

**Fly MPA with david
Boddington's 50 inch
trainer for .20 motors**

Carnival is the larger of a pair of models, the other being the 37inch span Fiesta, designed for the Model Pilots Association as dual purpose models. Both of these designs make excellent basic training models and they are also intended for the MPA 'Single design' fun-fly competitions. Actually, they may well become triple purpose aeroplanes as I see no reason why they should not become the basis of free flight models - but that will have to be proven first.

You may think that the Carnival looks a little old fashioned - and I would find it hard to argue with such a comment. What the design was intended to produce was a model that could be constructed simply and would be pleasant and easy to fly. To this end it was my intention to keep the model to a modest weight (open balsa wood structures are best for this purpose) and to make the model as 'foolproof' in construction and assembly as reasonably possible.

One of the principal reasons for a model to fail to complete the initial test flight is because of poor alignment of the flying surfaces ie the tail-surfaces are awry or the wings are warped. Carnival has been designed - in common with its smaller sister - to eliminate the risk of mis-alignment, as far as possible. Tail surfaces are built on a cruciform pattern



Carnival

to ensure they are correctly aligned and the tail unit is then slotted into the fuselage to keep it all nice and square. The fuselage itself is constructed over the plan, onto the lower fuselage sheeting, and is not removed from the building board until the sides, top sheeting and tail assembly have been added.

Wings have a flat bottom aerofoil so that they too can be constructed directly over the plan and diagonal bracing from the main spar to the trailing edge also helps to resist warping.

So there you have the Carnival, a good honest sports/trainer model that will give you hours of enjoyment (even if you are an experienced pilot) and will be your pass-key to the exciting 'one

design' contests we will be organising next year. Get building now.

Tail first

Glue the tips and trailing edge to the 3/16inch main tailplane sheet and the elevators and 3/16in x 1/4in spruce joiner. Sand and round off the edges. Note that the fin is cut so that the lower part houses into the fuselage, the rudder has an arc cut-out at the elevator joiner location.

Cover all tail parts, leaving clear the lower part of the fin and the areas where the fin and tailplane are glued together. Make provision for the hinges and permanently fix the elevator hinges - the rudder is fixed at a later stage.

Check the fit of the slots for the

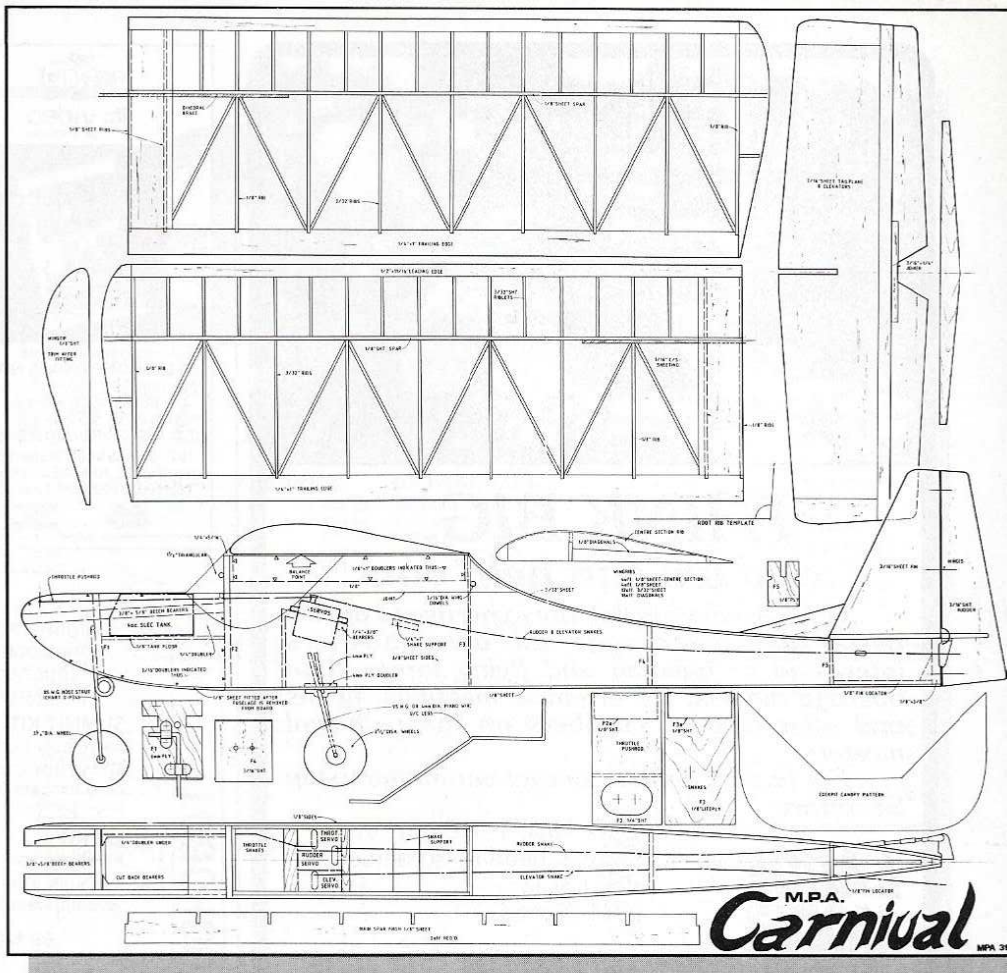
Top down: Carnival carries on the classic styling established by the first MPA design, the Fiesta. Prototype used PAW diesel power, but any .20 will provide a sprightly performance. Young MPA member, Anita Partington, gets to grips with Carnival, an ideal first model.

