PROJECT '66

Daily Express photograph

PHASE 1—THE HULL

This month's big free plan marks the start of PROJECT 66. Follow it through, and you can have a super radio controlled winner ready for the 1966 season. Brave Moppie—winner of the 1965 International Daily Express Offshore Powerboat Race—was the inspiration for RON WARRING'S exciting model.

THE full size plan included in this issue is a near-scale model of 1965's outstanding powerboat—'Brave Moppie', winner of the International Offshore Powerboat Boat race. The full size craft is based on the now famous 'deep vee' hull form originated by Ray Hunt (who previously used to design high speed naval craft, incidentally). We have chosen a near-scale rather than an exact **scale model** for two reasons. First, the hull shape we are using is very straightforward and easy to build. Second, the same basic hull can also be used for making a variety of other near-scale models of still more famous power boats —'Surfury', the 1964 winner; 'Thunderbird' second in 1965; the well known Fairey 'Huntress', and so on.

In this first article we are giving complete details of building the hull for 'Brave Moppie'. **Phase 2** next month will give full details of finishing and fitting out for powering by electric motor *or* diesel motor, to your choice. **Phase 3** in the series will appear in March with further plans and details for building other famous models using the same hull. You can either modify your 'Moppie' or build new hulls for each of these extra models and end up with a whole fleet of powerboat racers! Finally, in **Phase 4** we shall be giving complete details of how to fit out and operate your model with radio control.

To simplify construction and make for quicker and easier assembly balsa is used throughout for all parts of the hull (with the sole exception of the transom, which is cut from 1/16 in. ply). The majority of parts are cut from balsa sheet and, where necessary, you will find full size patterns of the parts required on one or other side of the plan. These patterns must be transferred onto the balsa sheet for cutting out, either by tracing or using carbon paper, or laying the plan over the sheet and pricking around the outline. In the latter case the prick marks can be joined with a pencil line as a final guide for cutting out. In the case of the *chine shelf* and *foredeck* only half the pattern required is given on the plan, so a tracing should be made of this half pattern on a sheet of tracing paper. Turn the tracing paper over and align with the centre line marked on the balsa panel, then mark one half outline. Turn the tracing paper over again and realign, and mark the second half of the pattern layout. This will ensure that your chine shelf and foredeck shapes, when traced onto the balsa, are exactly symmetrical.

Since building follows a sequence of logical steps we are grouping these under separate headings, illustrated by a diagram where necessary as a further aid.

Step 1 Cut two 20½ in. lengths of 2 in. by 3/16 in. sheet balsa and one 22½ in. length of 3 in. by 3/16 in. sheet balsa and cement together carefully on a flat surface as shown in Fig. A. Leave until the cement has set. Mark a centre line in pencil on the middle sheet and then trace or mark out the *chine shelf outline*, taken from the full size plan. Now cut out carefully to this outline shape with a sharp modelling knife or a fretsaw.

Step 2 Mark out and cut all the bulkheads—1, 2, 3, 4, 5, 6 and 7—using the full size patterns on the plan. These are cut from ¼ in. sheet balsa. (You can do this whilst the three sheets cemented together in stage 1 are setting.) Also cut two 12½ in. lengths and two 3⅞ in. lengths of ½ in. by ¼ in. balsa strip.

Step 3 Lay the cut out chine shelf (step 1) over the plan and mark on the position of the bulkheads. Cement these bulkheads to the chine shelf, as shown in Fig. B and photo 1.

