SECTION XVI.

MAKING AND SHORTENING SAIL.

SETTING TOPSAILS.

If the clews of the upper topsails are shackled or lashed on the lower topsail-yard, there is really nothing to do in setting the sail but to tend the braces and sway away the halyards till the leaches are taut, then point the yard, and steady tight the lee braces.

Upper topsails are very often fitted with short sheets, and are much handier this way, especially in stowing. In this case they are sheeted home before hoisting.

Upper topsails are often set first when getting under weigh from a crowded anchorage.

When setting a lower topsail in a strong wind, overhaul the lee gear well, and haul the lee-sheet home first, then the weather-sheet, point the yard, and steady tight the braces.

When pointing the yards, if the vessel is going by the wind, keep the weather topsail braces a little more in than the lower braces, so that the topsail yards are a shade squarer than the lower yard.*

SETTING TOPGALLANT SAILS AND ROYALS.

Say you have been under topsails, a strong breeze still blowing, and you are about to set the topgallant sails.

Lay the yard by the braces as required, a little more square than the topsail-yard. See the topgallant clewlines, buntlines, sheets, and halyards all clear.

When the sail is loose, overhaul well the lee buntlines, and run the lee sheet nearly home; then the weather sheet chock out, and then lee sheet again. Let go the lee brace, stand by the weather brace, and hoist away the sail until the leaches are well taut. Then steady tight the lee brace and coil the gear all clear for running on the pins.

If a heavy sea is running, and the ship labouring, it will be necessary to tend both braces when hoisting the yard, to prevent it swaying violently about.

Royals and skysails are set in similar manner to the above.

* This is sea fashion everywhere; but scientific experiment seems to prove that (on a wind) the sharper a vessel's yards can be got the better for both speed and weatherliness; and some very experienced sailing shipmasters recommend getting the lower yards as sharp as possible, and trimming all the upper yards in line with them; of course only in moderate weather.

SETTING THE COURSES.

Rouse well tight the lifts, send hands aloft, and loose the sail. When casting the gaskets adrift order them to be made up in snug hanks and hove before the sail, keeping them close up to the jack-stay. If this is not attended to, the gaskets will probably fly about and get jammed in some of the running-gear blocks when setting the sail.

Man the lee sheet, let the men on the yard overhaul well the lee buntlines and lee leachlines, and haul the sheet well aft. When all ready for boarding the tack, give the vessel a luff up, if by the wind, with the helm, and rouse well down the tack. After it is well secured and made fast, while the ship is shivering in the wind, jump over to leeward and rouse the sheet close aft, then haul well taut the bowline, and coil all gear snugly up ready for running.

Mind that the buntlines and leachlines are well overhauled, so that they will not girt the sail; and if it is blowing strong, put a preventer tack and sheet on.

SETTING THE JIB.

See the head downhaul all clear for running, that the tack is well fast, and that the hanks, especially the head ones, are securely seized on. Have the halyards in a leading-block on deck, so that it can be run smartly up. Then loose the sail and steady the sheet aft. When this is fast, let go the downhaul and run the sail smartly up. Then clap on the sheet again and rouse it well aft.*

SETTING STAYSAILS.

These sails are set precisely the same way as the jib, therefore no description is necessary, only let this caution be used in setting light and lofty staysails, namely, when the sheet is steadied taut, before letting go the downhaul, mind and hitch it securely over the pin, where it is made fast, as such staysails generally are fitted with a single sheet, and if this by any means whilst setting the sail gets adrift, it is dangerous to go near it, and a split sail is often the result.

The writer has repeatedly seen men injured by trying to get the slack of a lofty staysail sheet in when it has not been hauled down far enough before setting the sail. These single sheets should always be led through a cleat on the bulwark stanchions before being belayed on a pin, for when the sheet is flicking about the men can gather in the

* The sheet will often be found, as the sail goes up, to be too far aft. If so, it will have to be eased until the sail will hoist.

slack abaft the cleat without exposing themselves to the danger of an ugly blow.

A large jib or staysail should never be left shaking heavily, as it puts a great strain on the masthead, and may damage the spar. In fact, if the sheet gets adrift after the halyards are belayed, the most prudent thing to do is to down sail at once and secure the sheet, or else trip it up.

SETTING THE SPANKER.

Top the boom up a couple of feet higher than you require it when the sail is trimmed, overhaul well the lee topping lift, and unhook it to prevent the lift chafing the sail. Ease the sheet a little, and steady moderately taut the lee guy. Let go the brails and run the foot outhaul tight out, and belay it. Then let go the head downhaul, and pull the head taut out by the head outhaul, trimming the sheet and weather vang as required. Mind the weather vang is slacked well off when hauling the head of the sail out, or you will carry away the gaff or break the vang fall. The lee vang should be kept slack during the whole time you are setting the sail, and only kept in hand to prevent the gaff knocking about.

In conclusion, I may add, an officer wants to be very vigilant in making sail, and not to be going about letting go ropes, &c., himself, but keep his eyes well above his head, and see that the canvas is well clear of the running gear blocks; also he must see the crew go about their duty with smartness and alacrity, and when giving orders to any of the men who are aloft see that he is answered *immediately*, and take care all the slack ropes are hauled well tight when coiling up, and that all the gear is ready at a moment's notice for taking in the sails.

SHORTENING SAIL.

There is an old saying amongst seamen that any fool can make sail, but it requires a skilful sailor to take it in, and we must admit there is much truth in that old adage.

When a vessel is by the wind, or close-hauled, it is comparatively easy to shorten sail to what it is when running free.

There is less weight of wind to contend with when the ship is close-hauled than when running before it, and a sail in such cases can be more easily spilled and shaken, without the danger of splitting it; whereas with a vessel scudding with the wind aft or on the quarter, and increasing to such an extent as to make it necessary to shorten

sail, every precaution must be taken to prevent losing the sail, or worse, springing a yard.

To take in the mainsail in a hard gale with the wind quarterly, first haul well taut the main lifts, get plenty of hands on them, and take in every inch of the lift-falls you can get. See all your gear clear in the fairleaders, viz., clew garnets, leachlines and buntlines, then gently ease off the lee sheet, and take in all you can get of the buntlines and lee leachlines, now slack away the sheet and haul up. When the clew garnet is chock up, and you have got all you can of the lee and weather buntlines, ease away the main tack, do not let it go rip, but ease it gently away at first, man the weather leachline, buntline, and clew garnet, and haul all the gear close up.*

But perhaps the more usual method is to haul up the weather clew first, in which case the sheet is eased off as far as possible without shaking the sail, and as much as possible of the lee-gear got in. A few hands are now left at the lee buntlines, and the weather-gear manned; ease gently away the tack, and clew up to windward; when the weather-gear is close up, man the lee-gear again, and up with the lee clew, hauling all buntlines and leachlines snug up.

If you have the main topsail set, it is wise before you start the main tack to put a good tackle on the weather main yard-arm, and bowse it well taut to prevent springing the main yard; for the want of this tackle being placed as described, many a vessel has sprung her main yard, especially so when the main tack by accident has taken charge and been let go by the run. This is not so important with double topsails as it was when whole topsails were carried.

When a seaman knows enough to get the main course safely hauled up in a gale of wind, he can always manage a lower topsail, for the latter named sail will come in in the worst of weather, if carefully clewed up, *weather clew first*, then haul well taut the buntlines, or spilling lines, and lastly start the lee clew, snugging the buntlines close up.

When a lower topsail comes in, if running, the course has most likely been taken in previously, in which case it will always be possible

* Main buntlines should be rove as follows:—In the middle band at the top of each buntline cloth, have *lignum vitæ* bull's-eyes worked in with grummet strops sewn into the sail; the legs of the buntlines are then rove down before all, through these bull's-eyes, and clinched to the foot cringles on the aft side of the sail.

Leachlines should be rove spilling line fashion, that is, down before all through a similar bull's-eye in the leach, and up abaft all. With gear rove thus, a main or fore course can be so snugged up that it can at any rate be *secured* in any weather. A brand new mainsail wet through, in a heavy gale, *cannot* be furled snugly in a large vessel; it is an impossibility; and gear led this way is thus *very* serviceable.

to point the yard to the wind, and spill the sail, which will enable it to be clewed up much better, and be more easily furled.

If you chance to be fitted with Cunningham's patent topsails, where the bonnets come some distance below the close reef band, ease off the topsail sheets, and roll the sail up as far as it will go, then clew up the same way as described for a lower topsail; but in this case, mind the sail is rolled up as far as the bonnet will admit of it doing before pointing the yard to the wind. But I may remark these sails are very unhandy in a heavy ship, and their use is almost entirely confined to small vessels.

