

RACE TUNING





What is meant by 'One design'

by Victor Shaw

The Mirror Dinghy is, as we all know, a 'One Design' class dinghy but this title is used so familiarly that the true meaning of it escapes a great number of people. I have been asked as the official representative of IPC Newspapers, who not only launched the Mirror Dinghy but brought it to the great success story it is now, to explain simply what the words 'One Design' mean and their implementation so far as my Company, the holders of the Mirror Dinghy copyright, is concerned.

Basically, the interpretation of the words is that of a single aim — the aim to foster a class all the boats of which are as nearly identical as possible with the intention that, during racing, it is solely the quality of the helmsman which is tested and not that of the boat itself. It is a recognised fact that, in true sport, one seeks to assess the physical and mental potential of human beings weighed against each other; it follows therefore, that any equipment they use, be it a rifle, a tennis racquet, boxing gloves or a sailing dinghy, should be equated amongst the competitors. To this end most sports have certain regulations governing the weight and size, etc., of impedimenta used in competition.

We are concerned, though, purely with a sailing boat which is somewhat more complicated than many pieces of equipment used in other sports. Consequently, the number of rules governing its composition are more profuse and more complicated.

A lot of people seem to resent the fact that there are rules at all when, in reality, those very rules work on behalf of the individual rather than against them. The only person against whom the rules work is the man who tries to win competitions by sharp practice if not actually cheating.

The role of the Daily Mirror, as copyright holders, is to ensure that everybody who has bought a Mirror Dinghy has an absolutely fair deal and that the resale

price of their boat remains high. This can only be achieved by holding rigidly to 'One Design' principles and these principles must take into account the aims behind the original conception of the boat's design. Let me remind you of what the Mirror Dinghy was designed for in the first place; it was designed as a safe, inexpensive, versatile, family sailing dinghy which could be used for pottering about under single sail or two sails, for rowing, for outboard motoring and for racing. I would estimate that, of 51,000 boats or more now in existence, the maximum number which race regularly around the world is about 10,000 and working this sum out a different way altogether, it leaves 41,000 boats which are not racing regularly. The other important factor to remember is that the term 'One Design' only really functions for boats which actually race — after all, if a boat is not going to compete against its fellows then there is no reason at all for it to be identical. Our job at the Daily Mirror is to act as a sort of combination Chief Constable-cum-Ombudsman to ensure that all the laws are kept but those laws are fair to everyone.

The strange thing about the measurement rules is that some people who race their dinghy regularly somehow project themselves into a fantasy world where their Mirror becomes a Flying Dutchman or a Tempest or some other highly sophisticated racing craft and they attempt to substantiate this fantasy by introducing to their boat equipment designed for the high powered sailing boats. It is often said that men are only small boys at heart and after all, how many little boys try to substantiate the wild west image by wearing a sheriff's badge and toy six guns. I have many experiences of this sort of attitude coming to light at the Earls Court Boat Show when all the top dinghies are under one roof: it is a common occurrence for someone to come on to the Mirror Stand and say "I have just seen a marvellous device on a 505, is it allowed on my Mirror Dinghy?" In the excitement of acquiring a new piece of gear or a new shaped sail one important point is conveniently forgotten. If, for instance, I discover that a self-jamming, fluted rebeck will make my Mirror Dinghy go faster and give me an edge on everybody else in the fleet this obviously saves me developing my



own skills and yet achieves the superiority that my competitive soul demands. The irony is that eventually, if no watchdog is there to prevent this happening, a rule is passed to permit everyone the use of a self-jamming, fluted rebeck, returning me to square one from whence I commence a fresh search for some other piece of equipment to give me the edge once again. In the end, of course, I have a boat of simple design, built to take certain stresses, completely overladen and over-strained to the degree of being dangerously unsound.

From a personal point of view, my aim is that everyone should enjoy their Mirror Dinghy and obtain the utmost benefit from

it while they have it without jeopardising its racing aspects and to ensure that, when a person decides to part with his boat, he gets the best possible price for it — above all, I must keep to the basic principle that the Mirror Dinghy is one of the safest boats afloat and I must make sure it stays that way.

One final word! Whenever I give opinions on the Mirror Dinghy, you may be sure that these opinions are completely unbiased because I neither race them to win cups, nor manufacture them to make money and so have no personal axe to grind whatsoever, I only hope that my efforts result in more enjoyment for more people.

A racing machine

by Graham Ellis

The Basics

No doubt many of you have spent months, even years, playing about with every moveable object, ranging from mast step to clew out-haul on your Mirror, in order, you hope, to make it faster than before. What happens? "I think she's going a bit faster" you say, then at an Open Meeting you find you were wrong, and its back to the screws and screwdriver.

The following mass of words is intended for the chap who has an ambition to become a champion – use of psychology note:— Before you have any chance at all, your boat must have these essential features:—

1. Centreboard should be maximum length and width, and as strong as possible. The corners should be slightly radiused. Also, of course, leading edge should be rounded and the trailing edge faired to a fine edge (keeping within the Measurements).
2. Centreboard case should be of minimum height, so that you obtain maximum depth with your centreboard. (This can quite easily be corrected on an already built boat).
3. The skeg should be faired down to minimum dimension, and the hole streamlined, again keeping within the Class Rules.
4. The rudder blade should be faired down similar to the centreboard. The leading and trailing edge of which should be parallel and raked vertically.

For a competent helm, the blade area should be a minimum, however this is not essential.

5. Now ensure that the centreboard, skeg and rudder blade are all perfectly in line when viewed from behind (ie., as if you were looking at the boat from the underside when it is afloat).

6. The bilge pieces should be faired down to minimum dimensions.
7. All surfaces in contact with the water should be smooth.
8. Mast should be stiff and of minimum diameter (get yourself a metal mast!)
9. Boom should be shaved down to near minimum periphery, but should not be too bendy.
10. Gaff should be shaved down to minimum dimensions and preferably be flexy. In shaving down, try to take more off the sides of the gaff, to decrease windage and provide a better airflow. Also at the lower end (i.e. where the gaff jaws are) shave the leading edge down to obtain a minimum gap between the mast and the mainsail. The small gaff-band should also be fitted.

