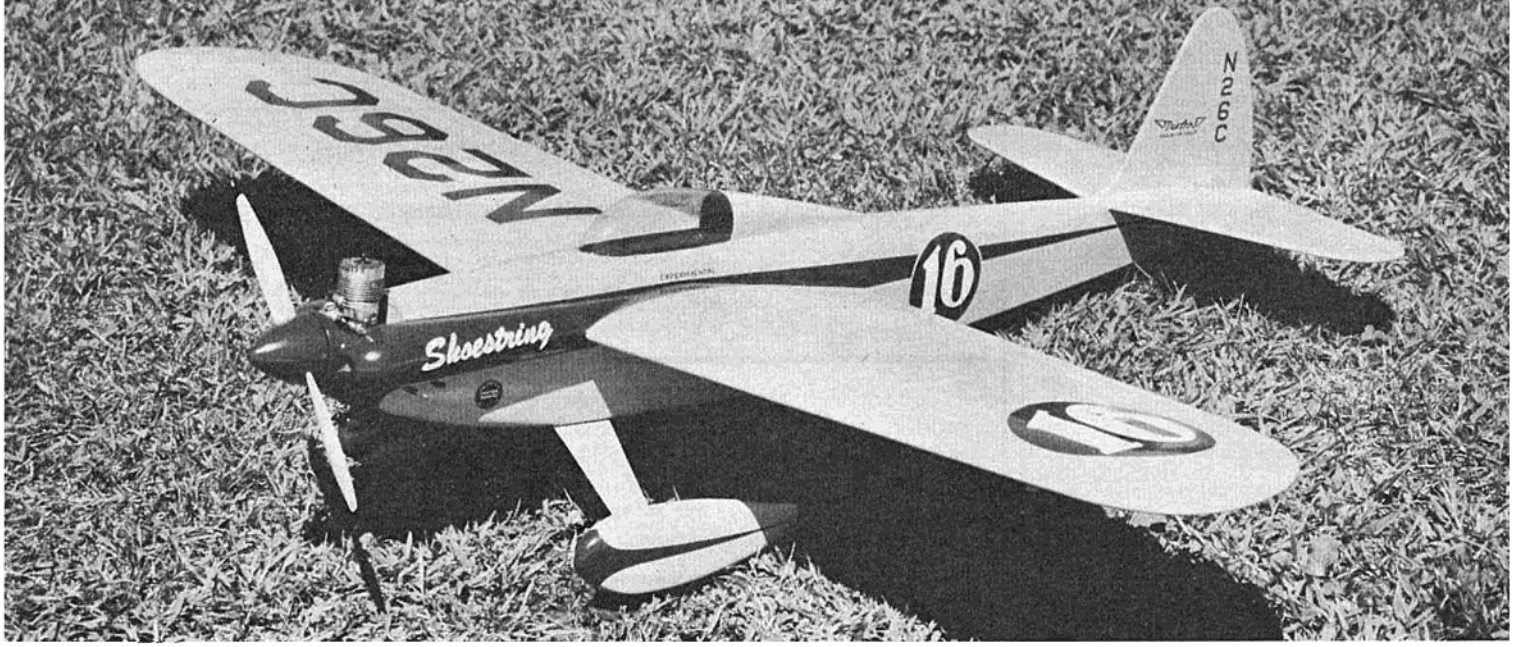


SHOESTRING

BY CARL GOLDBERG

THERE is something about almost every full scale airplane that makes it singularly beautiful. Of course, there are many different kinds of beauty. Some are even beautiful in an ugly sort of way, if you know what I mean. But when it comes to the Shoestring, designed by Rodney Kreimendahl, it has always seemed to me that he created a classic beauty fit to stand with the all-time greats.

Our model of the Shoestring, adapted to R/C, was begun in the summer of '64 but didn't make much progress until the idea of the miniature Goodyear races began to take hold. By sheer accident, our basic dimensions, etc., fitted into the Goodyear pattern. The only major change was to thin out the airfoil somewhat.