In taking in royals and topgallant sails, first see the yard is well down upon the lifts, then haul in the weather-brace to spill the sail, and man the lee clewline and buntlines, ease away the lee sheet, and clew up; after having got as much of the weather buntlines as possible, clew up to windward, and haul all the gear close up before sending the hands on the yard to stow the sail; also see the braces are well taut and the yard pointed to spill the sail as much as possible. Great tact can be displayed by an officer in laying the yard when taking in these sails. When close hauled it is as well to let run the lee sheet and halyards, at the same time round in the weather-brace, let go the weather-sheet, up with the weather-gear, and haul the buntlines snug up.*

To take in a trysail when blowing hard, ease off a little of the sheet (not enough to shake the sail), then let go the head outhaul, man the downhaul, and pull the head of the sail close down to the gooseneck or jaws of the gaff, and steady tight the weather-vang.

Now well man the lee brails, ease away the sheet, and brail up *to leeward*, merely gathering in the slack of the weather brails. When the lee brails are close up, then haul taut the weather brails, for if you put any weight on the weather brails before the lee ones are chock up, a bag of wind will form in the sail, and you will find it impossible to get the sail in without splitting it.

The days of the single jib are amongst things of the past. This sail was usually carried till the second reef came in, and at such times it used often to take an hour or more to furl it in a heavy ship.

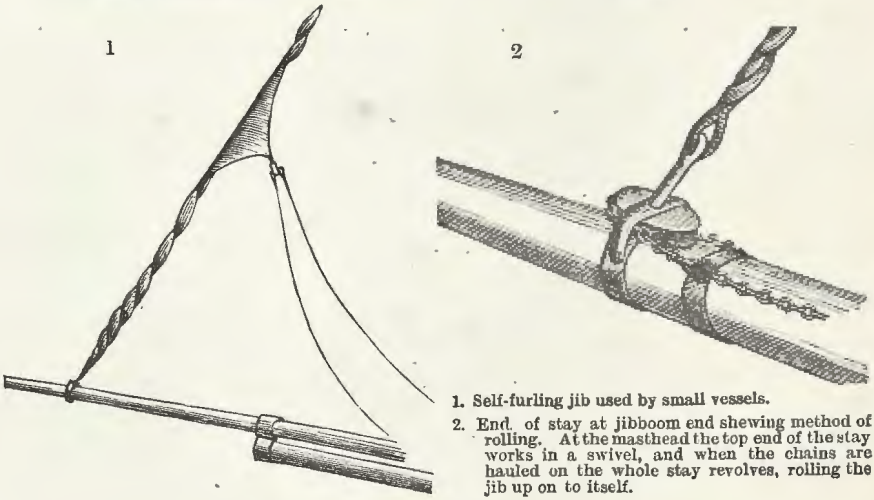
But even in these days of outer and inner jibs, care must be exercised when, after hanging on to them too long in a strong gale, it becomes necessary to take them in.

* It is sometimes a matter of difficulty to get a yard down on the lifts; this *must* be done, however, by some means, such as hauling on the braces and lighting up the halyards, and jumping down the parrel. Never send hands out on a yard to furl a sail until it is down on the lifts; if you do it may come down with a jump, and jerk someone off.

As a rule the outer jib will generally be taken in before the weather gets very bad. To take in the inner jib, first take the precaution to have the downhaul led along the forecastle, down on the main deck. If she is diving into a strong head sea, and shipping water over the forecastle head, get the downhaul over a cleat or pin, so that you hold every inch you get of it, station your men on the downhaul, and in this form it acts the part of a life line, and will prevent the men getting washed off their legs whilst hauling the sail down.

Now let go the halyards by the run; at the same time ease the sheet off a bit, but not too much; down with the sail as quick as possible, and when the sail is well down slack the sheet broad off, and haul the head snug down on the boom.

If there is a strong gale blowing, and you are not pinched for sea room, up with the helm and keep her away before the wind. The crew will then be enabled to hand the jib in five minutes; but if the vessel's position will not admit of her being kept away, the men must then lay out on the boom and pick it up the best way they can.



1. Self-furling jib used by small vessels.
2. End of stay at jibboom end shewing method of rolling. At the masthead the top end of the stay works in a swivel, and when the chains are hauled on the whole stay revolves, rolling the jib up on to itself.

Plate No. 57.

But here I may remark that more seamen have lost their lives in stowing the jib than in stowing all the rest of a ship's sails put together, and often has life been sacrificed in stowing this sail when really there was no necessity for doing so.*

* There is an old-fashioned fitting to a jib, now seldom seen, called a gab rope, which is of great assistance in furling the sail. A cringle is worked on the footrope of the sail at a distance from the tack equal to the length of the boom outside the bowsprit cap. A line is clinched to this cringle, rove through a block on the bowsprit cap, and led inboard. When the sail is down the weather-sheet is hauled over, and this gab rope hauled *taut*. This brings the foot of the sail tight along the boom, and makes the furling an easier job.

If the downhaul of the jib is taken hold of carelessly, and no turn over a pin taken with it on the main deck, if the vessel ships a heavy sea over her bows, away go all the men off their feet when perhaps the sail is half down, and the sail gets battered about and probably split. (Officers who are careless in these small matters cost their owners many a bill for canvas which might have been spared, and instead of being worth their pay, are often a source of expense to their employer.) When taking in any jib or staysail, be careful to see the halyards are laid down all clear for running, and see whilst they are so no kinks run aloft. If the downhaul of a jib should accidentally break whilst hauling it down, clap on the halyards immediately and reset the sail, up with a coil of rope, take it out on the jibboom, and reeve it through the downhaul block, bring it inboard, and send a hand aloft with the end, and make a bowline knot with it round the jib-stay. Let it run down to the head of the jib, and haul down and take in the jib as before directed. Do not take the old downhaul, as it will be too short.

A staysail is taken in in the same manner as a jib, but comes in much handier. The main topmast staysail in many vessels is carried till the double reef comes in, but it is a sail very easily handled, generally running nearly down of itself as soon as the halyards are let go.

But it must be always borne in mind, if the fore and aft sails have been carried too long, that to wipe the ship off before the wind for a few minutes, and take them in, is a very easy matter, that can mostly be put in practice *if the master likes;* and really, on a long voyage, the few minutes' detention that may occur through this manœuvre, that may only happen two or three times during the passage, will not be felt by the ship as to time, and may be the means of saving you a heap of new canvas, to say nothing of the risk to life and limb.

The old Indiaman's jibboom end used to be on a level with the foretop; but remember, our clippers of to-day have their jibbooms with very little stave in them, and consequently are doubly dangerous to go out on to what the old booms were.

There is considerable divergence of opinion amongst seamen on taking in square sails. Some will advocate clewing up to windward and hauling all the weather gear close up before starting the lee sheet; others will recommend an opposite course. In *furling* a clewed-up sail, however, there is only one opinion: the weather yard-arm is first furled. In the well-known quotation from Falconer's "Shipwreck"—

> "He who strives the tempest to disarm
> Will never first embrail the lee yard-arm."

The young seaman has a good "Aid to Memory" of this important rule.

You must not in squally weather trust always to an old sea rhyme, which says:—

"When the wind comes before the rain
You may hoist your topsails up again;
But if the rain comes before the wind
Your topsail halyards you must mind."

This doggerel rhyme only applies to ordinary squalls, mostly experienced about the tropics, and is not applicable to the S.W. monsoon in the Indian Ocean, Bay of Bengal, or squalls in the North Atlantic in winter time, and many other places too numerous to mention.

If you are carrying a strong press of sail, and the weather begins to turn squally, it is prudent to take in the royals and light staysails, as you will undoubtedly find, if a strong squall strikes the vessel, the topgallant sails and flying jib are quite as much as the watch can handle with safety, unless you are doubly well manned, which in these days is seldom the case.

It is far easier to loose and reset a royal, than it is to have to send down perhaps a sprung royal yard, or a split sail, and bend another—not to speak of the expense, or the risk of twisting the topgallant cap off the mast, or springing the masthead.

If after the topgallant sails are handed, the weather becomes rapidly worse, the order has been given, *Call all hands, shorten sail,* and you perceive a heavy squall is about to strike the vessel before the watch below can be on deck, then up with the weather clew of the mainsail, stand by the topsail halyards, and before it strikes the vessel down with the upper topsails, and give her a wipe off before the wind.

When she is before the wind, let the jib and main topmast staysail run down, then bring her gently to the wind; by that time all hands will be on deck, and you can shorten her down to what is necessary, according to the state of the weather.

If you find the ship will not go off when the helm is hard a-weather, ease off a little of the main and spanker sheets, and shiver the after yards by easing the lee braces; a very little will do it, and your vessel then will fly off before the wind. Be careful in bringing her too, and not let her come with what seamen term a "fullock;" if you do, and the squall is exceptionally heavy, you stand a good chance of springing some of the topsail or lower yards, or perchance losing a topmast.