Once your boat has these features, you now have a boat with a potential to be as fast as any Mirror on the water – but the rest is up to YOU! the helm and crew.

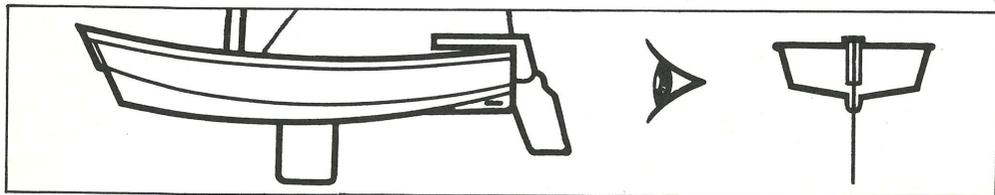
Fiddling put to Theory

In this day and age of technology, there should be a theoretical way to rig the boat – after all, the sail maker does it, why can't you? Enough of that psychological waffle, down to facts again . . .

The ultimate that you are looking for is for every square centimetre of both main and jib to be 'pulling' positively. To show this, the boat should be sailed on a close hauled tack, then, as the boat is slowly turned through the eye of the wind, the whole of the luff on both sails should back simultaneously, when the boat is perfectly upright and no weather or lee helm is felt.

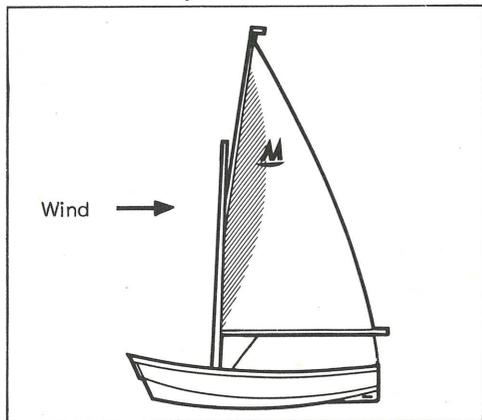
No doubt you have read many times that the optimum mast rake is between 6in. and 9in., fairleads placed such that more tension is on the foot than on the leech. This is perfectly true, but very general.

How do we obtain these positions more accurately? My theory is that the boat should be taken to some open space, on



land, on a day when there is ample wind to fill the sails.

1. Ensure that the boat is horizontal.
2. Rig the main only, and set it for beating, then stand aside the boat and slowly let the main sheet out, watching for the whole length of the luff to back simultaneously.



Remember here you have the mast rake, kicking strap, tack and clew positions to alter.

Rig the jib. The object now is to put the jib on to serve the purpose of increasing the flow of air around the leeward side of the mainsail. The tack of the jib should be within 1in. or 2in. off the deck, if this is too high, the slot at the top of the jib will narrow rapidly and backwind the main. Then with your crew assisting, ensure that the boat is always pointing at its maximum (therefore the need to have an open space and a steady wind). Hold the jib sheet by hand and move around, varying it from gunwale to the inner edge of the side tank, taking great care to find the position when both luffs back simultaneously. It will be useful to note that the leech of the jib should form a parallel slot between it and the main. Having obtained a position, screw down the fairleads. If all has gone well, and this being your first attempt, you should be near to the ultimate sail setting. It may sound a simple process to go through, but as usual, in practice it is not. Thoughtful positioning is needed.

Once you have the perfect racing machine, the next 70% to 80% of the race is up to YOU! — getting a good start, picking out windshifts and 100% concentration!



Reflections on tuning

by Nick Hodshon

From 1966 to 1968 I was working at the Daily Mirror, and although Secretary of the Mirror Sixteen Association, I was, of course, very involved with your Mirror Dinghy and pioneered the Mirror 14 but left the Paper when it was reaching the design stage.

Tuning the boat really does start at the basics of getting the hull and rig right, and I will also give some thoughts on getting the crew and helmsman tuned in.

Underwater – Hull

It really is essential that the underwater surfaces are as fair as possible, the skeg should be to the minimum size allowed by the rules, and the centreboard case constructed so the slot is again the minimum size permitted, leaving sufficient room for the dagger board to freely slide up and down.

It is important that the keel bands, fibreglass tape and heads of screws be filled and faired in smooth. I find the soft grade of Isopon ideal for this purpose as it is simply applied, quickly dries and rubs down to a smooth surface very easily. Having got the surface reasonably good I finish off with two quick coats of Helmsman's 'Graphspeed' – this goes on very thickly, fills and covers a multitude of sins and is very easy to rub down – the one draw back is that rubbing down is a messy job but it does not take long and saves a tremendous amount of time compared with conventional paints. Once the bottom is fair and reasonably smooth I do not worry about polishing, it has never been proved to increase boat speed and does make life difficult when capsized.

Underwater – Rudder and Centreboard

These items probably have more effect on performance than any other, it is essential that they are stiff, not twisted, and that the rudder blade is not slack in the stock. Conventional plywood is really a poor material because half the grain in the veneers runs fore and aft when, for maximum stiffness, the grain must run

vertically. From the boat builders point of view plywood is excellent because of its antiwarp properties and availability. The keen dinghy sailor should be able to find a good piece of seasoned mahogany by shopping around boat yards and timber merchants. Provided it is well seasoned and has no sap (whiter and soft) it is unlikely to warp and will definitely improve your beating performance in strong winds. It is, of course, important that you taper the edges to the maximum permitted by the rules as follows: –

1. The leading edge should be rounded to approx. 3/8in. (9mm) diameter.
2. The trailing edge should be 1/8in. (3mm) completely flat tapering to the maximum. Tank tests have proved this acts as a feather edge and is not so delicate.
3. The bottom edge should be semicircular.