cruciform assembly of the fin and tailplane and then glue the two parts together. Use a slow drying adhesive to give you time to make adjustments. Prop up the tips of the tailplane to the correct height and place a set square against the fin to ensure verticality. Leave to set thoroughly.

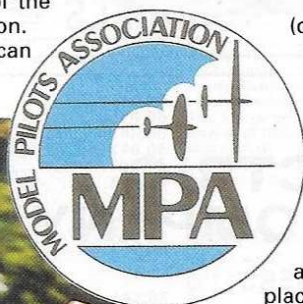
Flat bottom fuselage

Construction of the fuselage is a little different to normal, although it is commenced by marking onto the fuselage sides the positions of the formers and doublers. The latter are glued in position and also marked for former and bearer positions. Cut the fuselage bottom sheet, from F2 to the stern post, noting that the area of the main undercarriage legs is formed from plywood. Glue the 1/8in fin locating doubler to the rear of the sheet and the plywood undercarriage doubler. Pin the lower fuselage sheet over the plan view of the drawings. Glue formers F2/2A, F3/3A, F4 and F5 to the lower sheet and check with a square that they remain upright.

The fuselage sides, complete with doublers and engine bearers, are glued to the formers F2 and F3 and to the lower sheet over this area. (Incidentally, the Carnival is an ideal model to be constructed with the use of a building jig.) When this has dried add the front former F1, fuel tank floor, 1.1/2in triangular cockpit block, servo bearers and control snake cross piece support. When this has dried the front end of the fuselage is securely locked in position. Now the rear of the fuselage sides can be brought in and glued to the formers F4 & 5, the stern posts