Squally weather, about the equator especially, is very dangerous weather to carry a very heavy press of sail in, as the squalls are of such unequal strength. One comes that looks a heavy squall, which may turn out to have very little wind in it; where the next, which

looks to have little or no wind in it, may have energy enough to put the topgallant masts over the side. About the tropics these kinds of squalls are of common occurrence, so it behoves a seaman to be very careful in these latitudes, and not carry too great a press of sail, and not be led astray by the comparative lull between squalls. A good sign to go by is its density; if you can see through a squall, there is seldom much in it; but if too dense to see through it, mistrust it at once.

In high latitudes, generally speaking, squalls are not of such unequal strength as they are found in navigating the tropics, and therefore more canvas may be carried; yet as there are exceptions to every rule, so there is in this. In the latter part of the autumn, and the beginning of spring time, in high latitudes you will occasionally experience heavy squalls of unequal strength, very similar to tropical squalls.

When coasting along very high land in squally weather, it is best not to carry over great a press of sail, as the wind often rushes down the valleys in great force, when you are on a weather shore, or have an off-shore wind; in such cases, hand the royals, flying jib, and light staysails.*

When tacking in narrow waters with a large vessel, it is best to furl the mainsail and crossjack, and leave the leachlines and clew garnets well slack, so as not to hamper the yards when swinging them. The ship works much easier without these sails, and if you have to keep away hurriedly, or bear up for a vessel on the starboard tack, the ship will answer the weather helm much quicker without the two above-mentioned sails.

After having furled royals and topgallant sails, see the yards are properly pointed to the wind, by the braces, and haul all running gear taut belonging to them, for nothing looks so unseamanlike as to pass another vessel in bad weather, with all her ropes flying about, as if they really did not belong to her.

* In some places it is necessary to be *very* careful. For instance, if bound into Table Bay from the eastward, with a strong south-easter blowing, in coming along the high land the ship will at times be almost becalmed, whilst the next minute she may get a gust to which the topsail halyards will have to be let run.

SECTION XVII.

SAILING SHIPS GETTING UNDER WEIGH AND ANCHORING.

We will suppose, for sake of an illustration, that the vessel is riding to a single anchor in an open roadstead, that moderate weather prevails, and that she is about to get under weigh, with an off-shore wind.

Set one hand aft to cast off the relieving tackles, and oil all the wheel gear, whilst the carpenter is looking to the windlass, &c.

All being now ready, heave away the windlass. If it is a patent windlass, and the chain comes direct from it into the chain locker, a couple of hands must be sent below to coil the cable snugly in the lockers as it comes in. If it is one of the old-fashioned windlasses, then two hands range the chain on deck. When the cable is short, pawl the windlass, send hands aloft, and loose the topsails, courses, jib, and spanker. Masthead the upper topsails, and brace the afteryards sharp up on the tack you wish to cast the ship, and lay the foreyard a-box. Put the helm hard a-lee.

Now trip the anchor, and when she falls off so that the wind is a little on the bow, run up the jib and fore topmast staysail, keeping the sheets to windward. As soon as ever the afteryards fill, turn the foreyard round, brace it up, and let flow the jib sheets, hauling them over to leeward.

Directly she begins to gather headway, put the helm hard a-weather, and heave away the anchor whilst a few hands are setting the spanker. You then have the ship under command. As soon as the anchor is up, cat and fish it. Set the lower topsails and courses, then the topgallant sails and flying jib, and the other light sails as required.

If the roadstead is crowded with shipping, it is as well to keep the mainsail and crossjack hanging in the gear till you get out into open water; or if you are about to make a series of short boards, by all means keep the latter named sails furled, as the ship will work much easier without them.

If you are riding on a lee shore, and moderate weather prevails, the same evolution is carried out as described above, with the exception that as soon as the anchor is tripped all plain sail must be put on the ship as soon as possible, and the anchor hove close up and secured after the canvas is set.

But remember, no seaman can feel easy in his mind till the anchor is secured; yet many give themselves no end of trouble and anxiety by

crowding too much canvas on the ship before the anchor is hove up clear of the water, when there is often really *no necessity* for doing so; for you must recollect when the ship has good way through the water it is very often a difficult job to get the catblock hooked on the anchor. Many a smart seaman whilst doing this duty has been lost overboard and drowned; but this accident can always be avoided by making the seaman who goes on the anchor to hook the catblock on, sling himself in a bowline. At times, through the chain getting underneath the stock of the anchor, it is quite impossible to hook on the catblock until a hand goes down upon the anchor to guide the hook of the block through the ring of the anchor. Therefore, under such circumstances, the less way the ship has through the water the easier will this duty be accomplished.

Now let us assume you are lying in an open roadstead, and a heavy gale has commenced to set in upon a lee shore. Great danger attends picking up your anchor, so you have determined to slip it and stand out to sea.

Whip a reef in the fore and main courses as quickly as possible. Whilst this is being done, pass a good hawser out of the weather quarter chock, according to the tack on which you determine to cast the vessel, lead this hawser along the side outside the rigging, and hitch it securely to the cable chain just below the hawse-pipe.

When this spring is well fast, haul it tight aft; then belay it securely, and station a hand by it with an axe to cut it when ordered.

Now loose the lower topsails, inner jib, and spanker. The reefed courses are loose, hanging in the gear. Brace the yards up on the required tack, and sheet home the three lower topsails.

Now unshackle the cable, buoy the end, and see it is all clear for slipping.

Have handy tackles placed on the tacks and sheets of the courses, to enable the crew to set them smartly.

All being now ready, slip the cable. The ship will now settle astern, and heave a great strain on the quarter spring, which will cast the ship on the required tack.

As soon as ever she begins to cant, up with the inner jib and fore-topmast staysail, and when the topsails fill, cut the spring, keeping the helm amidships. Set the courses and spanker as quick as possible, and as soon as she begins to gather headway, meet her with the helm and bring her close to the wind.

This evolution is one of the most difficult tasks a seaman has to perform, especially if it blows hard and has come on very suddenly,

and it requires all the energy and resource he is master of to save his vessel from getting stranded.

In Madras Roads, during the hurricane season, and in similar places, all vessels should anchor with a spring on their cables, and their sails reefed, ready to slip at a moment's notice.

When a vessel is lying near you, and the tide is not very strong, the rule is to cast towards her, if the position of other vessels will admit of this being done, because in casting your vessel gathers stern-way, and increases the distance from the other vessel.

In acting on this advice, local surroundings must be taken into consideration, viz., how you are situated in regard to other vessels lying near you, the set and rate of the tide, and lastly, the force of the wind. For say the wind was very light, with a very strong tide running, and a vessel was riding a short distance away from you, a little on either quarter, as the case may be, it would not be prudent to cast towards this vessel, for the tide in all probability, running so strong, would set you right athwart of her bows before you gathered *sternway.*

Under such circumstances I would trip my anchor and drop down till I was clear of the above-named vessel, tending her with the helm, and sheer her as required.

In getting under weigh from an anchorage, if moored with two anchors, with the wind abeam, or riding on a weather tide, pick the lee anchor up first.

No directions as to casting the vessel or making sail are necessary, as the moment the last anchor is tripped the vessel will run away before the wind, so you can place her in whatever position you think fit, and make sail as required.

COMING TO AN ANCHOR.

In these directions it is assumed that the vessel is about to enter a bay or roadstead, where many vessels are riding, with an off-shore wind.

Before you draw in amongst the vessels riding, take in all the light sails, outer jib, mainsail, and crossjack, and if there is time, stow them; if not, let them be snugly hauled up, and hang in the gear.

Being now close to the position in which you wish to anchor your vessel, clew up the lower topsails, and haul the foresail snugly up.

The vessel will now be under her three upper topsails, inner jib, and spanker.

Now cockbill the anchor, see the chain is clear of the anchor stock,

and all ready for running, having previously overhauled a good range of chain, if you have not a patent windlass.

In some cases, when the wind is rather shy, it would suit best to come to an anchor under the staysails, jib, and spanker; but whichever plan you adopt, the directions are the same for anchoring.

Now all being ready, down helm, which will shoot the vessel up head to wind, and as soon as she loses her headway, let go the anchor and veer away the cable as required, lowering away the topsails and hauling down the jib at the same time. But if you think the vessel is going to shoot too far ahead of where you wish to place the anchor, let the yards run square, when she will lose her headway very quickly; then drop her down to the spot you select for anchoring.

If the roadstead is crowded, mind have the second anchor all ready for letting go in case she fouls the first, as slips often occur in the best of regulated families, and the tide, or other local causes unknown to the master, might be the means of the ship fouling her anchor.

