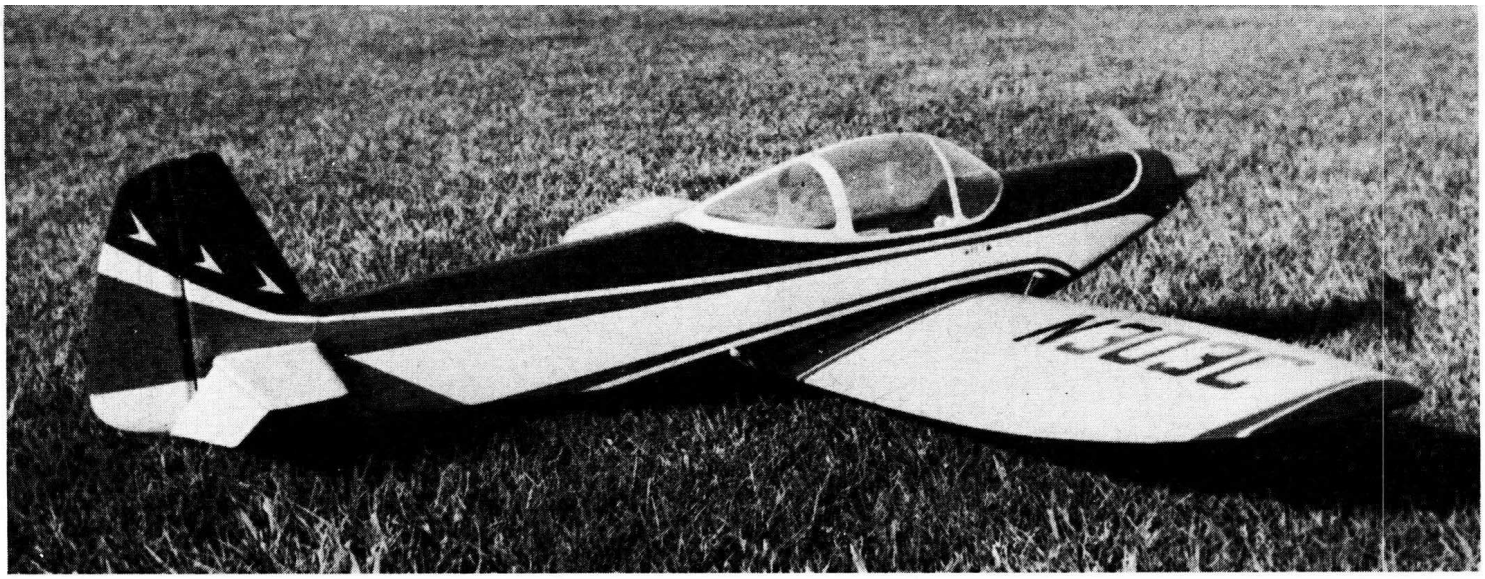
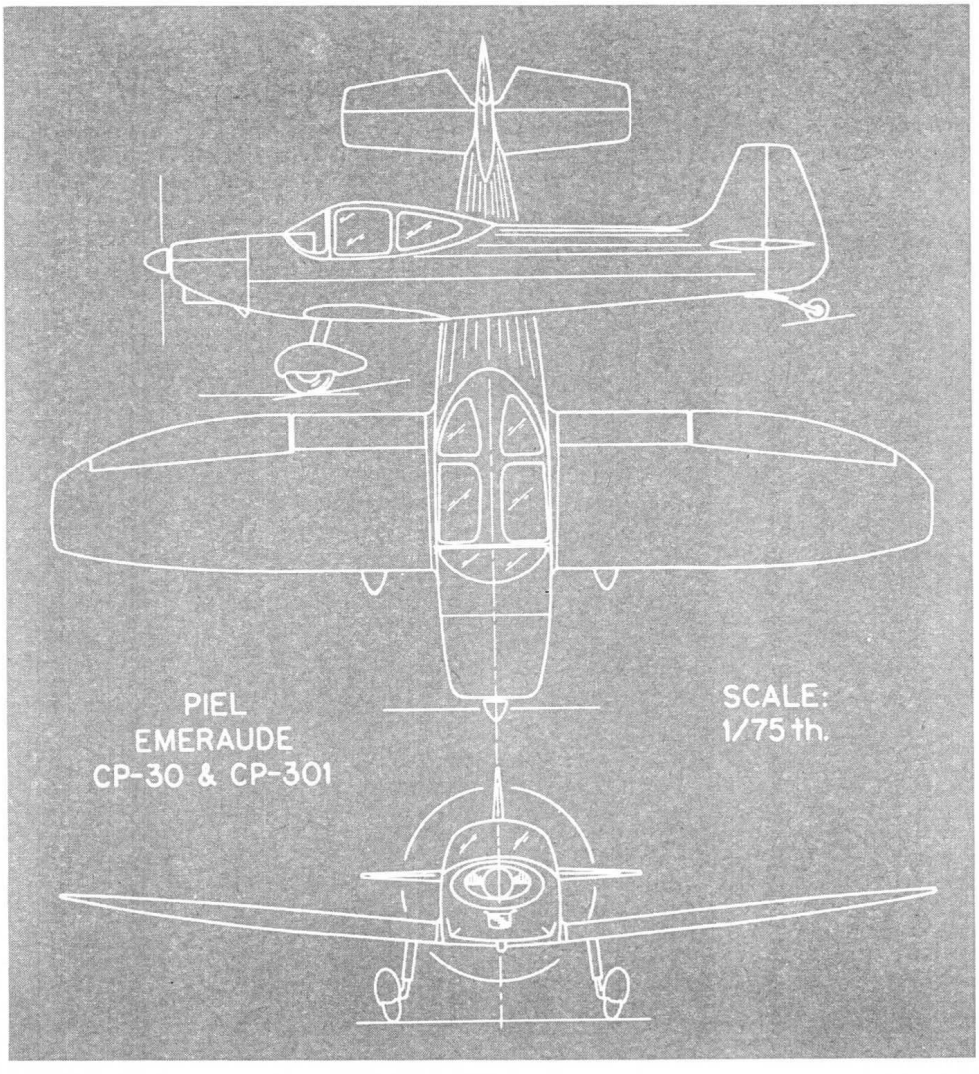