Remember to carry this taper well up to the keel line which must be the same on both sides, if not the board will vibrate at high speeds which it will also do if it is warped.

The rudder stock should be kept out of the water, so keep it as small as possible at the bottom and the pintles as high as possible on the transom. This will, in fact, reduce the rudder area, which means you will get out of control quicker than usual, and perhaps this is a move only for the more experienced.

While talking about the rudder, I must emphasise that there must be no play between the end of the tiller in your hand and the bottom of the rudder blade.

A good idea is to incorporate formica washers either side of the rudder blade, this considerably reduces friction with the inside of the rudder stock. This in turn enables you to have the pivot bolt done up much tighter which reduces play in this joint. While on the tiller, fit a good universal joint to the extension – it does prevent breaking them.

The other area where play develops, is where the tiller drops into the tennon on the top of the rudder stock. The fit cannot be 100% and if you do happen to push down on the tiller while sailing, the brass pin bends which is not good. The answer is to scrape the varnish away and glue and screw the tiller permanently onto the rudder. It will still stow inside the boat with the blade raised, and the improvement to handling is

fantastic.

The last attention to the underwater area is the self bailers. I favour the Elvstrom type which should be sited under the thwart where they are unlikely to be stepped on. When the bailer is in the raised position, it must be absolutely flush with the underside of the hull.

Above Water

The outside of the hull should be reasonably smooth but once again do not worry about polishing to an ultra good finish — make sure everything else is right first.

The inside of the hull, tank tops and sides and cockpit floor should be well varnished (or painted if badly stained) to prevent water soaking into the wood. The cockpit floor should be well sanded (sprinkle silver sand onto the wet varnish) to prevent slipping.

Tremendous strain is put onto the centre-board box and this must be very solidly fastened to the centre thwart to prevent any movement. To finish off the hull you must check that all the fairleads, cam cleats and toe-straps are in the right place, that they work correctly and will never, never pull out!

Rig

The mast should be minimum size and weight, but it is even more important that it be stiff, particularly for heavy weight crews, it should not bend even in the strongest winds. The gaff should again be stiff unless the total crew weight is below 15 stone when a bendy gaff will make the boat easier to sail in strong winds. The boom should be as stiff as possible. It is an advantage to increase the purchase of the standard kicking strap to 2:1, the maximum allowed. Use of a jaming block ensures that it can be quickly and easily adjusted. A rule of thumb for tensioning the kicking strap is just hard enough to keep the leech of the sail tight, if the leech is falling off to leeward tighten it until it just stands up to be level with a line from the end of the boom to the end of the gaff.

The jib halyard tension should be just enough to take the wrinkles out of the luff of the sail, any more tension and the flow in the sail will be pulled forward and you just will not point at all.

I am a great believer in woollies, not the departmental store, but lengths of wool

which are attached to the sail to tell you that it is set at the correct angle to the wind. The simplest way to attach these is as follows:—

1. Take approximately 9in. (235mm) length of wool and tie a thumb knot in the middle, preferably black or yellow to stand out on red sails.
2. Thread one end onto a needle.
3. Sew through the jib approximately nine inches behind the luff and clear of the seams so that the wool will not hang up on the stitches.
4. Pull through until the knot pulls up to the sail material.
5. Take off the needle and tie a thumb knot in that side as close to the sail as possible.

Sail Trim

I suggest two woolly tell-tales approx. 3ft. up from the foot of the jib and down from the head. If both windward woollies do not lift at the same time when you luff the boat towards the wind, the fairlead is in the wrong place. If the top one lifts first the fairlead is too far aft and vice versa. On the mainsail put them about midway between the luff and leech roughly in line with each batten pocket.

When sailing on a reach keep adjusting the sail so that the woollies are flying horizontal. If the windward one flutters pull the sheet in, if the leeward one flutters let the sail out.

Sailing to Windward

It is important that the sails are trimmed together to suit the wind conditions. This is basically arrived at by jib sheet tension. In strong winds pull it in tight and jamb it, in light winds pull it in hard and then ease it about 3 inches and jamb it. Steer the boat so that the woollies on the jib fly level. Steer into the wind if the leeward one flaps, away from the wind if the windward one flaps (if you cannot see the leeward one keep the windward one on the point of flapping). Sailing this way, adjust the mainsheet until woollies on the mainsail react at exactly the same time — both sails are now tuned together and will work with maximum efficiency.

Inboard Sheeting

I first came across inboard sheeting when racing Solings in 1971, and we spent many hours developing the technique of beating

with eased jib sheets. The natural tendency is to 'graunch it in' which is disastrous for boat speed. Remember that the closer in the jib is sheeted to the centre line, the more twist is required in the sail, and therefore the less tension on the sheet. To find the correct setting, I discovered the following procedure solved most of the problems: sailing to windward in flat water in a steady force 2, sheet in the mainsail as close as possible and sail to windward with the windward woollie just lifting; slowly pull in the jibsheet until the woollie lifts at exactly the same time as the one on the mainsail; mark the jib sheet (with a felt-tipped marker pen) either at the fairlead or jambcleat so that in future the crew can immediately cleat it in exactly the correct position. Also mark the sheet where it goes through the clew cringle so that it is always attached at the same place. As the wind increases, and more particularly the water gets rougher, it is necessary to widen the slot between jib and mainsail to prevent stalling — this happens automatically as the mast bends, but only to a certain extent — and is achieved by either moving the fairlead aft or outboard. The simplest is to go back to the old position on the gunwale — remember, however, that Mirror Class Rules of Measurement only allow one jib sheet lead and jambcleat each side, and forbid adjustable fittings in this area. With inboard sheeting, don't forget to lead the sheets inside the shrouds.

The helmsman must concentrate on keeping the boat as close to the wind as

possible without the windward woollies flapping. This demands constant tiller movement to luff up and bear away. The crew should keep a look-out for other boats, the next mark, etc., etc.

