stant watch should be kept to prevent the cable ever becoming slack. Fore-and-aft rigged vessels have much less difficulty in getting under way when close to a lee shore, as their main-sails can be fully set without holding wind, and directly she pays off all the sails draw.

If the anchors drag and the ship strikes the bottom, especially on rocks, and it is apprehended that she may go to pieces or founder in comparatively deep water, it would be right to select the best place on shore (if there be a choice), and endeavour to thrust her into it by slipping or breaking all the cables and making sail, if there is still the means of doing so, with the view of driving her up as high as possible and so saving life ; let it also be at the top of high water, if that can be waited for. When there is a heavy strain on a chain cable it is easily broken by scratching a notch with a common saw on a link that rests firmly on the bitts and then striking it with a maul or sledge-hammer.

The usual way of testing whether the anchors are holding or not is by dropping the lead over the side and leaving the line slack ; but the ship is liable to swing over it, causing it to be disturbed. A grapnel over the bow or from the bowsprit is preferable. Also by sitting on a cable before the bitts a tremulous motion is felt if the anchor is dragging.

If instead of a dead lee shore we have the wind oblique with the line of coast, and the ship from some cause too close to admit of a stern-board towards it, the head-yards should be braced abox to cast her head inshore, while the after-yards are kept square ; this will cause the ship to make a long stern-board from the shore, which will not terminate till the wind is well abaft the beam. The helm up to that time may be kept in midships, as there is no reason to diminish the curve. As the stern-way is lost the helm should be put hard up, the head-yards squared, and the mizzen- top-sail kept shivering till braced up on the desired tack. The main-top-sail should be kept full. If it is necessary to get the ship round as quickly and as shortly as possible, the fore-yard, instead of being squared when about to shake, may be braced entirely round quickly so as to continue paying her bow off till the wind comes aft, then squared to allow her to come to. The jib or the fore-top-mast stay-sail (according to the weather) may be hoisted when the anchor is tripped or not, until the wind is before the beam on the desired tack ; if at the former time the sheets should be hauled to windward and kept so till the ship is before the wind, then eased off till the wind comes before the beam. The spanker or mizzen-try-sail should be set as soon as it will draw the right way.

What has been said about trimming the sails as the ship is turned round after casting with her head inshore is equally appli­cable to a case of ordinary wearing when it is desirable to turn the ship with as little loss of ground as possible. As a general guide to the position in which the yards should be placed, it may be remembered that the pressure on the sails always acts at right angles to the yards. This may be exemplified by bracing the yards sharp up when the wind is two or three points abaft the beam. As it will then blow directly into the sails they will certainly receive greater strain, but the speed of the ship will be less than when the yards were square ; and it may be observed that considerable leeway will be caused by the lateral pressure. In wearing ship all the fore-and-aft sails should be taken in except the head-sails, and when the helm is put up the main-sail should be taken in and the mizzen-top-sail shivered, —the latter continued till it is sharp up for the new tack. A fashion has been adopted of leaving the mizzen-top-sail square till after the head-yards have been squared ; hence everything depends for a time upon the action of the rudder, and the ship sails a considerable distance before the wind and loses so much ground. The operation of wearing a cutter requires much more care than with a square-rigged vessel on account of the heavy boom. A schooner is treated similarly, but the spars and sails are lighter in proportion to the size of the vessel. Before putting the helm up, the tack of the main-sail is triced up (the top-sail clewed up), and the peak dropped till it is nearly in a line with the boom topping-lifts, which is called scandalizing the main-sail. Both peak and boom are secured firmly in midships by means of the down- haul and sheets. Not only is the diminution of after-sail necessary to allow the vessel to pay off quickly, but the change of wind from one quarter to the other will only cause a gybe which is per­fectly under control. The jib and stay-fore-sail are gybed by haul­ing the sheets flat just before the wind is aft so as to diminish the jerk as much as possible. The peak of the main-sail is easily re­hoisted while the tack is up and the vessel luffed up to the wind. The runners and weather-boom topping-lift should be pulled up while the ship is before the wind and the top-sail-sheet hauled out as soon as the peak is up,—the tack-tackle being shifted to wind­ward and pulled down. In wearing during fine weather, especially in yachts when racing, some risk may be preferable to the loss of time and the main-sail may be kept set. As the main-sheet is usually rove through a treble block on the boom, a double block to move along the horse, and a single block on each quarter, a strong crew can man each part at the same time and haul the boom in

midships quickly, belaying the part which was at the lee side and is about to become the weather side directly the boom is over the leading block, while the other part is kept in hand till the gybe has been effected to lessen the jerk.