The Emeraude

Popular French-designed home-built makes an ideal R/C ship capable of AMA pattern maneuvers, including snap-rolls and inverted spins.

BOB MORSE
as told to Leon "Duke" Crow



THE May, 1964, issue of Experimental Aircraft Association's *Sport Aviation* magazine carried an article describing the Emeraude, designed by Claude Piel of France and built by Wayne Barton of Rush, N. Y.

After seeing the photos of this beautiful home-built aircraft, we had to duplicate Mr. Barton's marvelous ship for R/C. We obtained from Falconair Aircraft Co. of Edmonton, Alberta, Canada, a descriptive brochure and three-view drawings.

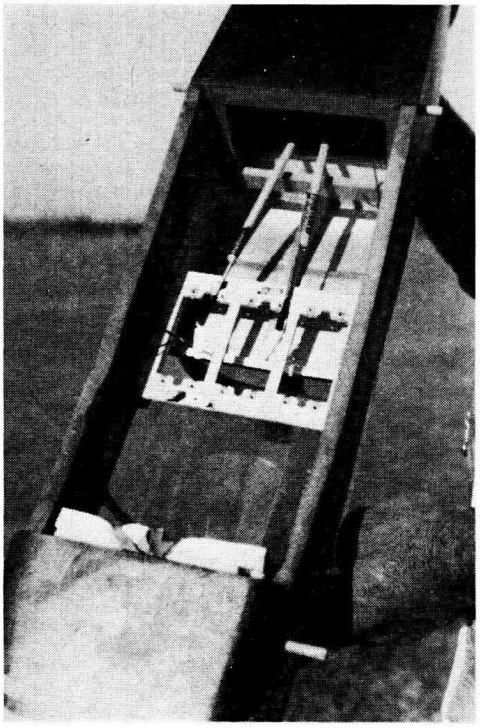
The Emeraude is quite an airplane, having a wing span of 26 ft. 4 in., length of 21 ft., and a wing area of only 117 sq. ft. It can tote two adults at a maximum speed of 112 mph, or cruise at 103 mph on only 65 hp. Increasing the power to 105 hp jumps the cruise speed to 120 mph and maximum speed increases to 137 mph.