The original wing span of 54" and overall wing area of 540" were retained. The additional area (above the minimum required by the rules) might make this ship a bit slower than the fastest, but we certainly didn't want a bomb that only the finest flyers could handle. This ship had to be something the average man could fly. This eventually proved to be true. Even I was able to fly it, and when you consider my extremely limited multi time, that's really saying something! For the real hot

shot, with blood in his eye to win races, sufficient area can easily be taken out of the middle of the wing to reduce it to the minimum allowed by the rules.

Another factor we kept in mind was that, for most flyers, an upright engine is a simpler deal and more practical to work with in every way. However, we provided room in the cheek cowls so that the engine can be mounted horizontally and completely concealed except that the head would be more or less flush with the outside.

Another consideration was how much dihedral to use. A flat wing like the original would, of course, be scale, but would require somewhat greater flying skill to handle than one with a few degrees of dihedral. There again, the choice can be made by the builder. For most flyers, we recommend the 4 degrees of dihedral shown, although the difference in stability probably wouldn't be substantial.

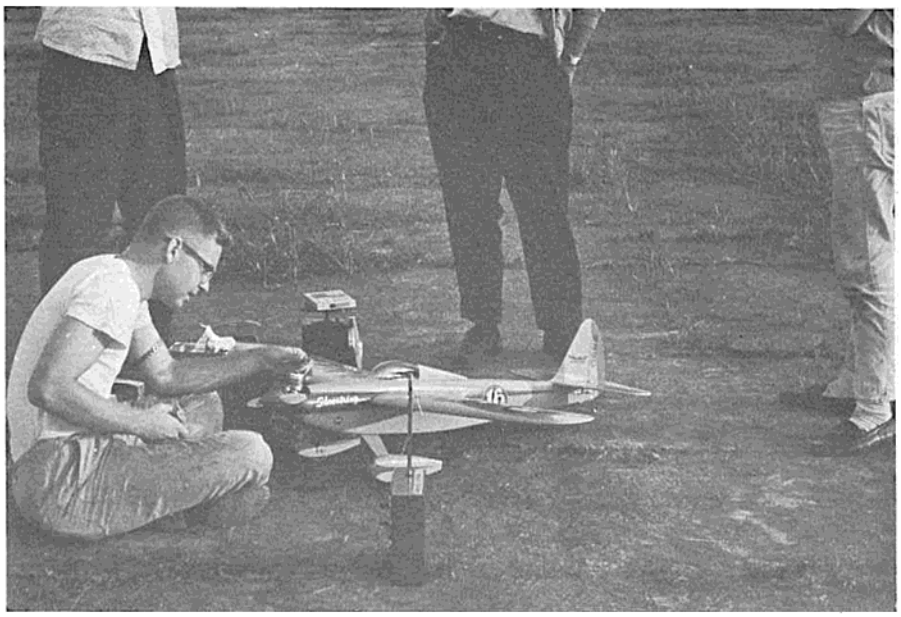
The prototype pictured here was built by Mehlin Smith. He began work as soon as our drawings of the fuselage permitted. Even then, his speed in building the model was often slowed down by the time we took in solving individual design problems as they came up. The ship was originally flown with 10 channels, although, 8 channels (omitting trim) is perfectly practicable. If you're not going to be racing according to NMPRA rules requiring ground steering, the ship undoubtedly would do fine on 6 channels for aileron, elevator and engine.

