Roughneck TOO!

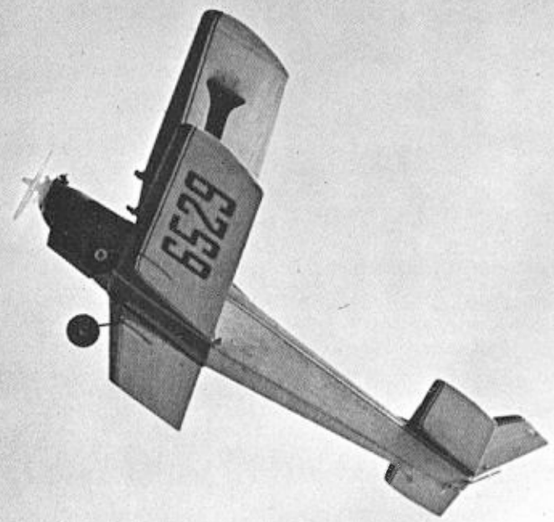
BY AUBREY KOCHMAN

An appealing little low winger has been updated for R/C rudder control into this sleek bipe. If you're admirer of the earlier Lil' Roughneck, we think you'll find it difficult to pass this new beauty by!

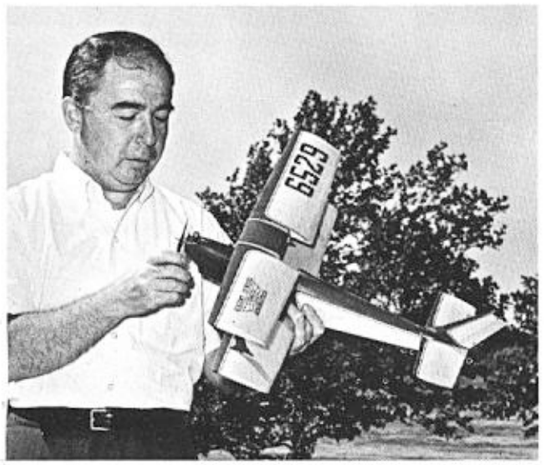
So enthusiastic has been the response to Lil' Roughneck since it appeared in the December 1963 *American Modeler* it seemed only natural that the original concept be taken a step farther. We toyed with the idea of enlarging the model but this approach would have destroyed the reason for the design in the first place. Our first intention had been to develop a small R/C job capable of steady dependable flights from small fields which were not capable of handling the larger single or multiships. The logical follow-on seemed to be a Bipe.

Basically, Roughneck Too is a Lil' Roughneck with an added top wing. However, comparison will show that a few subtle but necessary changes were made. The fuselage is deeper to accommodate receivers other than the Otarion equipment around which our original monoplane was designed. Fin and rudder area are both up a bit for added directional control.

If you have shied away from biplanes in the past because of the intricacies of the usual bird cage design of the center section wing struts, come back. Our struts are relatively simple to form, require no soldering and yet are rugged enough to more than take the imposed loads. Flying with the wing "I" struts in place is also quite normal as these



Comparison between original "Lil' Roughneck" above and the latest "Roughneck Too" shows similarity of line. Actually, fuselage of latter has been enlarged to take new R/C rigs.



Designer Kochman with his "Roughneck Too". Aubrey's original monoplane "Lil' Roughneck" has been kitted recently by Sterling Models.

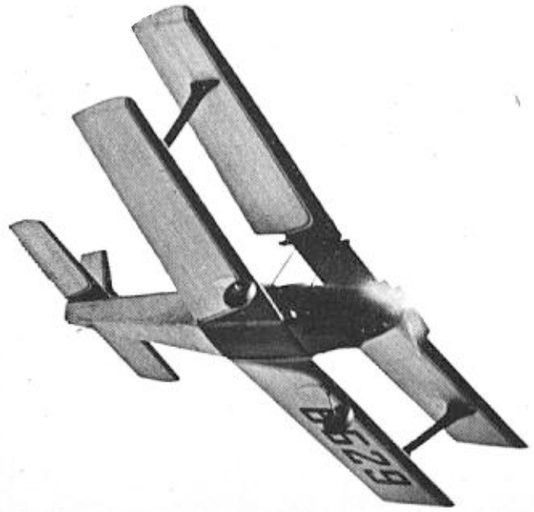
are designed to pop off on rough landings.

