Caproni Vizzola

Simple 75in. span semi-scale slope soarer for two function R/C. Designed by Jack Headley.

I WAS FIRST ATTRACTED to the C-22J when browsing through a copy of Air International in our library (Feb '81 issue, if you want to look it up). A first glance at the splendid colour shots of the plane flying over the Alps led me to believe it was a glider, but after spelling out a few of the words, and looking closely at the drawing a couple of (wait for it) *Klöckner-Deutz* KDH-317 turbo-jets were discovered behind the armpits of the wings. A well disguised dorsal NACA type inlet, invisible on all the photos, supplies air to these engines, which is later ejected through two, equally well disguised, exits alongside the tailboom.

These latter features, plus the camouflage colour scheme switched on my brain to the possibility of making a slope soaring version of the C-22J, no inlets or exhausts to build, a simple pod and boom body, and whoopee! a parallel chord wing; what could be simpler.

The article wasn't unfortunately accompanied by a three view configuration drawing, but later on in the same magazine, amongst a flock of other trainers, a drawing was discovered.

But what a disappointment! Instead of the elegant glider type shape I'd been expecting here was a large dumpy body, with a small boom/fin, and tiny wings.

However, never being one to let the facts stand in the way of a projected model I whipped out my trusty semi-scale ruler (made of the finest *Dunlop* rubber), and stretched the dimensions here and there, mainly there, until a shape that matched up to my expectations was achieved.

If you ever get around to comparing the model shown here to the actual full scale version you will see that I did take a few liberties, but it's all in a good cause after all.

The model is pretty simple to build, being all balsa sheet and blocks. I started by making the wings, so this is where I'll begin outlining instructions.

Wings

These basically consist of upper and lower 1/16in. sheet skins, a few ribs, and a full depth 1/8in. sheet spar. As the span is only a little over 6ft. a single piece wing is quite practical, and should fit into almost any car. I use this justification for all my glider wings, regardless of size, as (1) I don't like to build wing joiners, and (2) I do have a giant *Chevrolet* station wagon.

Back to the balsa. First select the sheets to make up the wing skins. Use the tough stuff for the flat bottom bits, and the more flexible for the top skins. Four skins are needed, each 3ft. long, and about 7in. wide.

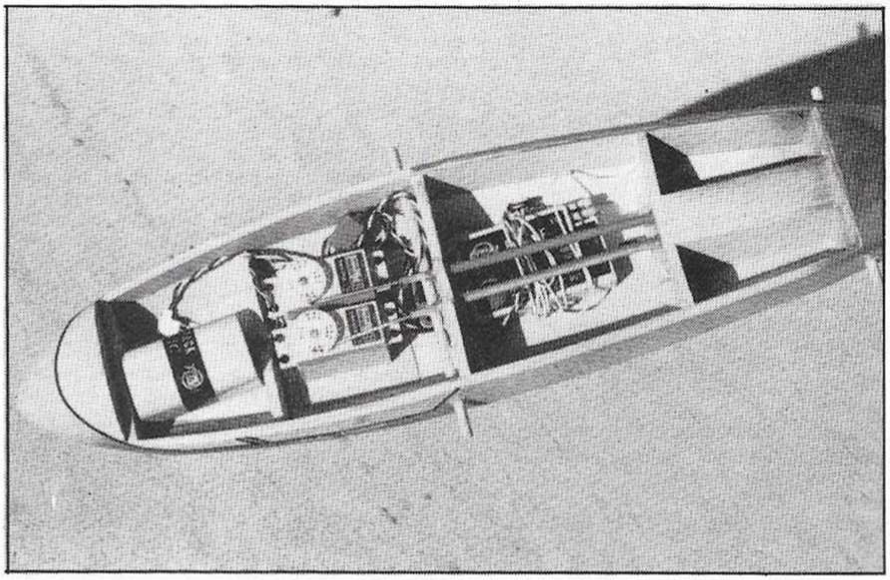
Pin one of the bottom sheets onto the plan, then make up the main spar from 1/8in. sheet, and glue this into place. Naturally with the sheet in place you can't see where to actually glue this item down, ditto the ribs, and this is the reason for all the small marks drawn around the wing plan to locate these items. Add the W2 wing joiners on each side of the spar, then cut the front spar from 1/8in. sheet, and cement this into place, together with wing joiner W1. All the ribs are now made and installed. Note the small balsa block at the tip, which is added now. When this is all dry bevel the front spar as indicated in the wing sectional view, then glue the top skin into place. Finally add the true leading edge, and the block wing tip, and one wing panel is complete.