M.P.A. Carnival MPA 31

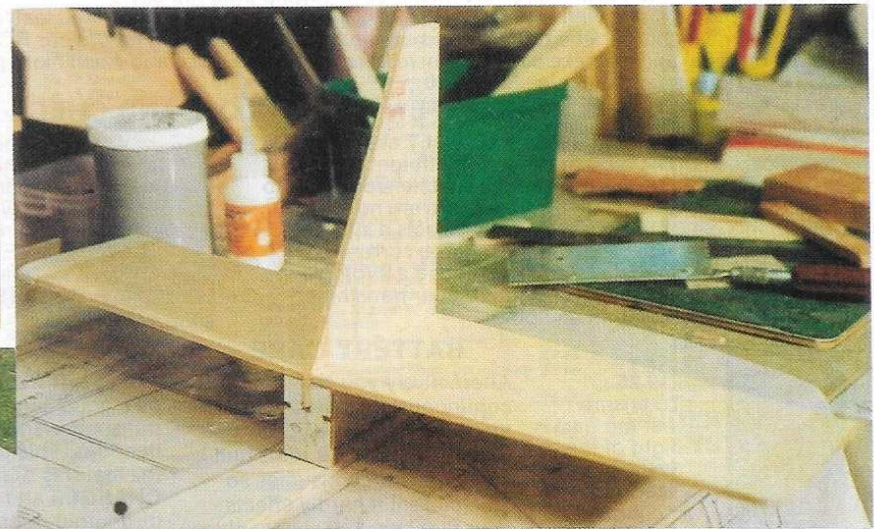
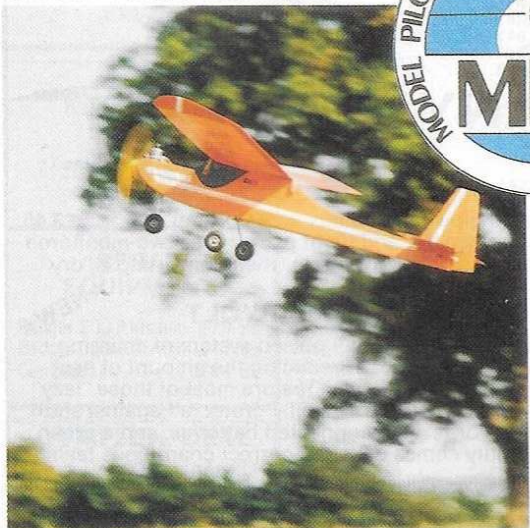


(chamfered) and the lower sheet. Install the rudder and elevator snakes before the 3/32in rear fuselage sheeting is fixed.

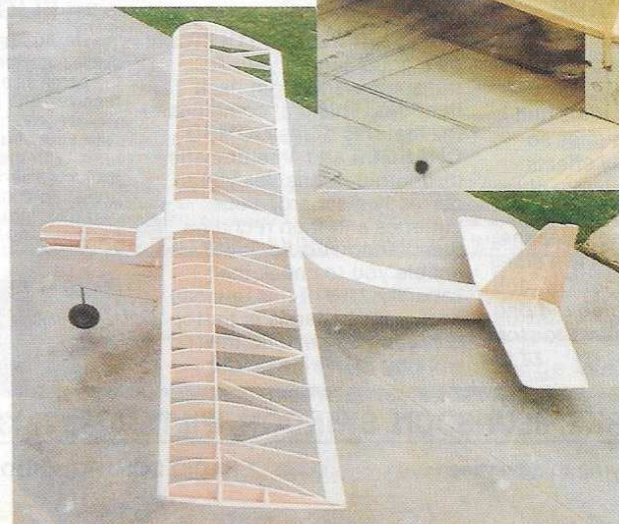
Prior to removing the fuselage the tail assembly is fixed in place, to ensure its

'squareness' with the fuselage. Dry fit the assembly and remove any covering to the underside of the tailplane where there is contact with the fuselage sides. Glue the fin and tailplane to the fuselage and prop-up the tailplane equally under each tip. Leave to set.

Remove the fuselage/tail structure and add the 1/8in lower nose sheeting. Provisionally fit and check the undercarriage legs and wing retaining dowels and then remove again. Sand the



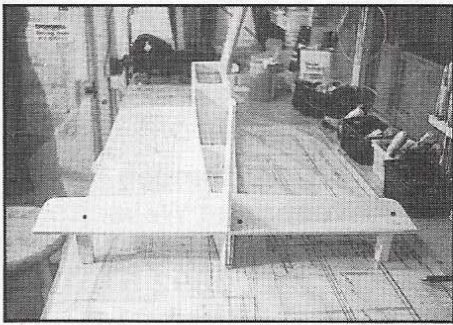
Clockwise: Away for another flight, the Carnival is very easy to fly. Crucifix tail group construction ensures all is square at the back. There's lots of satisfaction to be had from building a built up wing - try one and see!



fuselage, rounding off the nose areas. It is then ready for covering and for the rudder being hinged permanently.

