that case a round seizing is placed between the dead-eye and the splice. The dead-eyes should be in diameter 11/2 times the circumference of a hemp shroud and thrice that of wire ; the lanyard should be half the nominal size of hemp and the same size as wire : thus, hemp-shroud 12 inches, wire 6 inches, dead- eye 18, lanyard 6 inches.

*Short* *Splice.—*The most common description of splice is when a rope is lengthened by another of the same size, or nearly so. Fig. 22 represents a splice of this kind : the strands

have been unlaid, married, and passed through with the assistance of a marling- spike, over one strand and under the next, twice each way. The ends are then cut off close. To render the splice neater the strands should have been halved before turning them in a second time, the upper half of each strand only being turned in ; then all are cut off smooth. *Eye- Splice.—* Unlay the strands and place them upon the same rope spread at such a distance as to give the size of the eye ; enter the centre strand (unlaid) under a strand of the rope (as above) and the other two in a similar manner on their respective sides of the first ; taper each end and pass them through again. If neatness is desired, reduce the ends and pass them through once more ; cut off smooth and serve the part disturbed tightly with suitable hard line. Uses too numerous to mention. *Cut Splice.—Made* in a similar manner to an eye- splice, but of two pieces of rope, therefore with two splices. Used for mast­head pendants, jib-guys, breast backstays, and even odd shrouds, to keep the eyes of the rigging lower by one part. It is not so strong as two separate eyes. *Horse-Shoe Splice.—*Made similar to the above, but one part much shorter than the other, or another piece of rope is spliced across an eye, forming a horse­shoe with two long legs. Used for back-ropes on dolphin striker, backstays (one on each side), and cutter’s runner pendants. *Long Splice.—*The strands must be unlaid about three times as much as for a short splice and married,— care being taken to preserve the lay or shape of each. Unlay one of the strands still further and follow up the vacant space with the corresponding strand of the other part, fitting it firmly into the rope till only a few inches remain. Treat the other side in a similar manner. There will then appear two long strands in the centre and a long and a short one on each side. The splice is practically divided into three distinct parts ; at each the strands are divided and the corresponding halves knotted (as shown on the top of fig. 24) and turned in twice. The half strand may, if desired, be still further reduced before the halves are turned in for the second time. This and all other splices should be well stretched and hammered into shape before the ends are cut off. The long splice alone is adapted to running ropes.

*Shroud Knot* (fig. 23).—Pass a stop at such distance from each end of the broken shroud as to afford sufficient length of strands, when it is unlaid, to form a single wall knot on each side after the parts have been married ; it will then appear as represented in the figure, the strands having been well tarred and hove taut separately. The part *a* provides the knot on the opposite side and the ends *b, b ;* the part c provides the knot and the ends *d, d.* After the knot has been well stretched the ends are tapered, laid smoothly between the strands of the shroud, and firmly served ever. This knot is used when shrouds or stays are broken. *French Shroud Knot.—*Marry the parts with a similar amount of end as before ; stop one set of strands taut up on the shroud (to keep the parts together) ; and turn the ends back on their own part, forming bights. Make a single wall knot with the other three strands round the said bights and shroud ; haul the knot taut first and stretch the whole ; then heave down the bights close: it will look like the ordinary shroud knot. It is very liable to slip. If the ends by which the wall knot are made after being hove were passed through the bights, it would make the knot stronger. The ends would be tapered and served.

*Flemish Eye* (fig. 24).—Secure a spar or toggle twice the circumference of the rope intended to be rove through the eye ; unlay the rope which is to form the eye about three times its circumference, at which part place a strong whipping. Point the rope vertically under the eye, and bind it taut up by the core if it is four-stranded rope, otherwise by a few yarns. While doing so, arrange six or twelve pieces of spun-yarn at equal distances on the wood and exactly halve the number of yarns that have been unlaid. If it is a small rope, select two or three yarns from each side near the centre ; cross them over the top at *a* ; and half knot them tightly. So continue till all are ex­pended and drawn down tightly on the op­posite side to that from which they came, being thoroughly intermixed. Tie the pieces of spun-yarn which were placed under the eye tightly round various parts to keep the eye in shape when taken off the spar, till they are replaced by turns of marline hove on as taut as possible, the hitches forming a central line outside the eye. Heave on a good seizing of spun-yarn close below the spar and another between six and twelve inches below the first ; it may then be parcelled and served ; the eye is served over twice, and well tarred each time. As large ropes are composed of so many yarns, a greater number must be knotted over the toggle each time ; a 4-inch rope has 132 yarns, which would require 22 knottings of six each time ; a 10-inch rope has 834 yarns, therefore, if ten are taken from each side every time, about twice that number of hitches will be required ; sometimes only half the yarns are hitched, the others being merely passed over. The chief use of these eyes has been to form the collars of stays, the whole stay in each case having to be rove through it,—a very inconvenient device. It is almost superseded for that purpose by a leg spliced in the stay and lashing eyes abaft the mast, for which it is commonly used at present. This eye is not always called by the same name, but the weight of evidence is in favour of calling it a Flemish eye. *Ropemaker's Eye,* which also has alternative names, is formed by taking out of a rope one strand longer by 6 inches or a foot than the required eye, then placing the ends of the two strands a similar distance below the dis­turbance of the one strand, that is, at the size of the eye ; the single strand is led back through the vacant space it left till it arrives at the neck of the eye, with a similar length of spare end to the other two strands. They are all seized together, scraped, tapered, marled, and served. The principal merit is neatness.