The sails of all vessels are most effective when set as nearly flat as practicable, and also each sail, as well as each part of a sail, should be spread at the same angle from the keel. If under that condition too much or too little weather-helm is required, the balance should be established by changing the quantity of canvas at either end or by altering the trim, not by permanently easing off a sheet, for that is as detrimental as dragging the rudder at a large angle. By altering the stand of the masts materially the angle and consequent set of all gaff-sails are thrown out.

To tack a fore-and-aft-rigged vessel is very simple ; by easing off the jib and fore-sheets at the time the helm is eased down and hauling over the main-sheet, the vessel will soon run up to the wind ; then if the fore-sheet is hauled flat over as for the former tack it will assist to pay her bow off the right way. The jib-sheet would be hauled aft while shaking, but not too soon to cause it to take the wrong way. The fore-sheet is shifted over as the other sails are about to fill, according to the speed with which the vessel is paying off. In a smart vessel, such as a cutter-yacht in smooth water and with a good breeze, there will be no occasion to retain the fore-sheet, but allow it to shake itself over similarly to the jib. Returning to the idea of tacking with difficulty,—the helm should be put hard over as the speed decreases and reversed directly stern­way commences ; this remark applies to vessels of all shapes and sizes, as will also the advice not to put the helm over to a large angle while the vessel is going at great speed. At an angle of 10 degrees, more than 98 per cent. of the force on the rudder is applied to turning the vessel and 171/2 per cent. to retard her ; while at 30 degrees one-half the force would retard and 861/2 per cent. tend to turn. Hence we see the reasons for recommending close fitting, broad, tapering rudders.

While the vessel is in stays the weather-boom topping-lift should be pulled to take the weight of the boom, the runner-and-tackle on the weather side set up, and the lee one slacked as soon as she is round ; also shift the main tack-tackle over to windward and set it up ; get a pull of the gaff-top-sail tack if necessary.

The jib of a cutter, yawl, or schooner with a running bowsprit is a difficult sail to handle when the vessel is under way. If there is sea-room it is better to keep the yacht away before the wind and let go the outhaul, when the traveller will run in, or pull at the same time on the inhaul, which should be fitted with a span to keep it square. Haul the stay-fore-sail sheet over to make room to haul in the jib to leeward of it. Gather in the slack canvas smartly to keep it from getting overboard ; get hold of the luff of the sail by the stay-rope, while some hands pull on the downhaul. When the sail is perfectly under control let go the halyards and continue hauling on the stay-rope and downhaul. When there is not room to run before the wind, it is best to heave to with fore­sheet to windward while taking in or shifting a jib ; by letting go the outhaul the traveller will run in and the sail can be handled as before, a good hold being always kept of the weather side, that is, the luff of the sail. If another jib is to be bent it should be laid along the weather side of the deck in readiness, with the tack forward and the head aft. The sheets are then untoggled from the former sail, handed across outside (to windward) of the fore-stay, and toggled to the second jib ; also take the tack to the traveller, hook it, and run it out. Hook the halyards and hoist the jib up by them ; then tauten the luff by the purchase while the sheet is flowing.

A jib-headed gaff-top-sail is preferable for use on a wind and commanding breeze, though for light winds a long yard spreads a fine sheet of canvas. Such a yard should be slung at one-third from the fore-end (as a boat’s dipping lug), the clew-line block secured at the length of the leech from the upper end, and the standing part of the clew-line made fast to the lower end,—this last to keep it clear of the cross tree when being hauled down, which must always be done on the side it has been set, a tack being made if necessary to bring it to windward. On the approach of a squall the fore-sail should be hauled down by means of the downhaul and the vessel luffed up; it is dangerous to attempt bearing up at such a time until the main-sail has been scandalized ; the effect of the water on the rudder aids greatly in tripping a vessel over.

As bad weather comes on the main-sail must be reefed (a smaller jib having been already set) by topping up the boom, easing down the peak and throat, and hauling down the reef cringle to the boom by the reef-tackle ; lash the tack and tie the points without rolling the slack canvas. The second and third reefs are taken in as the wind increases and the fore-sail reefed again or stowed, during which time the jib-sheet should be hauled flat, the main-tack triced up, and the vessel kept close to the wind to avoid plunging the sea over the bow. To reef the bowsprit,—house the top-mast, let the jib run in, slack the bobstays and bowsprit shrouds, take out the fid, and let the bowsprit run in one or two reefs ; then refid it, set taut the gear, and set a small jib. It is at all times much more