Supposing many vessels are lying about, look out and pick out a good, clear swinging berth. Do not try to go in *to windward* of everything, as some of the vessels close in shore may be drawing less water than your own, and lying in perfect safety, where your ship, brought up close to these vessels, might be too near the ground to be pleasant.

Also when going in to windward of everything, the probability is you would have to keep your vessel away before the wind, in order to bring her up. This would give the ship a good deal of headway when you least required it, and would necessitate you having plenty of room under such circumstances to round her to.

Therefore it is more prudent to round the leewardmost vessel's stern, and shoot your ship up to windward, as far as she will go, and down anchor.

There are of course times when this evolution would not be advisable, thus:—If some of the vessels were riding very far to leeward, close over to a shoal, &c., like they frequently do when anchored in the Downs, close over to the Goodwin Sands.

Under such circumstances, with an off-shore wind, it would be advisable to steer a middle course, and pass to windward of the leewardmost vessels, and pick out as clear a berth as possible.

If it was blowing hard, and you were beating in to an anchorage under double-reefed sails, both anchors must be ready to drop at a

moment's notice, as the sails must be carried up to the last moment before letting go the anchor.

Your crew's activity and smartness must now show themselves to the best advantage.

When close up to the anchorage, up mainsail, and let it hang in the gear, then the foresail, and down jib, hard down with the helm, let go the topsail halyards, and as she rounds to clew up the lower topsails; and when she is head to wind, and loses headway, let go the anchor. If you are in seven or eight fathoms of water, give her 30 fathoms of chain; of course more if the water is deeper. Now sheer the ship well broad of her anchor by filling or backing the yards as required. If the port anchor is let go, port the helm, and sheer her to starboard. If the starboard anchor is let go, hard-a-starboard, and sheer her to port, assisting her to do so with the foretopmast staysail.

When you see the vessel is well broad of her anchor, and taut sheered over, let go the other anchor, and pay away chain on both cables till she has 75 fathoms on the first anchor let go, and 45 fathoms on the second; she will then be fairly moored, if, as I said before, she is in seven or eight fathoms of water.

If the gale was exceptionally heavy, of course she would require more chain than mentioned above; for you must always bear in mind she had better have fifteen fathoms too much than one fathom too little, as the cable is easily shortened in when the weather moderates.

In Algoa Bay, and other exposed roadsteads where cargo is loaded, vessels ride by 12-inch coir hawsers, called springs.

These springs are made securely fast to riding bits or bollards in the after part of the vessel, then led along the deck forward, passed underneath the windlass, and nippered securely on to the cable chains.

The vessel then rides by the spring, and they, being coir, give and take with the sea. Care must be taken that the deck, in the wake of where the spring is bent on the chain, is protected from chafe by mats or planks. The turns of the chain round the windlass are slacked up and overhauled sufficiently for the give and take of the coir spring.

Vessels that are so fit, ride out gales of wind that it would be impossible for ships to ride out with their cables alone; and this spring greatly facilitates loading cargo in such dangerous roadsteads.

These coir springs are generally 30 fathoms in length each, twelve inches in circumference, and have a long eye-splice in one end.

When bringing a vessel up, do not let her drop over the top of her anchor, and see that she brings no weight on the cable till a considerable quantity of chain has run out, or she will probably start the

anchor out of the ground; and once she starts the anchor it will not bite again, if the bottom is foul with seaweed or kelp, or if the ground is rather hard, until the second anchor is let go.

If you let too much chain run out when letting go the anchor, it falls down over the stock and fouls the anchor; consequently it will not hold at all.

Great vigilance should be exercised by the officer who lets go the anchor in this respect, as more foul anchors occur through paying out too much slack chain than from any other cause. This officer should always keep informing the master how the cable grows when bringing up, and point with his arm the trend of the chain; as the master being aft he cannot see the chain himself, and without knowing the trend of the cable he cannot manœuvre the ship to ease her up to her anchor unless the officer on the forecastle keeps him well informed; and I would fain impress this matter strongly on the minds of young officers.

A smart officer on the forecastle, who keeps his eyes about him, and does not forget he has a *tongue* in his head, on a dark night, when coming to an anchor, is worth a great deal to a master of a heavy ship.

Many seamen prefer to lie to a single anchor, with a great scope of chain out, in preference to riding with two anchors. A vessel moored with two anchors will put more weight on her cables than a vessel riding to a single anchor, and the more spread two anchors have the greater the weight she will heave upon the cables.

Then again, one cable is easily slipped, and you have a cable and anchor all ready for shifting your berth to a safer anchorage.

Yet at times two anchors are absolutely necessary, in such places as narrow rivers, where you have just room to swing.

Say you want to moor ship in a narrow river, with one anchor for the flood tide and the other for the ebb, in 7 or 8 fathoms of water.

When you let go the first anchor give her 60 fathoms of chain, with the yards flat aback, if the wind is ahead, to tighten the chain. When the 60 fathoms is taut out, let go the second anchor and heave in on the first anchor, slacking away upon the second till you get the 30 fathom shackles inside the hawse-pipes on both chains. She is then moored for flood and ebb tide, and both shackles being inboard, the hawse is easily cleared if she takes turns in the chains.

Sometimes two anchors are compulsory when riding in bays where there is no sensible tide, and heavy winds prevail, which cause the vessel to sheer madly about when blowing hard, if riding to a single

anchor. Here a second anchor is necessary to steady the ship, and it prevents her starting her anchors.

In open roadsteads of bad repute have everything ready to slip at a moment's notice, so as not to have to look up the necessary gear after the order is given to slip cables. Have a good buoy and buoy-rope fit for each cable, with the ship's name painted on the buoy. See the shackle pins are in good order abaft the windlass, and have a hawser ready to pass out of either quarter you may require it, to bend on the cable, to cast the ship, if a sudden gale sprung up, and it is found necessary to slip.

How often gales spring up on a dark, dirty night. Then how inconvenient, not to say dangerous is it to be hunting about for shackle punches, buoys, buoy-ropes, &c., and getting a hawser up from below, to bend on the cable for a spring.

Yet such, alas, is often the case; and it is mentioned here just to warn young officers not to be caught napping, for they will find themselves, if they neglect these precautions, far astern of other vessels who have kept in mind the old sea order, "See all clear *before dark.*"

Many seamen when riding in exposed bays keep a good spring from the quarter made fast to the cable on the side dangerous winds are expected, for, besides being useful in slipping the cables, it is found very serviceable in steadying the vessel when a swell sets in the bay during fine weather; for at such times, if a spring is kept well taut, it will head the ship up to the swell, and facilitate taking in cargo immensely.

And there can be no doubt that a spring made properly fast, and the cable parcelled in the wake of where the hawser is made fast to it during fine weather, is to be preferred to one made fast in a hurry, on a dirty night; for I can assure my readers it is anything but an easy job, on a dirty night, to get a hawser bent on to a cable chain, below the hawse pipe, when perchance the ship is beginning to dive her bow into the sea.

Yet for all this many shipmasters will not keep the spring bent on the cable, but keep the hawser in readiness passed along from aft, on to the forecastle, alleging as their reason for doing so that the hawser may get chafed in fine weather near the cable, and when actually wanted to cast the vessel, it often breaks, causing the ship to be placed in great jeopardy. But I think, all things considered on both sides of the question, keeping it always bent is far the best mode of procedure.

When bringing up in such exposed places as mentioned above, put

a good reef in each of the courses, and upper topsails; you are then prepared for action, if bad weather sets in, when the signal is made to slip cables.*

When bringing up at night time, see the anchor riding light is well trimmed, and the glasses properly cleaned; also have a couple of good deck lamps ready lit, in case the anchor light blows out—you then have a lamp to replace it for the time being. Also see the anchor light is hung on the side of the ship you may expect the most traffic, and shifted over when the ship swings. And see the relieving tackles are placed on the tiller-head, and hove taut.

SECTION XVIII.

TACKING AND WEARING.

Keep the ship a good clean full for stays, haul the cross jack up, and let the lee-tacks and weather-sheets of the courses be cast clear of their beckets. Lay all the braces down clear for running.

The order is now given, "Ready about!" (stations). When all ready, ease down the helm till it is hard a-lee. When it is hard over the order is, "Hard a-lee!" Let go the fore-sheet, haul in the spanker-boom amidships, ease a bit of the lee fore-brace, and ease off the head-sheets, and overhaul them.

The ship is now flying up into the wind. The moment you see all the square sails shivering the order is, "Tacks and sheets!" The tack and sheet of the mainsail are now let go (keeping the bowline fast), and the clews, and also the lee-clew of the foresail raised a bit, that the clews may fly clear of the rails when the yards are swung. Sometimes the fore-tack is also hauled up (keeping, of course, the bowline fast); but this makes a bag of the sail, and makes a backsail of it.