Wings

These panels are also built directly over the drawing. Commence by pinning down the slotted trailing edge and 1/8in

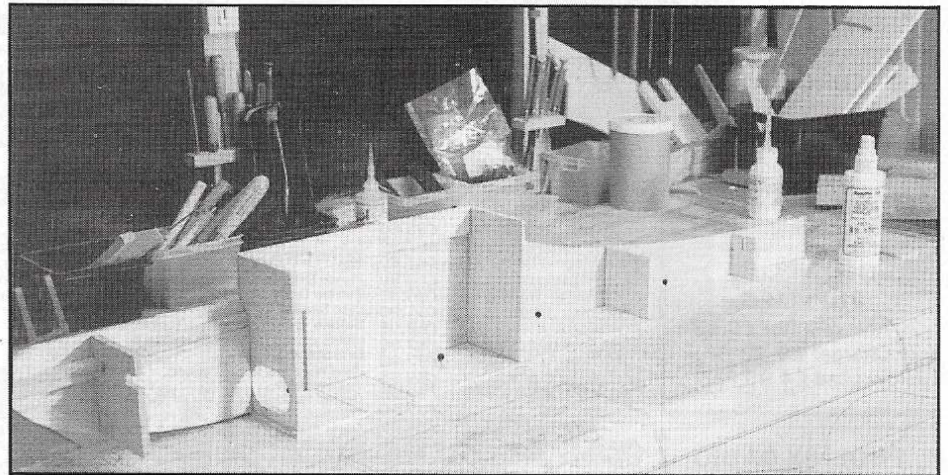
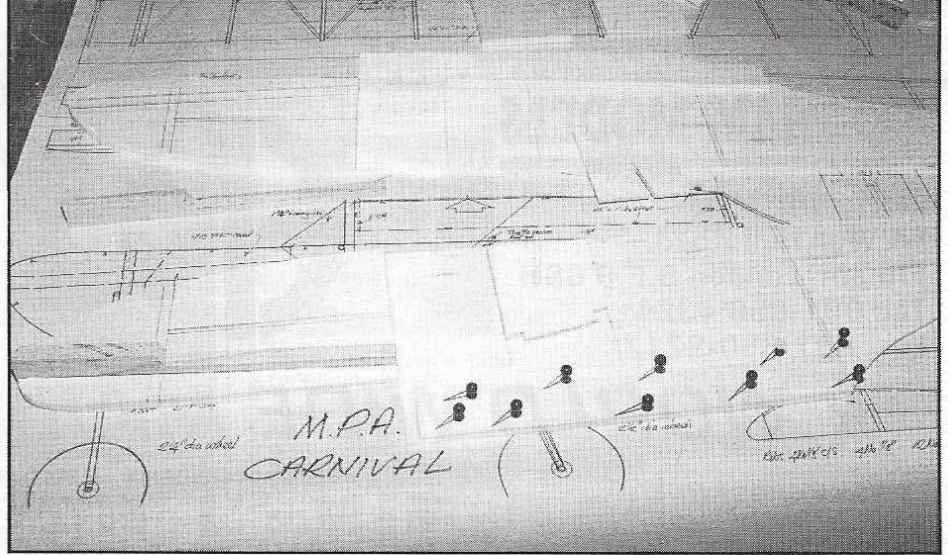


Above: use balsa blocks to keep the tail straight whilst the glue dries. Right: Making up the fuselage sides.

