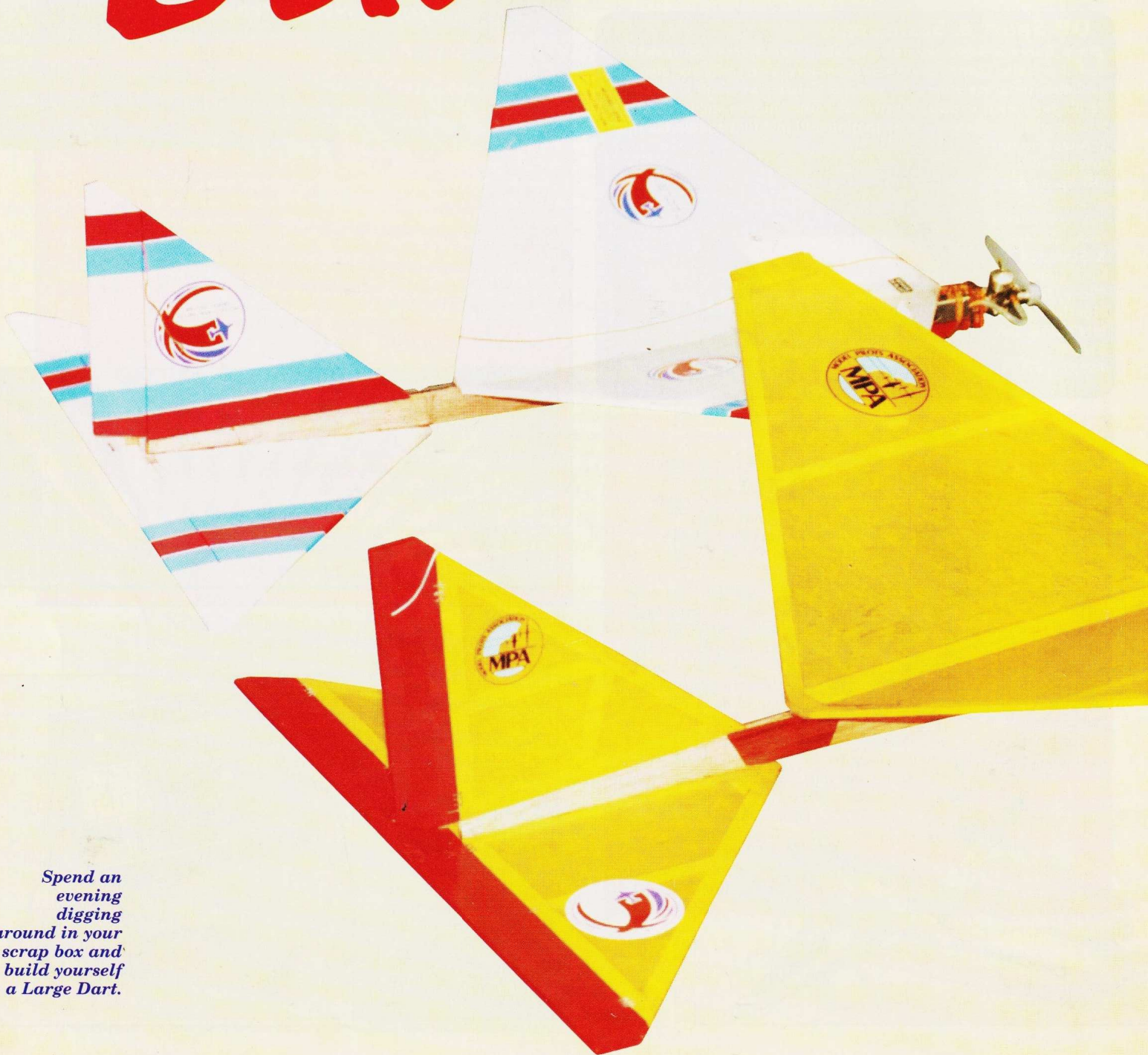


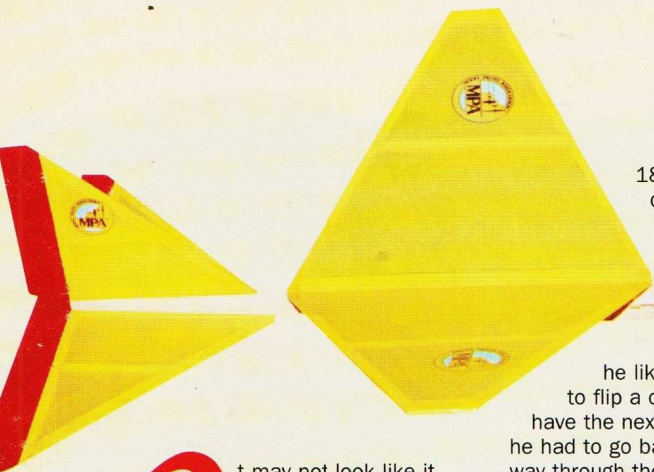
Build this model from our fabulous free Pro-Plan

Large Dart

Brian Cooper pays tribute to
Frank Ehling's diminutive
free flight rubber design by
scaling it up for miniature
R/C gear



Spend an evening digging around in your scrap box and build yourself a Large Dart.



