Boy's Manual of Seamanship and Gunnery

and System of School Training 1870

The upper school division is to consist of two classes for instruction, and are to be called the first and second classes, which are to be subdivided into four parts, to regulate the attendance. **These two classes are the equivalent of {Advanced Class} AC Boys' Upper and AC Boys' Lower. Ganges DID NOT have AC Boys'.**

The subjects of instruction in the several classes are to be:

1st Class To read and write well and correctly from dictation. Arithmetic: Rule of three, simple and compound ; fractions, vulgar and decimal (to be optional) ; and practice.

2nd Class To read and write well and freely from dictation. Arithmetic Reduction to compound division.

The lower school division is also to consist of two classes for instruction, to be called the third and fourth classes. They are to be arranged into two parts each, so as to regulate the attendance. **These two classes are the equivalent of Ordinary Boys, later to become {General Class} GC Boys' Upper and GC Boys' Lower. Ganges ONLY HAD GC Boys' although she had AC Boys' who were Pupil Teachers having first trained in First Class Training Ships and subsequently chosen to be career teachers after training in a Teachers Training College.**

The qualifications of the classes are to be:

3rd Class To read and write fairly. Arithmetic: Simple multiplication, short and long division.

4th Class To read and write a little. Arithmetic: Numeration to multiplication.

REGULATIONS FOR CONDUCTING THE MORNING INSPECTION

The boys are to fall in at 8.30 A.M., {**note that the use of the 24 hour clock did not start until many years later**} with their towels in hand. As soon as they have been mustered, they are to be hung up on lines, the instructors attending to see that it is properly done. No towels are to be taken below, nor are the boys to place them inside of their frock, or the waistband of their trousers :

When the boys reassemble, the following system is to be carried out by the ship's corporals {**fore runners of the Regulation Branch**} and instructors :

First. The sleeves of the frocks are to be turned up above the elbow, and the cleanliness of the person is to be minutely ascertained.

Second. " Right about face." Examine critically the state of the clothing, which is to be in good repair, and free from grease.

Third. " Right half face." Each boy is to hold up, first his right arm, and afterwards his left, to show that his frock is in proper repair.

Fourth." Front." Off shoes and stockings. Tuck the trousers up above the knees; examine legs and feet.

Fifth. " Right about face." Examine heels, legs, and heads.

Sixth." Front." Off caps. Instructors and police are to satisfy themselves that the hair has been properly cut, after which the caps are to be examined to ascertain that they are properly marked, as also that a good chin-stay is attached to each.

Seventh. The frock collars and shoes are to be inspected at least once a week, to see that they have been properly marked, as also to renew the marking of the serges, which may have been washed out. {**the reason why names were to be sewn-in using red silk cotton to avoid this happening**}.

Eighth. On Tuesdays and Thursdays the boys are to appear at divisions, with the sleeves of the blue frock turned up in order to show that they have a clean white one underneath

REGULATIONS FOR THE DISCHARGE OF BOYS.

As soon as a boy has completed one year under training, if he has attained the age of sixteen, and can pass the following examination, he is to be advanced to the first class, and discharged for sea service

EXAMINATION FOR THE RATING OF FIRST-CLASS BOYS.

Seamanship.

1st. To be well up in the 1st, 2nd, 3rd, and 4th instructions, as detailed in the training regulations, and to be able to pass nippers and stoppers. {**see below**}

2nd. To have a perfect knowledge of the different parts of a sail ; to be able to name the gear that is attached to it, and how it is bent; also to pass an earring; and to be able to reeve running gear for plain sail.

3rd. To be able to use the palm and needle fairly, to sew a seam, and to work an eyelet-hole.

4th. To be able to pull in a boat.

5th To have a perfect knowledge of the helm, lead, and compass; to understand and explain compass bearings, as also the system of bow lights.

6th. To be able to swim.

Gunnery.

To be well up in the Truck Gun instructions, as also in the rifle and sword drills. A passing book is to be kept in each training. ship, in which the result of each examination is to be noted, after which it is to be submitted to the Captain, who will note thereon what boys are to be rated.

DRESS REGULATIONS TO BE OBSERVED BY THE BOYS IN THE TRAINING SHIPS

(To be hung up on boards between Decks.) ,

A uniform pattern of clothes having been adopted for the boys, they are strictly enjoined that they will not be permitted to make any alteration whatever in their clothing. All are to be dressed exactly alike *in every respect*. The collars of the frocks are not to exceed 17 inches in length, and 8 inches in depth. No needlework or embroidery will be allowed to be worn.

The boys of the watch that are to come on deck after breakfast are always to be dressed, and their bags stowed before they fall in to muster.

Both watches are to fall in for muster and inspection half an hour before divisions, notice of the time being given by sound of bugle. They are to bring their towels with them when they fall in.

Clean frocks are to be put on on Sundays, Tuesdays, and Thursdays, and the flannels are to be changed every Sunday morning.

Shirts may be worn from evening inspection until the next morning, but at no other time.

Hat ribbons are all to be of the same pattern.

In warm weather each boy is to muster at divisions on Wednesday and Friday, dressed in white duck jumpers, in readiness for general exercise.

On Sundays and Thursdays all are to appear at divisions, dressed in their best suits and with shoes on.

The round blue bonnet is always to be worn on board, excepting boats' crews, side boys, and messengers, who are to wear the uniform cloth cap and ribbon, and are also always to have shoes on. No boy is ever to be permitted to go into a boat without having shoes on.

Each boy is to bring with him to divisions for inspection on Thursday, his Seaman's Catechism, two combs, knife and lanyard, hammock and clothes stops, as also his round blue bonnet.

Boats' crews, side boys, and messengers, are to fall in by themselves daily for inspection, immediately after breakfast, and they are to remain dressed until after supper.

Clothes and bedding will be mustered and inspected by watches on the first and second Thursday in every month; the former are always to be kept neatly rolled and stopped round.

The bags not to be unstowed, excepting at the appointed hours, and are never to be left lying about the decks ; they are either to be stowed between the messes or placed in the racks.

No clothes or shoes are ever to be issued without being previously marked by the police and shoemakers with *the boy's name in full.*

It is hoped that every boy will see the necessity of keeping his person very clean, and always well washed, as also that he will take a pride in acquiring habits of cleanliness and neatness in his dress.

MESS REGULATIONS.

(To be placed on a board and hung up on the mess decks.)

Two boys are to be selected as captains to each mess. They are to wear an anchor badge on their sleeve, and will held responsible for the order and cleanliness of their messes

Two cooks are daily, at breakfast time, to be selected for each mess, whose duty it will be to procure the food, to lay the tables, to clean the mess traps, and to sweep the mess out after meals.

At 11.30, one cook is to lay the table with the mess traps, and the other is to go to the coppers for the meat, &c. This, is to be divided, and a portion put into each plate by the captains of the messes, under the supervision of the instructors and the Officer of the deck. The boys are all to be ranged outside the stools, standing. When the dinner has been portioned out, it will be inspected by a lieutenant, after which the senior boys of each mess will say grace, and the .boys are to be seated and dine with their caps off.

Nothing is to be placed overhead excepting ditty boxes, hats, and shoes, for which the racks are fitted. Nothing is to be put on the mess shelves excepting basons (sic), plates, and mess gear. All cloths, deck rubbers, and brushes, are to be kept in the mess drawer. No bread bags or tubs are to be placed on the deck under the tables. The mess cloths and deck rubbers are daily to be hung up on a line to dry at 7.30 A.M. and 12.45 p.m.

Nothing whatever is to be taken in at, or thrown out of the ports, nor are any clothes to be hung up or left lying about the mess decks.

The bags, when up, are to be stowed between the messes, and are never to be left lying about the mess decks.

No singing or riotous conduct will be permitted, and all quarrelling and fighting will be severely punished.

On no account are cards, dice, or gambling of any sort to be allowed in the messes.

Throwing biscuit at each other, being a highly dangerous practice, is strictly prohibited.

The police are ordered to report any boy making use of bad language, which is most strictly forbidden.

No boy is ever to interfere with his messmate's property. Nothing can be lost in a ship, and any anything that is found is immediately to be taken to the police of the mess decks.

Washing on the lower deck is prohibited and all haircutting and cleansing of the person is to take place in the bath rooms.

No cooking is to be allowed at the Brodie's stoves; they are never to be interfered with by the boys, and are to be under the care of the police and instructors.

Boys are never to be guilty of spitting on the deck ; it is a most filthy, disgusting, and un-English habit.

Loud talking or any noise whatever is forbidden when the boys are in their hammocks and after the lights have been put out.

The mess decks are always to be ready for inspection at the following times:- At a quarter of an hour before divisions, 11.45 A.M., 1 P.M., at evening quarters, and at the hour of the rounds.

It is to be hoped that every boy will not only take a pride in keeping his mess and traps perfectly clean, but that each will willingly and cheerfully do his share of the work, and be perfectly obedient to the captain of his mess, who is charged to carry out these orders, and to see that they are duly observed, being overlooked by, the instructors, who are to be stationed at the boys' messes, in order that there may be a complete and efficient supervision.

R U L E S

HUNG UP IN EACH MESS FOR THE INFORMATION OF NEWLY-RAISED BOYS.

1. OBEY *all* orders implicitly.

2. Never steal, never buy or sell clothes; never trade, chop or change anything in any way ; if you find or pick up what belongs to another, take it *immediately* to one of the police.

3. Always speak the truth; if you commit a fault *own it at once.*

4. Be clean and decent in your person, keep your clothes and well mended.

5. Never use bad language, never fight, strike, or quarrel with any one; be civil and obliging to all, especially at meals.

6. When you address an Officer take your cap off ; when you meet an Officer of the Army or Navy on shore, always touch your cap to him respectfully; if a flag Officer, take your cap off.

7. Never abuse indulgence; never *break your leave*.

8. Never talk or skylark *on duty*; never make a noise in your Hammocks after turning in.

9. If you are beaten and ill-treated, make your complaint respectfully on the Quarter Deck to the Commanding Officer, but be very careful that you have been strictly obedient and subordinate.

SUBJECTS COVERED [OTHER THAN SCHOOL WORK - SEE ABOVE] WHILST UNDER TRAINING.

1. Signalling:

Homograph to be used when unable to communicate by other means
Distant Signals for Boats having no reference to Colour
Semaphores
Salutes

2. Boats' Crews:

Instructions for Boats' Crews

3. Seamanship First Instruction:

Q. NAME the decks of a three-decked ship ?

A. Ships termed in the Navy three-deckers, are so named from having three batteries or gun decks under the upper deck, but they actually have five decks, viz., upper, main, middle, lower, and orlop deck, such as the " Impregnable" and "St. Vincent" training ships for boys ; the " Britannia," training ship for Naval Cadets; the " Excellent, " gunnery ship at Portsmouth; and the " Duke of Wellington," receiving ship at Portsmouth.