The other wing panel is built in a similar way, except that the first panel is attached after the front and main spars are laid down. The first panel needs propping up at the correct angle during this operation, and this is obtained by using a block 8in. high under the tip.

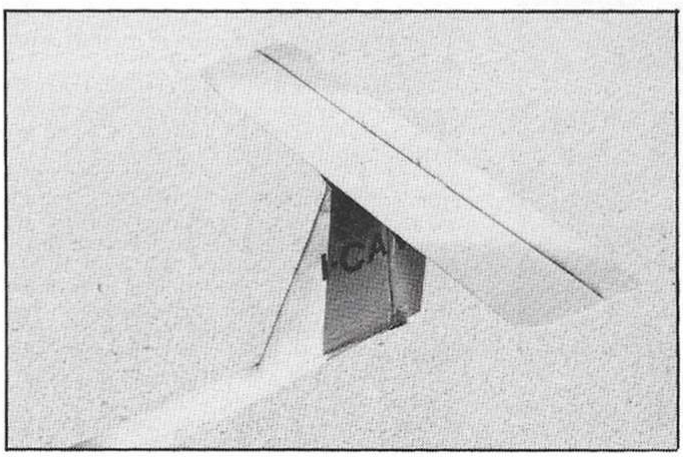
Sanding the leading edge as shown on the plan, then a light sanding all over, finishes off the basic wing construction.

Fuselage

This is made initially as two items, the front pod, and the tail boom. Begin with the tail boom, which is built as a simple box, with 1/8in. sheet sides, and 3/16in. sheet pieces top and bottom. Note how these top and bottom



Above: the clumsiest of fingers should find R/C installation child's play in the Caproni. Author Jack Headley uses servo tape to fix all R/C components in place.



Left: sheet tailplane fixes to the top of the fin with a single screw.

C-22J

pieces taper locally at the fin station. Only add one of the 1/8in. sheet sides at the base of the fin at this time, so that the elevator control run can be installed, after the fin has been attached.

Don't as yet sand the boom to its final contours.

The pod piece has some highly contoured sides, so choose some suitable wood for these items. To help form these contours 1/32in. ply doublers are first glued to the 1/8in. sheet sides, with the pieces held in a curved position, approximately that of the final shape. This can be done with some suitable weights and blocks. While these sides are drying the fuselage floor can be cut from 1/8in. sheet, and all the fuselage formers. Pin the floor to the building board, then glue the tail boom into place followed by all the frames. Block up the end of the tail boom as shown on the plan. Add the fuselage sides now, then the 3/8in. triangular reinforcement pieces. Soft balsa blocks, aft of former 4 are used as simulated engine nacelles. Other blocks are needed for the fuselage bottom, and the nose, and these can be added now. Former 2 is shown on the plans as a solid item, however suitable holes will be needed to anchor the (flexible) snake outer tubes, and to pass wires through.

Again a lot of sanding now to get the fuselage into its final contours. The partially constructed fin is now attached.

When the fin assembly has been completed, (see later), the wing can be fitted to the body. Trim former sides until a suitable fit is achieved, then make the cockpit canopy, followed by the two small fairings on the wings.

Tail pieces

The tailplane and elevator are made fro 3/16in. sheet, the elevator being sanded to a wedge shape, all other edges are rounded off. This completed item is attached onto the top of the fin by a small bolt, to a nut epoxied underneath the tail platform T1. A small 1/32in. ply washer is glued on the top of the tail for the bolt to bear on. The tail is further located by a scrap piece of 1/8in. dowel glued into the tail after covering. Note the location of the elevator horn, so that the rudder can swing freely.

The basic fin structure is 1/4in. sheet, and the rear piece extends downwards, so that on assembly it fits between the two fuselage sides. The rudder is cut from 1/4in. sheet, and sanded to a wedge section.

Cover one side of the fin only at this time with 1/16in. sheet and the strip of 1/16in. ply. The other side remains uncovered until the elevator control system is installed.