180 feet long, but once he discovered the characteristics of the model he began to like flying in there, proclaiming to everyone that, "It was easy." In fact

he liked it so much that we had to flip a coin to see who would have the next flight, until, mercifully, he had to go back to school about half way through the exhibition, and I got my toy back.

Got a spare evening?

Constructing one of these aeroplanes is simplicity itself and can be finished in three or four hours, but do remember that weight is the enemy. Do not over engineer it - it doesn't need it. You are aiming for an all up weight of about 10 - 12oz max. Experimenting with carrying extra weight has proved that it will fly at 15oz but it is not as sprightly and nimble as a lighter version. Keep it light for the best results.

The wings, tail, fin, rudder and elevator are all constructed from $\frac{3}{16}$ " x $\frac{1}{2}$ " medium grade strip. Stripping a sheet of $\frac{3}{16}$ " x 4" will give you all the wood you need, while the fuselage and the wing centre piece are $\frac{1}{4}$ " balsa. There are four dihedral braces which are made from $\frac{1}{64}$ " ply. Also the front section of the fuselage 'stick' is reinforced with $\frac{1}{64}$ " ply. Cyano was used on the originals to glue

everything into place.

Starting with the wings, cut the leading edges, trailing edges and 'ribs' to size and glue them together over the plan. Glue in a filler at the tip and you now have two large letter As. Next, cut the $\frac{1}{4}$ " wing centre piece to size and glue on the wings, ensuring there is 6" of dihedral under each tip. The centre joint is very weak at this point in time, but fitting the dihedral braces soon puts things right.

As you get no 'shuffling time' with cyano, cut the braces oversize and trim them to shape once they are glued on. Fit the bottom ones first. Be careful with the top ones as the dihedral angle makes it a little awkward.

That's the hardest part of the construction over with. Now simply cut out the remaining parts for the tail end and glue them together. Treat all the parts to a coat of Balsaloc and put aside to dry while you cut the fuselage stick to shape. Cut out the holes for your radio equipment and construct a ledge from $\frac{1}{2}$ " triangle balsa strip and $\frac{1}{64}$ " ply for the receiver.

Again cutting oversize, glue on the left hand ply doubler first, cut out the various holes, and trim up from the balsa side. Repeat the process for the right hand doubler, but do not cut through the Rx hole this time. After trimming up, cut and fit the $\frac{1}{8}$ " ply engine mounting former and reinforce it with $\frac{1}{2}$ " triangle strip. Also make the ledge for the fuel tank and glue it on.

Fuelproof the fuselage with one coat of fuel proofer. The original model was

Choose a calm day and they will fly great outdoors too!

It may not look like it, but this is one tough little bird. Flown every day at the International Model Show at Olympia,

it seemed to take on strange magnetic qualities whenever a pylon racer was airborne, and suffered no less than four mid-air collisions with them during the week. However, it happily bounced back with the aid of a bottle of cyano and a few drops of epoxy. It was never meant to be treated this way, but I am beginning to wonder if anything short of a nuclear attack will finish it off.

Unashamedly inspired by the BMFA's excellent little rubber powered Dart, which is so successful with kids of all ages, it has quite simply been scaled up to carry three function radio gear, while a PAW 55 R/C diesel engine and a 7 x 3 prop fitted up front provides the pull. With this motor, the model has a top speed of about 15mph whilst the lowest speed it can fly at is about 3mph. Any slower and it simply begins to mush earthwards with the wings rock steady.

The model is incredibly stable yet very manoeuvrable. It will turn on a sixpence and can be flown at very low level with confidence. Later in the week another Large Dart appeared, built by Richard Harris, who had been so impressed with

the one he saw flying that he took some measurements from it and built one up. His

too flew brilliantly and both Darts were soon having many happy sessions buzzing up and down the hall bursting a seemingly endless number of

balloons supplied by the MPA as well as performing some spirited aerobatics. This caught the attention of Ali Machinchy who made me an offer I couldn't refuse for my spare Dart, and inside 30 minutes he had fitted it with radio and engine and began to delight the crowds with his own style of flying.