Q. Name the decks of a two-decked ship ?

A. So named from having two gun decks below the upper deck, but in reality, a ship termed a two-decker in the Navy has four decks, -viz., upper, main, lower, and orlop decks, such as the " Boscawen," " Implacable, " and " Ganges," training ships for boys.

Q. Name the decks of a frigate?

A. Upper, main, and lower decks ; a frigate has only one gun deck below the upper deck ; the main deck.

Q. Name the decks of a corvette or smaller vessel ?

A. Upper and lower decks; the upper deck is the gun deck.

The arrangements as to decks, holds, &c., of an iron-clad are quite different to a regular built frigate.

An iron ship, iron plated, is built in compartments (water tight).

For example: The " Resistance " and " Defence " class.

The main deck is divided into three compartments, named the after; battery, and fore compartments.

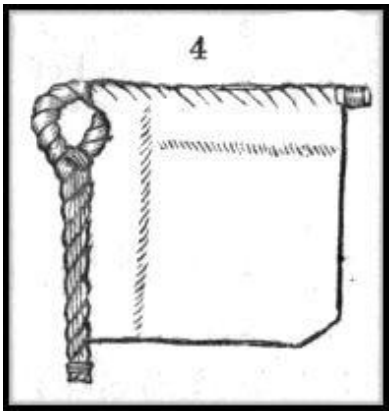
All below the main deck is divided into flats, entirely separated from each other by water-tight partitions.

A separate hatchway and ladder communicates with each flat from the main deck, therefore there is no possibility of getting from one flat to another, without again going on the main deck.

There are about thirteen flats in the " Defence " class, named according, to the use the flat is appropriated to.

Q. Name the yards, masts, and spars, in a full-rigged ship ?

A. All spars take their names from the mast to which they belong, viz., foremast, mainmast, mizenmast, fore topmast, main topmast, mizen topmast, fore topgallant and royal mast, main topgallant and royal mast, mizen topgallant and royal mast; the topgallant and royal mast are in one. Bowsprit, jib-boom, and flying jib-boom are the spars projecting from the bows. The lower yards are named fore and main yards, and the lower yard on the mizenmast is called the cross-jack-yard, on which no sail is set. The topsails, topgallant, and royal yards are named fore, main, or mizen, according to which mast they are attached, dolphin-striker, and spritsail-gaff on bowsprit. Topmast studding-sail booms on fore-yard ; topgallant studding - sail booms on fore and main topsail yards ; they are seldom carried on a mizen topsail-yard. Trysail masts are small masts placed abaft the lower masts to which they are attached, for the purpose of setting the spanker and fore and main trysail on. The spanker, or main boom, is the spar projecting over the taffrail, the inner part is fitted to the mizenmast in a ship, and to the mainmast in a brig, by two cleats or chocks of wood called jaws, forming a semicircle round the masts to keep them in place.



Q. Name the parts of a topsail?

A. Head, leeches, and foot ; the top is the head, the bottom is the foot, and the sides are the leeches ; the clews are the two lower corners, they are formed by the foot and leeches ; the head-earing cringles are in the upper corners, formed by the head and leech-ropes.

NOTE.-This applies to all square sails**.**

Q. How many bands has a topsail?

A. Six bands : four reef-bands, a belly-band, and a foot-hand.

Q. What is a reef-band ?

A. Double part of canvas across a topsail or course, for working eyelet.-holes for the reef-lines.

Q. What is a belly-band ?

A. An extra cloth of canvas across the belly of a topsail or course, below the fourth reef-band of a topsail, and the second reef-band of a course, to strengthen the sail midway between the lower reef and foot.

NOTE.-This applies to either sail**.**

Q. What is a foot-band

A. An extra part of canvas along the foot of the sail.

Q. What is a mast lining?

A. An extra part of canvas on the after part of the topsail, to take the chafe of the topmast and cap, extending from the third reef band to the belly-band, and about two cloths in width.

Q. What is a top lining ?

A. Double part of canvas on the after part of a topsail, to take the chafe of the top, extending from belly-band to foot in length, and in width according to the size of the ship.

Q. What are the buntline cloths ?

A. Double part of canvas on the fore part of a topsail, to take the chafe of the buntlines, extending in an angular direction, from foot to belly-band.

Q. What is a reef-tackle patch?

A. Extra part of canvas, to take the strain of the reef-tackle of a topsail.

Q. What is a goring cloth?

A. A side cloth of a topsail cut obliquely, or lining of a topsail, called by sailmakers the leech-lining.

Q. What is the tabling of a topsail, or any other square sail?

A. Double part of the sail to which the bolt rope is secured.

Q. What are eyelet-holes ?

A. Holes, with small grummets sewn in them, formed in the tabling and reef-bands, for the cringles, robands, reeflines, and buntline toggles.

Q. What are cringles?

A. A strand of rope worked through two eyelet holes in the leech of the sail round the bolt rope, for reef earrings, bowline bridles, and reef-tackle pendants.

NOTE.-Head earring cringles are spliced in the leech rope.

Q. Are all the cringles fitted alike?

A . No, the reef-earring and reef-tackle cringles have thimbles in them, to take the chafe of the reef-earrings and reef-tackle pendant, also to prevent the earrings jamming, and insure their rendering easily.

Q. What are robands ?

A. Pieces of sennit plaited round the head rope of a topsail, or any other square sail, for securing it to the jackstay.

Q. Are all robands alike?

A. No ; the midship roband is round rope, so that in shifting topsails, the captain of a top will readily distinguish it from the other robands, and as soon as he ascertains the topsail is clear of turns, and on the right slew, he at once secures the midship roband as near the centre of the yard as possible, so as to prevent the men at the yard-arm from hauling the sail more out to one yard-arm than to the other ; mid-ship robands are secured round the tye-block, or blocks ; if fitted with a double tye, your sail should be fitted with two midship robands.

Q. What is a bolt rope ?

A. The rope secured round the sides of a topsail to the tabling, or any other square sail.

Q. Is a foot rope secured to a topsail, or course in a similar way to the leech and head rope ?

A. No, the foot rope being wormed, parcelled, and served, it would be impossible to get a needle through it ; it is therefore marled to the topsail or course.

Q. What are head-earrings?

A. Pieces of rope spliced into the head-earring cringles, for the purpose of hauling the head of the topsail, or any other square sail, out to the head-earring strops, and taut along the yard. They are fitted with a long eye ; it forms a double part when rove through the head-earring cringle.

Q. What is a reef-earring?

A. Reef-earrings are pieces of rope, in size according to the size of the leech-rope, as when a topsail is reefed the reef-earring, when passed is supposed to bear the same amount of strain as the leech-rope.

The first and second reef-earrings are fitted with a running eye round the yard-arm, outside the lifts ; they are in length twice and a half the depths of the reefs, i.e., the first reef-earring is twice and a half the depth of the first reef, and the second reef-earring twice and a half the depth of both first and second reefs.

The third and fourth reef-earrings are spliced into the eyelet-hole in the lower part of the third and fourth reef cringles, forming a long eye sufficient to admit of both parts of the eye going round the yard and through the thimble of the reef-cringle again. The two parts of the earrings forming the long-eye are marled together, the bight being seized to the eyelet-hole. The other end of the earrings are hitched as follows : the end of the third reef-earring is rove through the second reef earring-cringle, and bowline knotted to its own part, and the end of the fourth reef-earring in a similar way through the third reef-cringle.

What is a gasket ?

A. All gaskets on lower and topsail yards are made of sword matting, cut to the required length, and fitted with an eye in each end. The upper eye is fitted with a lanyard, it is secured to the head rope of the sail. The proper length to cut a gasket is half the round of the part of the yard the gasket is to go on.

For topgallant and royal yards the harbour-gaskets are made, the upper part of French and the lower part of English sennit, an eye is formed in the upper part in making the gasket and seized to the jackstay of the yard.

Sea-gaskets, are made all through of English sennit : an eye is formed in the outer end, which is seized to the yard-arm, the gaskets being long enough to pass roundabout-turns round the sail and yard, from yard-arm to quarter, the inner end being secured to the jackstay.

Q. What is the difference between a bunt and yard-arm gasket ?

A. All bunt-gaskets are of sword matting, and the lanyards are spliced in the lower instead of the upper eyes. The upper eyes, for a course or topsail, are seized to the head ropes of the sail. For topgallant or royal yards they are seized to the jackstays. Bunt-gaskets always cross in the middle, and are secured to opposite quarters.

Q. What is a bowline bridle ?

A. Pieces of rope spliced into the bowline cringle, as follows:

For a fore and mizen-topsail, the upper bridle is spliced, the upper end to the upper bowline cringle, and the lower end in the middle bowline cringle. The lower bridle the upper end, is spliced round the upper bridle, and the lower end in the lower bowline cringle.

The bridles are in length (when fitted) once and one-third the drift of the cringles.

The upper one is served two-thirds up, and the lower one two-thirds down.

For a main topsail, the upper end of the upper bowline bridle is spliced in the upper bowline cringle, the lower end to the second cringle. The lower bridle the upper end is spliced into the third, and the lower end into the fourth cringles. The middle bridle the upper end is spliced found the lower part of the upper bridle, and the lower end round the upper part of the lower bridle.

The upper and middle bridles are served two-thirds up ; and the lower two-thirds down.

The length to cut a bowline bridle is one and two-thirds the drift from cringle to cringle.

Q. What is a clew-hanger ?

A. A piece of 1½ or 2 in. rope, according to the size of the topsail, about two fathoms in length ; they are generally spliced round the upper part of the parrel ;

when the sail is furled, they are passed round the clew, and hauled taut back to the parrel again, where they are secured.

The clew-hangers on a lower yard are fitted in a similar way, only spliced into the truss strop instead of the parrel ; sometimes they are spliced in the jackstay in the bunt of the lower yard.

Q. How do you know a main from a fore or mizen topsail?

A. The main has four bowline bridle cringles, and a fore or mizen has only three.

Q. How do you know the fore from the after part of a topsail?

A. The roping is sewed on the after part of all square sails.

Q. What would be the consequence if a topsail or any other square sail was bent, with the roping part forward ?

A. The stitches would chafe through, and the sail would blow out of the bolt ropes.

Q. How is the bead-earring secured ?

A. The end is rove through the thimble of the head-earring strop, from up down, and through the head-earring cringle from down up ; these are called the two outer turns, it is then passed four times round the yard and through the head-earring cringle each time ; these are called the four inner turns ; the end is then clove hitched round all parts of the outer turns, and expended round them or the jackstay ; thus, the number of turns taken with the head-earring are two outer and four inner.

Q. How do you secure a roband ?

A. A roband is passed round the jackstay, over, and under, and through the eyelet-hole in the head of the topsail, or any other square sail, and secured with a clove-hitch.

Q. What are reef-lines?

A. Lines running across each reef-band on fore part of a topsail, from leech to leech, secured to the upper eyelet-hole of the reef-cringle.