The boat must be kept upright at all times with the crew sitting close together roughly in the middle of the boat so that the bottom of the transom is just kissing the water. In stronger winds, when the boat is going faster, it is possible to sit a little further aft without depressing the transom and this will help to stop the flat bow slamming into the waves.

Off the Wind

Trim the sails constantly as previously described, while keeping the boat upright and sitting as far aft as possible without depressing the transom. The centreboard should be about half way up, more exactly have just enough down to prevent leeway. The most common reason for lack of control and capsizing is the rudder blade lifting. Keep it down by having a positive downhaul.

Starting to Race

Watch the club champion closely, try to rig your sails the same way. Stay close to him at the start, try to follow him as much as possible while keeping your wind clear. Each successive race you should be able to stay with him a little longer until one day, who knows, you will pull out and overtake him on the last lap. Suddenly all that preparation and concentration will be worthwhile.



Centreboarding

by John Reece

The Forces which try to push a dinghy to leeward are at their maximum when close hauled, and lessen as you bear off, until when running, there are hardly any at all. The wind thrust on the sails is converted to forward motion of the hull by the centreboard, hull shape and rudder. The most important being the centreboard. The drawback is — the more the centreboard is lowered to counteract the slip to leeward, the greater the drag, or slowing effect on the hull owing to the extra wetted surface area to be pushed through the water. It follows, therefore, that the less the centreboard is lowered, combined with the proper adjustment of sails, the faster the dinghy will be propelled along.

How much should it be lowered? As little as possible — enough on a beat or reach to prevent leeway, and on a run to stop rolling. This is usually three-quarters or completely lowered on a beat, half on a reach, and about a quarter on a run. Many dinghy sailors mark their boards with these divisions so that there can be no mis-understandings with the crew.

Let us try to illustrate how correct use of the centreboard on all legs of the course can help us stay up with the leaders.

Start with a centreboard the maximum size permitted by Class Rules, and very, very smooth. The leading edge is rounded, not sharp, and the rear is feathered off from two inches in to one eighth cut off; this one eighth width at the rear is to prevent turbulence as the water flows over and leaves the board. It also saves the shock-cord being cut. A piece of plastic tubing over the cord also stops wear.

A puff of blue smoke, flags lowered, and off on the first leg of the course, sailing close-hauled to the windward mark. Of all the points of sailing, the beat to windward is the most important; more time is spent on this leg than any other. Those whose dinghies point higher, and foot faster, and in consequence arrive at the windward mark first, are more often than not those who win.

The board is at its lowest, the boat being

sailed to as to keep the board vertical. This is very important — the more the boat is allowed to heel, the less effective becomes the board; not only is it not low enough to be most resistant to leeway, but the angle of attack is wrong and it will not produce the lift to windward which should be achieved by the beautiful dynamic shape of the hull. Arriving at the windward mark in the lead, ease sheets to bear off on a broad reach while the crew raises the centreboard to the halfway position.

At this point, I should mention that we are lake sailing. Sailing on the sea requires a different technique with waves and currents to contend with.

Right — so back to our lake with its shallows and geographical wind shifts, those strong puffs which always seem to catch us unawares as we leave the shelter of the islands. The centreboard is raised to halfway, and looking back to the mark there is a nice straight wake, indicating a good course with no leeway. Up comes the board a little more, for extra speed. Still maintaining the lead, arrive at the gybe mark. A warning here, if the wind is very strong and things are going to be a little hairy, raise the board until only 4 or 6 inches are in the water, draw the mainsheet in so the boom is off the shrouds and while turning let the crew throw over the boom. No half-hearted throw here, a real scruff of the neck type of heave. As the centreboard is up the boat will slip sideways, whereas if it was down it would tend to trip over itself. Remember — strong winds, up centreboard.

Once rounded and heading for the run down wind, up comes the board to leave just a quarter in the water. In smooth water and a gentle breeze, raise the centreboard a little more. All goes well until the stronger winds in the middle of the water where the boat starts to roll from side to side. Immediately, lower some board until the rolling stops. Rolling slows the boat more than having extra board down.

At long last comes the final windward leg, but now the winds have grown very much stronger; towels and changes of clothing come to mind. Both helm and crew are fully extended, and it is still difficult to hold the boat up, water is coming over the gunwale; progress to windward is very slow.



There are two reasons for this – Firstly, wind is being spilt from the sails in order to prevent capsizing, and secondly, the drift to leeward, owing to the inclination of the centreboard, is alarming. What to do? How to compete now with the heavyweights usually passed in drifting conditions and now rapidly catching up? Try this – pull up the board perhaps 4 or 6 inches, or enough that with both out as far as possible the boat is sailing level. Because the area of board counteracting the windforce is reduced, less leverage is required and the boat will come more upright. True, there will be less centreboard in the water, but no less depth than when it was heeled, and much is gained by having it all effective.

The hull will also present less windage by being level, and because the boat is sailing on an even keel – as it was designed to do, it is going faster. Also, as the boat comes upright, more sail area is exposed to the wind, which gives more speed, which gives more lift to windward and so on. As the strong winds abate, and before the crew can relax, lower the board to prevent the extra leeway caused by the easing of the wind.

Although all the boats are similar, being one design, the differences between them are too small to make any significant difference in boat speed. It is only the helmsman making full use of his sails, centreboard, and rudder, and causing as little windage and drag as possible, that puts him and keeps him at the front.

On with the motley

by Peter Thomas

In any conversation, discussion, or article for *Mirrormania*, it is hard to think of a more controversial or delicate subject to approach, except perhaps sex. I refer of course to crews and crewing. Helms have no inhibitions on this score. Crews, it must be said, are equally vocal about helms, there's probably more harmony at the Vietnam Peace Talks, although about the same amount of discussion about the seating arrangements.

Helms love to tell of the crew who bought a nationally advertised and guaranteed power chain saw, only to return it a week later complaining bitterly that it was no faster to use than the axe that it had replaced. Puzzled, the sales man started the thing up to check it, whereupon the crew remarked in alarm, "What's that noise!" Crews, however, claim that most helms couldn't pour water from a boot if the instructions were written on the heel. No sacrifice is too great for a good crew,



which is why you won't be seeing any sacrifices made in this area.

