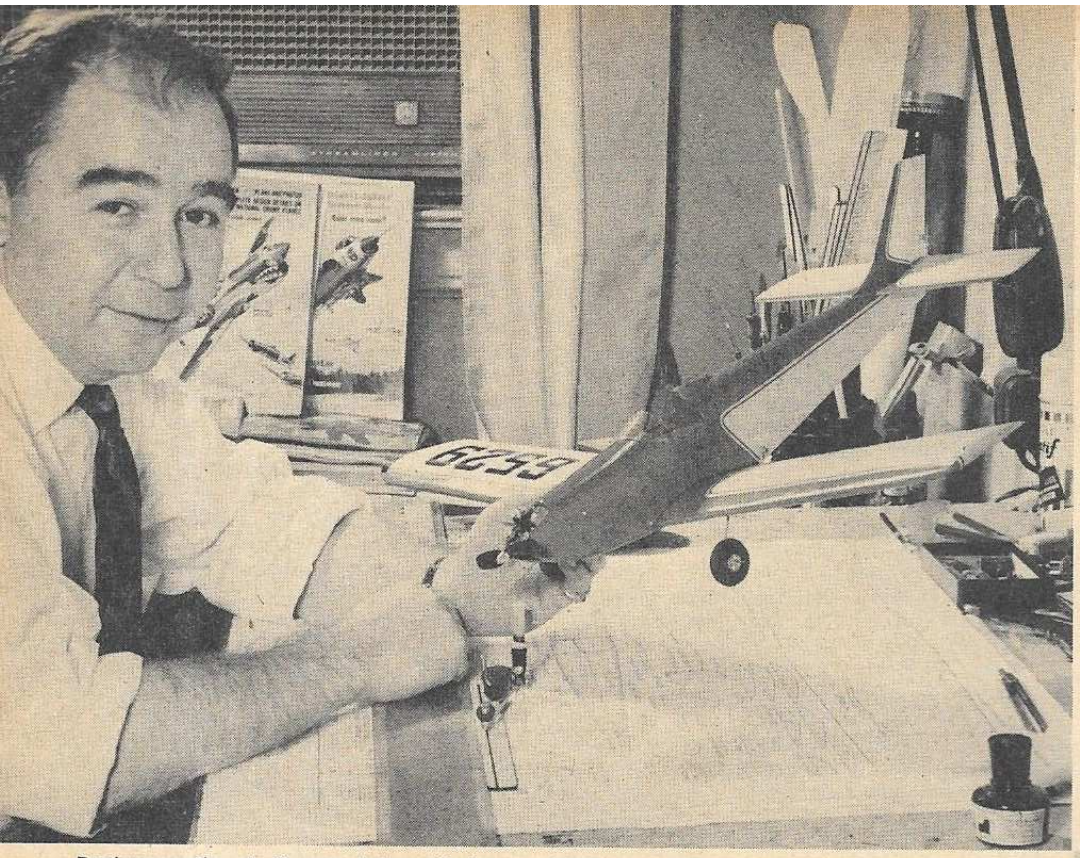
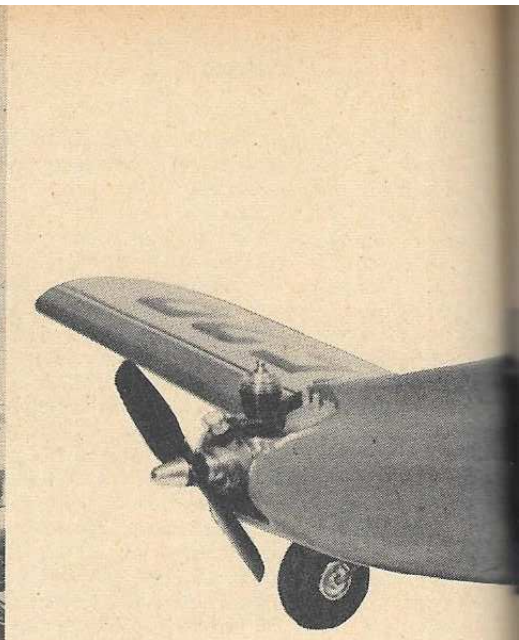
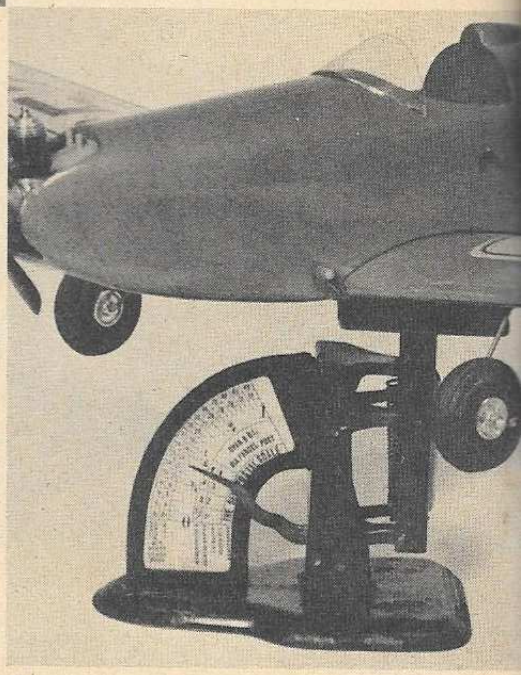