Q. What are naval lines ?

A. Lines running across the after part of a topsail, from leech to leech, for the purpose of securing the reef-lines, the ends of the naval lines are also secured to the upper eyelet, holes of the reef-cringles.

Q. What is a spilling line ?

A. A line up and down the fore part of a topsail, for spilling the sail when reefing.

Q. How is a reef-line secured by a naval line ?

A. Trice the sail up by the first reef-cringles, and haul it well taut, pass your naval line the aft side of the sail, making, it fast to the cringles, and heaving well taut.

Well stretch your reef-line, measure the length of your reef-bands and allow a foot extra for every three holes, the length to cut your reef-line.

Commence reeving your reef-line in the centre, and work both ways ; the man that works to the right will pass the line through the hole under the naval line, and receive back over, the man that works to the left will pass it over and under, and so on to the end, securing it to the upper hole in the cringle, and splicing it to its own part ; the other reefs in the same manner.

Q. What is the use of a reef-tackle ?

A. To light the sail out to the yard-arms in reefing arm shifting topsails.

Q. What are slab-points?

A. Slab-points are reef-points, rove through the eyelet-hole, and the reef line and naval line rove through them on their respective side.

Figures to denote the Force of the Wind

0	-	-	denotes Calm
1	Light Air	-	just sufficient to give steerage way
2	Light Breeze	with which a well-conditioned man-of-war, under all sail and clean full, would go in smooth water from	1 to 2 knot,.
3	Gentle Breeze	with which a well-conditioned man-of-war, under all sail and clean full, would go in smooth water from	3 to 4 knots
4	Moderate Breeze	with which a well-conditioned man-of-war, under all sail and clean full, would go in smooth water from	5 to 6 knots .
5	Fresh Breeze	in which the same ship could just carry close hauled	Royals, &c.
6	Strong Breeze	in which the same ship could just carry close hauled	Single reefs and topgallant sails.
7	Moderate Gale	in which the same ship could just carry close hauled	Double reefs, jib, &c.
8	Fresh Gale	in which the same ship could just carry close hauled	Triple-reefs, courses, &c
9	Strong Gale	in which the same ship could just carry close hauled	Close - reefs and courses.
10	Whole Gale	with which she could only bear	Close-reefed main topsail and reefed foresail.
11	Storm	with which she would be reduced to	Storm staysails.
12	Hurricane	to which she could show no canvas	

Letters to denote the State of the Weather

b	denotes Blue Sky-whether with clear or hazy atmosphere
c	Cloudy-i.e. Detached opening clouds
d	Drizzling Rain
f	Fog
f	Thick Fog
g	Gloomy Dark Weather
h	Hail
l	Lightning.
m	Misty or Hazy-so as to interrupt the View.
o	Overcast-i.e. the whole sky covered with one impervious cloud.
p	Passing Showers.
q	Squally.
r	Rain i.e. Continuous Rain,
s	Snow.
t	Thunder.
u	Ugly threatening appearance in the weather.
v	Visibility of Distant Objects-whether the sky be cloudy or not.
w	Wet Dew.
e	Under any letter denotes an Extraordinary Degree.

By the combination of these letters all the ordinary phenomena of the weather may be recorded with certainty and brevity.

Examples

b c m	Blue sky, with detached opening clouds, but hazy round the horizon.
g v	Gloomy, dark weather, but distant objects remarkably visible.
q p d l t	Very hard squalls, and showers of drizzle accompanied by lightning, with very heavy thunder

ARRANGEMENT OF THE CREW OF A SHIP OF WAR AS TO WATCHES, STATIONS, SLEEPING AND MESSING

Division of the Crew

Q. How is a crew divided for performing the different duties of the ship ?

A. Into two parts, or watches, called the starboard a port watch - odd numbers, starboard watch; even numbers, port watch. They stand on the watch bill as follows:-

- Chief Petty Officers and Instructors
- Boatswain's Mates, Quartermasters, Signal Men
- Forecastle Men.

- Fore-top Men, Main-top Men, Mizen-top Men.
- Quarter Deck Men
- Carpenters
- Working Idlers
- Excused Idlers
- Stokers
- Marines

N.B.-The terms after guard and gunners are abolished. and those bodies incorporated under the designation of quarter deck men, captains of the after guard becoming captains of the quarter deck men, gunners' mates retaining the name. The first part of quarter deck men will, where requisite, perform the duties that have hitherto been allotted to gunners' crews, the second part, those allotted to after guard. The gunners' mates will be at the head of the first part, and the captains of quarter deck men the second.

Distinctions.

Q. How are the two watches distinguished from each other?

A. By m piece of bright red tape, sewn on the sleeve of the blue serge and a piece of blue dungaree on the sleeve of the white frock worn on the right arm by the starboard watch, and on the left arm by the port watch.

Q. Are there any other marks of distinction?

A. Yes; all above the rating of A.B. wear a badge of distinction on their left arm-viz.

A chief petty officer	anchor and crown and wreath of oak leaf.
First-class petty officer	cross anchors and crown.
Second-class petty officer	anchor and crown
Leading seamen	anchor

Mark of Distinction worn by Seamen Gunners.

- Gunnery instructors: a crown over cross-gun, rifle, and sword.
- First-class seamen gunners : a crown over a gun.
- Second-class seamen gunners: a gun.

These distinctive badges are now worn on the right arm.

All seamen of good character are now entitled to good conduct badges, of the following colours

- On cloth . . . . . .in gold.
- On blue serge . . . . . .in red (bright).
- On white duck or drill. . . .in blue.

The distance between badges is to be three eighths of an inch.

Each watch is divided into two parts, and in large ships' companies, where there are a great number of men, it is found necessary to again divide the parts into sub-divisions.

Q. In working ship, with the hands on deck, how are the watches divided

A. The starboard watch work the starboard side of the deck, and the port watch the port side of the deck.

Q. Working ship with the watch only, how is the watch divided

A. The first part, the starboard side of the deck, and the second part, the port side of the deck.

Q. How is the day and night divided into watches?

A. The twenty-four hours is divided into seven watches - viz., afternoon watch, from noon to 4 o'clock ; first dog watch, from 4 p.m. to 6 p.m.; second dog watch, from 6 p.m. to 8 p.m. ; first watch, from 8 p.m. to midnight; middle watch, from midnight to 4 a.m. ; morning watch, from 4 a.m. to 8 a.m.; forenoon watch, from 8 a.m. noon.

The dog watches, being of only two hours each, and all the other watches four hours each, is the cause of the watches changing every twenty-four hours : thus the watch that had the first watch last night, would have the middle watch to-night ; by this plan, each watch has in turns eight hours on deck every other night at sea, and eight hours in their hammocks likewise, every other night.

Q. How is the time denoted on board ship

A. By striking a bell in the following way :-

Noon or midnight, eight o'clock and four o'clock	8 strokes of the bell
Half-past twelve, four, or eight o'clock . . .	1 bell
Half-past six in the last dog watch	1 bell
One, five, and nine o'clock	2 bells
Half-past one, five, and nine o'clock	3 bells
Half-past seven in the last dog watch	3 bells
Two, six, and ten o'clock	4 bells
Half-past two, six, and ten o'clock	5 bells
Three, seven, and eleven o'clock	6 bells
Half-past three, seven, and eleven o'clock . .	7 bells.

Thus it will be found, that the number of bells denoting the time from six to eight o'clock in the last dog watch differs from the number of bells denoting the same hour in the morning watch, on account of commencing them again with the last dog watch.

Messing

Q. How is the crew divided into messes ?

A. Master at arms, seaman-schoolmaster, and ship's steward have a mess place amidships.

The chief petty officers mess alone; 1st class petty officers mess alone.

The remainder of the crew are divided into messes, with , an equal number of each watch forming the mess, so as to insure half of each mess below at a time for cleaning the mess deck &c. - two petty officers generally in a mess.

Q. Where do the crew mess?

A. In a line-of-battle ship, on the lower deck, one mess in each space, between the guns,

In an iron-clad, in the battery compartment, two messes in each space, between the guns.

In a frigate, or smaller vessel, on the lower deck, an equal number of messes each side of the deck.

The marines always occupy the after messes on each side of the deck in all ships.

The boys are equally distributed among the messes.

Sleeping Arrangements for the Crew.

Q. How are the hammocks berthed?

A. The numbers are arranged in rotation, commencing forward, and working aft, the numbers running athwart ships ; by which plan, with a watch on deck, every other hammock is empty.

The boatswain's mates sleep close to the hatchways, ready for a call at the shortest notice.

Boys are berthed in the fore part, or one side of the main deck, under the charge of a sentry and a ship's corporal.

Hammocks.

Every one of the ship's company (and officers not provided with cabins) have two hammocks supplied to them; they are numbered for the crew with the number corresponding to their number on the watch bill; in the case of an officer, they are distinguished by a letter and number also.

One set is marked with a white figure on a black patch, and the other with a black figure on a white patch.

Marines with red figures, one on a white, and the other on a black patch.

Q. Where are the hammocks stowed?

A. In the hammock nettings, which are fitted all round the upper deck; on top of the bulwarks.

Bags.

A bag is also supplied to each man and boy, for keeping their kit in, bearing their number on the watch bill; thus it is easily ascertained (by referring to the watch bill), when a hammock or bag is found knocking about the decks, to whom it belongs.

Q. Where are the bags stowed ?

A. In the bag-racks, which are erected in a line-of-battle ship in the fore cockpit.

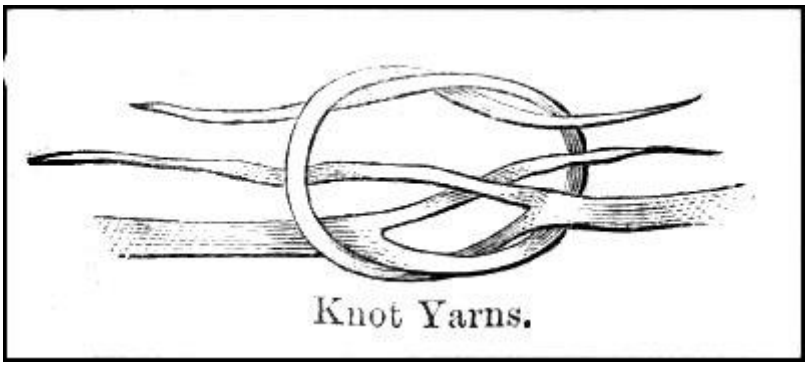
In a frigate, forward on the lower deck, or round the deck, under the mess tables.

In an iron-clad, in the bag rack flat.

4. Seamanship Second Instruction:

Describe the use of the following knots, bends, and hitches, and the mode of making them : To knot yarns; Reef-knot; Bowline knot; Bowline on a bight; Running bowline; Clove-hitch; Timber-hitch; Blackwall-hitch; Two half-hitches; Rolling-hitch; Sheet bend; Bending studdingsail halyard; Cat's-paw; Sheep shank; Carrick bend; Bend hawsers; Sling a cask; Inside clench; Outside clench; Clap on jiggers and stoppers; To use a parbuckle.