The cost of building a ship at home can be difficult to nail down. Mr. Barton managed to build his Emeraude, using all new materials except for instruments, wheels and a majored engine, for only $1,223. This is really a lot of airplane for the money! We plan, someday, to begin construction of our own Emeraude, but until then, we will have to enjoy our model.

Since building the ship in 1964, we have enjoyed many many flights. It is an excellent flyer, very stable and will perform the complete '68 AMA pattern (including snap-rolls and inverted spins) maneuvers. And you wouldn't believe the ground handling; takeoffs and landing have to be seen to be believed with these old-fashioned bicycle landing gears.

Wings: Construction is straight-forward and should present no problems. While the wing appears difficult to build because of its elliptical shape, it is, in reality, a straight wing with only the outboard portion, incorporating the ailerons, being elliptical. We chose the full-depth spar with interlocking ribs as the most practical method of obtaining the elliptical wing shape and to provide the correct spar profile in the outboard section of the wing.

Begin construction of the wing by pinning the inboard trailing edge sheet to the flat building board. The main spar with

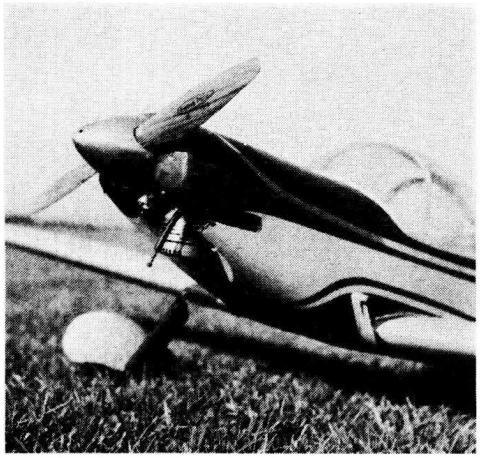


Looking through wing opening and out the canopy from the inside. There's plenty of room for three large servos side-by-side.

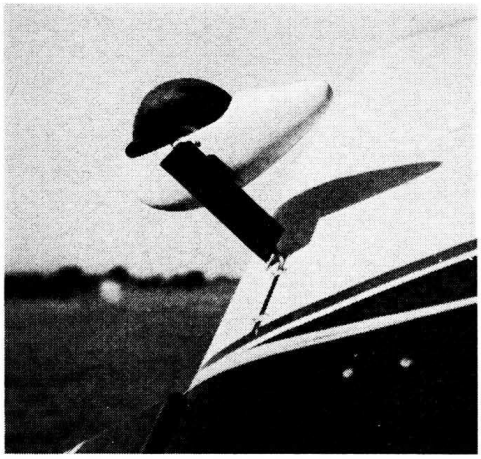
the ribs keyed loosely in place is then placed on 3/8" square spacer blocks (you'll see the reason for this when you pin the ribs down to the bottom trailing edge sheet). With the loose assembly in place, key the outboard ribs in place and then position the aileron spar so that all ribs are in line. With this spar pinned and blocked in place, the ribs can be disassembled and reassembled with glue. After the glue has taken its permanent set, the leading edge, nose sheeting and trailing edge sheeting can be installed. Add the rib capstrips and, when the assembly has cured, lift the panel and add the landing gear blocks, lower nose sheeting, and lower cap strips.