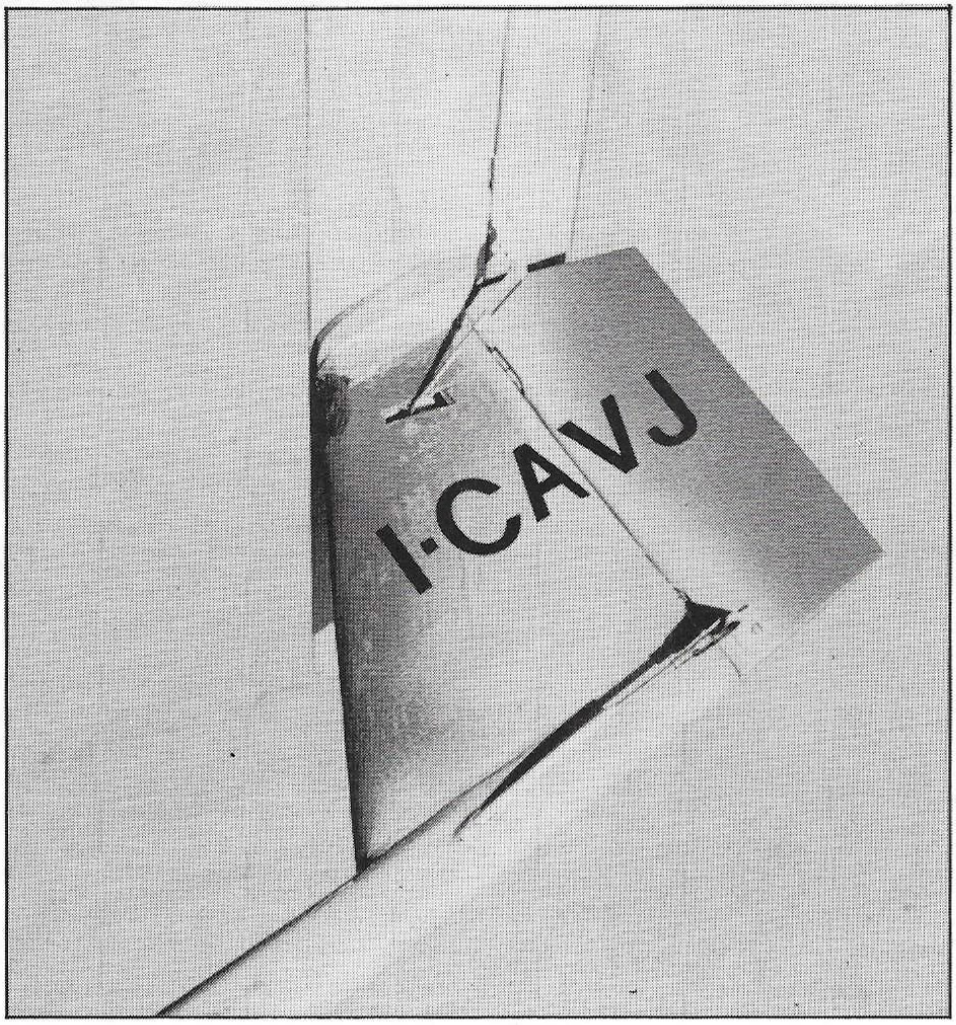
Cement the fin to the fuselage when completed this far.

Control system

On the prototype I used snakes to connect the servos to the controls, and I would recommend this approach, especially for the elevator. For once the cabin area is of ample size for the radio equipment, and the servos are located in the first bay, with straight runs for the pushrods aft into the boom. The rudder hook-up is quite standard, and needs no comments. The elevator, perched on top of the fin, requires a little more description.

With the fin assembled to the body, but still only sheeted on one side add the other strip of ply, then install the small bellcrank. Epoxy the outer cover of the snake into the boom, then cut away the fin structure locally for the inner sleeve. Don't cut away too much wood, as this will result in a sloppy elevator motion. A small pushrod connects the bellcrank to

Right: underside view of the tailplane reveals short pushrod to couple fin mounted bell-crank to the elevator.



the elevator horn. When you're satisfied with the elevator motion add the remaining sheeting on the boom and fin. A small slot is needed on this latter sheeting for the elevator pushrod.

Add the tail platform, not forgetting to epoxy the small nut to its bottom side first, then attach the two small 3/8in. triangular reinforcing pieces.

Finishing touches

I covered the whole model with medium weight tissue, then sprayed-on coloured paint in an appropriate pattern. Light blue was used for all the undersides, the top surfaces being light brown/green/grey. I used the patterns shown in the 'Air International' as far as I could, but as none of the shots showed the upper surfaces of the wings I made up a design. Purists please don't write!

Flying

Bring the C.G. to the region shown on the plans by adding weight to the appropriate spot. My original needed about 2oz. of nose weight for this. Check the radio/controls, then fly. Make further adjustments to the C.G. as required. The reason I mention checking the controls is that, despite having been a glider flyer for some time now, I did manage to connect up the elevator control backwards, so that my first flight was very short, from shoulder height to the ground in about 1 second. A little 5-minute epoxy fixed up the model, but it took longer than 5 minutes to overcome my embarrassment!

Moral: a few seconds pre-flight testing at home saves red face on slope.