Q. How do you knot yarns?

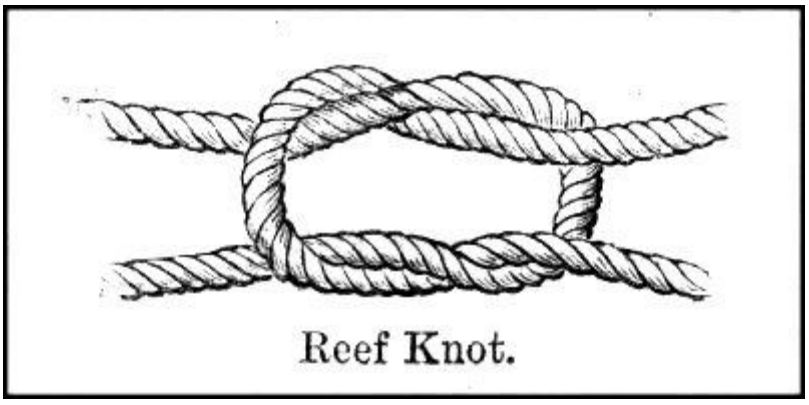


Knot Yarns.

A. Take the ends of two yarns, split them in halves about 2 ins, down, marry them together and form a reef-knot, with the opposite ends as nearly as you can ; yarns are knotted for the use of the rope-maker, for making spunyarn, nettlestuff, or any small rope.

Q. How do you make a reef-knot, and what is its use

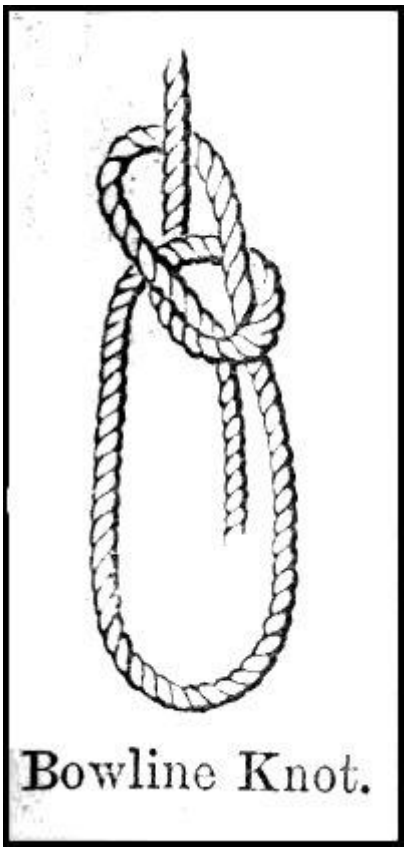
Q. How do you make a reef-knot, and what is its use ?



Reef Knot.

A. It is used for reefing sails, fitted with reef points, such as trysails, spankers, and boat sails. First make an overhanded knot round the foot of the sail, then bring the end which is next to you over the left hand and through the bight ; haul both ends taut, and it is made.

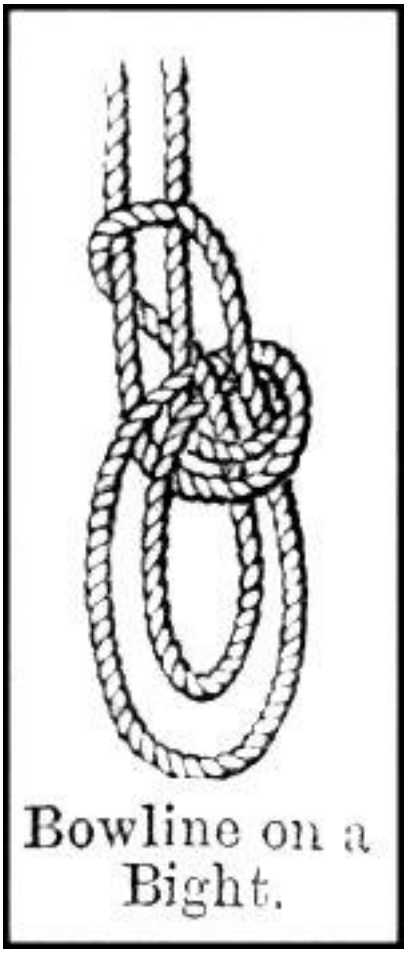
Q. What use is a bowline knot, and how is it made ?



Bowline Knot.

A. A bowline knot is used for sending a man aloft, or one down from aloft, for riding down stays, backstays, making of pair of slings, and many other purposes. Take the end of your rope in your right hand, and the standing part in your left, lay the end over the standing part, then with your left hand turn the bight of the standing part over the end part, so as to form a cuckold's neck on the standing part ; then lead the end through the standing part above, and stick it down through the cuckold's neck, and so the knot is completed.

Q. What use is a bowline on the bight, and how is it made ?



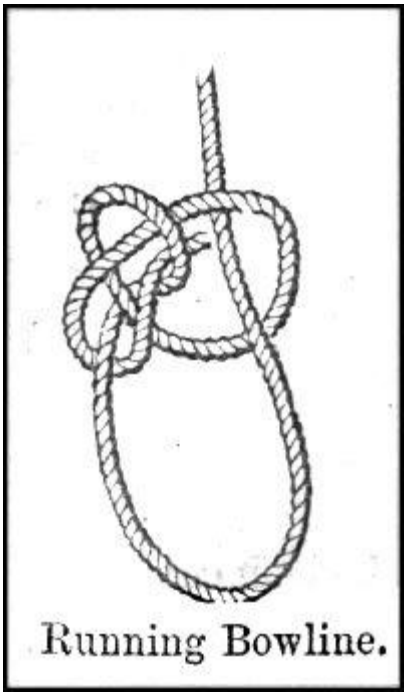
Bowline on a Bight.

A. A bowline on the bight is used when both ends are occupied, or to send a man down from aloft when he is hurt, as it is much easier to sit in.

To make the Knot.

With the bight of a rope in your right hand, and the standing part in your left, throw a cuckold's neck over the bight with the standing parts, then haul enough of the bight up through the cuckold's neck to go under and overall part, haul all taut, and the knot is completed.

Q. What is a running bowline used for, and how is it made ?



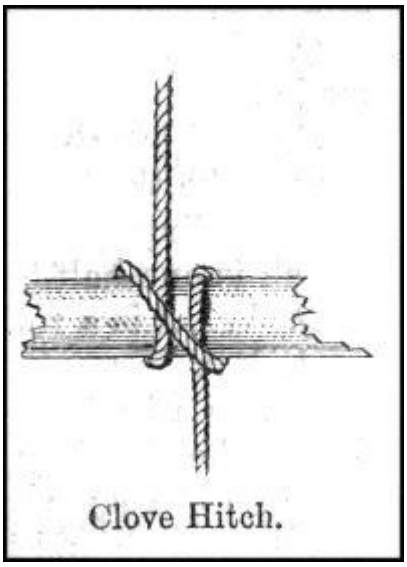
Running Bowline.

A. It is used for throwing over anything out of reach, or anything under water.

How to make the Knot.

You take the end of the rope round the standing part, through the bight, and make a single bowline upon the running part.

Q. What is a clove-hitch used for, and how is it made ?

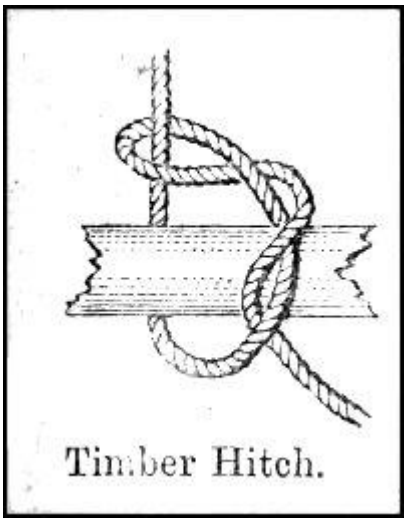


Clove Hitch.

A. It is used for rattling down the rigging. It is made by passing the end of a rope round another rope or spar, over, and bringing it under and round behind its standing part, over the rope or spar again, and up through its own part. It can be stopped or hitched to its own part as required, the only difference between two

half-hitches and a clove-hitch is, one is hitched round its own standing part, and the other is hitched round a spar or another rope.

Q. What is a timber-hitch used for, and how is it made ?



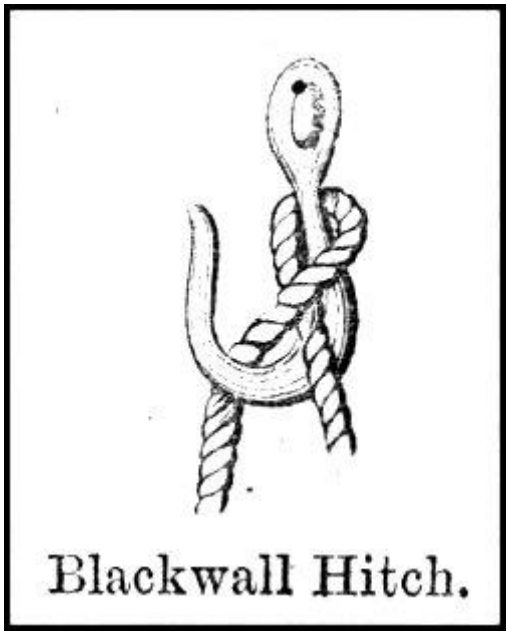
Timber Hitch.

A. For securing the end of a rope to a spar : in towing a spar, always use a half-hitch in addition to a timber-hitch.

To make the Knot.

Take the end of a rope round a spar, pass it under and over the standing part, then pass three turns round its own part, and haul it taut.

Q. What is a Blackwall hitch used for, and how is it made ?



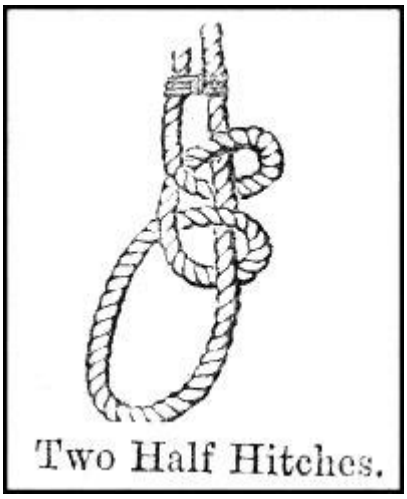
Blackwall Hitch.

A. For hooking a tackle to a rope, such as setting up lower rigging instead of a cat's-paw, where the end of the lanyard is not long enough to form a cat's-paw, but a strop and toggle is preferable.

To make the Hitch.

