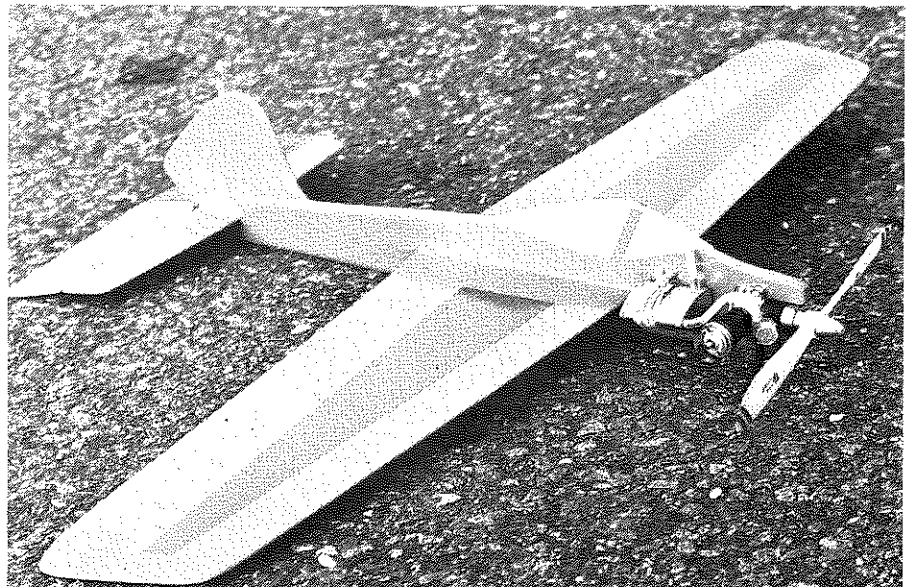


The FLIP

By DICK SARPOLUS . . . A fine project for any young modeler. Helps to get the feel of cutting, sanding, and finishing balsa wood. All parts easily cut from sheet stock . . . no fancy shaping required. And oh yes, it flies great, too!



Note screen on Cox .049 Tee Dee intake to keep out dirt. Perfect 2/3 ounce tank was later replaced by 3/4 ounce unit. Easily strapped on with rubber bands.

• This very simple 1/2A model is a practical, capable stunter. It will perform all the pattern maneuvers . . . not quite like a "real" stunt model, but well enough for fun flying, and it offers some advantages as a stunt trainer. Our Flip was designed to see if it was possible to work within the limitations of using all sheet balsa, simple construction techniques, and still get a ship that would perform the pattern maneuvers well enough for a skilled flier to enjoy, or for a beginner to learn the maneuvers.

The May 1975 MODEL BUILDER issue had a "real" 1/2A pattern ship, the Gremlin. That was built just like the big ones; flaps, thick airfoil, built-up wing, full fuselage, etc., and it is the way to go for competitive performance in a small package. We wanted to get most of that performance with a model that could be built quickly . . . say, one hour or so. Experience with .049 engines made it obvious that Cox engines, in particular the Tee Dee or Medallion .049's, had ample power for good performance. Experience with the typical plastic ready-to-flies, and many of the all balsa kits on the market, showed us that they will fly but sure won't do for stunt capabilities. We believed the big problem was size . . . most 1/2A designs just don't have the wing area necessary for good aerobatic performance.

Aside from the model, those dacron flying lines have got to go! Just too much drag and stretch. Going to 35 foot, .008 or .012 stranded cable lines make a tremendous performance difference. One other design consideration was the landing gear . . . or lack of one. We fly almost exclusively over grass, where a landing gear is useless, as take-offs and landings can't be made with small wheels. Grass field flying also permits hard landings; the straight-in full bore type, usually with little or no

damage. So we left the landing gear off and gained more performance.

The model ended up with a 27 inch span, 130 square inch wing area, and 20 inch length. And for us at least, the performance is pure fun. Speed is high, too high for really smooth flying, but fun. Perhaps a reed valve engine like the Cox Black Widow or Golden Bee would give a more restrained performance; we show a mounting on the plans but have not tried that version. Speed does make it harder to learn the maneuvers, and there is a case for learning on a larger, .19 to .35 size, built-up ship. But a mistake with the larger craft gives you a broken plane; the .049, all balsa model will usually bounce back for more, or can be "Hot Stuffed" back together right away. Performance in a reasonable wind is not a problem with this small ship; line tension is good. The Flip has no difficulty with vertical and overhead eights.

Material selection was interesting . . . with an all wood wing we know we couldn't get much of an airfoil, so instead of trying to sand and carve an airfoil from 1/4 inch or thicker wood, we went to an absolute flat plate, 1/8 inch thick wing. It can flex while flying; is amply strong, and yes, it works. Tail surfaces are also 1/8 inch; more rugged than 1/16 or 3/32, and the weight is not a problem. Fuselage is 1/4 inch balsa, typical profile construction, with 1/32 inch plywood nose doublers over hardwood motor mounts. The whole thing can be built from one piece of 1/8 x 6 x 36 and one half of a piece of 1/4 x 3 x 36 balsa. No, don't ask the hobby shop for an 18 inch piece of 1/4 balsa; buy the whole piece and build two models.

There's our rationale and sales pitch for the Flip; now we can get into some construction comments. As mentioned,

we need only 1/8 and 1/4 inch balsa plus some scraps of 1/8 and 1/32 inch plywood. Six inch wood doesn't have to be used for the wing; 3 inch planks can be edge-glued to get the necessary width. Make up the fuselage, epoxying the 1/4 inch hardwood motor mounts in place with the correct spacing for the engine being used. We assemble the entire plane using five-minute epoxy for all joints. Cloth or sewn hinges can be used; be sure they are free. Any commercial bellcrank is fine. We use an R/C-type horn on the elevator as very little throw is needed; also prefer a 1/16 inch pushrod to insure no flexing. Lead-outs are thin wire or flexible cable. Engine is installed with two washers under the front holes of the mounting lugs, for thrust offset. Tip weight is a length of large solder. Gas tank is mounted with rubber bands; we put a small piece of foam rubber between the tank and the fuselage.

Everyone has his own finishing technique; a quick method for us is to apply four coats of clear dope, sanding well between each coat; spray on one or two coats of color, trim, and top off with two coats of clear. We feel an epoxy finish would also be most desirable.

For flying, it's fast and lively. Adjust elevator throw to suit your taste; it doesn't take much.

We understand our MODEL BUILDER editor has never flown control line (*well, almost never. wnc*) as he is the editor of a full coverage publication, we think the C/L fliers in his area should get him out to the circles. You owe it to your readers, Mr. N.!