*Mouse* *on* *a Stay.—*Formed by turns of coarse spun-yarn hove taut round the stay, over parcelling at the requisite distance from the eye to form the collar ; assistance is given by a padding of short yarns distributed equally round the

rope, which, after being firmly secured, especially at what is to be the under part, are turned back over the first layer and seized down again, thus making a shoulder ; sometimes it is formed with

parcelling only. In either case it is finished by marling, followed by serving or grafting.

The use is to prevent the Flemish eye in the end of the stay from slipping up any farther.

*Rolling Hitch* (fig. 25).—Two round turns are taken round a spar or large rope in the direction in which it is to be hauled and one half-hitch on the other side of the hauling part. This is very useful, as it can be put on and off quickly.

*Round Seizing* (fig. 26).—So named when the rope it secures does not cross another and there are three sets of turns. The size of the seizing line is about one-sixth (nominal) that of the ropes to be

secured, but varies according to the number of turns to be taken. An eye is spliced in the line and the end rove through it, em­bracing both parts. If either part is to be spread open, commence farthest from that part ; place tarred canvas under the seizing ; pass the line round as many times (with much slack) as it is intended to have under-turns ; and pass the end back through them all and through the eye. Secure the eye from rendering round by the ends of its splice ; heave the turns on with a marling-spike (see fig. 8), perhaps seven or nine ; haul the end through taut ; and commence again the riding turns in the hollows of the first. If the end is not taken back through the eye but pushed up between the last two turns (as is sometimes recommended), the riders must be passed the opposite way in order to follow the direction of the under-turns, which are always one more in number than the riders. When the riders are complete, the end is forced between the last lower turns and two cross turns are taken, the end coming up where it went down, when a wall knot is made with the strands and the ends cut close ; or the end may be taken once round the shroud. *Throat Seising.—*Two ropes or parts ot ropes are laid on each other parallel and receive a seizing similar to that shown in fig. 21,—that is, with upper and riding, but no cross turns. As the two parts of rope are intended to turn up at right angles to the direction in which they were secured, the seizing should be of stouter line and short, not exceed­ing seven lower and six riding turns. The end is better secured with a turn round the standing part. Used for turning in dead-eyes and variously. *Hat Seizing.—*Commenced similarly to the above, but it has neither riding nor cross turns

*Racking-Seizing* (fig. 27).—A running eye having been spliced round one part, of the rope, the line is passed entirely round the other part, crossed back round the first part, and so on for

ten to twenty turns accord­ing to the expected strain,· every turn being hove as tight as possible, after which round turns are passed to fill the spaces at the back of each rope, by taking the end *a* over both parts into the hollow at *b,* returning at c, and going over to *d.* When it reaches *e* a turn may be taken round that rope only, the end rove under it, and a half-hitch taken, which will form a clove hitch ; knot the end and cut it close. When the shrouds ate wire (which is half the size of hemp) and the end turned up round a dead-eye of any kind, wire-seizings are preferable. It appears very undesirable to have wire rigging combined with plates or screws for setting it up, as in case of accident —such as that of the mast going over the side, a shot or collision breaking the ironwork—the seamen are powerless.

*Diamond Knot* (figs. 28, 29).—The rope must be unlaid as fares the centre if the knot is required there, and the strands handled with great care to keep the lay in them. Three bights are turned

up as in fig. 28, and the end of *a* is taken over 6 and up the bight *c.* The end of *b* is taken over *c* and up through *a.* The end c is taken over *a* and through 6. When hauled taut and the strands are laid up again it will appear as in fig. 29. Any number of knots may be made on the same rope. They were used on man-ropes, the foot-ropes on the jibboom, and similar places, where it was necessary to give a good hold for the hands or feet. Turk's heads are now generally used. *Double Dia­mond.—Made* by the ends of a single dia­mond following their own part till the knot is repeated. Used at the upper end of a side rope as an ornamental stopper- knot.

*Stropping-Blocks.—*There are various modes of securing blocks to ropes ; the most simple is to splice an eye at the end of the rope a little longer than the block and pass a round

seizing to keep it in place ; such is the case with jib- pendants. As a general rule, the parts of a strop combined should possess greater strength than the parts of the fall which act against it. The shell of an ordinary block should be about three times the circumference of the rope which is to reeve through it, as a 9-inch block for a 3-inch rope; but small ropes require larger blocks in proportion, as a 4-inch block for a 1-inch rope.

When the work to be done is very important the blocks are much larger; brace - blocks are more than five times the nominal size of the brace. Leading-blocks and sheaves in racks are generally smaller than the blocks through which the ropes pass farther