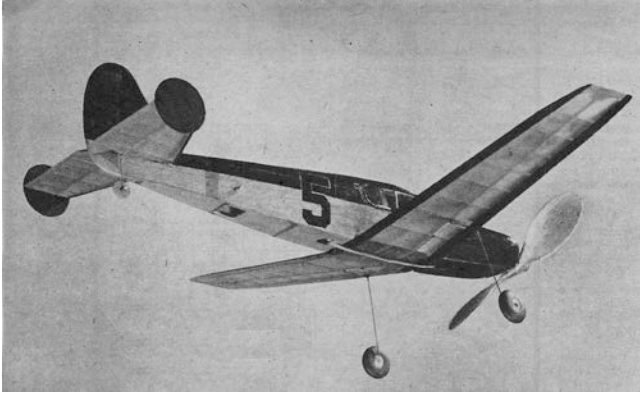


# Bellanca



## **She looks like the real thing, yet has contest type performance by Cristo Russo.**

Free flying scale jobs are fairly hard to make and seldom in the same league with contest models as far as performance is concerned. Contest rubber jobs do not resemble real planes. But there is one way to have your cake and eat it too. How about a big sport design, meant primarily for performance but laid out along the lines of some popular real aircraft? This "Bellanca," for instance.

It has good proportions for flying, slimmed out as it is, with big prop and stilt like landing gear. While there is nothing scale about it, every line the wing tips, the stabilizer tip rudders, the cabin shouts Bellanca. In the air it looks a lot like the real ship.

Since the fuselage sides are parallel back to the trailing edge of the wing, the forward bulkheads are cemented in first the sides are then drawn together at the rear and the remaining formers put in place. The stringers are fairly hard and eliminate all bowing of the contours due to paper pull. The nose is extra strong with cross pieces on all four sides. The heavy leading edge of the stab prevents easy breakage and gives a nicely rounded edge. Ribs are fairly soft.

To assemble, lay down the edges, then the bottom spar of hard 1/8" square put the ribs in place, being careful not to make force fits (which may cause warps), and finish with the top anti-warp spar.

Cut all wing ribs identical to the center section rib, then trim to fit the taper as shown in the detail. The wing tip can be cut ready to go from 1" wide triangle stock, otherwise shaped from 1/4 x 1" wood. First lay

down the edges, next the bottom spar of 1/8" square hard balsa. Trim the ribs to fit and slide into place without forcing. Add the top spar. Be sure to note that the two panels are made separately, then joined in the middle when dihedral is incorporated. In other words, the center section is added last. The center section consists of filling in the connecting leading and trailing edge pieces, a full depth piece of 1/8" sheet (at the spar positions as shown), and a further 1/8" square about two thirds chord point. This also is shown in detail. On the bottom surface, almost directly beneath this last piece, is a short piece of 1/8" square that does not extend beyond the root rib on either side.

The landing gear is really part of the wing, bent as shown. A piece of hard 1/8" x 1/4" is inserted in the wing against the inner side of the appropriate wing rib (see top view wing) another short spar of 1/8" sheet (see front view wing) extends from the root rib out to this landing gear attachment rib; on the top view it may be seen between the top and bottom wing spars. The 1/16" x 1/4" balsa pieces are placed to either side of the landing gear attachment rib as show on the top view.

The prop is a standard contest type. A freewheeler is used and five turns of a Jasco spring (or a light spring from your hardware dealer) is inserted between hub and nose block with a washer at either end. A 3/4" wood screw is the stop. Divide the motor into three portions and braid. First, loop the end of the motor over a large nail. Draw out to three times its length each of the three portions and wind in about 20 winder turns. Slide a clothespin the snap type won't slip through the outer end of each stretched out and partially wound portion. Proceed to braid and have a helper slide the braids along smoothly toward the opposite end of the motor, but not forcing them tight.

It is suggested that, before balancing the prop, the freewheeler or other metal parts be added first to the light blade. Usually, minor balancing remains after that. Cut the blades fairly heavy for strength. Use two coats of wood filler or sanding sealer followed by three coats of clear dope. Be sure wood holes are drilled oversize to permit easy freewheeling.

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Covering is left to the builder. Some prefer rubber model tissue but good results and a durable machine result only from the use of Sky Sail. Wet cover if possible. First dope the structure to prevent warping of edges, and lay the wet tissue briefly between the folds of a towel to sop up excess moisture. Wet covering is faster, easier, and neater. Give the finished covering two coats of dope thinned half and half, then follow up with a third coat of the same mixture to which three drops of castor oil per ounce have been added. Run grain chord wise to avoid hooking down trailing edges.

While the Bellanca is not difficult to adjust it is imperative that it be lined up accurately and be without a warp. If you have a slight wash-in in the left wing tip, let it stand, but remove any other warp by softening the tissue with thinner, or by steaming, and then holding the surface at the proper angle until the tissue pulls tight again. If the warp is bad, twist the surface in the opposite direction in the hope the two will cancel out.

While the "Bellanca" will turn in spectacular flights it must be flown as described; the fact that low wings often behave badly is the result of trying to make them do what is impossible for them. In general, low wings should not be flown to the right. Trimmed one way, this one would not fly regardless of the method of adjustment. But trimmed another it flies quite reliably.

The big error in adjusting the low wing semi scale is to correct for tail heaviness by increasing the stabilizer angle, decreasing the wing angle, or by any means reducing the decalage, which is the difference in angle between the two surfaces. It is necessary to purposely trim the ship tail heavy by the rigging of these surfaces, then to bring the C.G. into the proper position with lead ballast in the nose.

This method of adjusting insures that at high speeds the low wing will not dig under. In the beginning this ship would dive spirally into the left once the ship had stalled; if it didn't stall it would also come into the left but at a very shallow angle at high speed. When

properly trimmed, the airplane climbs steadily and, if stalled, will recover from the left turn that results.

Be certain that there is at least 3/32" negative in the stabilizer. Use rubber-tired wheels to help bring the C.G. forward and down. No right thrust was used but we had purposely softened the tissue of the left wing tip with thinner and worked in slight wash-in, always good practice for the wing on the inside of the turn.

Make your usual hand glides. Don't worry about the gear, it is exceedingly whippy. The wing will come askew if you hit it. When satisfied that you have enough weight in the nose for a smooth glide, try about 50 power turns, over grass if possible. Add ten turns at a time. The ship should develop a slight stall tendency under power, so begin to add the remaining down thrust. Good flights should result. If the turn tends to tighten, add a trifle right thrust but not enough to make the ship go straight or to the right.