



Elementary

Model No. 2



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AIR WORLD'S

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WHEN THE BASIC knowledge of building with sheet balsa and adjusting models in flight has been learned through the construction and flying of hand-launched gliders, the new modeler is ready for a powered model. The little craft shown here is no more difficult to build than the glider (previous issue) except for the wire fittings and carved propeller. As to adjusting the model for flying, the new problem involved here concerns the effect of motor torque (the tendency of the motor to revolve the model opposite to the direction of propeller rotation.)

Follow construction procedure as outlined in detail for the hand-launched glider by cutting all parts of uniform sheet balsa, sanding them carefully and rounding and tapering the edges as shown on the plans. The lower leading edges of the wings are doped to curl the surfaces gently to the proper section. Narrow strips of thin aluminum hold the wings to correct curvature and are useful in retaining delicate adjustments of wing

warp. The wings and tail may be finished and joined to the fuselage before tackling the wire parts and propeller.

A pair of small-nosed pliers for bending angles, round-nosed pliers for bending loops and diagonals for wire cutting would be ideal but if these three tools are not available, the small-nosed pliers will handle all three operations after a fashion. Steel wire of .032 diameter is bent to fit perfectly to the full size landing gear pattern and after being tested for a snug fit over the fuselage or motor stick, is thoroughly cemented in position.

The small wooden wheels are best secured to the axles by soldering small washers on either side of them; an alternate method is to simply bend the axle ends upward at right angles.

Propeller shaft, thrust bearing and rear hook are carefully bent as indicated by the full size patterns. The tiny loop in the thrust bearing is perhaps the most difficult single operation in the entire model. Excess vibration will occur

if the loop is oversize. Take time to bend several trial fittings, if necessary, and do not be satisfied with a poorly bent part. Use cement liberally in attaching the fittings.

Propeller carving is not difficult after you have practiced a bit and provided you have the proper tools and materials. Since flight performance of any powered model is largely governed by propeller efficiency, it is worthwhile to concentrate on a neat, well balanced propeller. The necessary items are a narrow bladed penknife (a sharp one), grades of medium to fine sandpaper and a uniform grained block of medium texture balsa. Pitch will be accurate if you are careful with the block outlines. Carve the front view of the block first, then mark and cut the side outline. Begin the carving with the lower surfaces, making long, slicing strokes with the knife. By making somewhat diagonal strokes, the slight undercamber (about 1/16" depth) is easily carved into the blades. Finish by carving the top

surfaces of the blades, leaving the wood thickest near the hub, tapering toward the edges and the tips. Smooth and balance the propeller by sanding with medium then finer grades of paper. Trim the blade outlines, dope the propeller and mount the shaft to it.

Two strands of 3/16" brown rubber will likely be sufficient power for the model. We indicate added ballast of modelling clay to the nose if necessary to make the model hang level when held by the extreme wing tips.

Test glide the model as you would a glider, tossing it from shoulder height at a slight downward angle. The glide should be fair, considering the propeller drag, and ought not indicate a tendency to dive or stall. Adjust the amount of clay or warp the surfaces gently to achieve a straight glide.

Wind the rubber motor until there is a row of knots along its entire length, then launch the model in level flight into the wind. Watch for a left spiral as a result of motor torque. If it is a nice climbing turn, all is well. If the model spirals downward, warp the rudder slightly to the right or warp the rear of the left wing down. The final adjustment, though no two models fly exactly alike, will probably provide a left climbing turn followed by gliding turns to the right. Lubricate the motor and use a winder for flights of maximum duration. END