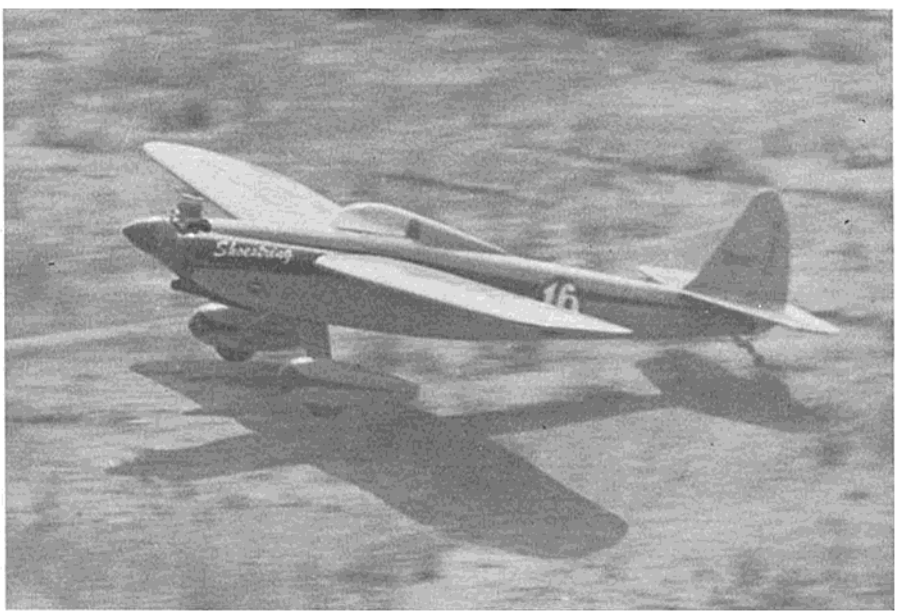
In testing the Shoestring, the original small ailerons seemed too slow in taking hold so they were increased to the present size. Otherwise, only small detail changes were indicated. The landing gear, which is right in the scale position, worked out beautifully on somewhat rough ground and on short grass. There was never a tendency to nose over or fishtail.

One unusual construction feature is the aileron torque rod setup. It's different from the usual pushrod and bellcrank arrangement normally used for conventional ailerons. It actually is based on the idea of the simplicity of strip ailerons.

Another different feature, and one which probably gave us the most design headaches, came about while trying to get rid of external rubber bands for holding the wing down. A great many ideas were kicked around, including several tryouts in mockup form. The hold-down system shown on the plan originally led to a number of hot discussions. In its present form it is both simple and highly effective. The main hold-down, at the wing spar, is an adaptation of the breakaway engine mount idea. When the plywood plate

(Continued on Page 72)





is screwed in place as shown, it takes a pull of more than 50 pounds to break it. This is plenty for normal flying, but in a very bad or a crash type landing, it gives the wing a chance to shift or even come off entirely.

The many sketches accompanying the plans, will be sufficient no doubt, to clarify most construction questions. However, a few suggestions on procedure may be useful. The entire fuselage and wing should be well completed, including silking, before fitting the cheek cowls in place.

In building the wing, the four trailing edge sheets are cut accurately to shape, including cutting the aileron outlines out of the top sheets. The bottom sheet is pinned to the plan, and ribs (except #1) and leading edge and top spar are added. Next come the tip brace, tip, and top trailing edge sheet. The ribs in the aileron area are now cut to receive the aileron spars, the two end riblets added, and the aileron sheeted. The top leading edge sheet is added, after which the wing is removed from the building board and the lower spar and bottom leading edge sheet cemented in place. The ⅛" sheet on the bottom of the wing tip is added, allowed to dry, and sanded. The wing is then replaced on the table with the trailing edge pinned down at the root, but with a **1/16" shim under** the rear of #10 rib. The purpose of the shim is to set all the wing ribs at the same angle. If left as built, there would be a slight progressive wash-in towards the tip. The ⅛" sheet is now added to the top of the tip and allowed to dry solidly, at least over night. Sanding can then be completed. The reason for the top tip sheet going on last, is that it helps to retain the effects of the shim under rib 10.

Your comments, questions, etc. will be welcomed. May your Shoestring delight you both as a beautiful model and thrilling flyer!