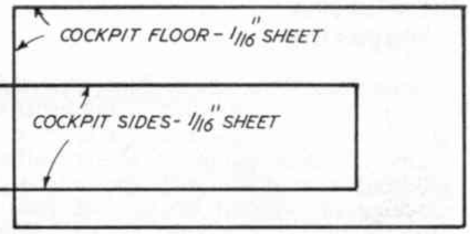
BABY DELTA

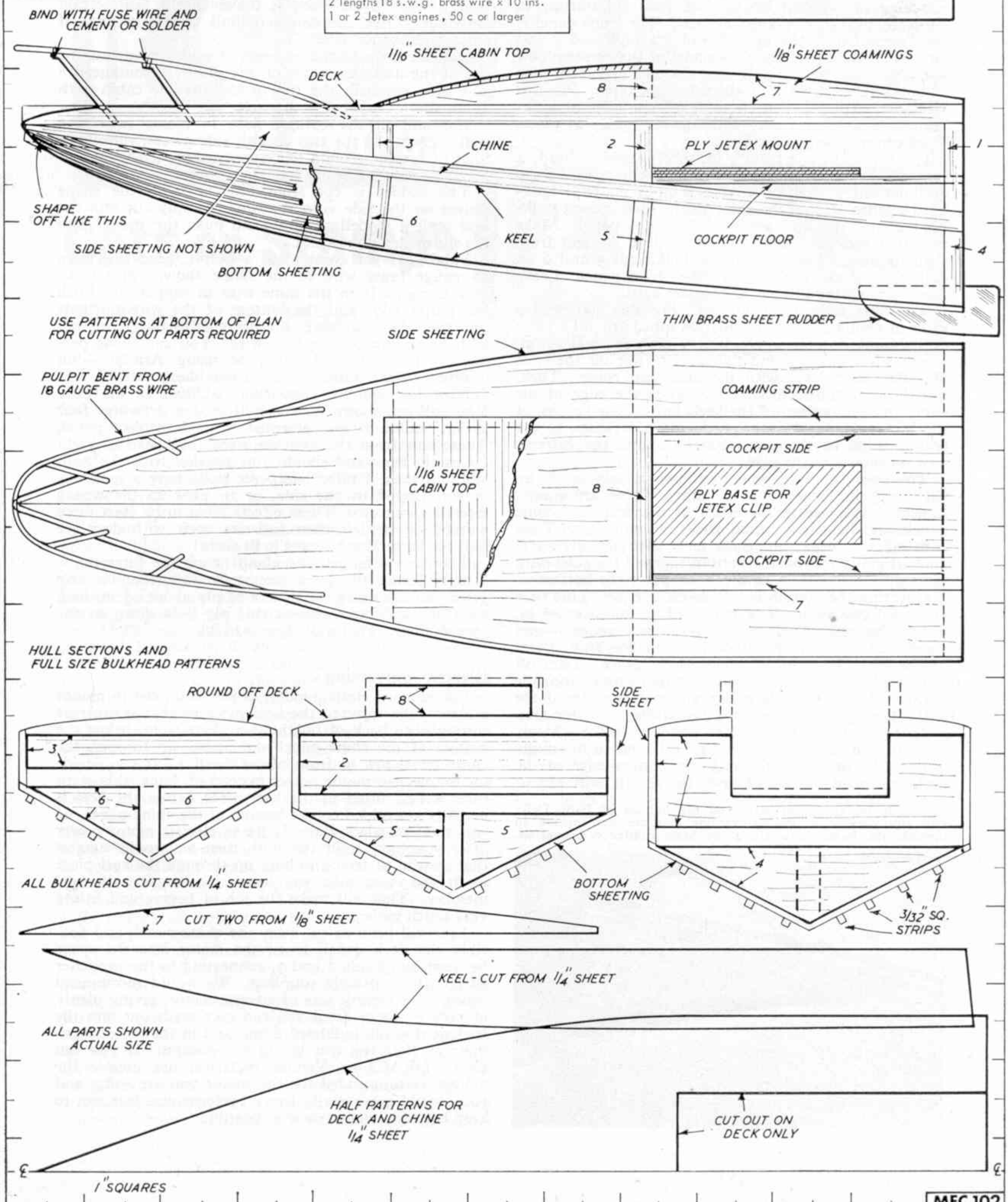
A 12½" LONG OFFSHORE POWER BOAT RACER FOR ONE OR TWO JETEX ENGINES. SIMPLE CONSTRUCTION, CAN BE ELECTRIC MOTOR POWERED IF DESIRED.