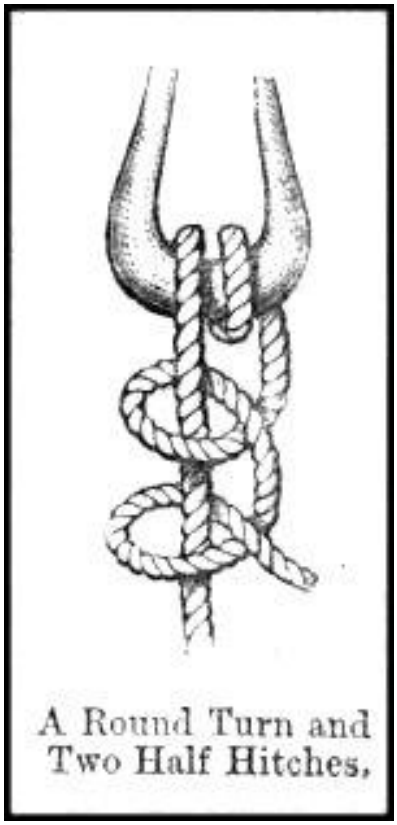
You form a bight or a kink, with the end of the lanyard, keeping the end part underneath, and the standing part on the top, put the hook through the bight, taking care to keep the bight well up on the back of the book, until there is a strain on the tackle.

Q. What are two half-hitches used for, and how are they made?



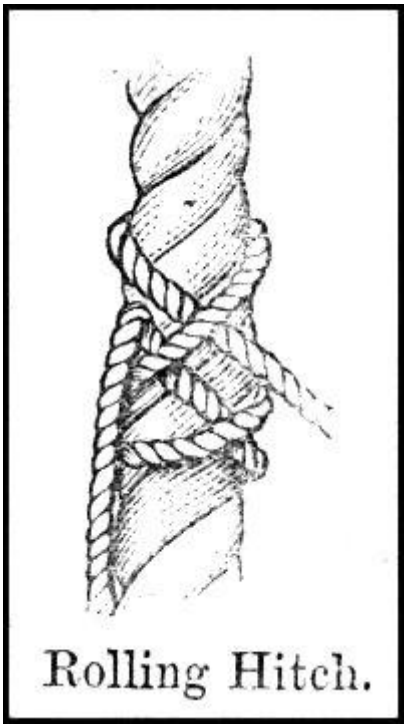
Two Half Hitches.

A. Making the end of a rope fast, such as a boat's painter. You make the knot by passing the end of your rope round the standing part, and bringing it up through the bight, which is one half-hitch ; repeat it, and the knot is completed.



A Round Turn and Two Half Hitches.

Q. What is a rolling-hitch used for, and how is it made ?

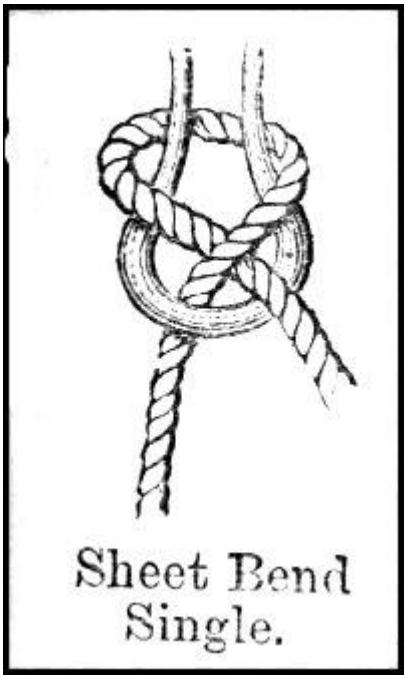


Rolling Hitch.

A. Bending a small rope to a large one, putting a tail jigger on a backstay. Make the hitch by taking a half-hitch round the standing part with the end of a rope, and

another through the same bight, hauling it well taut in place above the first hitch and the upper part of the bight, and dog the end above the hitch round the standing part, and stop, it back with spunyarn or a ropeyarn.

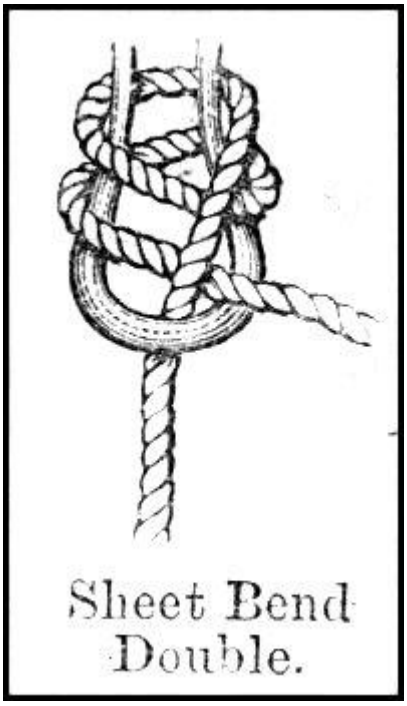
Q. What is the use of a sheet bend, and how is it made?



Making a rope's-end fast to anything, such as a becket of a swab or block.

How to make the Bend.

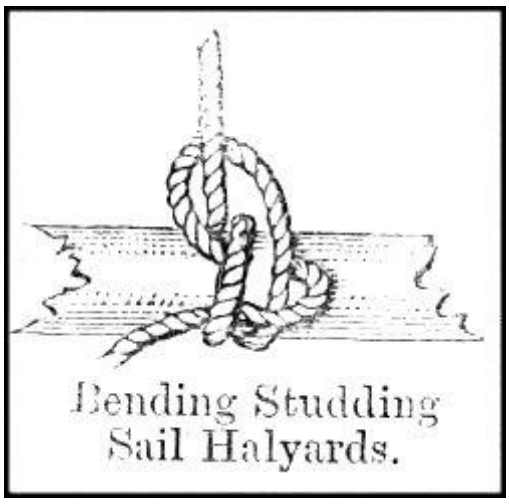
Pass the end of a rope through the bight of another rope, or through the becket of a block, or a clew of a sail ; then round both parts of the bight or becket, and take the end under its own part;



Sheet Bend Double.

it is sometimes put under twice, and the end stopped back to the standing part ; also for bending topgallant and royal clewlines, jib and staysail down-hauls.

Q. What is the use of a studdingsail halyard-bend, and how is it made?



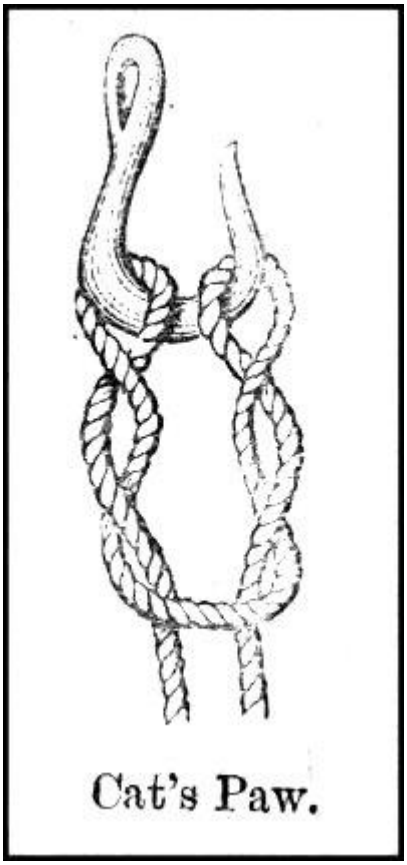
Bending Studding Sail Halyards.

A. It is used in bending studdingsail, topgallant, and royal halyards; it allows the yards to go closer to the blocks of sheaves than any other bend.

To make the Bend.

Take two round turns round the yard, pass the end from right to left under both turns, then from left to right over one, and under the other turn.

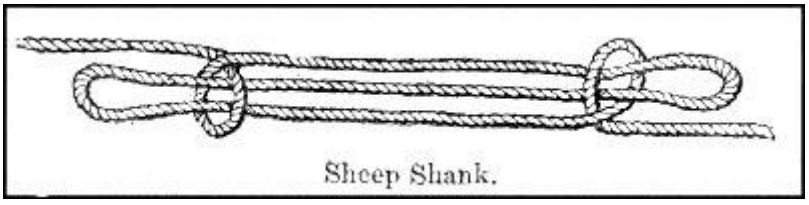
Q. What is a cat's-paw used for, and how is it made?



Cat's Paw.

A. It is used for setting up lower rigging. To form it, you first lay the end part of the lanyard across the standing part, which will form a bight ; then lay hold of the bight with one hand on each side of it, breaking it down and turning it over from you two or three times ; clap both bights together and hook on to both parts. A boatswain's toggle and strop should always be used in preference to a cat's-paw, as it is almost certain to burst the enter yarns of the lanyard.

Q. What is the use of a sheep-shank, and how is it made ?

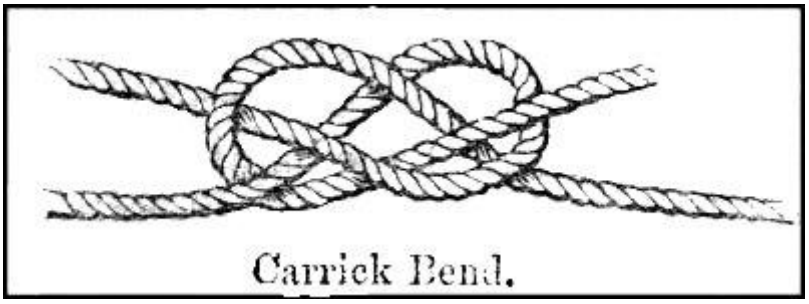


Sheep Shank.

A. For shortening in a rope, which requires to be lengthened again, such as topgallant and royal backstays, the rope is doubled in three parts, and a hitch taken over each bight with the standing part of the backstays, and hauled taut.

A Carrick Bend

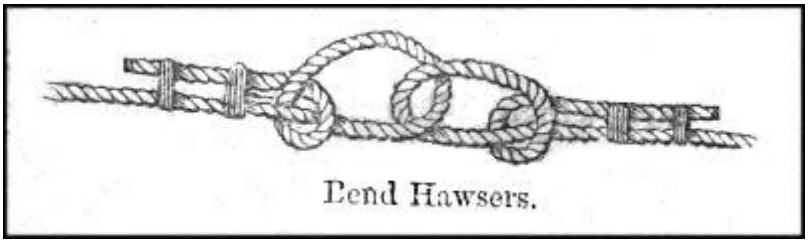
To Bend two Hawsers with a Carrick Bend.



Carrick Bend.

Take the end of a hawser and lay it across the top of standing part forming a bight, reeve the end of the second hawser down through the bight thus formed, up and over the cross, and down through the bight again on the opposite side, from the other end ; one end will then be on top, and the other underneath, one each side of the standing part ; if both ends come out on top, it will form a granny's knot.

To Bend two Hawsers with Two Bowline Knots.



Bend Hawsers.

Form a bowline knot in the end of the first hawser, dip the end of the second hawser through the bight of the first bowline knot, haul sufficient end through, and form a bowline knot with the second hawser, leaving a bight to each bowline at least a fathom long.

To Bend two Hawsers with two Half-Hitches and seizing the ends back.

