well in the climb.

I am very pleased with this model's performance. With minimum flight adjustments, it was ready for competition flying.

In building this model, medium-hard



Left: The workings of the power system show in this view—principals of which are the Cox TD .049 engine and KSB clockwork engine-run timer. Right: Gabe Bedish, the author/designer isn't a newcomer to FF modeling by any means. He proclaims this model to be successful.



You can tell from the size of this 1/2A Free Flight that it's really meant to move out in the climb. The author has found that the wing shape combined with the model's general proportions and anhedral stabilizer make for an easier-to-trim model than the norm. ■ Gabriel Bedish

balsa is used throughout. Use only straight-grained strip wood.

Wing. Leading edge sheeting of 1/16 balsa and a single spar are utilized. Build the wing as a one-piece unit, directly over the plan. A piece of Saran Wrap over the plan will prevent the glue joints from sticking to it. After the glue is dry in the wing unit, put in the trimmed spar and dihedral. Start with the outer panels, gluing the trimmed ends with 5-min. epoxy to speed the work along. Then put in the spar dihedral braces. The center panel dihedral goes in last, and the wing is finished by gluing on the leading edge planking. The tips are placed at 60°

from the bottom. When you trim the leading edge, don't round the bottom, as that will adversely affect the glide.

Tail. Build directly over the plan. When the glue has dried, put in the negative dihedral, and attach the leading edge sheeting. Use an extra coat of glue at the center joint. There is no spar in the stabilizer due to its thin airfoil. Glue in the wire dethermalizer hooks in the leading edge of the stabilizer. Then round the leading edges of the stab and rudder, and taper the rudder trailing edge.

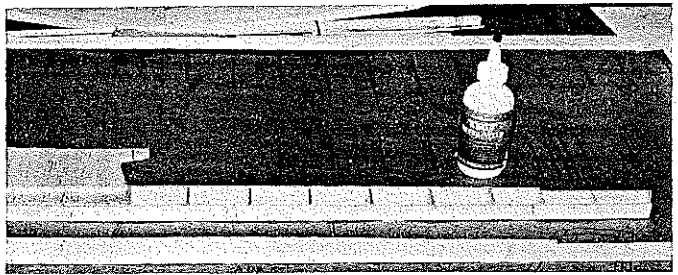
Fuselage. This design will produce a strong,

lightweight, warp-free structure. First, cut out the sheet balsa sides. Using a pencil, mark the inside of the bottom sheet for the cross-brace pieces. Pin the bottom sheet to the plan, and glue in the longerons and crosspieces.

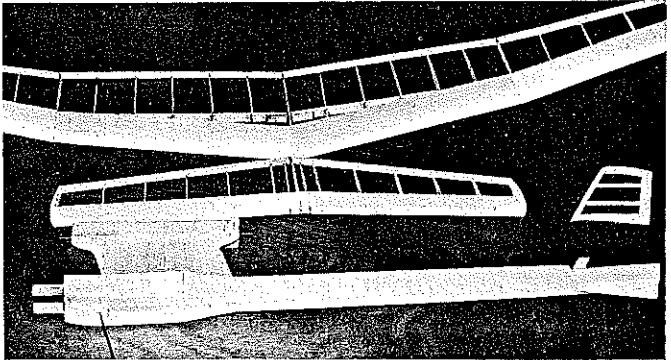
The pylon is raised by strips of the indicated width. Making a paper template of the pylon is recommended. Mount the pylon.

Attach the top, side sheeting. Then cut out the balsa formers and plywood firewall and landing gear mount. You should epoxy the landing skid in place, as well as the engine mounts and firewall. Cut out a place

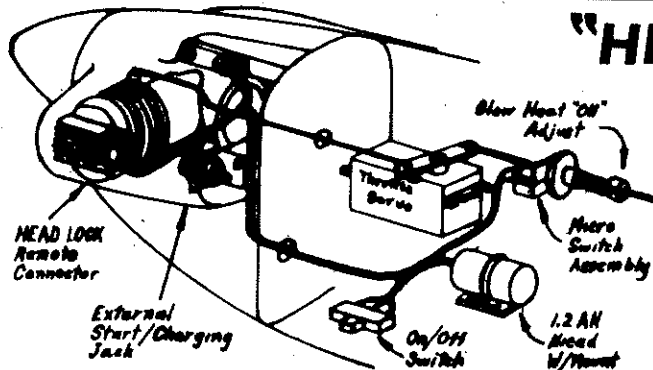
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Above: The fuselage construction is lightweight, strong, and warp-resistant. Author credits Sal Taibi for the method. Right: All of the structures have been built and sanded, so they are ready for covering. Silk is recommended, though silkspan may be used.



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That's all for now. I'll be back in two months. Keep those cards, letters, and photos coming!

Bob Meuser, 4200 Gregory St., Oakland, CA 94619.

hook into the bottom of the rudder, and then cement the rudder atop the stabilizer.

Flying. I use 2° left thrust and 3/32-in. right rudder for a right turn in the climb and glide. The model will turn either way, but it is very sensitive to rudder changes; use rudder adjustment sparingly. The necessary downthrust is drawn into the plan. The large stabilizer helps overcome any looping tendency.

Balance the model as indicated by adding lead shot or BBs to the nose ballast box. Hand glide the model until a long, smooth descent is obtained. This model really moves under power, so use bottom-low throttle, with 3/32-in. rudder offset and a 5-sec. engine run. Even with bottom-low throttle, the model will spiral up steeply. After everything is okay, you can gradually open up the engine to full power.

I believe the Manta wing holds a great potential for high-performance Free Flight models. At any rate, if you have built this design, you will have a real contender for any contest. Good luck to you and your very own Manta 250.

Manta 250/Bedish

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for the fuel tank, and mount it. Cover the front fuselage section with hard balsa sheeting.

Attach the wing mount after epoxy-gluing the wire wing hooks. Run a fillet of glue in the corner joint of the wing mount and pylon for added strength. Round the corners of the fuselage, and trim the stabilizer mount. Glue the stabilizer mount brace in place.

You may need a ballast box in the front end of the fuselage due to the light weight of a Cox TD .049.

Covering/finishing. With fine sandpaper, go over the entire model and smooth all the surfaces. Trim away any surface glue blobs. I recommend covering the model either with silkspan or silk. Silk is more resistant to punctures. I covered my model with silk and applied three coats of clear nitrate dope. I recommend this kind of dope, because it allows steaming-out warps that won't come back.

The fuselage was brushed with two coats of clear dope and then sanded smooth. After that, two coats of color are applied. Put in the engine, KSB timer and fuel tubing. Don't forget the dethermalizer snuffer tube and the rear hooks. Recess the top

F1C Tech./Cowley

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Stuart's models at Goulburn were under control (most of the time) thanks to the most complete set of gadgets ever to grace a Power ship—including VIT, auto-rudder, wing-wiggler, and bunt. He was all set for fifth place except for a 64-sec. disaster in the last round. A subsequent letter tells of further experiments with the moment arm extended from 600mm to 860 with great improvement to the climb stability. He now plans a 1000mm version with thoughts of dispensing with VIT altogether—full circle!

Another project he's working on is the manufacture of fiberglass/carbon props made to the pattern of the props the Chinese were using in Australia. These are available in shaft sizes to order at \$6.00 each, plus \$5.00 postage and packing, from Joe Supercool, P.O. Box 40, Kingswood, 2750 NSW, Australia. Stewart tells me he's saving up to go to Yugoslavia in 1985, so you could help him get that airfare.

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