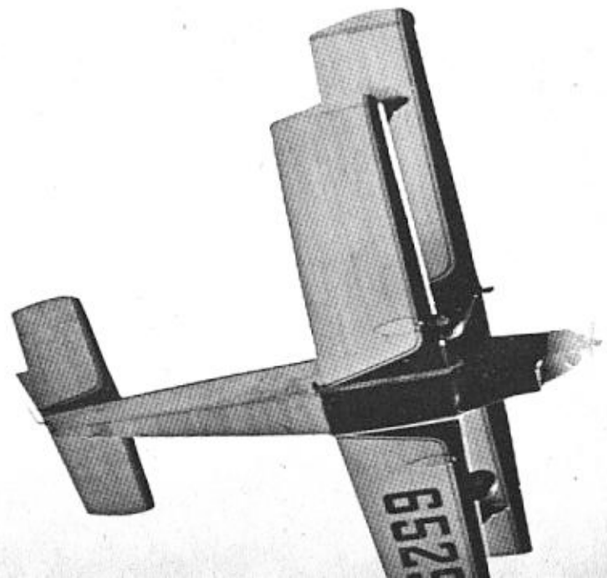
Lil' Roughneck has been a delight to fly. Roughneck Too, by virtue of its more docile nature, is even more of a fun ship. But put a Cox .020 in the nose and you'll have a real tiger on your hands.

For .01 power, your Roughneck should weigh no more than 7½ ounces. For .02 operation a few extra ounces will be tolerable. Choose your lumber wisely, especially those sheets to be used aft of the lower wing. Avoid building a tail heavy structure that will require stuffing the nose full of dead weight. In other words, use very light wood where structural strength is not needed and save the heavier grades for use in and around the nose section.

Except for the difference in their respective center sections, the top and bottom wings are identical. They are more easily formed if 4" or 6" wide straight grained medium soft stock is used. The bottom wing is built in two halves and joined together glider fashion, after which the center section doubler is added. This doubler spans the dihedral break from rib 2 of the left panel to rib 2 of the right panel and thus forms a flat section on the top surface only.

Cut the bottom sheets to outline shape. Cut all ribs from 3/32" soft sheet and cement them in place. Add the ⅛" hardwood dowel leading edge. The use of the dowel greatly strengthens the wing and protects it against nicks and cracks. Taper the trailing edge of the bottom sheet to conform to the rib airfoil. Add the landing gear struts. Cut the top sheet oversize to allow for the bend and cement it to the dowel, ribs and trailing edge. Use a slow drying cement. Masking tape, cut to approximately 2" lengths, does an excellent job of holding the top sheet firmly in place. The trick is to work quickly so that any warps can be straightened out before the cement dries. With any double sur-