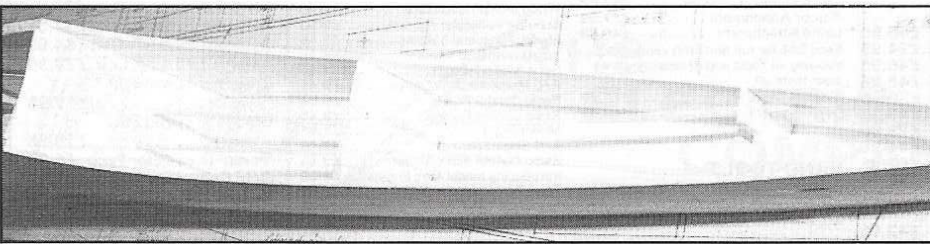
slotted main spar (vertical). Glue the ribs in position, angling the root rib for the dihedral. Glue the leading edge to the front of the ribs and then add the nose ribs and the rear diagonals. Complete the basic panel by adding the 1/16in centre section sheeting. Construct the second wing panel in a similar manner.

When the panels are removed from the building board (leave for the adhesive to *thoroughly* set) the wing tips can be added, chamfer the lower edges as shown on the drawing. Cut slots in the centre section, behind the main spar, to receive the dihedral brace and check for the fit of the brace and the mating of the two panels. Again using a slow drying adhesive, glue the two wing panels and dihedral brace together, pin the centre rib position to the board and prop up the wing tips by 2ins for the correct dihedral.

Finish by sanding smooth and covering.



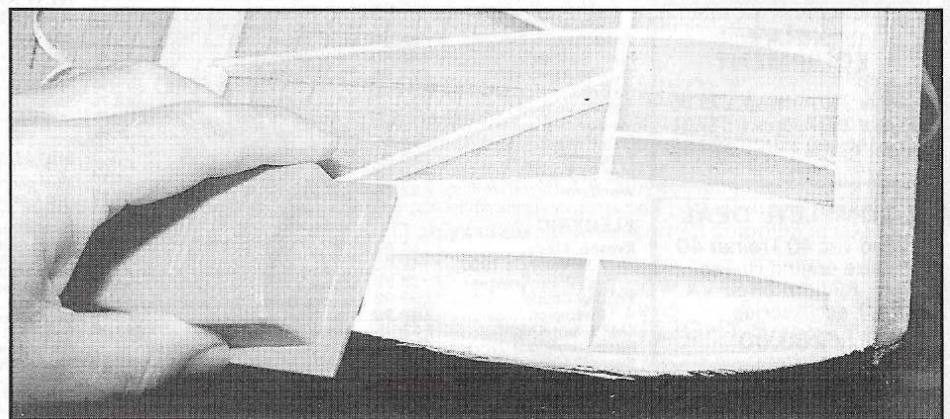
Above: Construct the fuselage from the bottom up. Left: Snakes are used for primary controls, firmly supported at their middle and ends.



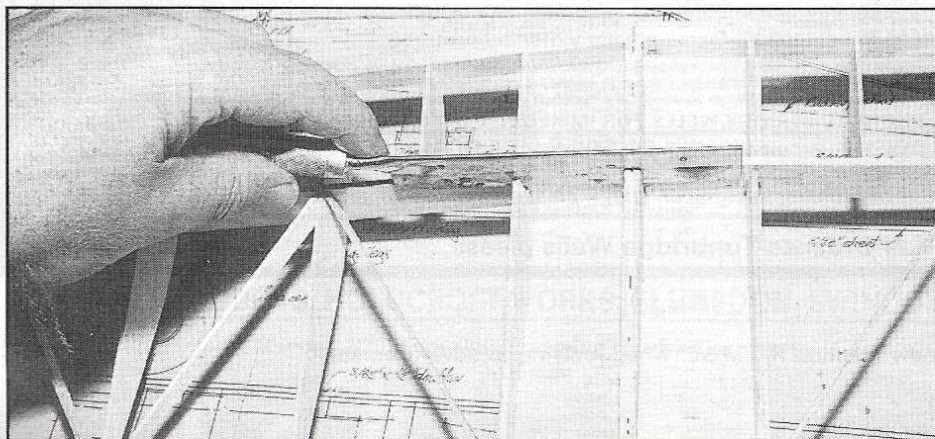
Right: Use a sanding block to shape the wing tips, with masking tape to protect the end rib.