MATERIALS LIST

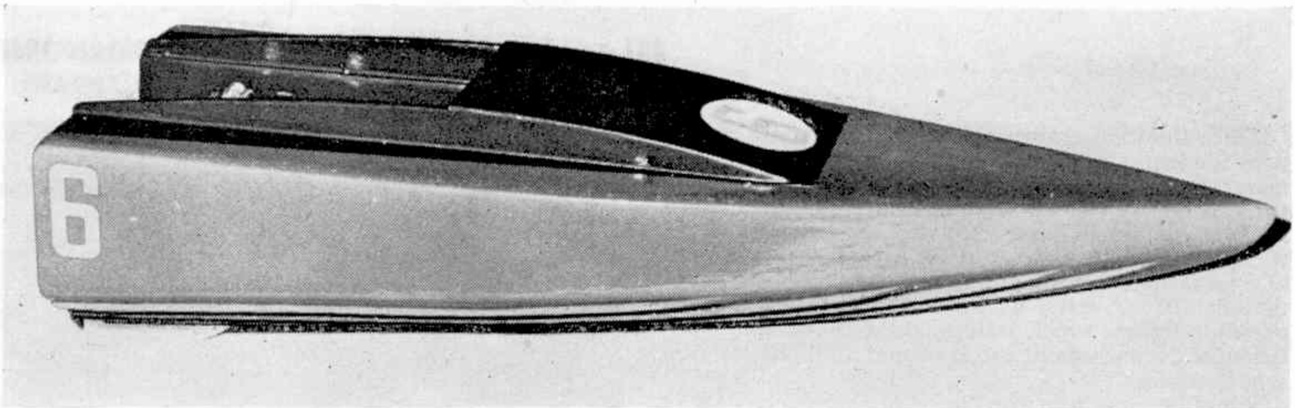
1 sheet	1/16"	× 3"	× 36"	med. balsa
1 sheet	3/32"	× 3"	× 36"	med. balsa
1 sheet	1/4"	× 3"	× 36"	soft balsa
4 strips	3/32"	× 3/32"	× 36"	hard balsa
1 sheet	1/8"	× 2"	× 4"	plywood

2 lengths 18 s.w.g. brass wire × 10 ins.
1 or 2 Jetex engines, 50 c or larger





MEC 102



BABY DELTA

FULL SIZE PLANS AVAILABLE FROM THE EDITORIAL OFFICE

Why not build this easy to construct, semi-scale power boat racer? 12½″ long for twin Jetex or Electric power.

FOR THOSE of you who are used to the shape of ordinary model boats, Baby Delta must look quite revolutionary, and perhaps even wrong. Instead of a fairly blunt bow, the hull is almost arrow shaped with a pointed bow and the maximum beam well aft. In fact, it is patterned on the lines of a modern high-speed full-size power boat—the shape that wins offshore power boat races in any conditions, against any comers!

Jet powered

Since it is a *high-speed* hull, we need something lively in the way of power to push it along, so we have designed it for use with Jetex power—the bigger the Jetex unit the better! We have left the cockpit quite open, with the transom cut away for jet clearance, and it is big enough to take more than one Jetex unit side by side, if you wish. That should give you very high scale speed—and the hull is stable enough to take it, even if the water on your local pond is chopping up a bit.

Of course, if you prefer, you can adapt Baby Delta for more conventional power. That only means building in a 5 in. or 6 in. propeller tube and locating the motor between bulkheads 2 and 3. More about this later. Let's get Baby Delta built.

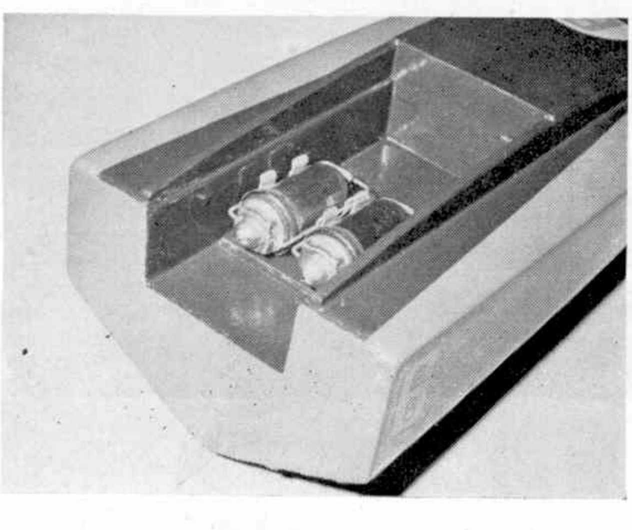
First, check the material list to see that you have all the necessary materials. Balsa wood is used throughout for the construction, except for a small piece of ply for the Jetex mount; a 16 in. length of 18 gauge brass wire for making the pulpit (you can omit this if you like, but it adds to the racy appearance); and a scrap of thin brass sheet for cutting out the rudder.

All the outline shapes of the various parts required are shown on the plan. The plan is reproduced half size here, so to make full-size patterns you must scale these drawings up to twice size. If you are working from a full-size plan (**available from Meccano Magazine offices, 13-35 Bridge Street, Hemel Hempstead, Herts; price 1/6d.**) you can trace the shapes directly, or, better still, cut out the patterns to pin or paste onto sheet balsa wood for cutting out.