My young lad Daniel, who is just nine years old, took to flying it in Olympia's National Hall like a duck to water. Being more used to flying a Wot 4 (outside) he was initially concerned (as is everyone) about the walls and the roof. At Olympia the hall is about 75 feet wide and about



Brian and young Daniel flew their Large Dart every day at this year's International Model Show. Come along next year and join in the fun with your own version.



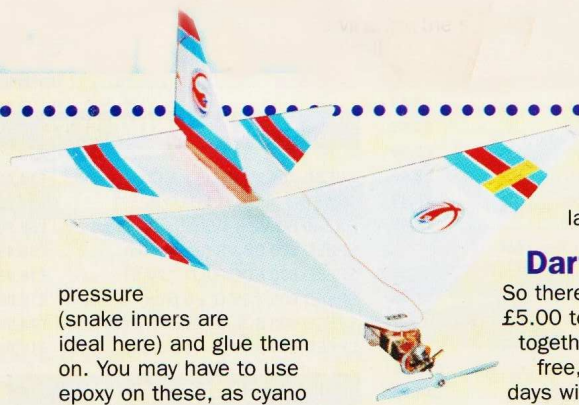
Getting ready for another Large Dart duet at Olympia.

covered in Litespan which is available in a variety of colours, is strong, completely fuel proof and, importantly, is very light. For the wings and tailplane, only the top surface is covered. Ensure everything stays unwarped.

It's radio time

Once everything is covered, make the control horns for the rudder and elevator and hinge them to the tail and fin before gluing them into the fuselage stick and, when set, glue on the wings. Five minute epoxy was used on the wings to allow some 'shuffling time'.

Now the radio can go in, use the lightest you can get. It is best to pin the rudder and elevator in place so you can line up the 22 SWG control rods accurately; the original has no adjustable linkages. Ensure that there are enough guide tubes to stop the rods from bowing under



a dead flat calm day, fire it up and give it a very gentle launch. You will love it.

Darting off

So there you have it. It will cost about £5.00 to put one of these aeroplanes together and you will get a gentle, vice-free, slow flying model for very calm days with a 1/2cc diesel engine. Or turn up the control movements and put in a hot 1cc diesel and you will have a wickedly manoeuvrable model that goes vertical and could shame some fun fly aircraft. Any more than 1cc? You are on your own...

See you at Olympia next year! ●

Sections of snake inner are used to guide the wire pushrods. Note the simple ply control horns.

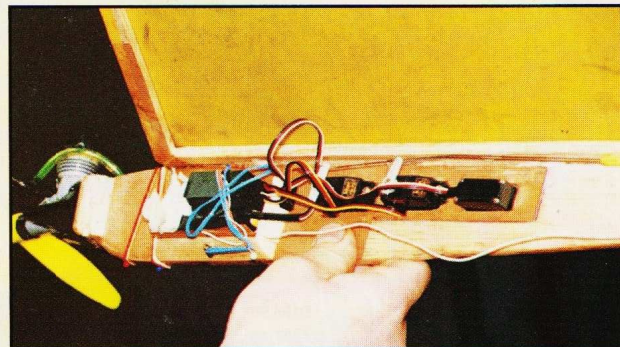
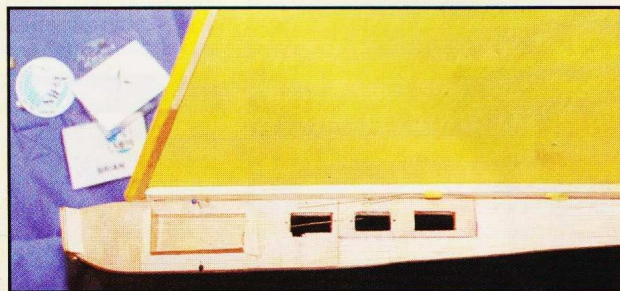


pressure (snake inners are ideal here) and glue them on. You may have to use epoxy on these, as cyano does not stick to fuel proofer.

Bolt on the motor and line up the throttle linkage (if you are using an R/C motor), drop in the fuel tank and secure with a rubber band. At Olympia we all used control line tanks and they gave no trouble with fuel feed, even during the wildest aerobatics.

Position the battery when everything else is done to get the CG right. Once you have the ideal position, make up a ledge for it and secure with a rubber band using the hooks made from pins as shown on the plan.

The model is now ready to go. Choose



R/C installation, before and after. Only takes a few minutes to get it all in.