Make a half-hitch in the end of the first hawser, leaving a bight at least a fathom long, reeve the end of the second hawser through the bight of the first hawser, haul end enough through on both hawsers to have at least four feet end, put a seizing on about two feet from the half-hitch, on each hawser, and stop the ends to the standing part.

Q. How do you sling a cask ?

Head up.

A. There are several methods of slinging a cask, either with a pair of butt slings, bale slings, or a bowline knot. A cask should always be slung, bung up, or on its head ; should one of the heads be defective or out, a bowline knot is used for this ; it is very useful, for the instruction of boys, to have small miniature casks slung in the different ways, and hung up in a conspicuous part of the ship, set apart for seamanship instruction.

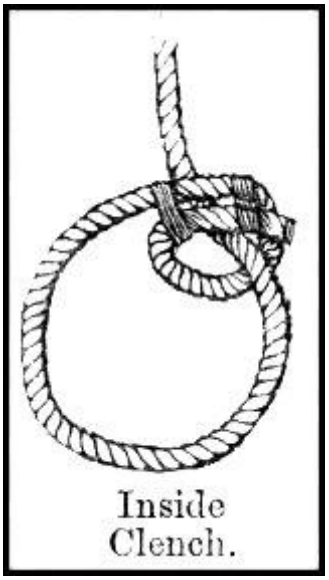
Butt Slings.

Parbuckle.

Can Hooks.

Bale Slings.

Q. What is the use of an inside clinch, and how is it made ?



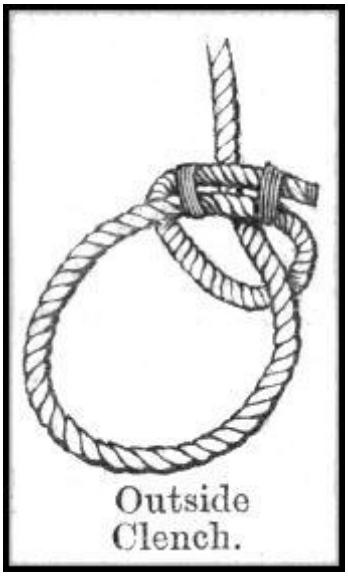
Inside
Clench.

A. For securing the standing part of a reef tackle round the goose-neck or any other rope that you wish to jamb.

To make the Clinch.

Take the end over and under its own part, and inside, put two seizings on opposite each other, they are called the throat and quarter seizings ; exactly the same as are used for turning-in lower rigging.

Q. What is the use of an outside clinch, and how is it made ?



A. For securing the standing part of a rope topsail sheet, or any rope you wish to let go smartly.

To make the Clinch.

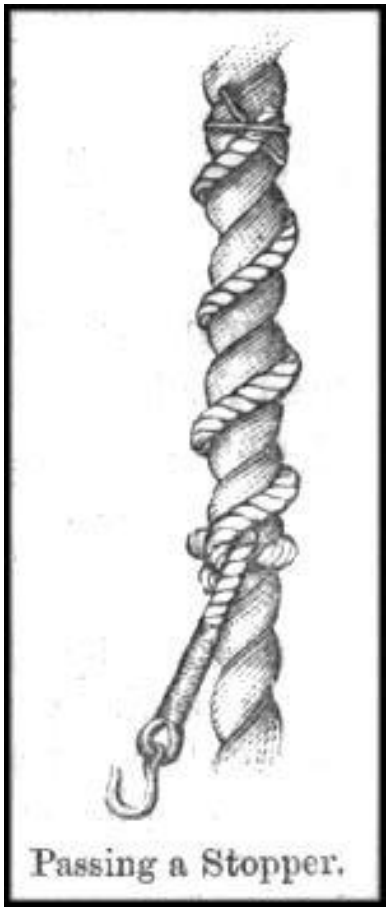
Take the end over and under its own part and outside, put the two seizings on exactly the same as for inside clinch.

Q. How do you put a jigger on a backstay ?

Putting on a Jigger.

A. With a rolling hitch.

Q. How do you pass a stopper ?



Passing a Stopper.

A. By taking a half-hitch round and against the lay of the rope, and lashing the end of the stopper in the lay.

PART II

Overhand Knot

To make the Knot.- Pass the end of a rope over the standing part and through the bight. It is used for the end of running rigging, or any rope rove through a block or sheave to prevent it unreeving

Figure Of Eight Knot

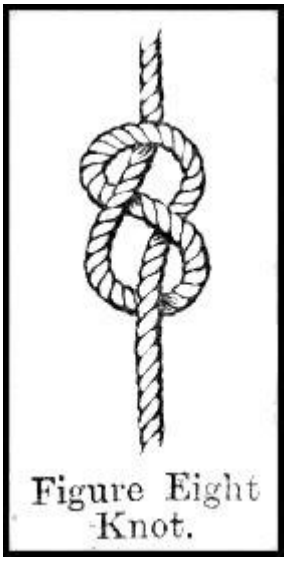


Figure Eight Knot.

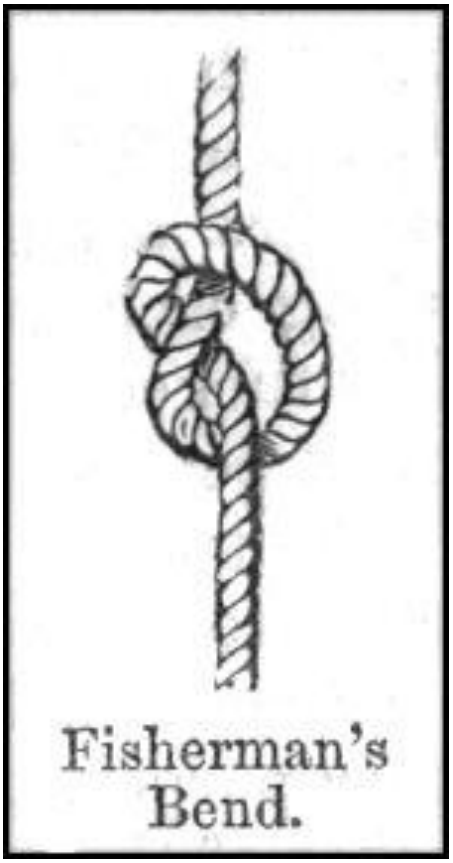
To make the Knot.- Pass the end of a rope over and round the standing part, up over its own part, and down through the bight. It is used for the end of running rigging, or any rope rove through a block or sheave to prevent it unreeving.

A Bend

So called, by many persons, is simply a rolling-hitch, made by two round turns round a spar, and two half-hitches round the standing part.

A Fisherman's Bend.

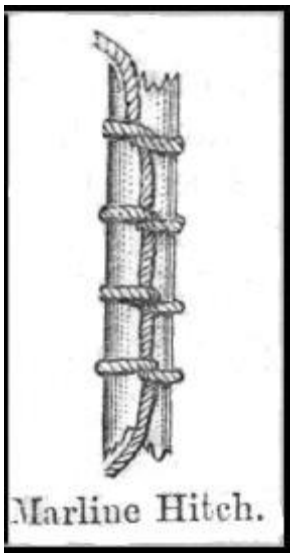
Take two round turns with the end of a rope round a spar, or through the ring of an anchor, take one half-hitch round



Fisherman's Bend.

the standing parts, and under all parts of the turns, then on half-hitch round the standing parts above all, stop the end to the standing part, instead of taking the last half-hitch, tuck the end under one of the round turns, and it becomes a studding-sail halyard bend.

A Common Marline Hitch, used for Lashing Hammocks up.



Marline Hitch.

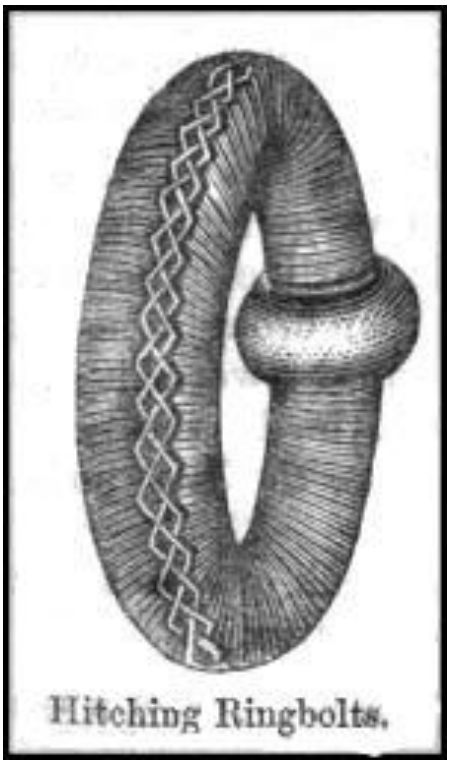
An eye is spliced in one end, the other end is passed round the head of the hammocks, and rove through the eye, and hauled taut, this forms the standing part

of the lashing which is brought along the hammock, the other part being passed over and under at regular intervals, hauling each turn well taut, after passing the last turn the end is tucked under it, and the bight of the remaining part expended up the standing part of the lashing and under the two last turns. Seven turns are the correct number to take in lashing a hammock up, leaving an equal distance between each turn.

A marline hitch is used for many other purposes, such as seizing the double part of the strop together of the fish-block that goes over the fish davit head, also for securing the foot of a course or a topsail to the foot rope, and for marling down the strands of a splice before serving over it.

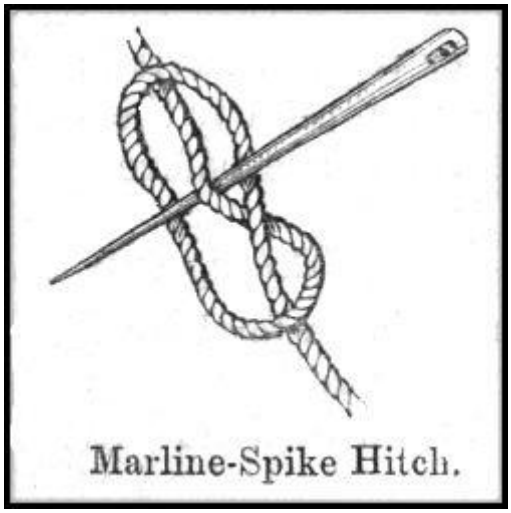
Hitching over a Ring-Bolt.

All the ring-bolts for breechings, in fact, all ring-bolts not used for hooking tackles to, are generally hitched over for neatness. It can be done with one, two, or three ends.



A Marline-Spike Hitch (also called a Midshipman's or

*Admiralty Hitch) **



Is made by placing the marline-spike upon top of the end of the seizing you are going to heave taut, the end part is then brought over the marline-spike, forming a round turn; the marline-spike is then brought back under the standing part of the seizing, and up between it, and the other part of the round turn thus formed ; the greater strain you bring on the seizing, the more the end jambs and prevents it from slipping.

If used for the hook of a tackle, the hook is passed down between the round turns.