When the ship comes within about a point and a half of being head to wind, the order is, "Mainsail haul!" The after-braces and main bowline are now let run, and the after-yards swung sharp up on the other tack. Then board the main tack and aft-sheet whilst the wind is out of the sail.†

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* If riding heavy, good tackles should be placed on the cable before and abaft the windlass, and hove well taut. This eases the strain on the windlass.

† If this order is given at the right moment the yards will swing of themselves, and if a good run is made with the braces they should be run nearly sharp up on the other tack in one run. If left till head to wind the sail will be becalmed, and before it can be got sharp up the wind on the other bow will cause a "dead haul."

The crew now jump forward and stand by the fore-braces, the forecastle hands being engaged hauling over the head-sheets and trimming the jibs.

As soon as she pays off enough for the main topsail to fill the order is given, "Fore bowline—let go and haul!" The fore-tack and bowline are then let go, and the fore-yard hauled round and braced up; but if you see she is about to pay broad off, 'vast bracing the fore-yard sharp up, and if she gets sternway upon her change the helm.* Flatten in the spanker-sheet, and ease off the head-sheets. When she begins to come up towards the wind, ease off the spanker-sheet, haul aft the head-sheets, brace the fore-yard sharp up, down fore-tack, aft fore-sheet, and meet her with the helm.

When the ship comes close to the wind give the square sails a shiver, and bouse well taut the weather fore, main, and crossjack braces.

It is customary to have a mark on the topsail braces, so that when the yards are far enough forward a turn may be taken at these marks; for you must always be careful that the weather topsail braces are not left slack when the yards are braced sharp up, or probably a sprung yard would be the result.

Place now the lee-tacks and weather-sheets in their respective beckets, and set taut the bowlines fore and aft; then coil all braces down clear for running, and see that all slack ropes are hauled taut fore and aft, for nothing looks so slovenly to a good seaman's eye as to see a lot of running gear flying away to leeward in bights, as if they did not belong to the ship.

It may happen sometimes that after the mainyard is swung the vessel begins to get sternway upon her. If such is the case, and she commences to pay off again on the old tack, shift the helm a-lee again, square the after-yards, haul aft the head-sheets, and in with the spanker. When she has gathered good sternway, shift the helm and shiver the after-yards. When the wind comes aft, square the head-yards, shift over the head sheets, and brace up as she comes to on the other tack.

In olden times, when vessels were built much shorter than they are at the present day, they stayed much quicker than the long vessels of this era; and often, when it was blowing hard, and they were under double-reefed topsails and courses, if the water was smooth, stayed with the greatest of ease. Under such circumstances our long vessels of to-day would have to be wore round, for to try and stay them under canvas, as mentioned above, would I think be next to impossible.

As the mainsail in large ships often greatly interferes with the

* On a dark night the extra strain on the wheel will tell you if she has sternway.

working of the fore-braces, it is often customary while in stays to raise the clews of the mainsail, and board the tack after the vessel is round.

If the vessel carries a crossjack, it is usual to haul the clew garnets nearly right up before commencing to stay the vessel; and if you are about tacking up a narrow channel, by all means furl it out of the way.

When working a vessel in narrow waters, if at all shorthanded, keep both mainsail and crossjack stowed, as the ship will work considerably easier. The order when the main yard is turned round is then, *Main topsail haul*, instead of *Mainsail haul*.

In tacking a four-masted ship it is the general custom to throw the jigger yards aback before putting the helm down, and bracing them sharp up on the other tack; she is then handled as a three-masted vessel. If the jigger mast is barque-rigged, of course the yards will be swung in the usual way.

It is customary in large vessels, when tacking ship, if a strong breeze prevails, to let the light staysails run down, and dip the sheet over the fore-and-aft stays before re-setting them. This is done for two reasons, viz.:—Firstly, it saves the sails getting a severe shaking whilst the ship is head to wind; and secondly, these staysails are generally fitted with single sheets, and if so, hauling them down becomes a necessity. But staysails should by rights be fitted with a tripping line on the clew, then in the event of a sheet parting, or getting loose, the sail can be tripped up and steadied. The same can be done when going about, unless there is too much wind. This line also greatly assists in dipping over the sheets, and does away with the necessity of starting the halyards; it also hauls the clew up when the sail comes in, and snugs it for furling.

The main topmast staysail should also be either hauled down or tripped up before going round, as the sheet interferes with working the fore-braces, and as it is a large sail, with a heavy sheet, it would be very unhandy to dip it over the mainstays.

In tacking, ships are often baulked by mismanagement in hauling aft the head-sheets too soon. See the head-sheets are never hauled aft till the wind will fill the sails on the right tack.

A TABULATED FORM OF TACKING SHIP.

READY ABOUT.—See that all your crew are at their respective stations.

HELM'S-A-LEE, LEE OH! OR EASE OFF!—(All three terms are used).—Ease off head-sheets, let go fore-sheet, haul spanker-boom amidships, and check lee fore-brace.

TACKS AND SHEETS.—Up clews of mainsail, and lee clew of foresail, sufficient to clear the rails.

MAINSAIL HAUL, OR TOPSAIL HAUL.—When about 1½ points from being head-to-wind, let go the lee braces, and run round the after-yards; board main tack, aft main sheets; haul aft the head-sheets when paid off sufficiently for the head-sails to take on the right tack.

FORE BOWLINE.—Let go fore tack and bowline, and overhaul them.

LET GO AND HAUL.—Turn round head-yards, board fore tack, aft fore-sheet, and out bowlines.

Haul well tight the weather lifts and lower braces, and coil all ropes clear on their pins ready for immediate action. Do not forget, before hardening the yards sharp up, to let go the lee lifts.

WEARING SHIP.

When under all plain sail, and you wish to wear, haul up the mainsail and crossjack, down main topmast staysail, and in spanker. Ease away the lee main and crossjack braces, to keep the sails lifting, and hard a-weather with the helm. When she begins to pay off, haul away upon the after-braces, and keep the after-yards lifting until you have them with a cant on the other tack.

When the wind comes aft, let the fore-yard run square, and haul the head-sheets over; then, as she comes to the wind, brace up the after-yards, out spanker, up main topmast staysail, down main tack, and brace the head-yards up. Mind she does not take charge and come to too quickly, as remember the fore-yard has to be braced up last of all.

Many seamen when squaring the head-yards brace them sharp up on the tack they are going to put the vessel on; but this evolution is not advisable with a long vessel, as it retards her coming to quickly, but it is commonly done on account of having plenty of men on the after-braces, especially so if you are wearing ship with only the watch on deck.

This evolution of wearing is seldom put in practice, except when the weather is too heavy to tack, or if in consequence of a heavy head sea or swell the ship is not likely to stay.

When wearing ship in a heavy gale, with a high sea running, great precaution is necessary, as she may have too little canvas on her to keep her before the sea, and get her decks swept, especially if deeply laden.

Say you are head reaching under the three lower topsails, and fore topmast staysail, and require the vessel placed on the other tack.

Firstly, secure all the deck openings, such as companions, ventilators, skylights, &c. Loose the foresail, and set the sail. But if the gale is exceptionally heavy, and you consider a whole foresail is too much for her, then keep the weather clew garnet fast, and only haul aft the sheet, as it will be quite sufficient to wear the vessel under these circumstances. Watch a smooth and put the helm up.

As the vessel goes off, square in the after-yards, keeping the topsails lifting* till they have a cant on the other tack; then square the fore-yard and get the staysail sheet over. When the wind is on the other quarter, ease the helm so as not to let the ship fly up in the wind, as she will then be going fast through the water, and might ship a heavy sea; but case her to the wind gradually, bracing the yards up as she comes to. Then up foresail, and stow it, when the vessel is by the wind.

When wearing in heavy weather, mind and have careful hands at the weather-braces, so that too much is not slacked away when bracing up, thereby leaving the yards without support.

MISSING STAYS AND TAKEN ABACK.

When a vessel comes head to wind, and pays off again on the tack she was previously on, she has then what seamen term *missed stays.*

Say a vessel is on the starboard tack, and has missed stays. Keep the helm hard a-port, as she will probably have stern-way upon her; flatten in the head-sheets, brail in the spanker, raise the clews of the mainsail, and square the after-yards.

When the fore-yard fills, brace up the after-yards, set the mainsail and spanker, and change the helm. Then keep her a good clean full, so that she will have good headway, before trying to stay her again. But if you conclude to let her come round on her heel, when the fore-yard fills, keep the after-yards shivering till she goes well off, then square the head-yards, put the helm hard a-starboard, and when the wind is on the port quarter, brace the after-yards sharp up; then the head-yards, and bring her to on the port tack.

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* Keep the sails lifting from the first, or else it will be nothing but hard pulling, *with no result,* until the wind is right aft.