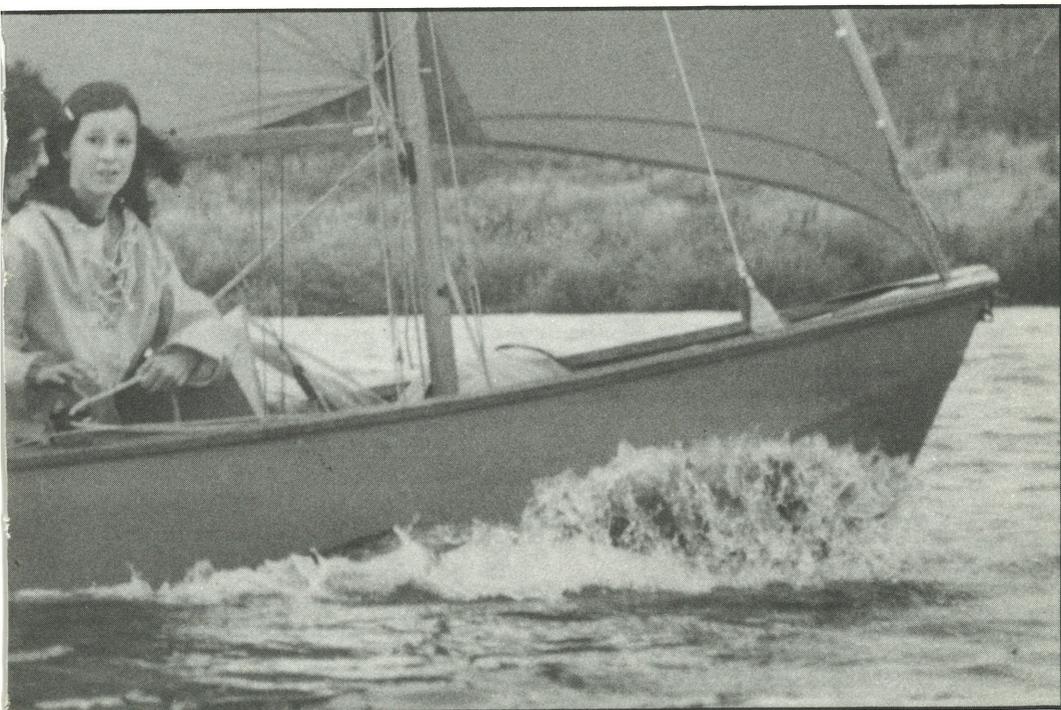
But what makes a good crew? If decibel output is any criterion I have collected a winner. Gaining attention over 80-odd other crews on the line at Chew Valley strongly reminded me of Wellington's great remark on his troops before Blenheim. "I don't know their effect on the enemy, but they scare the hell out of me!"

A point often overlooked is that crews need not be male, but beware, there are seaworthy, and unseaworthy females. The former are usually all snapped up, and the latter stand in groups muttering "I just don't know how she can wear a wet suit with her figure!" about the former. Watch out also for the Women's Lib. type; if insulted they tend to burn their bras at the drop of a hat, and this could melt a nasty hole in the jib when you least expect it. Why is it that you always get on better in the boat with someone else's wife than she does crewing for her husband? and vice versa? Sadly I have been forbidden to pursue this interesting social phenomenon to it's logical conclusion, but there is scope for

some serious research in this area.

You may say, as I did, give the crews more to occupy them, and they'll have less time to think up sarcastic remarks about your tactics, and like me, you'd be wrong. They get all possessive: given sole charge of the spinnaker, they growl, and even scream at you, if you so much as re-arrange the lee sheet to get rid of the knotted end you've sat on. Still, it does provide another aspect of their performance that you can criticise, and it keeps them off the streets. Of course, there are spinnaker crews, and nonspinnaker crews, the distinction lying in whether or not they own a wet-suit.

Crews should be alert, but selectively informative. There is no joy in having your attention drawn to the plight of a capsized Whizzbang up to his burgee in the mud, when a totally un-noticed Merlin Rocket on starboard is about to halve your overall length. A certain amount of bravado is desirable, but more important in my view, is the ability to chicken out. No crew observing the 'oggin without, pouring within, will be censured for leaping onto the toe-straps without waiting for an engraved invitation. In fact, a



Spinnakers

by Ted Wilson

crew who knows where it's at can be a decided advantage in those tricky situations when the fleet rival seems to have you beaten on all points of sailing, you are racking your brains for a solution, while still trying to appear composed, and a bored voice from the front says, "Why don't we luff him onto that dirty great shallow over there?" Then again some helms prefer the subservient ignoramus type, who jumps immediately you shout jump, and stays up until told to come down, and never does figure out what it's all about, but enjoys it all in his, or her own way.

Whatever the type, your crew should be affluent enough to buy his round, and perhaps even add the odd item to the boat. Following a series of what I thought were rather interesting manoeuvres, my crew pressed a self bailer on me and implored me to fit it, muttering the while about life insurance and his dependants, and stuff like that. Since complying with this request we have spent all our time sailing 'Wisconsin' on her ear, in order to ship water and find out if the thing really works. We finally achieved an unpremeditated downwind capsize, or at least a semi-capsize, as, per usual, Robert (Dry Knickers) Morgan did not feel constrained to leap over the side and spoil his record, so we finished up with water lapping happily over the side tanks, and we are now in complete agreement as to the efficiency of Mr. Elvstrom's product. I do hope there's no truth in the rumour that Morgan has been seen downtown pricing trapezes . . .

All in all, crews really are a problem. You can't race without them and in some cases you can't race with them. They have distressing tendencies to treat you like a teaching hospital, and leave to buy their own craft, they get pregnant just when nicely trained, or fall-out over insults, not even remotely connected with sailing, regarding their omelette mix and cracks in the drive. Some even get married and are not allowed out any more, others so handy in light airs, grow up and discover the other sex holds more interest.