* Used for heaving the turns of a Seizing taut with a marline-spike or hooking the hook of a tackle to any rope where a smart pull is required; it is preferable to a cat's-paw, as it never jambs.

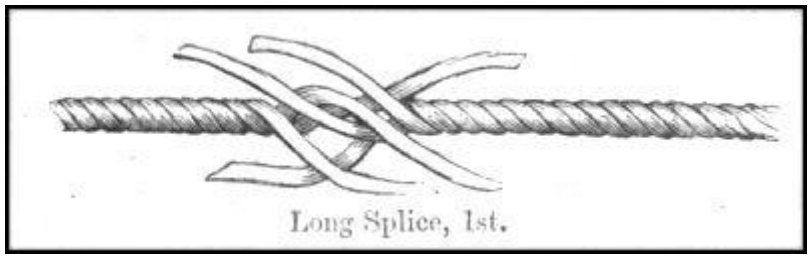
5. Seamanship Third Instruction Part 1:

Q. Describe the use of the following splices : Long-splice, short-splice, and eye-splice, and the mode of making them ?

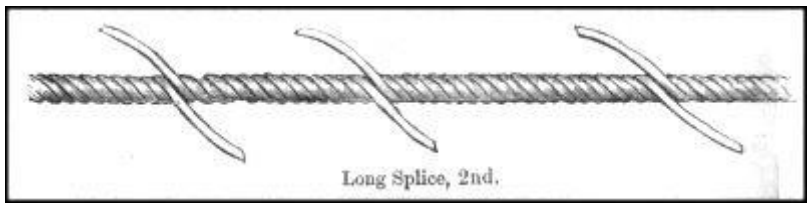
A. A splice is considered to weaken a rope one-eighth. A long splice is used in joining any running gear together that has been carried away, such as braces, clew-lines, &c., or any gear required to reeve through a block : when well done it does not enlarge the rope.

To make a Long-splice

Unlay the ends of the two ropes to the length of five and a half times the circumference of the rope, crutch them together in a similar manner to a short-splice,


Long Splice, 1st.

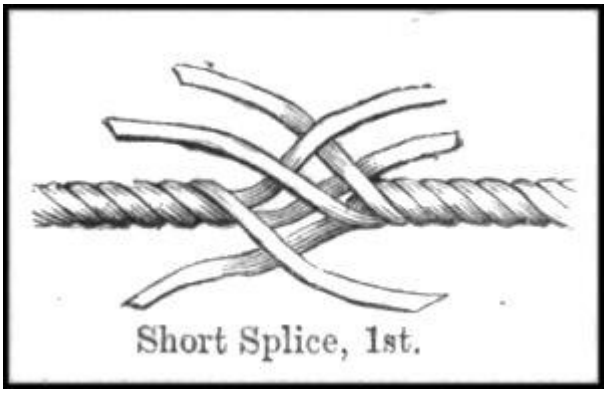
unlay one strand, and fill up the vacant space which it leaves with the opposite strand next to it, then turn the, rope round and lay hold of the two next strands that will come opposite the respective lays, unlay one, filling up the vacant space, as before with the other.


Long Splice, 2nd.

Take one-third out of each strand and knot the opposite strands together, and heave them well in place, stick all six ends once under one strand ; having stretched the splice well, cut the ends off.

A Short-splice

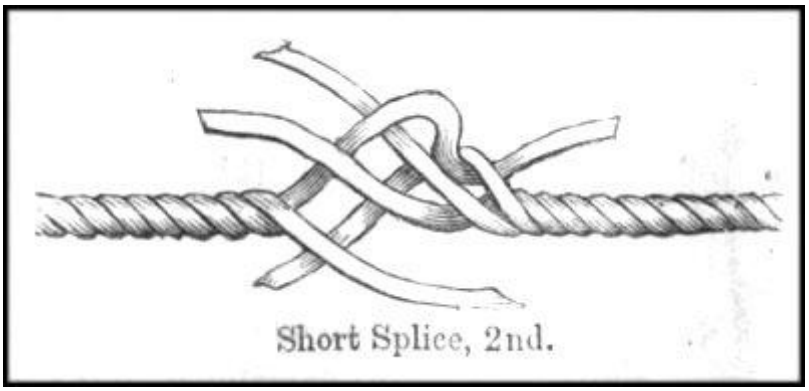
A short-splice is used for joining standing rigging, or any gear not required to travel through a block, strops of blocks, &c.



Short Splice, 1st.

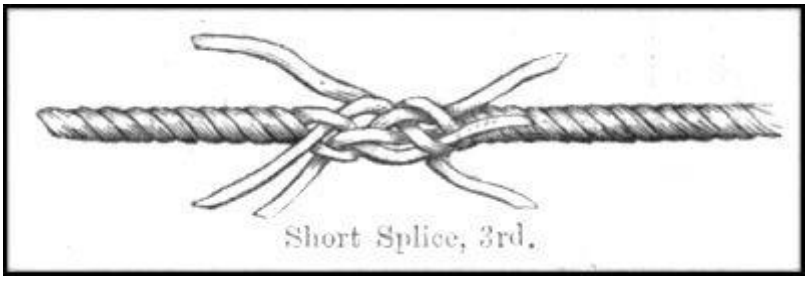
To form a Short-Splice.

Unlay the rope to the required length, which is twice the circumference of the rope for the long ends, and once and a half the circumference of the rope for the short ends ;



Short Splice, 2nd.

when this is done, whip all the ends with a yarn, then crutch them together, put a stop round the crutch, the long ends are put in twice, and the short ends once, pass the left hand strand over the first strand next to it, stick it underneath the second strand, and haul it taut in the lay of the rope, then enter right hand strand, and lastly the middle strand,



Short Splice, 3rd.

in a similar manner to the first or left-hand strand, haul them taut along the lay of the rope, being the long ends, put them in again as before, cut the stop of the crutch, and put the short ends in once in a similar way, stretch the splice, whip the

ends, and cut them off. If it is intended to serve over the splice, the strands in once and a half each way, take a few of underneath yarns from each strand to fill up the lay of the rope for worming, scrape the ends, and marl them down ready for serving.

An Eye Splice

An eye-splice is used in forming an eye for any common purpose, lower lifts, &c., and made by opening the end of a rope, and laying the strands, at any distance upon the standing part of the rope, according, to the length of the eye it is intended to make.

Eye Splice.

Divide the strand by putting one strand on the top, and one underneath the standing part, enter the middle strand, having opened the lay with a marline-spike, and stick it under its respective strand, take the next end over the first strand and under the second ; the third and last end is taken through the third strand on the other side. With a four-stranded rope, put the left-hand strand under two strands or two lays of the rope and cover it with the next strand.

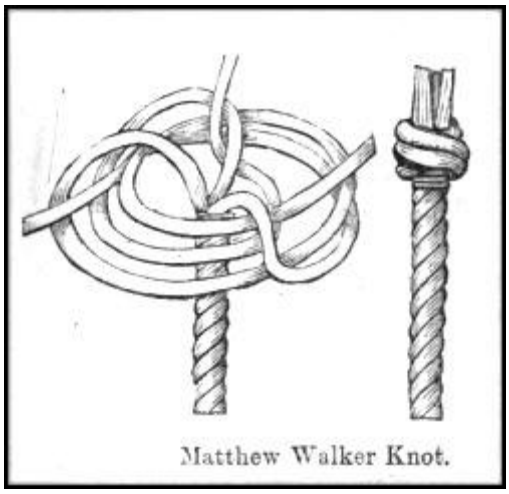
Q. How do you make a grommet?

A. Cut a strand three times the length of the grommet required, allowing end enough also in addition for finishing it of. Middle the strand, lay the right-hand end over the left, and lay the strand-up again until the rope is re-formed, then tuck the ends and finish off, as in a long-splice.

Q. How do you make the following knots, and what are their use: Matthew Walker, Stopper-knot, English shroud-knot, French shroud-knot ?

A. Matthew Walker knot is used for the standing part of the lanyards of lower rigging, and many other purposes

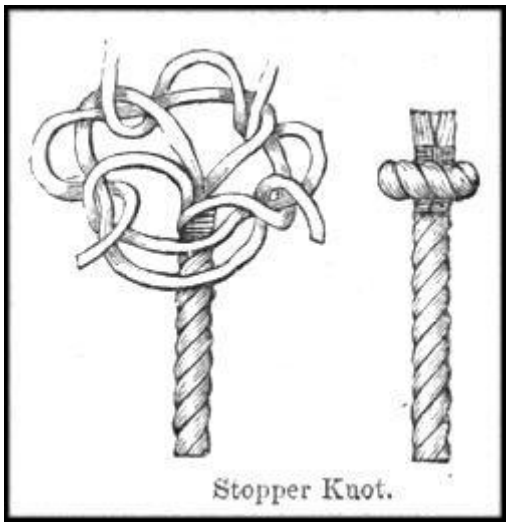
To make a Matthew Walker Knot



Matthew Walker Knot.

Unlay the ends of a rope, and take the first strand round the rope and through its own bight, and the second end round the rope underneath through the bight of the first, and through its own bight, take the third end round the same way underneath, and through the bight of all three, haul the ends well taut.

Stopper-Knot

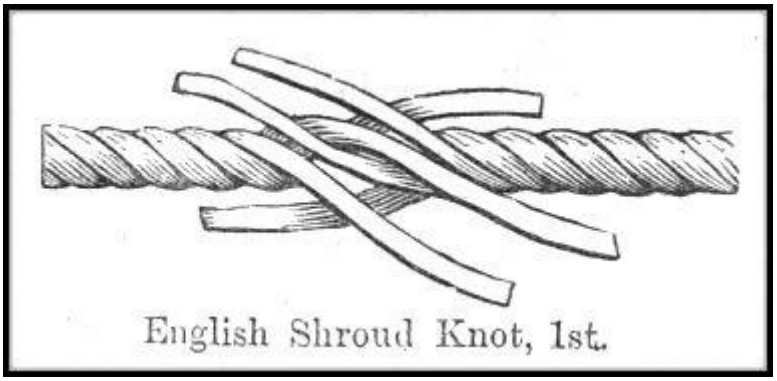


Stopper Knot.

Stopper-knot is used in the end of stoppers, it is usually formed by double walling, in some cases crowned ; there is however, no necessity for this ; heave the ends together, seize and cut them off to within three ins. of the knot. But the best method of making a stopper-knot is to wall and half-wall it, put a good whipping on about two or three inches from the knot, and cut the ends off. A stopper-knot made this way will never capsize. A stopper-knot made with a double wall will capsize when a great strain is brought on it.