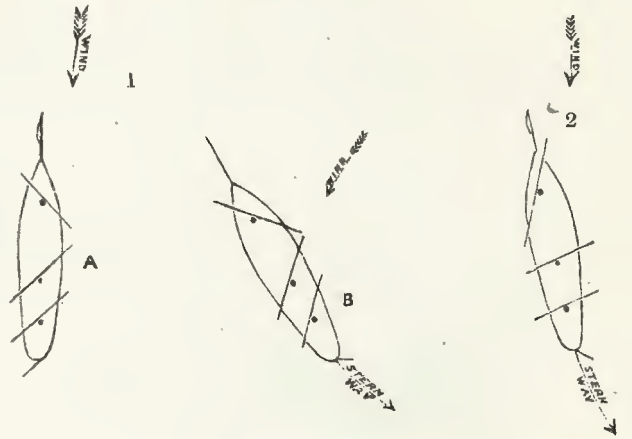


Plate No. 58.

TAKEN ABACK.

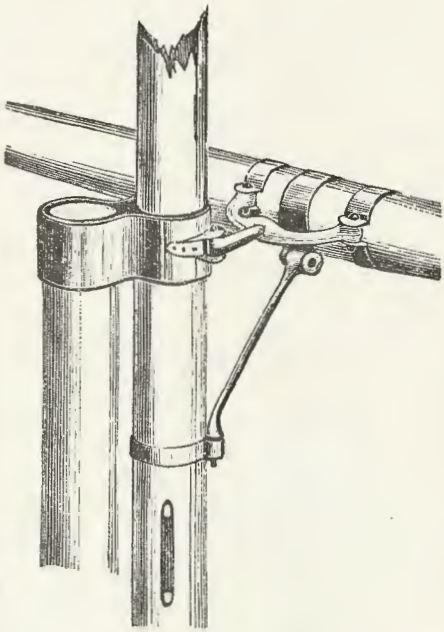
Say you are on the starboard tack, and the wind has shifted suddenly, coming right ahead. Flatten in the head-sheets, let go fore-tack, sheet, and bowline, and turn the fore-yard round, changing your helm at the same time. This will what seamen term *box her off.* As soon as she goes far enough off for the after sails to fill, let go the head-sheets, and turn the fore-yard round as it was before you were taken aback, down fore-tack, aft fore-sheet, haul out the bowline, and change the helm. But if she refuses to box off, and keeps coming round on the other tack, turn the after yards round, and act as you would if staying ship. *(See Plates).*

In case you do not want her on that tack, then let the yards run square, and wear her round, bracing the after yards up when she brings the wind on the quarter, and keeping the fore-yard square till she brings the wind abeam. Then brace it sharp up, board tacks, aft sheets, and out bowlines.

In very light weather, and you are doubtful of her staying, when raising the tacks and sheets, down flying and outer jib, resetting them after the ship is round.

SECTION XIX.

TOPSAILS AND REEFING SAILS.



Truss and crane of lower topsail yard.

Plate No. 59.

The old-fashioned single topsail is now seldom met with, unless as the mizzen topsail of a ship of small tonnage, or in coasting vessels. In these instances it has three reefs in it, and being a small sail, is easily handled. For all sailing vessels the double topsail (formerly termed Howe's rig, from its inventor, an American shipmaster) has long ago proved its infinite superiority over all other kinds of topsails. Short-handed steamers carrying a fore topsail may possibly find advantages in the patent topsails invented by Lieut. Cunningham, R.N., or the other patent rig of Messrs. Colling and Pinkney, of Sunderland, but neither of these are suitable for a sailing vessel of very large size, as, when fitted to large yards, the sails are too cumbersome

to be easily handled, and the result is that, in reefing, the sail is often split, and as they are not so easily shifted as an ordinary sail, much trouble and inconvenience is the result, as well as the attendant expense; but in small vessels they answer very well. The double topsail, as its name implies, is a topsail in two halves, an upper and lower; the topsail-yards, also, are two instead of one.

The upper topsail-yard is parralled to the topmast, and hoists and lowers by halyards in the same manner as the old-fashioned single topsail-yard.

The lower topsail-yard is trussed to the lower cap, in the same manner that a lower yard is trussed to the lower mast, but instead of being suspended by slings, is supported from below by a crane or iron stay, which works in a socket, either upon the forward rim of the top, or else on the heel of the topmast, some feet below the lower cap.

The rigging of the yards and sails has already been sufficiently explained.

The advantages of the rig are obvious. An upper topsail can be carried as long as a double-reefed topsail, and, with the single reef in, can be hung on to if necessary in very heavy weather. This is particularly valuable when running in a heavy gale, with hard squalls and lulls, where it is necessary to carry on to keep the ship ahead of the sea; when, if a squall is too heavy, the yard can be run down, and when the squall is over, can be easily hoisted again; whereas to reef down a ship with old-fashioned topsails in such weather was often a four hour's job for all hands. When necessary to stow the upper topsail you have left a close reefed sail (in the lower topsail) with a yard of its own, well bent, with no badly tied reef-points, and a sail that, if necessary, can be clewed up and furled, in anything short of a hurricane, easily, and without losing the sail.

The two afore-mentioned patents are both topsails which roll up (by hauling on halyards *on deck*) like a window blind, the principal difference being that in Cunningham's patent the topsail-yard *itself* rolls, and winds the sail round itself, whilst in Colling and Pinkney's rig the sail rolls round a rolling spar, which is fitted on the fore-side of the yard. Cunningham's yard has a light spar on the after-side, termed a chafing spar, which carries the footropes and studding-sail booms. As there is nothing very intricate in either system it will not be necessary to go into further detail; should the young seaman be shipmates with either rig he will learn how to work them without much trouble. But, as a word of caution, it may be well to add that if it is attempted to roll up a heavy sail with either of these rigs,

unless the vessel is kept right off before the wind, and the yard squared a little, the chances are that it will not roll up evenly, and a split sail will be the result. Cunningham's yard will also be found a very heavy one to hoist. It may also be noted that the Cunningham sail only rolls up to a close-reef; by Colling and Pinkney's method the sail can be close-reefed, and then by slacking away the sheets the whole sail can be rolled up, thus doing away altogether with the necessity of clewing up and furling by hand. This rig is well adapted for steamer's topsails.

Double topgallant yards on a similar principle to the double topsail are now fitted to many ships of heavy tonnage, and are an undoubted advantage when running with a strong gale, as they can be carried on to much longer than a whole topgallant sail; and when it is necessary to take them in, can be handled twice as easily. In the case of double topsails the lower cap is supported on the after side by cap-shrouds. In the case of double topgallant sails the topmast-cap is similarly supported by topmast-cap backstays.

Upper topsails and topgallant sails are much handier if fitted with sheets and clewlines, the sheets in these cases being usually short, and not long enough to allow the clews of the sail to be fully clewed up, their use being to slacken the foot and leaches sufficiently to make the sail easy to furl.

It is more usual, however, to have the clews of the upper topsails lashed or shackled to the lower topsail yard-arms, as in *Plate No. 60.*

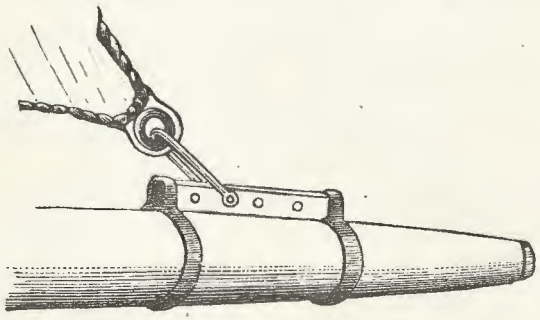


Plate No. 60.—Ordinary method of securing upper topsail clews.

TO REEF THE FORE COURSE.

Call all hands. Clap on the fore lifts, and rouse them well taut, at the same time easing a little of the lee fore and topsail braces, if by the wind.

If she is head-reaching, or close to the wind, the head-yards may be

shivered a bit, great care being taken that she does not lose her way and come to. Now haul the foresail up, leaving both clew garnets about two-thirds up, the other gear close up. Get plenty of force on the weather-reef tackle, and rouse it out two blocks, slacking the leach-line if necessary. Then the lee-reef tackle the same way.

All hands aloft. Reef the sail, with an officer to superintend in the slings of the yard, whose duty it is to see the reef-band is taut along the yard before making the reef points fast.

If there are studdingsail booms, these must be triced up to the rim of the top, out of the way, before the men go out on the yard.

After the two men at the weather-earing have rove it through the reef cringle, and are all ready for hauling out, they call out, "Light out to windward." Each man then seizes hold of a reef point, and pulls the sail to windward until the weather-earing is far enough out, when it is made fast. The order is then given, "Haul out to leeward!" The men then light the sail over to leeward, to assist the men at the lee-earing; and when the reef band of the sail is taut along the yard the officer gives the order to make fast the lee-earing and tie the reef points.