To sum up, as the politicians say, picking a crew is akin to learning to drive, or choosing a wife. Anything will do to learn on, but when you know what you're doing, get a good one!

In 1967, during the National Championship at Plymouth, I was lying about 12th when we rounded the last mark and started a beam reach to the finishing line, quite pleased to see John Taylor behind me. However, he put his spinnaker up and sailed free to the leeward end of the line while I tried to protect my clear wind by sailing a windward course to the line. John finished 2nd to Chuck Shepherd and I finished 10th. I tell you this for two reasons. Firstly, it illustrates the advantage to be gained from a well used spinnaker and secondly, because it is indicative of the progress made with Mirror spinnakers in the last few years. John, or anyone else for that matter, could not try that move with the same success these days.

For those of you who have not got a spinnaker, or for those who have one but aren't really very sure how to rig it properly, I shall endeavour to describe and explain the sail and the bits of equipment needed to make it work well.

The shape of the Mirror spinnaker as shown in the Yearbook is really not very good. It is a full cut sail which sets with a large useless bulge in its upper third. To get a flatter sail one has, because of the straight leeches, to lose area and the most successful shape is a compromise between shape and area. When considering the right shape for a spinnaker two points must be remembered. The spinnaker, like all other sails, derives its power from the wind flowing across its surface, the bag full of wind idea is quite wrong. The other point is that a spinnaker gives the greatest advantage on a reach and is less significant on a dead run. Although there has been a great deal of experimentation with the shape and arrangement of the panels, I am sure that in the case of a Mirror spinnaker this is not as important as getting a good specimen of whatever design you have chosen. In particular look out for tight seams and luff tapes which spoil the even curve of the sail when it is set. It is obvious when a main or jib is blown out but this is not so with spinnakers. The useful life of a

frequently used spinnaker is less than that of a mainsail.

It is quite beyond the scope of this article to describe in detail the possible or even probable spinnaker equipment for a Mirror but I will try and summarise the important points. The rules of measurement give the owner a free choice of spinnaker fittings, but my own rule is to select the simplest, and therefore usually the cheapest, piece of equipment that will adequately do the job. This keeps things easy to operate and prevents the boat being cluttered up with unnecessary bits and pieces.

The sail must not be able to fall off the hook on the end of the pole in very light weather. To prevent this either use the sprung piston type of hook or alternatively bind the nylon rings on the sail with twine until the standard pole ends clip onto them. The pole must have a convenient downhaul fitting. A pair of open cleats (HA81) or spinnaker pole downhaul cleats (HA157) screwed to the middle of the pole locating between two knots about 2in. (51mm) apart in the downhaul seems to be successful.

The Anglo-Saxon dog-clip arrangement which is, I believe, supplied through the Daily Mirror is most un-satisfactory and should be discarded.

The downhaul should be arranged in such a way that the angle of the pole can be adjusted while the sail is set and drawing. On my own boat the downhaul terminates about a foot above the deck in a stainless steel cringle. The adjusting cord is fastened at the foot of the mast, passes through the cringle on the end of the downhaul and then goes down to a small fairlead and cleat screwed to the deck by the mast.

The halyard should be made of braided cord as laid rope twists more. Any twists which do occur in the halyard and top part of the sail do not give trouble if a swivel is fitted at the point of attachment of the halyard to the sail. Make sure the halyard is free running and does not foul on things like the gaff jaws. It is best secured by an easily released cam or clam cleat. Both the halyard and the downhaul can be led aft and cleated under the thwart where the helmsman can operate them.

The spinnaker fairleads should be positioned quite well aft to open the slot

between the spinnaker and the mainsail as much as possible when reaching, but fairleads too far aft make it difficult for the crew to reach the sheets and there is an increased likelihood of the sheet getting itself over the end of the main boom when the spinnaker is being hoisted or lowered on a reach. Systems using a second fairlead leading the sheet forward to about level with the thwart are quite popular but the advantage of being able to get the fairlead 2ft. further aft is marginal compared with the disadvantage of the increased friction making it difficult to adjust the sail set in light conditions. The cleats should be positioned so that the sheets can be easily cleated and released by both the helmsman and crew from either side of the boat. Clam cleats are not suitable for this purpose as the sheet can easily jamb itself when you want it to run out.

The latest item of equipment to find application on Mirrors is the spinnaker chute which is superceding the roller and net on the foredeck idea. My chute seems to work efficiently in all conditions and the ease and speed of handling justifies the effort of making it. I must say that the rules of measurement do not allow you to cut holes in any part of the boat to facilitate a chute so it has to be deck mounted.

I hope I have given those of you without spinnakers some idea of what to aim at when you get one and perhaps the rest of you are taking a more critical look at your own system.

Spinnaker technique is something which is, perhaps more than any other aspect of sailing, personal and certainly nobody can be dogmatic about how it should or should not be done. I am sure the best advice is to read about it and watch other people to get the basic ideas, then develop your own system and practice it until you can use a spinnaker with as little effort and fuss as it takes to tack. There is more to handling a spinnaker than can adequately be described in this article but I shall endeavour to discuss the fundamentals.

It seems sensible to consider first when a spinnaker can be used. Obviously the spinnaker should be used on the run and don't be put off by the strength of the wind as a spinnaker helps to stabilize the boat on a

dead run in strong winds. A broad reach is fairly obvious too, so get it up every time. The awkward question to answer is how close to the wind can you successfully fly a spinnaker and the answer depends on several factors: in particular the cut of the sail and the strength of the wind, but in general if the foot of the sail is tight and you have to pull the main in to a close hauled position to stop it from lifting, the spinnaker is doing you no good even if it looks full.