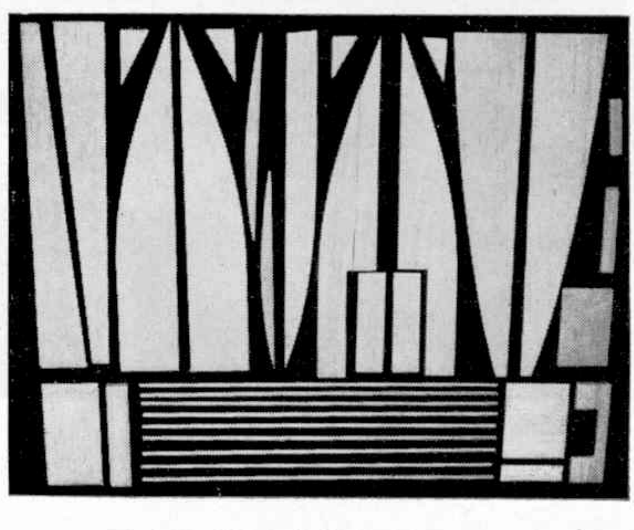
Construction

You will notice that the pattern for the deck and chine shows only one half of the shape required. We suggest that you cut four of these *half* shapes and then cement them together in pairs. You can cut these economically from a 3 in. wide sheet of ¼ in. balsa. Note that the chine and deck panels are identical in outline shape, but the deck has an additional piece cut out to form the cockpit. Next cut bulkheads 1, 2 and 3

The twin Jetex 50C engines are a snug fit in Baby Delta. Remember these engines get very hot, so allow plenty of space between the cockpit side and the combustion chambers.



All of the parts required to construct Baby Delta. It is better to cut the parts and number them before you commence construction. Use soft, lightweight balsa for all components.



—again from $\frac{1}{4}$ in. sheet. Note that these (and all the other parts) are assembled in the order of the numbers they have been given—1, 2, 3, etc.

Lay the deck panel on a flat surface and cement bulkhead 1 in place with the cut-out in bulkhead 1 matching the cut-out in the deck (you are starting to build the hull upside down in fact). The chine panel is then cemented to the top edge of the bulkhead 1 and directly to the tip of the deck panel at the extreme bow —but first you will have to chamfer off the bottom edge of bulkhead 1 slightly to allow for the taper. Pin this assembly in place, then chamfer off one edge of bulkheads 2 and 3 until they will slip accurately in place. Then cement them in position.

Cut the keel piece from $\frac{1}{4}$ in. sheet; also bulkheads 4 (one off), 5 (two off) and 6 (two off). Chamfer the top of bulkhead 4 slightly so that it lines up with bulkhead 1 when laid on the chine panel, then cement bulkhead 4 and the keel piece to the chine panel. Make sure that you get the keel lined up dead straight from stem to stern. Then cement on bulkheads 5 and 6 on each side of the keel, and to the chine panel. Leave this assembly for an hour or so to set hard.

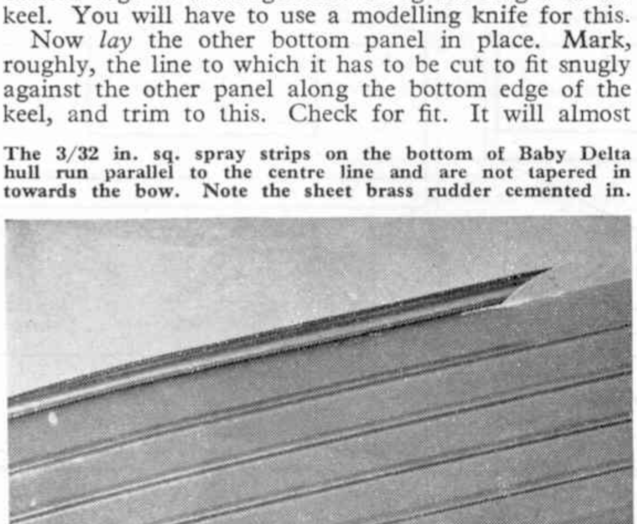
The next stage is fairing off. For this you need a piece of medium fine sandpaper wrapped around a piece of balsa block or a spare length of 3 in. wide $\frac{1}{4}$ in. sheet. First sand around the sides to fair off the ends of bulkhead 3 level with the deck and chine. Then, using the sanding block laid between the edge of the chine and the bottom of the keel, fair off the bottom of the hull along its length, producing a V shape to the bottom edge of the keel. Finally shape the extreme bow, as shown on the plan.