Repeat this for the opposite panel and you are ready for wing joining. Sand the skin sheeting at the roots to the dihedral angle shown and butt glue the two panels together. Take all the time you need at this point and make absolutely sure that the two panels are perfectly mated. If you do this right, you will have a wonderful flyer. Do it wrong and you'll have a dog! Assuming you have done it right and your glue has set, paint a 2"-wide strip of resin around the center-section joint, press a strip of glass cloth into the resin, and finish off your basic wing structure with a final coat of resin over the cloth.

The ailerons are built now and can be either built-up as shown, or hogged out of soft 3/4 sheet stock.



Inverted engine easiest to start. Don't prime into cylinder; just wet side of piston with fuel just before flipping prop.



Conventional torsion-bar landing gear used. Wheel pants from Stafford Chipmunk kit with strut faired by balsa and silk wrapping.

The real plane also is an exciting aircraft. Clean lines give fast cruise performance. Large wing area permits slow easy landing. Model's airfoil also permits aerobatics.

Fuselage: It is rather straight-forward and should present no problems. Start by making two complete side assemblies; don't forget, one righthand and one lefthand. These consist of the 3/32 side sheets, the ply wing opening doubler, the vertical 1/8 x 3/8 stiffeners and the stringers. After these have been finished, gently crack the 3/32 sheet at the forward edge of the ply doubler as shown in the top view; this will make things a little easier later on. Assemble the fuselage upside down on the building board with the front hanging over the edge of the board so that the firewall and the fuel-tank bulkhead can be installed. Add the gusset blocks and engine mount beams, then add 1/8 x 3/8 cross pieces at the uprights and top of sides, then the 3/32 bottom sheeting.

Pick up the fuselage now and complete the rounded, stringered top. To get straight stringers, pre-notch only the aft cabin former and install the other three turtledeck formers without the notches. Position each stringer as shown and mark the position on the rest of the formers, then cut in the notches and install each stringer as you go along.

Miscellaneous: As the model is built to 1/5 the size of the real ship, there is room for almost any type of radio gear. If you would like to operate the wing flaps, there is plenty of room for the control installation.

There are two pretty hard nuts to crack in building this bird, and we will tackle the tough one first. The cockpit canopy resembles a rather small birdbath! There are two ways of getting a canopy on your ship: 1) carve a hard balsa pattern 1/16 in. undersize from the drawing contours and finish it glass-smooth with Hobbypoxy, or a similar hard coat, and then heat 1/8" Acrylic or Polyvinyl sheet to a pliable state and quickly press over pattern.

The second problem is wheel pants. We did it the hard way — made molds and laid up our own with resin and cloth. Our next ship will have Jack Staffords' fiberglass Chipmunk or the Williams Bros. plastic parts.

As far as power is concerned, the ship is an excellent performer with a 45 mill up front, but for competition flying, a 60-size engine will really put those rolls "on a wire." Our ship is silk covered and finished in butyrate color in the same scheme as Mr. Barton's N9441H.

Every construction article we've read has cautioned the new builder to check things out before you go down to your favorite 5,000-ft. runway. We're no exception. Almost is not good enough. It's got to be right. Check out your control system. Recommended ground range, control linkages free, vibration checks with engine running, and so on. If anything doesn't look quite right, fix it now, or you won't have anything to fix later.

Flying: An experienced flyer will have no trouble with the Emeraude. One word of caution to our hot-dog tricycle-geared pilots, take it easy on the throttle on take-offs. Ease her up to about half throttle and watch the tail lift off. When she's got some speed and the controls become effective, you can firewall the throttle and really go!

We have flown the trike-geared ships for a long time now, but two-wheel lift off and touchdowns of a bicycle gear really give you a thrill.

For the new R/C flyer, Emeraude is a gentle, forgiving ship, and with an experienced flyer as a copilot, she makes an excellent trainer.

If you would like to get into the scale competitions, here's your chance to grab a few points with a relatively easy-to-build dependable flyer.