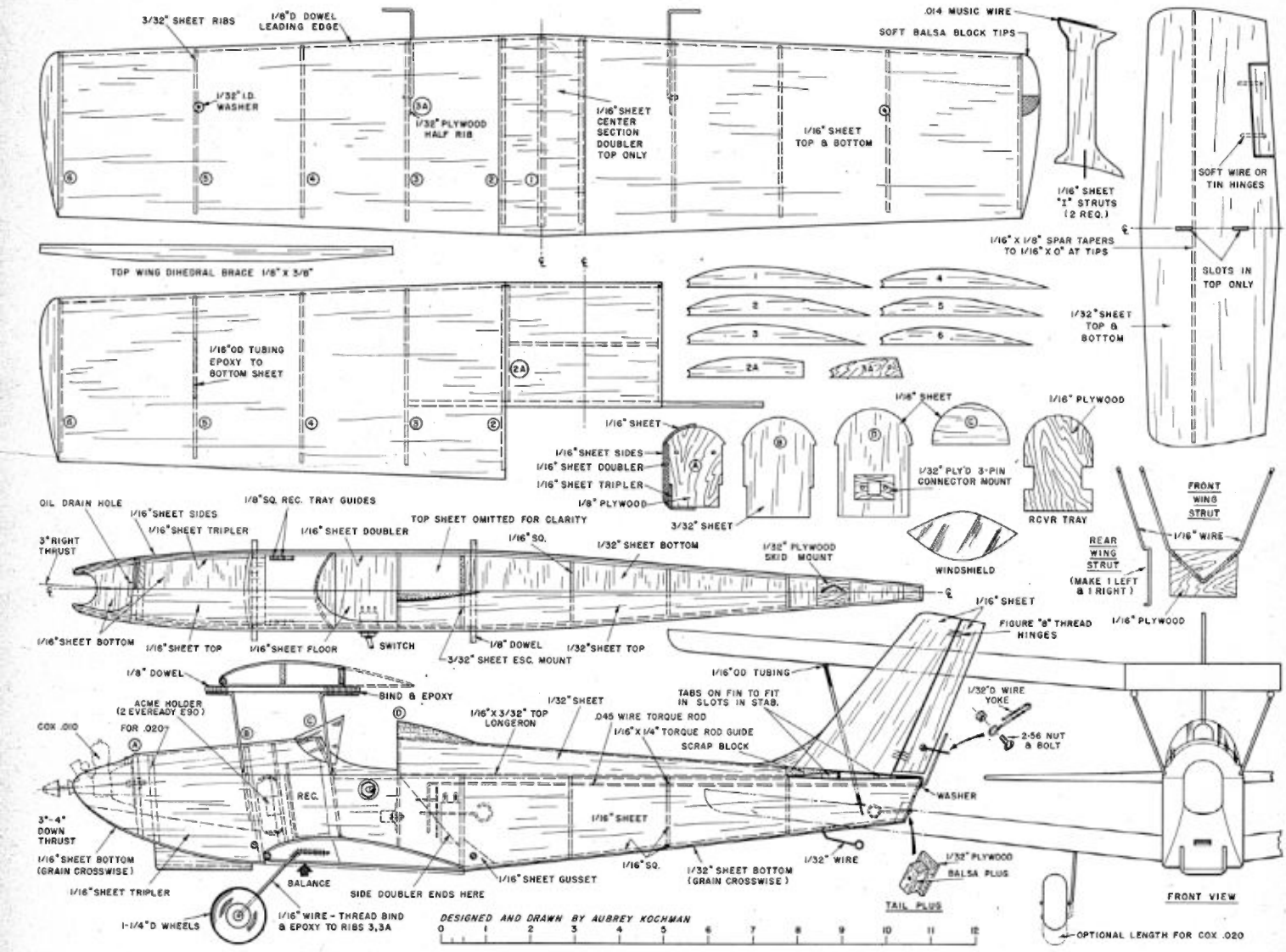




faced balsa construction, built-in warps are impossible to remove. However, by the very same token, surfaces which are built true will remain true indefinitely. Rough carve the soft tips and cement them in place. Sand them to final shape after completing both panels. Join the panels, carefully checking the dihedral angle. When this joint is thoroughly dry and with the wing still blocked up, add the 1/16" sheet center section doubler.

For the top wing, cut the bottom sheet to outline shape and proceed as with the bottom wing but do not apply the top sheet to the outer panels. The flat center section should be completed. The center spar is simply a strip of 3/32" sheet cut to rib depth. The dihedral brace is an integral part of the center section. Place either of the outer panels flat on your building board and cement the completed center section to it using the ribs and the dihedral brace as attachment points. Add the top sheet. Allow the cement to dry thoroughly. Repeat the same procedure for the other panel.

