

# DON QUIXOTE

by  
Dave Thornburg

● Don Quixote is pure nostalgia. Not instant nostalgia, mind you . . . it takes more than a weekend to build, even with sheet balsa keels to take the headache out of fuselage alignment. But it will be worth the effort, because the completed airplane has that classic look of the forties. Old timers will assure you they've built dozens like it in their freeflight days; youngsters are certain they've seen it in so-and-so's collection of *Air Trails* or *Flying Aces*.

Actually, the Don's antiquity is only silk deep. Underneath its eight coats of thinned nitrate dope lie generous amounts of sheet balsa (a rare commodity in the forties), a few modern conveniences such as Nyrods and precut trailing edges, and a newfangled digital radio to bring it home again. I could even forgive you for covering yours with Monokote . . . provided of course that you use one of the transparent colors, to show off its beautiful framework.

Construction is easy, though time-consuming, so let's get cracking, as the British say. Decide on your radio system before beginning the fuselage, and make the appropriate cutouts in the main keep pieces for servos and battery pack. The current crop of two-channel "bricks" will fit beautifully; just remember that they are not immune to shock damage, and need at least 1/4 inch of REAL foam padding all around. For sailplane work, I like to bury my antenna within the ship and just "plug in" as I install the radio. A piece of very light music wire epoxied down the keel and culminating in a plug up by the receiver serves the purpose nicely. Be sure you leave enough pigtail on the receiver to add up to the factory-recommended antenna length, and you should have no problems. Fliers who cling to the superstition that antennae ought to be as nearly vertical as possible are horrified by this practice, but don't let them dissuade you. The last piece of equipment I had that really needed a vertical antenna was a Berkeley "Super Aerotrol" rig. Ask your grandpa about that one, chile.

*(Scuse us for buttin' in, Dave, but here's a way to hide the antenna without chopping it. While the framework is open, install a piece of Nyrod outer tubing . . . or to save money and weight, 3 soda straws butted together and taped . . . in the fuselage with*

*the front end in the receiver compartment. When installing the receiver to fly, simply feed the antenna into the tube. It will thus be loosely confined in a straight line back through the fuselage. Ain't that clever? WCN)*

Be sure to drill the Nyrod holes when cutting out the formers, and don't forget to install the rod casings before you cover the fuselage. The blocks for the nose section are all standard sizes, available from any good hobby shop (or any good scrap box). Tack-glue the cowl in place between a roughed-out noseblock and a completed cockpit combing for final shaping with a sanding block. Hollow the two cheek blocks for a snug fit around your batteries before gluing them in place and carving them to shape.

The tongue slots in the 1/16 inch cockpit combing are critical to wing alignment, so you may prefer to cut them only after the combing is installed. Check the wing tongue for fit and alignment, but don't install it until the fuselage has been covered. Ditto the 3/16 inch balsa root blocks.

Leave the main cowl in place until the fuselage has been covered and doped, then cut it loose carefully with a thin, sharp razor blade. Glue the tongue in place with liberal amounts of epoxy . . . why trust ordinary glues in high-stress areas? Same goes for the towhook.

The wings are simple enough, but if you're not accustomed to undercambered foils, there are a few points to watch. When laying the pieces out over the plan, block up the front of the precut trailing edge 1/16 inch before pinning it to your workbench . . . a piece of 1/16 square balsa makes a fine block. Next, pin down the 1/4 square lower spar, add the ribs (omitting the four at the tip), and glue in the upper spar. Glue the leading edge in place, and then tackle the tip blocks. The object is to create built-in washout in the tip section: do this by blocking up the trailing edge tip blocks so that the final three ribs will remain flush with the others on their top surface, but have to be trimmed progressively on their bottom surfaces (see rib template on full-size plan).

Add the 1/16 inch sheeting between the top spar and the leading edge. When dry, remove wing from plan and sand or plane the leading edge and tip blocks to proper cross-sections.

The tongue box consists of two pieces of 1/32 inch plywood inserted into the slots in the first three ribs and held in place while drying by a piece of 1/4 inch scrap between them. If you worry a lot, you may want to fill the gaps between the wing spars and the tongue box with scrap balsa, to help transfer flight loads directly from the wing tongue to the main spar structure; in any event, coat this area liberally with epoxy. Add the 1/16 inch top sheeting over the root ribs and sand the wing for covering.

Covering; ah yes. Covering. Maybe you've never covered an undercambered wing. Lucky dog! The whole trick is in the sag. Whether you use Monokote or silk, you have to allow a lot of slack in the concave section aft of the lower spar, otherwise the covering tightens up and pulls away from the ribs, transforming your beautiful cambered foil into a 25% thick Clark-Y! You don't want this.

To avoid it, prepare your framework carefully. For Monokote, go over each rib with a damp tack cloth, to be sure you stick to solid wood and not a layer of balsa dust. For silk, give each rib at least two coats of thinned dope, and let dry thoroughly before covering. With both materials, work from leading edge to trailing edge, getting a good stick to the area forward of the lower spar before tackling the concave section. Leave plenty of slack, and hit each rib heavily with a bead of dope (or the iron). Don't seal the trailing edge until things look good in the undercambered section. After this, the top covering is a snap.

The empennage is of conventional construction. If you've gotten this far, you won't need any help with it.

Now a word about holding the wing in place. For tongue-and-box designs such as this one, almost everyone uses hooks on each panel with a rubber band through the fuselage. You can do it too . . . why be different? Personally, I never use anything but a few coats of dope on the tongues to fatten them up for a tight fit in the boxes. No, I've never lost a wing in the air. I once landed with about 30 degree sweepback in the left panel, but this was my own fault: forgot to preflight the plane, and there was a bad crack in the tongue box structure. If the thought of seeing air between the wing root and fuselage scares you, by all means use the hook-and-rubber device, or balsa cotter keys through the top sheeting and into the wing tongue. Coward!