Designer-author-draftsman Aubrey Kochman with his latest R/C success; being a New Yorker "Koch" is accustomed to flying in small areas, hence crash-insurance construction.





Completed model ready to fly weighs just a wee bit over 6 ounces as shown.

Lil' Roughneck

A "ballpark-size" radio control low-winger with a lot of forgiving features, this diminutive darling will surprise you with its steady flight and sturdy construction which resists rough landings.

BY AUBREY KOCHMAN

■ Once .01 powered R/C models proved to be an ideal fun ship, their popularity spread like crabgrass. As is the case with any comparatively new class the best all-around size and configuration isn't quickly settled upon.

We have witnessed flights of these mini-ships with as little as 12" and as much as 36" spans. In our opinion the 12" jobs were too hot to handle while the 36" models were definitely underpowered. Unless you are interested in flying either the largest or the smallest .01 R/C in the world we see little attraction in either extreme.

From past experience, we have learned that .01 models have extremely poor ground handling characteristics. R.O.G. (rise-off-ground) take-offs are usually a matter of luck. Unless very smooth runways are provided, landings—right side up, that is—are also uncertain. Ground loops or cart wheeling can be the rule rather than the exception. Even a perfect approach and touchdown can't guarantee a smooth landing. A wire skid would probably be the best answer, but our asthetic values ruled against it. As you can guess we feel a trike gear is of little value in so small a model. Therefore we use a two-wheel wide-track gear. And the extra weight of a nose gear can be put to better use by beefing up the fuselage front with additional lumber.

Silk covering was ruled out as too heavy while tissue has always seemed to us to have an affinity for tough weeds that can make Swiss cheese out of most any airframe. Although weed-proof, the single-surface sheet balsa wing at best is pretty flimsy so it, too, was ruled out. Not much left to choose from, so we settled on a double-surface sheet balsa wing (which is our favorite anyway). So look out weeds—here we come!

In our design approach to Lil' Roughneck we have attempted to lessen the jump these small models make when entering and recovering from a turn. To accomplish this we lengthened the tail moment to gain longitudinal stability and reduced wing dihedral to an angle which proved a good compromise as far as lateral stability goes. Construction-wise, this model is rugged enough to take it when we miss the weed patch and has been found to be practically warp-proof. Once flight trimmed, Lil' Roughneck will prove a consistent flyer which is as it should be for a model designed primarily for fun flying.