Choose very light 1/32" sheet preferably with some quarter grain mottling for the stabilizer. Cut both top and bottom sheets exactly alike except for the fin notches which are in only the top sheet. The medium hard spar may be either cut or sanded so that it tapers symmetrically from the center to a feather edge at its tips. Cement the spar to either of the stab sheets. (*See pg.78*)



Full size working drawings for "Roughneck Too" are part of Group Plan #1165 available from Hobby Helpers.

ROUGHNECK

(*Continued from page* 30)

Run a bead of cement all around this sheet and along the top edge of the spar. Position the second sheet accurately and hold the sheets together with masking tape. Again check carefully for warps and remove them before the cement dries.

The fuselage is quite conventional. Side doublers, longerons and vertical braces are cemented in place to the sides which have been cut to outline shape. Note that the top longeron extends above the side sheet 1/32". This is necessary in order to give a stronger glueing surface for the 1/32" top sheet. The nose tripler is added after formers A, B and D are installed. We recommend a white glue when installing former A. Draw the tail end of the fuselage together and install the tail plug and all the 1/16" sq. cross pieces. The bottom sheets are applied with the grain running crosswise and with butted joints centering on the 1/16" squares.

With the fuselage thus far completed check the alignment of the bottom wing and the stabilizer. Rubber band the wing in place and attach the stab so it fits square and true in relation to the fuselage and wing. Cement the stabilizer in place.

Make up the wire center section wing struts. The front strut is thread bound and then epoxied to a piece of 1/16" plywood. After the epoxy has cured, sand off the thread flush to the rear surface of the plywood. Cut the wing rest dowels to size and bind and epoxy them to the front and rear struts. Cement the front strut unit to former B. Use the top wing or a straight edge to check proper alignment. The rear struts are epoxied to the fuselage sides. The lower hook on the strut is notched into the bottom of the sides to prevent them from pulling up.

Install the escapement and torque rod before adding the top sheeting.

Fitting the curved top sheets is not too difficult if the following procedure is followed. Make paper patterns first. This saves both time and wood. Transfer the patterns to medium-soft-to-soft, straight grained balsa and carefully cut to the shape of the paper pattern. Rub a thin coat of cement onto the underneath side of the balsa and moisten the outside with warm water. As the cement dries, the sheet will begin to curl. With a little assistance, the sheet will assume the proper degree of curve and very few pins will be needed to hold it in place while it is being cemented to the fuselage. Cut out the cockpit after the sheet is in place.

The "I" struts are not really necessary as they do not add any structural strength. However, for a more realistic appearance they should be used. Cut them to shape from medium hard 1/16" sheet. Form the top wire "hook" from thin music wire of approximately .014 diameter and epoxy it in place above the top of the strut just enough so that it can slip into a piece of 1/16" O.D. tubing. The tubing is epoxied to the underside of the top wing at rib 5. The bottom fitting is simply a straight piece of the same diameter music wire which is also epoxied to the strut. This lower "pin" goes through a washer reinforced hole in the top surface of the bottom wing. The ease with which the struts will pop off is determined by the lengths of the wires in their respective fittings. The shorter the wire the more easily it will slip out.

The degree of finish is naturally a matter of choice. It should be governed by the weight of the undoped model and how closely the balance point corresponds to that shown on the plans with all components installed.

Bill of Materials: BALSA—Four sheets 1/16" x 6" x 36" medium soft straight grain; 1 sheet 3/32" x 3" x 36" soft; 1 sheet 1/32" x 3" x 36" soft quarter grain; 1 sheet 1/16" x 3" x 36" medium; 1 sheet 1/32" x 3" x 36" soft straight grain; 1 pc. ½" x ½" x 36" very soft; 1 pc. 1/16" x 1/16" x 36" med. hard; 1 pc. 1/16" x 3/32" x 36" med. hard.

Five pcs. ⅛" dia. x 12" birch dowels; 1 pc. .014 music wire; 1 pc. .045 music wire; 1 pc. 1/16" music wire; 1 pc. 1/32" music wire; 1 pr. 1¼" wheels; ⅛" plywood; 1/16" plywood; 1/32" plywood.