To cover the sides you need two panels of $\frac{1}{16}$ in. balsa $13\frac{1}{2}$ in. long by 2 in. wide. These are simply cemented in place to the edges of the deck and chine panels and held in position with pins until set. Then trim off surplus $\frac{1}{16}$ in. sheet level with the deck and chine. Finally fair off the bottom edges of the sides with sandpaper to conform to the V shape of the bottom.

Covering the bottom is a little bit trickier. This time you need two 13 in. long panels of $\frac{1}{16}$ in. sheet $2\frac{1}{2}$ in. wide. Pin one panel in place—do not cement—and check that it fits snugly all along the chine and bottom of the keel. If satisfied, cement it in place. Trim off any overlap when set—the tricky part being to trim the bottom edge in a straight line along the length of the keel. You will have to use a modelling knife for this.

Now *lay* the other bottom panel in place. Mark, roughly, the line to which it has to be cut to fit snugly against the other panel along the bottom edge of the keel, and trim to this. Check for fit. It will almost certainly need further trimming, so do this until you are satisfied with the fit obtained. Then you can cement this second bottom panel in place.

The 3/32 in. sq. spray strips on the bottom of Baby Delta hull run parallel to the centre line and are not tapered in towards the bow. Note the sheet brass rudder cemented in.



Once more use the sanding block to smooth off the hull sheeting, and any other rough spots. At the same time, round off the deck as shown in the hull section drawings. Give the complete hull a coat or two of clear dope at this stage.

Cut the two coaming pieces 7 and cement to the top of the deck, as shown on the plan. Fit bulkhead 8 and then cover in the top of the shallow cabin with $\frac{1}{16}$ in. sheet.

Cut and fit the cockpit floor in place, cementing well. Then add the two cockpit side pieces, running a fillet of cement around the bottom edges of the cockpit floor to produce a really watertight joint.

The rudder is cut from thin brass to the shape shown on the side view drawing. Simply cut into the keel with a modelling knife and push the rudder into the slit made by the knife.

Finally, if you want to fit a pulpit, bend this from 18 gauge brass wire to the shape shown; also make four uprights from the same wire to support it. Push the pulpit ends and the bottom of the wire uprights into the deck and secure the uprights to the pulpit rail with a binding of fine fuse wire. You can make permanent joints by soldering, or using Araldite—but ordinary balsa cement will do, if you like.

Now for one very important addition to the hull. You will see shown on the hull section drawings four $\frac{3}{32}$ in. square strips cemented to each bottom panel. These run from the extreme stern (bulkhead 4) right up to the bow and should run *parallel* with the hull. Without these "rails" deep-vee hulls have a tendency to run tipped to one side, or to bank in the wrong direction in turns. These effects seem to be even more marked on models than full-size craft with deep-vee hull sections. Don't forget to fit them!

There is nothing tricky about fitting the Jetex units. Simply secure the Jetex mount (to suit whatever size Jetex you are using) to a piece of ply about $2\frac{3}{4}$ in. long by 1 in. wide and cement this ply base down to the cockpit floor. That's all there is to it!

Electric conversion

For inboard electric motor power you need to mount a stern tube through the keel piece so that it emerges through the back of bulkhead 4 about $\frac{1}{2}$ in. below the bottom of the chine panel and passes up through the chine panel just in front of bulkhead 2. If you decide to use electric motor power instead of Jetex, this stern tube is best fitted to the keel piece *before* the keel is actually assembled on the bottom of the chine panel. If you want to adapt Baby Delta to electric motor power *after* you have built the hull, then we would suggest that instead of trying to bore up through the keel piece to fit the stern tube you locate it *alongside* the keel member. This will make the job of boring and fitting very much easier.

You will have to cut away the chine panel, and possibly the deck panel, to fit the motor into the space between bulkheads 2 and 3, connecting to the propeller shaft with a flexible coupling. We would recommend fitting a reasonable size of electric motor, giving plenty of power. Once fitted you can take leads out into the cockpit through bulkhead 2 and seal in the motor completely. Batteries can lay in the cockpit. If you can afford DEACs or Venner batteries, use *double* the voltage recommended for the motor you are using and you should get a really lively performance, but aim to keep battery *weight* as low as possible.