How you hoist the spinnaker will depend largely on the competence of your crew and I must say I leave this operation almost

entirely to mine. Our system is this: the crew pulls the spinnaker up as we round the mark while I'm still trimming the main and pointing the boat in the direction of the next mark. Generally speaking if the helmsman hoists the spinnaker he cannot do so until he has established his new course and therefore wastes vital seconds. Next I hand the crew the pole and start trimming the sheets roughly while she puts the pole in and sits down and takes the sheets from me. The important points are to have the spinnaker well prepared and clipped on to the halyard before you get to the mark so that it can be pulled straight up without jamming or twist-



ing; to have the halyard marked so that the crew knows just where to cleat it; for the helm (or the crew if the helm is doing the hoisting) to pull the sail round the forestay as it is being hoisted; and for the crew to attach the downhaul as the pole is pushed forward prior to it being hooked onto the mast. Many crews attach the downhaul after the pole is hooked into the mast fitting which moves their weight unnecessarily far forward and certainly wastes time.

Now the spinnaker is up you must concentrate on getting the best possible advantage from it by making the boat go fast and by gaining the most tactical advantages

from your extra speed.

Let us consider first the spinnaker used on a dead run. In all but the very lightest of winds the head of the spinnaker should be about 18in. (459mm) down from the top of the mast and the pole sloping slightly up from mast to sail. The pole can be pulled well round, about in line with the main boom and the sheet played, easing it until the luff of the sail starts to break and then tighten a little. Don't be tempted to pull the pole too far round as the sheet will then have to be over tightened to prevent the spinnaker from collapsing. Don't relax downwind, it is just as much a part of the race as the beat and requires the same level of concentration.

Broad reaching is much the same as running except that the guy and pole angle requires less fine adjustment. In marginal planing conditions tighten the sheet in as the boat picks up speed in a puff to encourage it to plane. In a really strong wind keep the boat level and don't be tempted to allow the boat to luff up in the puffs, always bear away a bit and keep the boat planing. Beam and close reaching with a spinnaker can win and lose races. I prefer to let the guy go slack and allow the pole to rest on the forestay and then play the spinnaker in much the same way as a genoa. Try to carry the spinnaker as far away as possible from the mainsail to avoid backwinding it. This is aided by slackening off the head from the mast top and freeing the sheets until the luff is almost breaking. It is tempting to tighten the guy and pull the pole round a bit in an effort to 'catch more wind.' This means the sheet will also have to be tightened to prevent the sail from collapsing which not only lessens the effectiveness of the spinnaker but also spoils the flow of air behind the mainsail. In lighter weather the pole can be pulled down a little and the head raised to help prevent the luff from breaking.

The closer the reach the more important it becomes for the crew to rivet his attention to the luff of the spinnaker and to play the sheet with precise control. If the sail is a little too tight power will be lost then and if it is a little too slack then the luff will break and the resultant flapping will draw unwanted attention to your mistake. Remember that the stronger the wind the





less close one can carry the spinnaker because as the boat goes faster the apparent wind direction moves further forward.

Gybing with a spinnaker is quite a straightforward matter. The important thing is to keep control of the spinnaker sheets while you are gybing. We do it like this; as we approach the gybe mark I cleat both the spinnaker sheets and prepare the mainsail and tiller for gybing. As we gybe round the mark I uncleat the sheet which was to windward and pull it as I go across the boat which pulls the pole round and tends to flatten the sail round the forestay. As soon as the crew has pulled the boom across I start to trim the spinnaker sheets for the new leg while the crew stands up, detaches the end of the pole from the mast and clips this end onto the new guy, then pushing the pole out into its new position, rejambs the downhaul and frees the other end of the pole from the spinnaker and clips it onto the mast fitting. At no time during the manoeuvre can the spinnaker fly free.

Taking the spinnaker down would seem to be the easy bit but there are three main pitfalls. Firstly when the crew stands up to take the pole out he can let go of the sheets and then when the pole is unclipped the sail

can fly free and can be difficult to get hold of again, particularly in a strong wind while on a reach. The sheets should be cleated or held by the helmsman while the crew removes the pole, but remember to free them as the crew gathers in the spinnaker. Secondly when the crew or helm releases the halyard it runs out faster than the crew can gather in the sail which then falls into the water and disappears under the boat. To avoid this the crew should always gather in the foot to collapse the sail before releasing the halyard. It is then easy to pull down without it being blown from the crew's grasp. Thirdly the helmsman loses control because the crew has done him 'a nasty' with the pole as he thrusts it back into the boat.

Unless you are trying to maintain, establish or prevent an overlap at a mark, don't leave it too late to get the spinnaker down and stowed before you round the mark as much more can be lost by trying to start the beat with a spinnaker half down and a flapping jib than can possibly be gained by leaving the spinnaker up for an extra few seconds.

The one thing that can be said about spinnakers without any fear of contradiction is that there is no short cut to success – it takes a lot of practice.

Thoughts on getting a crew

by Stan Wilson

I have always thought that one of the main advantages of the Mirror, the other advantages are legion, is that so often it can be sailed solo. On the other hand it is so often laid down that the 'old tub' must have a crew of two, and this is where this annual headache raises its ugly head.

One helm thought that he had overcome this difficulty by acquiring one of those female tailors' dummies with a face and figure which all men dream about, but despite frantic searching, never seem to find. No bother at all getting it down the beach in pieces, assembling in the cockpit, dressing it in an old one piece suit, and pushing off while everybody else was still tinkering about with their latest bit of 'go fast' gear.

The first weekend nobody noticed except the O.O.D. who peering through the binoculars remarked that Bob S—— had a 'smashing bit of crumpet' with him. It was the second weekend when disaster struck. A slight lapse in concentration was followed by the inevitable capsize, and before Bob could grab her and inflate the life jacket, 'Popsy,' that was what he called her, sank quicker than the anchor. The officials on the Bridge in the Clubhouse watched with horror as they saw the beautiful red nylon 'hair' disappear beneath the waves, and frantic S.O.S. calls went out to every 'Rescue Service' for miles around. It was two Safety Boats, one R.N.L.I. Lifeboat, one Air-Sea Rescue Helicopter, and three police frogmen later, that our friend realised the error of his ways.