When tying the reef points, if fitted with points on both sides of the sail, pull the after leg of the point the tightest, and haul the reef knots well taut, or they may shake adrift. If the sail is fitted with single points on the fore side of the sail only, two are taken together, half-hitched round the jack-stay, and then knotted to each other.

Let the men at the earings look well to the dog's lug, and keep it well on top of the yard when making the earings fast. (The dog's lug is the roping of the sail between the head cringle and the reef cringle.)

When all is made well fast, let the booms down upon the yard, secure them, and overhaul the reef tackles well before the men go on deck.

Mind leave two men aloft to overhaul the buntlines and leachlines whilst the men on deck are setting the sail.

The officer who is on the yard must now go and overhaul both earings, and see the reef points are properly made fast, all of them having an equal tension, except the dog's lug points, which must be a little slacker than the rest. When this is done then set the sail.

REEFING TOPSAILS.

The upper topsails are much easier to reef than the courses, for when upper topsails are lowered down they fall before the lower topsail, and to a certain extent lie becalmed.

Lower the yard down, keeping the downhauls square ; if fitted with upper topsail sheets, they must be started, and the sail clewed up if necessary. When the yard is on the lifts, lay the two yards parallel with each other, and reef the sail.

If the course is in, or the vessel by the wind, shiver the sail whilst reefing ; but remember, if you touch the braces, that there are men on the yard, and that the lower topsail if it begins to shake heavily may jerk someone off.

REEFING FORE-AND-AFT SAILS.

Great care must always be exercised in reefing fore-and-aft sails, as they more frequently get split than square sails, and it invariably happens through the earings and points not being properly tied. In reefing a fore or main trysail, if the gaff is a standing one, that is, one that does not lower down (and these kind of gaffs so fitted are common in most of southern going vessels), firstly, clap on the head downhaul, and haul the head of the sail snugly down, at the same time taking in all you can get of the lee brails ; then ease the sheet off as much as possible, till the upper brails are close up. The lower brails of course will not be close up, but get all you can of them, taking in the slack of the weather ones.

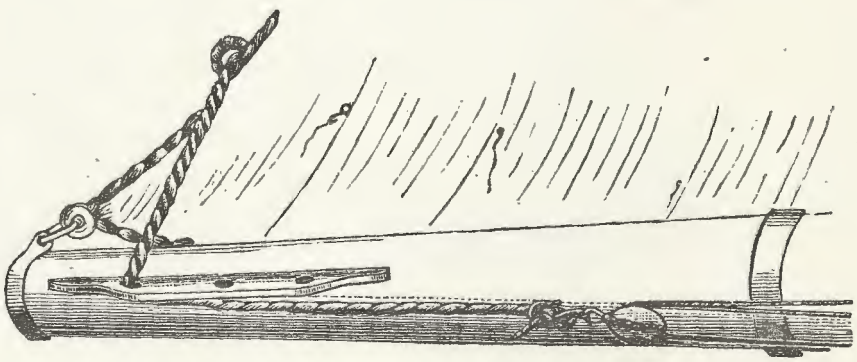
Now take a good reef-earing, about three-and-a-half fathoms in length, and reeve it in the clew cringle, pass it through the reef cringle, and lash the two cringles close together ; then place some parcelling round the sail in the wake of the earing, and take several turns of the earing right round the sail, over the parcelling ; an old gunny bag is mostly taken for this job. Be careful in gathering up the foot of the sail taut along from the reef cringle to the foot of the luff cringle, for if the foot gets puckered between the points when rousing the sheet aft it will have a great tendency to split the sail. But fore and main trysails with standing gaffs are clumsy sails to reef, and if it is blowing that hard that the sails must be brailed in altogether, and the sheet let go, this complicates matters, and it is next to impossible under such circumstances to whip in a good reef. The sail should not be *rolled*, but gathered up, and the footrope left taut along underneath to take the chafe off the points, which must not be tied *too* taut.

But on the other hand, if it is a spanker with a running gaff, which lowers down on deck like a schooner's mainsail, reefing it becomes an easy matter, and a first-class reef may be put in.

Act thus :—Reeve a reef pennant through the boom end in the cleats fitted for that purpose, have a tackle handy before lowering away

the gaff; lower away the jaws of the gaff till it is as far down as necessary—nearly right down if you are going to close reef it—then ease away the peak halyards a couple of fathom. Let a couple of hands get on the boom, which beforehand must be well steadied by the guys and sheet, let them reeve the reef pennant through the reef cringle, and then through the hole in the reef cleat at the end of the boom, and hook on the tackle to the end of the pennant, the other block of the tackle hook on about the gooseneck, at the inner end of the boom. Get plenty of men on this tackle, and rouse the reef cringle well out to the end of the boom, at the same time putting a small tackle—the handy billy will do—upon the reef cringle belonging to the same reef on the luff of the sail.

When the reef cringle is as far out as you require it, and the reef band tight from the mast, put some parcelling on the sail in the wake of the reef cringle, and pass an earing with seven or eight turns through it and round the boom end, binding the cringle taut down on top of the boom. Then let the hands distribute themselves along the sail, gather up the foot evenly, and tie all the points. The sail is then reefed, and if care has been exercised in gathering it up, it should stand quite as well as a whole sail.



Reef pennant of spanker.

Plate No. 61.

But if the sail has no boom, and it is a running gaff, keep the sheet fast, lower away the throat and peak halyards as much as you require, then take a good reef earing and reeve it through its own part in the clew cringle of the sail, and lash the clew cringle to the reef cringle; then finish off the end of the earing by taking several turns right round

that part of the sail contained between the clew and the reef cringles. Do it as snugly as possible; but you cannot help a very ugly bunch of canvas and rope combined hanging and dangling about the clew of the sail in trysails which have a standing gaff and no boom.

In finishing off the end of the earing, mind and take a round turn round the cringle before hitching the end. This will prevent the hitches jamming when rousing aft the sheet.

In conclusion we may add, too much care and caution cannot be used in reefing any sail. If you trust all to the crew (mind, some of them may be very young at the profession), and not set an officer to overhaul the reef before setting the sail, you may go scot-free many times, but there *will come a day* when you will lose a sail. And mind this might occur at a very inopportune moment—perchance when beating off a lee shore—when the safety of the ship and all hands' lives are concerned; for you must ever remember that amongst a large vessel's crew there is generally some luckless wight who is neither soldier nor sailor, who knows nothing about reefing a sail, and cares less. Yet he counts one on the yard, and ties his points accordingly, *as he thinks fit;* and it may, or it may not be, a granny's knot, too tight or too slack, &c.

But if a careful officer is aloft, who has some *nous* about him, he will detect this man's shortcomings, and rectify the error before setting the sail.

SECTION XX.

SCUDDING, ROUNDING TO, AND WEARING IN SEVERE WEATHER.

In these days of double topsail and topgallant sails, scudding is an easier business to manage than it was when the topsails were whole sails.

Short bluff ships will run safely much longer than clippers of low freeboard and great length, and these latter ships should be hove-to in time. But it sometimes happens that the vessel has been run too long, and the time for heaving-to is past.

(The writer has a vivid recollection of a case of this kind, where, with double-reefed topsails on the cap, an old-fashioned East Indiaman was steered for some six or seven hours by the captain himself, the chief officer at the lee wheel, and two quartermasters assisting, until the heaviest of the gale was over, the sea less dangerous, and

daylight had appeared. In this case it was too late to heave-to, and if a sheet had been started, the sail would undoubtedly have been blown to ribbons. One dangerous sea was shipped, which filled level the main deck to the top of the high old-fashioned bulwarks, some seven or eight feet, and washed away the hammock-netting. With this exception she ran it out without accident.)

The best canvas to carry at a time like this is (for most vessels) the lower fore or main topsail, and perhaps reefed upper main topsail, and reefed foresail, *and the fore topmast staysail.* This latter sail should always be carried, when scudding, with the sheets well flat, the weather-sheet being dipped over the stay, and also hauled aft, so that both sheets divide the strain.

Perhaps in the case of running out of a hurricane, when it is necessary to keep the wind and sea quarterly, it might be found that the lower fore topsail would be a better sail than the main. In this case, if the main topmast staysail be a good sail, and not too large, it might be carried with advantage as well as the fore topmast staysail; but it unfortunately often happens that cyclones are encountered when the previous weather has been fine, and the wind perhaps light, so that possibly the best suit of sails is down in the locker. This is a matter worth consideration when crossing a hurricane district during the season.

The chief dangers to guard against in scudding are getting by the lee, or broaching-to.