Radio and engine

Installation of the radio equipment, engine and fuel tank follows standard practice. Note that the servos are angled to give a more direct alignment for the rudder and elevator snakes, a small refinement but worthwhile. Battery location is under the fuel tank, accessible through formers F2, the receiver fits (suitably protected) in front of the servos and the switch is fitted on the port side above the receiver area.



Left: A razor saw is used to cut slots for the dihedral brace.



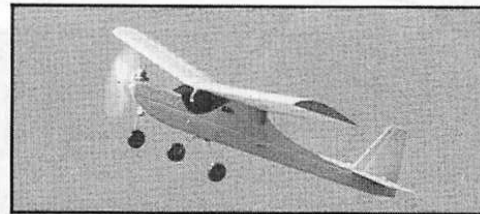
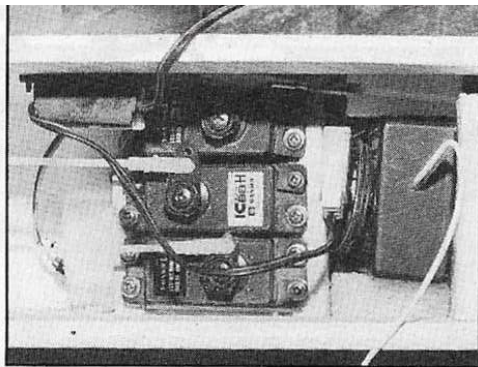
weight down and limit decoration to a sensible minimum. As always, carefully check the balance point, make adjustments to the battery position and add ballast if necessary - but never accept a rearward balance position. The tail/fuselage alignment should be OK, but check the wing alignment with the

tailplane and in plan view, for being at 90 degrees to the fuselage. No warps, of course!

Set up the rudder and elevator throws to those recommended on the drawing and give the engine a run before leaving for the flying field.

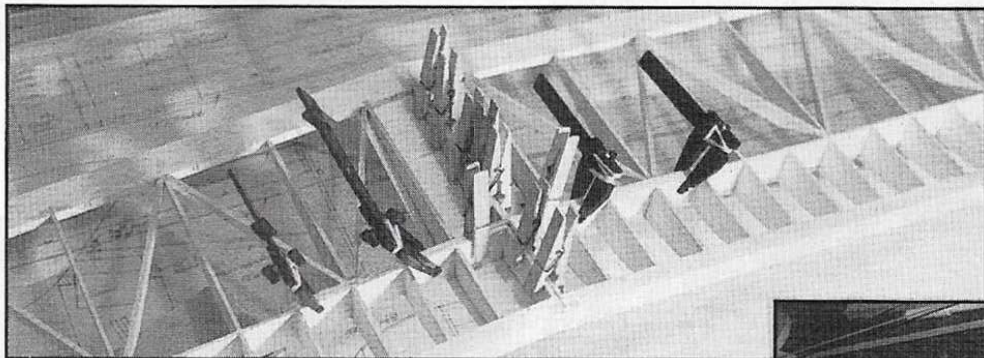
Final frontier

At the flying field carry out all of your normal safety checks of range, frequency



model. With a 'hot' 20 it will cavort around the sky in a quite sporty fashion and with a slightly less potent motor the performance is a little more sedate. Of course, you could fit a larger capacity motor, but this would not be eligible for our MPA 'One design' competitions. Non racing (side exhaust and expansion chamber silencers) engines only are permitted.

We hope you enjoy building and flying the 'Carnival' and look forwards to meeting you at our special MPA events. Finally, I can end with the apt musical phrase 'the Carnival is over'.



clearance etc. Depending on the site you can either carry out a take-off or hand launch for the test flight. I am assuming that it is not a total beginner flying the model at this stage. With such care during building and assembly the model should fly fairly straight but, having a flat bottom wing, you must anticipate a degree of nose-up pitching after speed increase ie, after a diving turn.

Carnival will not give you any cause for alarm, it behaves very much like a basic trainer, indeed it is just as suitable for this purpose as it is for a sports

Top down: Use all the screws to mount the servos and don't forget the foam packing around the Rx and battery. Lots of pegs are needed to hold the wings together whilst the glue dries. Diagonal wing ribs give the Carnival great strength.

