

CO-ETTE

CO₂ OR RUBBER
POWERED MODEL



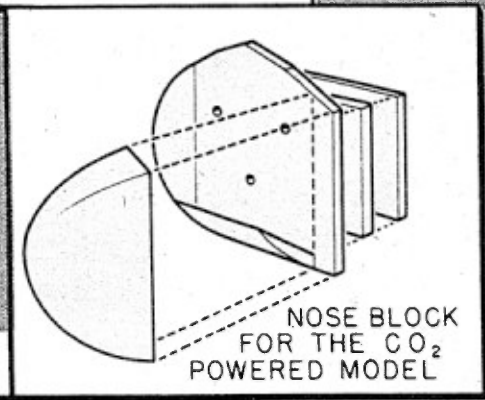
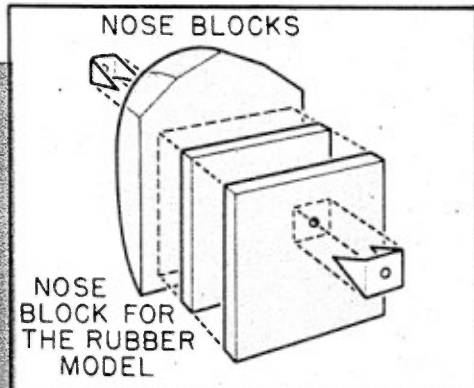
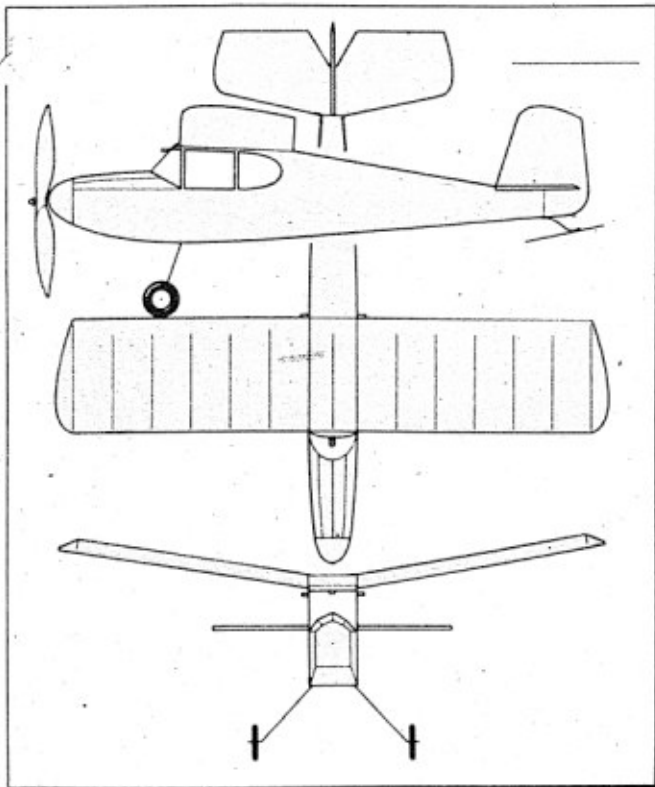
POWERED BY HERKIMER OR U.S. RUBBER COMPANY'S T-56, THIS GOOD LOOKING FLYER IS A "NATURAL"

TO see if there was any notable difference in CO₂ powered models this ship was built for both rubber and CO₂ power. The results showed that although the CO₂ version with Herkimer's carbon dioxide engine

is slightly heavier it has good performance and the duration (in glide) is comparable to the rubber job flown on U.S. Rubber Company's T-56.

This little ship is suitable for beginners and experts alike, as it is simple but efficient.

As the plans are full size there will be none of the usual troubles in enlarging. Pin punch all formers, bulkheads, and outlines on sheet balsa (Turn to page 73)



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of required thickness. When making wing ribs pin punch one on $\frac{1}{16}$ " sheet pine and use this as a template for the required seventeen. Dash lines on the wing rib show where slots are cut after constructing the wing and should not be cut out until then.

When the formers are made, place the plan on a soft pine board and rub thoroughly with soap or place a sheet of waxed paper over it to keep any glue from adhering to its surface. Before laying down the longerons soak the two $\frac{1}{8}$ " x $\frac{1}{8}$ " strips that are to be used for the bottom longerons in warm water for about an hour. This will permit you to bend them quite easily to the shape shown on the plan.

In the meantime construct the rudder, as it will require about half an hour and will keep you busy. Pin the $\frac{3}{16}$ " x $\frac{1}{8}$ " leading edges in place. Glue in position the $\frac{1}{8}$ " sheet tips outline. Next cement the trailing edge of $\frac{1}{8}$ " x $\frac{1}{4}$ ", then position the lower $\frac{1}{8}$ " sheet outline along with the strip of $\frac{1}{8}$ " x $\frac{1}{4}$ ". Pin in the spar of $\frac{1}{8}$ " x $\frac{1}{8}$ " and the strip of $\frac{1}{8}$ " x $\frac{3}{16}$ " that fits above the stab. Next cut the piece of $\frac{1}{16}$ " x $\frac{1}{8}$ " to fit in place as shown.

To get back to the body, wipe the longerons fairly dry and pin in place—one on top of the other. Pin in place the other longerons and spacers as shown. Let this assembly set for several hours to allow thorough drying. Go on to the elevator and construct in the same manner as the rudder, using wood of the required size. Work carefully, using a liberal amount of glue and good light firm wood. Take the rudder from the plan and sand the leading edge round and the trailing edge to a knife-like shape. Do the same to the elevator, but taper the trailing edge as with the wings.

Now that the tail assembly is finished you can cover them. When covering with tissue or light silkspan, be careful to attach it only to the outline of the rudder and stab, and not to any ribs. This will give you a wrinkle-free covering after you water it.