The fine for causing a 'public mischief' was only £50, but the bill for the public services involved totalled £350.01, and even now I am not sure whether or not that included V.A.T.

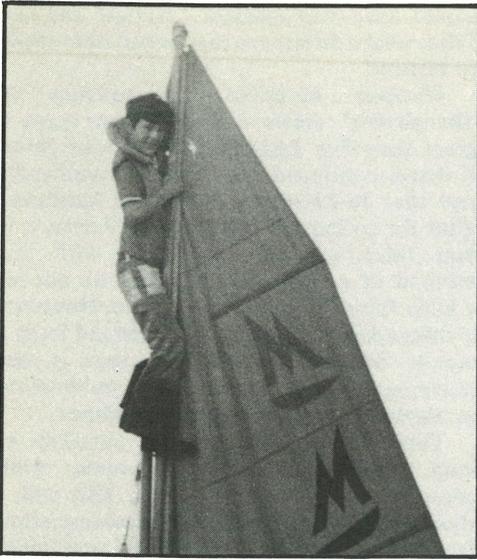
Of course there has always been a problem of crews for sailing craft ever since Adam, astride a log, held up Eve's figleaf to gain extra propulsion. History records that if it had not been for the 'pressed' men who had been 'Shanghaied' only half of Nelson's fleet

would have ever reached Trafalgar and just think what a difference that would have made to history!

Whoever outlawed the practice of 'shanghaiing' crews did us Mirror types a great disservice. Just think of the possibilities if it still continued. No worries at weekends, and that 36-22-36 you have been hankering after for so long at last a reality. Anyway, if you think you can get away with this method of getting a crew, please do not let a little thing like the law stop you. However, if things don't work out, I understand from a lawyer friend that the plea that it was recommended in such a reputable publication as 'Reflections' is positively no defence.

Those of us who consider ourselves as long term planners can, of course, think about breeding our own crews. This will, I should imagine, need a fair bit of co-operation from the wife/mistress/girl friend/or scientist friend who knows about test tubes, (delete whichever is inapplicable, preferably the friend with the test tube). Should the co-operation you seek not be there, there are certain underhand means to an end, such as taking a few aspirins from the medicine cabinet, and swapping them with those in the handbag, but this is not recommended as it will only work once, and if you are taking the trouble to plan so far ahead it is wise to think about a succession of crews. Most offspring suffer from a complaint when they are about 14/15 years of age, when they get that peculiar delusion that the 'old man' is past it. I suppose you have to be firm and punish them, so I would suggest you ban them from the luxury and stability of the Mirror Class, and relegate them to the Mirror 14 where there is always some 'clown' at the helm who never fails to 'dunk' them whenever they get on the trapeze. This would cure any normal person but the salt water somehow softens the brain, and in their demented way, they even get to like it.

Should you wish to bypass the natural way of things, and heaven help us if we have such members amongst us, there are always the Adoption Societies to appeal to. I can warn members, however, that the 'fuddy-duddies' that run such organisations do not consider bringing up a child to be a good healthy Mirror crew, as being a good reason for adoption. What you would have to do



too is keep a straight face and lie about a Christian upbringing, love and affection, and a host of other things you know little about, before you stand any chance at all.

Another method of getting a crew that I thought of, was blackmail. If you are forever on your toes instead of burying yourself in the cockpit of the boat something will always present itself.

I thought this was a good way of getting somebody until I discussed it with a friend at the Club House bar. He told me that he had actually tried this, and he felt that it was definitely no accident that the jib was still cleated when he gybed at the sea mark. It just did not ring true that the crew panicked when the boat capsized. He had never been afraid of water before. As a matter of fact, my friend found out later, that this particular crew had swum the Channel twice, but he continued to hold on tight to the gunwale until the boat turned turtle. My friend swears that the new elastic holding the dagger board was secure when they were on the beach, but the dagger board slowly disappeared from sight as they floundered in the water. The panic of the crew as he clambered on top of the upturned boat did not look real as he first put a knee through one panel of the chine and then a foot through the other. If you are thinking of blackmail, forget it!

The next thing that occurred to me was

coercion. Some may think that 'Shanghai' and 'Coercion' are the same but the technical difference is that with 'Shanghaiing' the victim, sorry I mean crew, is either unconscious or semi-conscious, and consciousness is restored with a hand bailer of salt water, whereas with coercion the crew is well aware of the 'Half Nelson' or 'Head Lock' to which he is being subjected.

One has to be very careful when adopting this method for if the boat 'bucks' on a wave when launching, there is a possibility that something may be broken. It may prove difficult for anybody to crew with a broken arm or a dislocated neck.

My wife swears that those bitten by the Mirror bug are quite mad enough to sail with a broken neck, but then she always exaggerates when talking of her arch-rival, M21060. A dislocated neck perhaps, but a broken neck — ridiculous!

I was quite convinced at one time, that charm was the real answer to this problem of finding crews. I thought that if you were particularly nice to someone, however difficult that might have been, then they would be only too happy to crew for you. Another friend told me of his experience and raised considerable doubt in my mind.

It appears that it cost £50 in Solicitors' fees, a night in the police cells, and an hour in front of the 'beak' to try and convince the 'old goat' that he was only smiling and being nice to the boys for the sole purpose of getting a crew for his Mirror. You have been warned.

Bribery was yet another method that was tried and it was this particular method which dented my pride a little. Firstly, the crew insisted that he be paid in advance in case he 'never came back.' I realise I shall never be in championship class, but I feel certain that I am not so bad as to lose a crew member. To add insult to injury I next saw him taking to the water in another boat, so beside having no sail I also lost £5.

Running out of ideas, my wife suggested I might find one of my own kind in the Mental Hospital. She felt, and I quote, 'the shock of putting to sea on half a dozen lumps of ply, held together with telephone wire and glue, would probably effect the cure the doctors are looking for.' Very little understanding these women!