Our completed model, painted and ready to fly, weighed in at just over 6 ounces. To match this weight it is very important that you spend a little extra time at the balsa rack and choose your stock wisely.

The wing, which is built in halves and joined together glider fashion, is more easily formed if 6" wide stock is used. Choose straight grained medium soft balsa sheets. We used Sig contest balsa. Cut bottom sheets to outline shape. Cut all ribs from 3/32" soft sheet and cement them in place. Add 1/8" dowel leading edge. This dowel greatly strengthens the wing and guards against leading edge knicks and cracks. Its weight is practically negligible so don't leave it out. Taper trailing edge of the bottom sheet to conform with rib airfoil. Add landing

Roughneck

gear legs. Cut top sheet oversize to allow for the bend and cement it to the dowel, ribs and trailing edge. This is the most critical stage of construction as any built-in warps cannot be corrected once the cement has thoroughly dried. Rough carve tips from 1/2" x 1/2" soft balsa and cement in place. Sand to final shape when both wing panels have been completed. Join the panels, carefully checking for proper dihedral angle. When this joint is thoroughly dry and with the wing still blocked up, add 1/16" sheet center section doubler.

Stabilizers of 1/16" sheet have always given us trouble since they seem to warp so easily and upset trim adjustments. To overcome this, we resorted to a double-surfaced stab which like the wing is practically warp-proof. Choose very light 1/32" sheet, preferably with some quarter grain mottling. Cut both top and bottom sheets exactly alike except for the fin notches which are in only the top sheet.

The single 1/16 x 3/32" deep medium hard spar may be cut or sanded so that it tapers symmetrically from the center to a feather edge at its tips. Cement spar to either of the stab sheets. Run a bead of cement all around this sheet and along top edge of spar. Position second sheet accurately and hold them together with clamp clothes pins or masking tape (pin holes would mar the final appearance). Again check carefully for warps and remove them before the cement has thoroughly dried.

The fuselage should offer no problems. Side doublers, longerons and vertical braces are cemented in place before you add the sides. Nose tripler is added after formers A, B and D are installed. We recommend a white glue when installing former A. Note that the top longeron extends 1/32" above side sheet to give 1/32" top sheet good gluing surface.

Install escapement and torque rod before adding top sheeting.

The only tricky operation for some could be fitting the curved top sheets. Bond paper fitted and then used as a pattern for the balsa saves both time and wood. After cutting front 1/16" sheet and the rear 1/32" sheet according to the paper pattern proceed as follows. 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 added assistance, the sheet assumes the proper curvature and very few pins will be needed to hold it in place. Do not cut out the cockpit until after the front sheet has been cemented in place.

The bottom 1/32" sheet, rearward of the wing, is applied so its joints meet on the 1/16" sq. cross braces.

Cut the fin from medium 1/16" sheet, the rudder from soft 1/16" sheet. The two fin tabs which fit through the stabilizer slots insure a strong joint and perfect alignment—provided, of course, that the slots have been cut accurately.

Finish is a matter of choice and will depend upon the undoped weight of the finished model and how it balances with all components installed including receiver, batteries, escapement rubber.

We used three coats of clear dope over the entire model, sanding well between each coat and lightly sanding after the last coat. Colored dope was kept to a minimum aft of the CG so as not to upset the correct balance we had achieved through careful construction. Pin striping was done with 1/32" Chart-Pak tape, available at most art supply stores. Clear dope applied over the tape will keep it from peeling.

Glide test the model before attempting powered flights to familiarize yourself with its flying speed. Slight alterations in trim is provided by the stabilizer trim tab. Make your first powered flight with engine at moderate speed or with the prop on backward in case thrust adjustments require some change. When trimmed properly for a shallow climb and a slight turning tendency, (to whichever side the model trims easiest) Lil' Roughneck, through its warp-proof construction, will remain a consistent performer, requiring only slight stabilizer trim tab adjustments to compensate for various wind conditions.