Returning to the body, remove the sides from the plan and sand lightly to eliminate any bits of rough glue. Cut strips of $\frac{1}{8}$ " x $\frac{1}{8}$ " balsa into required lengths as shown in top view of body. When finished glue the sides together, using the pre-cut spacers. Keep the frame lined up. Upon completion add bulkheads 1, 2, 3, 4, nose fill-ins (sides and bottom only), and the side fill-ins that support the dowel at the rear. Glue in the window outlines, the gussets that support the wing dowel and the $\frac{1}{8}$ " x $\frac{1}{8}$ " stringers. Assemble the former that fits on the top of the body over the windshield and glue in place.

Before making the nose blocks study the diagram. The nose block for the rudder model is shown by the heavy solid

line; the one for the CO₂ is shown by dash lines. Obtain a block of hard balsa 1" x $1\frac{1}{2}$ " x 2" and glue lightly in place on the front of the body. Shape this block as shown, fairing it into the lines of the body. When finished cut off the block and glue the two sheets of $\frac{1}{8}$ " balsa—laminated at right angles to each other—to the rear, to act as a plug. Drill a hole $\frac{1}{16}$ " diameter in the rear nose block; cut bushings from brass or tin and glue in place on the front and back to strengthen the block and act as bearings for the prop shaft. Cover the body with tissue or silkspan and spray with water. When dry give it and the tail assembly two or three light coats of clear dope.

Cut a trial piece of paper to get the exact shape of the windshield and then scribe onto celluloid. Glue in place by attaching it on one side first and allowing it to dry. Then bend it around and glue in place on the other side. Don't put the side windows on until you glue the wire rubber support in place. Cut a small rectangle in the front windshield for this wire. When the wire is in place glue on the side windows and the rear wing mount dowel which is $\frac{3}{32}$ " diameter and $2\frac{3}{4}$ " long. Cover the nose block with tissue and give several coats of clear dope.

For the CO₂ powered model cut a bulkhead from $\frac{1}{16}$ " sheet plywood and drill three holes for the engine mounting bolts. Glue two sheets of balsa on the rear as described for the rubber block, and drill for the bolts. Attach the side faces of $\frac{3}{16}$ " sheet and the bottom fill-in of $\frac{1}{8}$ " sheet and sand to shape. Apply several coats of glue and cover with tissue. Bend six hooks from light wire and then glue them securely to the two nose plugs and the front of the body—see photo. Don't forget to leave two sections open on the bottom of the body for replacement of rubber or CO₂ cartridges.

Propeller. Obtain a straight grained block of medium balsa 1" x $1\frac{1}{2}$ " x 8" and mark off as shown. Cut to the shape shown by the heavy lines and start chipping away. Proceed carefully, carving away the back of each blade first. Carve about $\frac{1}{8}$ " under camber in the bottom

and then carve the top to give an airfoil shape. The blades should be about $\frac{5}{32}$ " to $\frac{3}{16}$ " thick close to the hub, and tapering to a little less than $\frac{1}{16}$ " at the tips. Balance carefully and give several coats of clear dope, sanding lightly between each and balancing at the same time. Purchase a free wheeling device and glue securely to the prop hub along with a bit of brass on the rear side to act as a bearing. Cover the prop with tissue. Insert a length of $\frac{1}{16}$ " diameter wire and bend one end as a winding loop engager for the free wheeler. Slip on a ball bearing washer and the nose plug and bend into a loop—see plan.

Slide on a length of cambric tubing and put the rubber motor in place.

CO₂ Unit. Attach the motor to your CO₂ nose plug with three bolts and three washers which are placed on the bolt ends to give a larger surface to help support the nuts. Bend the brass air tube as shown. Fashion the landing gear from $\frac{1}{16}$ " diameter wire and solder two washers in place. Slip on the wheels and solder two more washers in place to retain the wheels. Slip this assembly into the slot in the body and glue securely. Attach the light wire tailskid.

Wing. If you can not obtain tapered trailing edge, cut a piece of $\frac{5}{32}$ " x $\frac{5}{8}$ " x 23" medium balsa to shape, and sand to a knife-like edge. Place the trailing edge on the plan and mark for the notches. Be sure to cut the notches accurately. Pin the trailing edge in place on the plan and then the ribs, gluing them in the notches carefully. Pin in place the leading edge of $\frac{5}{32}$ " and $\frac{5}{32}$ ". Now slide the 18" x $\frac{1}{4}$ " spar through the ribs and glue. When dry remove from the plan and add the tips. Cut the wing apart, slot the five center ribs for the dihedral brace of $\frac{1}{16}$ " sheet pine, and glue securely. Be sure to get exactly $1\frac{1}{4}$ " dihedral under each tip. Sand the leading edge to fair into the ribs. This is important for a smooth covering job. Fair the tips into the leading edge and the trailing edge. Cover the center panel on top and bottom, then the two outer panels—the bottom first, then the top. Spray with water and give two or three coats of clear dope. Watch for warps. Attach to the body with a couple of strands of rubber.

Flying the CO₂. Balance the model $\frac{1}{2}$ back from the leading edge, adding clay to nose or tail if needed. When balancing during glides have an empty cartridge not a full one. For the first flight puncture the cartridge only a little to obtain low power. If the model stalls and loops then add a little down thrust. Do the reverse if it dives. To straighten the turn during climb add side thrust. After tests prove adjustments suitable, use full power.

Flying the Rubber Job. Balance the same as the CO₂ and give only 50 or 60 turns for the first flights. Add slivers of balsa for different thrust adjustments as required.

No matter what method of power your ship uses, if you turned out a neat job you're sure to have plenty of fun with this little free fighter.