The first of these is when the wind has been quartering, and the vessel flies off, bringing the wind on the other side, shivering and possibly laying the sails aback. With a heavy, irregular sea running, this is an accident not unlikely to occur, unless the steerage is most carefully attended to. Should this happen, hard up the helm (unless already so), ease away the fore tack and sheet, being careful not to let them run; fill the foresail by squaring in the yard or bracing it round if necessary (the weather-brace being carefully tended), and shiver the lower main topsail. When she brings the wind aft again, meet her with the helm, and again trim the yards as they were before.

"Broaching-to" is, when running, the ship flies up into the wind, and comes a-back. If it is found that she inclines to do this, it is best to set the lower fore topsail (before it happens), as well as, or in lieu of, the main, and perhaps take the foresail in. Should this accident occur, the helm will be already hard up; keep it so; brace the main-yard into the wind, and fill the fore yard, only easing off the weather fore sheet as far as necessary. Should she be under lower fore topsail

and topmast staysail, the fore yard will be easily filled. But whatever means are necessary must be used as quickly as possible to prevent her getting stern-way, as it is almost certain that, if this accident does happen, at least one sea will be shipped before she is again got before the wind; and should she gather stern-way it is a serious matter—it is a position of great danger to be placed in.*

At one time there was a very prevalent idea amongst seamen that in scudding before a storm the main topsail was *a necessity*, as they considered it helped to keep the ship's stern out of the sea. But we believe that idea is now, generally speaking, exploded, and the great bulk of modern seamen have discarded the use of this sail when scudding, for the following reasons:—

It becalms the fore topsail, and takes away its power of directing the ship's head.

If the vessel yaws about much on a high sea, it helps to broach her to.

And the ship's momentum through the water, being derived from a force acting on the centre of the structure, helps to retard the good steering qualifications of the vessel; therefore many modern seamen scud their vessels under reefed foresail, and lower fore topsail.

In scudding, when judgment says it is best to round-to, make all preparations before attempting to do so. In a vessel which is not too heavy aloft, the royal yards can often be sent on deck whilst running, and this will ease considerably the strain aloft; it is seldom possible to get the topgallant yards down in a vessel of any size. Let the carpenter look well to his hatches, see that the wedges are all secure, and that there are no lugs of tarpaulin sticking out for the sea to get hold of. Let the sails all be looked to, and, when necessary, preventer gaskets passed; see that there is nothing that can get adrift, and that the skylights, booby-hatches, and deck-house doors are secured, and heave-to by *daylight* whenever possible.

Haul down the fore topmast staysail and stow it. If the foresail be set, get it in, and as well stowed as possible under the circumstances; and if both fore and main lower topsails are set, take in one of them, leaving set whichever the vessel lies-to best with—if you have not had experience of her, leave the main one set. Now watch the sea. It is a matter of common observation that two or three heavy seas often come together; try and watch for such a slant as this, and as

* If she has come-to, and lies so, probably it would in most cases be best to keep her there and heave her to.

soon as ever the second sea (unless a third one is coming) breaks on the counter, ease the helm down, and run the main yard forward and get the men off deck, seeing also that those at the wheel have got a turn of a line round them. It may be that she will come-to without shipping a heavy sea, but the chances are against it if she is at all deeply laden. As you put the helm down pour a good quantity of oil overboard, and continue to do so as she is rounding-to.

In laying-to under a lower main topsail, the ship will often behave better if the head-yards are checked in a couple of points. The helm must not be lashed hard a-lee, but should be carried about three points down, and in some cases, by tending the ship with the helm, she will lay-to easier.

She will now come-to and fall off, the wake probably trending away abeam, or a little before or abaft it; this will smooth the sea, and to a great extent prevent it breaking aboard. If it is running very heavy, a stout clothes bag, with a few holes punched in it with a roping needle, filled with oil, and payed out by a line to windward, will help very much to smooth the sea, and give a deep laden vessel a better chance of riding the gale out in safety.

Should the topsail be blown out of the bolt-ropes, a tarpaulin must, if required—which is not always the case—be put in the rigging. To do this it must be rolled up neatly, and a few stops must be put round it. It can then be carried into the rigging and placed athwart the shrouds, so that when cast adrift it will unroll upwards. Cast the stops off, let the wind unroll it, and stop it securely in position.

Keep the crew as little exposed about the decks as possible, in case a heavy sea drops over the weather bulwarks.

If you find she falls off very much, and lays herself in the trough of the sea, she then becomes dangerous, and other measures will have to be adopted. If it blows very fierce, reef the mizzen staysail, if you have one, and set it; or if you have a main trysail, haul the foot out, keeping the head in, and put a strong lashing round the head, for fear the down-haul should part.

It may be that, being hove-to, it is necessary to get her round on the other tack. If the gale and sea are very heavy, this will be a matter of difficulty. It has been recommended to use a drag from the lee quarter to help the ship, and perhaps in an emergency this might be resorted to; but under ordinary circumstances it will usually be sufficient to set the fore topmast staysail and fore lower topsail, or perhaps a goose-wing of it. Fill the fore-yard and brace the after-yards to the wind, clewing up the main lower topsail if necessary. Do not jam the

helm hard up. If you watch when she falls off, less helm will do, and so much strain will not be put on the rudder.

But suppose the vessel to have been hove-to in a hurricane on the wrong tack, that the mistake has been discovered, and that it is *necessary for the safety of the ship* that she should be got round.

In the first place, she will be under bare poles, for no canvas can be shown in these storms. A drag must then, if possible, be used; and if this fail it might be necessary to cut away the mizzen topmast, in which case the wreck would probably help her round, if used as a drag, by bending a line to it and holding it on at the stern. This will draw her stern up to windward till she is right off before it. The line may now, if necessary, be passed along forward to bring her to the wind, and if thought prudent, the vessel may be allowed to ride to it; but in that case the line should not be made fast right forward, for fear of bringing her bows on to the sea, when she might possibly be canted on to the other tack again. This procedure is bound to answer. The loss of the mast itself will assist her in falling off, and it is better to lose one mast than risk losing all by remaining on the wrong tack and getting brought aback.* But in such an extreme emergency as this all will depend on the thorough seamanship of the master, who will want no book to guide him. It is only with the utmost difficulty that any work can be proceeded with when actually caught in a bad cyclone, but many seeming impossibilities can be overcome when it becomes a matter of life or death.

When scudding, if there is no hood or protection over the wheel, compel the helmsmen to make themselves fast, and strictly order them not to look aft. As a rule, seamen, from some stupid idea—possibly that it is lubberly—will not secure themselves when at the wheel, unless forced to do so; but if a man knows he has hold of something, in case the ship is "pooped" (*i.e.*, is over-run by a sea), it gives him confidence, and enables him to attend more coolly to his steering. Again, if a man is allowed to look round at the sea, he gets nervous, and begins to steer badly at once, thinking, in fact, of other things than what he is about.

Do not allow a bad steersman to remain at the helm under such circumstances as this; and if the gale is *exceptionally* heavy, and you have got a man at the wheel who is keeping her along nice and smoothly, it is better to let him stay there the whole four hours, if necessary, than to relieve the wheel at the usual time.

* In cutting away masts, always cut away lee rigging first, then weather-side, beginning aft, and the stays and foremast weather-shrouds together.

When relieving the wheel, the steering should be most narrowly watched till the fresh hand has got the run of her. A spare lamp should also be kept lighted, ready in case the binnacle lamp should blow out. From want of attention to these points many cases of broaching-to and getting by the lee have happened *at the change of the watch.* Sad accidents have also occurred several times on board of Atlantic steamers from the same causes.

A man turns up on deck, both eyes bunged up with sleep, and gets hold of the wheel spokes before his eyes are open. The officer of the watch, instead of being, as he should be, extra vigilant, is giving the orders to *his* relief. A careless piece of steering is the consequence, often with fatal results. In one of the best known Atlantic mail boats, only a few months after the writer of this article left her, the captain, chief, and second officers were all washed overboard together from the bridge *whilst the wheel was being relieved.* She steered from aft, the junior officer conning her at the time.

But now comes the question—When a ship is making bad weather scudding, and it is necessary to do something for her safety, is 'heaving-to' the *best* manœuvre? From a discussion initiated by one of the authors in the *Nautical Magazine* for 1895, it would appear that shortening sail, or scudding under bare poles, is after all the best method to adopt. In every case where it has been tried, success seems to have followed, and it appears that the more a vessel's speed is eased the better she behaves and the easier she steers; and, even when all canvas has been furled, if it is necessary to bring her to the wind, she will come-to better than if any sail was set. We therefore recommend this matter to the notice of our readers, and advise that when running before a heavy gale (in sail or steam), when the ship begins to make bad weather, *reduce her speed* as much as possible.