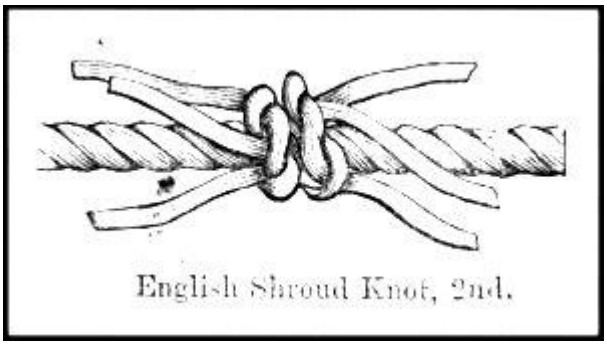
English Shroud-Knot

Shroud-knots are used when a shroud is shot or carried away.



English Shroud Knot, 1st.

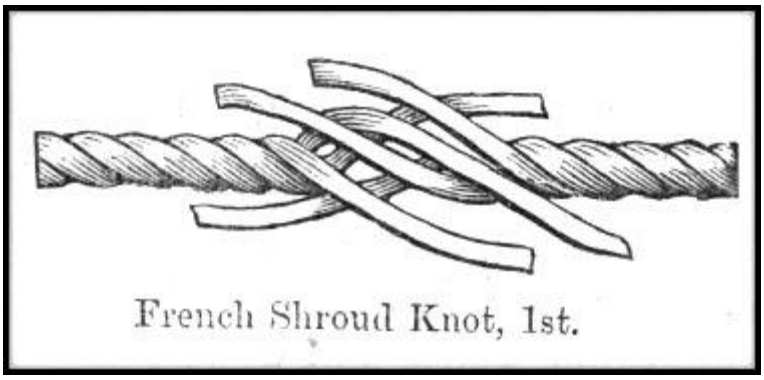
To make an English Shroud-Knot



English Shroud Knot, 2nd.

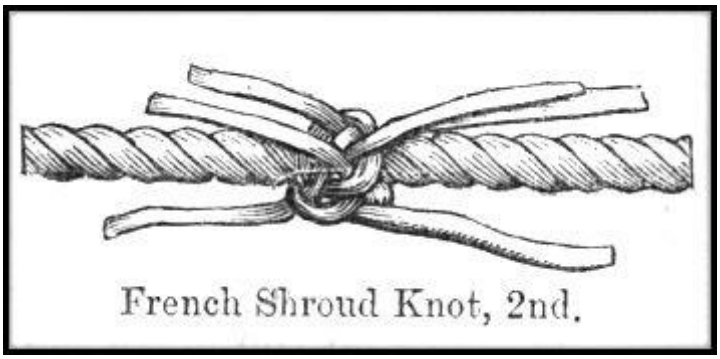
Unlay the ends of the shroud you are going to splice, and commence in a similar way to a short-splice, then single wall the ends of one rope round the standing part of the other, and wall the other three ends in the same manner ; open the ends of the strands and take out a few yarns from each, and lay them in for worming ; taper the remainder down, and serve over them with spunyarn.

French Shroud-Knot



French Shroud Knot, 1st.

You place the ends of the two part similar way of the shroud, in a similar way to forming an English shroud-knot, drawing them close together, then lay the first three ends upon their own part,



French Shroud Knot, 2nd.

and single-wall the other three ends round the bights of the first three ends and the standing part, taper the ends, marl them down, and serve over them. This knot is much neater than the English shroud-knot.

Q. How do you make a Turk's head, and what is it used for ?

A. It is used for the foot ropes of jib and flying jib-booms and spanker-booms, being much neater than overhand knots, also for man ropes and Jacob's ladders; it is generally made of white line or nettle-stuff.

To make it.

Take a round turn round the rope you intend to make the Turk's head on, cross the bights on each side of the round turn, and put one end under the cross on one side, and the other end under the cross on the other side, after which follow the lead until it shows three parts all round, and finish it off.

A Point, its Use, and how it is Made.

For reefing sails : make the point by taking five foxes and middling them, working them down sufficiently to form the eye, viz., 3 ins., place the two parts together, which will give the eye 1½ ins. ; after having formed the eye, work down 6 ins., then leave out the short end, and work the point to the length required.

Q. How do you make a sea-gasket, or English sennit ?

A. Take three or four foxes (if intended for tyers it is made of yarns) according to the size you intend to make the gasket, middle them over a belaying-pin and plait three or four of them together, the length you intend to make the eye, then work both parts together to form an eye, and plait them by bringing the outside foxes on each side alternately over to the middle ; the outside one is laid with the right hand, and the remainder held firmly with the left hand ; work the whole together, adding

a fox when necessary ; after the eye is properly formed, and you have worked three or four inches down, drop a fox or yarn, and continue to the end with an odd number. When it is a sufficient length, lessen it by dropping a fox at regular intervals. To finish it, lay one end up, leaving its bight down, plait the others through this bight, until they are all worked through it, then haul on the end, till the bight is taut ; to secure all parts, cut the ends off, and whip it.

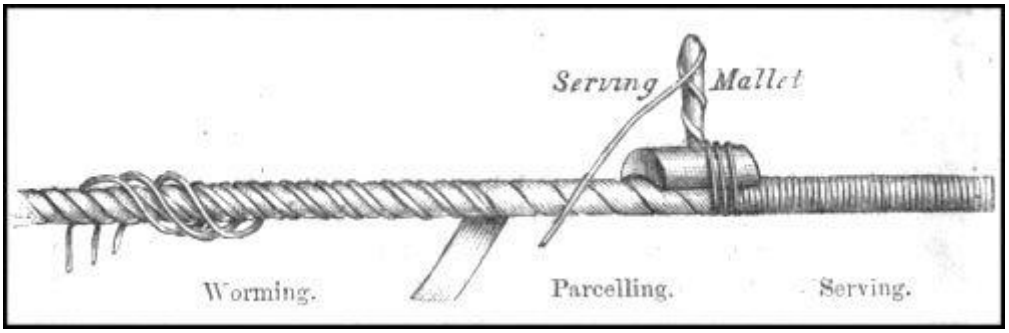
Q. How do you make a harbour-gasket, or French sennit ?

A. With foxes something similar to the common sea-gasket, but instead of taking the outside fox over all the rest and bringing it into the middle, you interweave it between them by taking the outside fox of both sides, and taking it over one and under the other, working it towards the middle, the same as common sennit.

Harbour-gaskets, for lower and topsail-yards, are made of sword matting, and cut off to the required length, leaving enough end to form a Flemish eye each end of the gaskets. Gaskets made of French sennit are only used for topgallant and royal yards, and are always finished off the same as a sea-gasket, by working the ends with English sennit.

Worm and parcel with the lay,
And serve the rope the other way.

Q. What do you mean by worming a rope, and what use is it ?



A. To fill up the vacant space between the strands of the rope with spunyarn or small rope to render the surface smooth and round for parcelling and serving, to give it a neat appearance. The strops of gun-tackle blocks are wormed.

Q. What do you mean by parcelling a rope ?

A. Parcelling a rope is laying round it with the lay of the rope strips of old canvas dipped in tar, from two to three inches wide, according to the size of the rope, before serving it ; each turn of the parcelling should overtop the other, in fact, like tiles on the roof of a house.

Q. What do you mean by serving a rope ?

A. The service is of spunyarn, put or hove on by an instrument called a serving mallet, it has a score in the under part, according to the size of the rope, so as to lay on the rope, and a handle about fifteen inches long. Service is always laid on against the lay of the rope ; a man passes the ball of spunyarn, taking the turns well out of it, at some distance from the man that is serving the rope. When the required length of service is put on, the end is put under the last two turns, hauled taut and cut off. All standing rope likely to be chafed, is always served.

Q. How do you strop a block ?

A. There are various ways of stropping a block, depending upon what they are required for. *First*. There is the common strop, used for all general purposes, which is formed by short-splicing the two ends of a rope together, forming a ring, in which the block and thimble, or hook and thimble is seized.

For this purpose the rope is got on a stretch. All above 3½ ins. is wormed, parcelled, and served ; below that size is only served with two or three yarns, spunyarn : cut the rope for the strop off, the length depending on what the strop is required for. If it is intended to put the ends in twice one end, and once the other, put a chalk mark, or a stop, on the piece of rope already cut to length, at twice the round of the rope from one end, and once and a half the round of the rope from the other end ; then unlay the strands to the chalk marks or stops, heave the service back, crutch them together, close up to the chalk marks or stops, and enter your strands, as if making a short-splice, only taking great care to marry your splice slack, so as when you come to stretch the strop the strands will draw down in place and form a neat strop. If it is not intended to serve the strop over, put the chalk mark or stop at twice the round of the rope each end, and put the strands in twice each way. By putting the strands in once and a half each way, you make a neater strop, especially if it is intended to serve over it. After your strands are tucked, and the strop has been well stretched, cut the ends off, work the service up to the splice, and finish it off ; the strop is then ready for placing the block and thimble in place. When the block and thimble are in place, put a temporary seizing on, and with a couple of small wedges made for the purpose, set the block well in place, until the splice of the strop takes well in the score of the ass of the block ; take the temporary seizing off, and heave the strop between the block and thimble well together with a Spanish windlass, then pass the seizing for a full due.

To Strop a Single Block with a lashing Eye

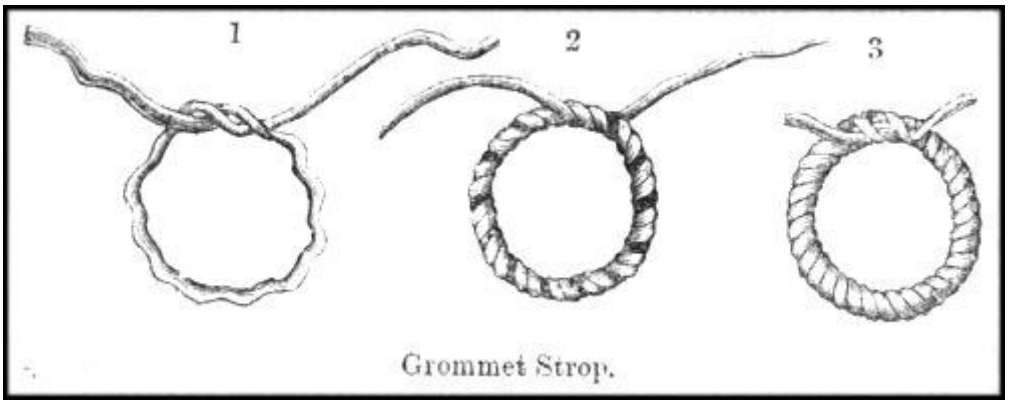
You proceed exactly the same as if stropping a block with a thimble. The length to cut the strop depends upon what it is required for, the size of the eye is generally once or once and a half the round of the rope.

To strop a block with two lashing eyes is merely putting an eye-splice in each end of the strop after it is cut to length and before the block is seized in place ; the length of the eyes are from once to once and a half the round of the rope.

To Strop a Double or Single Block with a Tail.

The strop is sometimes cut long enough to admit of the strop and tail being in one ; and it is also fitted separately, the tail being spliced in a thimble seized in the crown of the strop ; the latter is by far the better plan, as it can be replaced at pleasure, which is at times most convenient, as the tail invariably fags out before the strop is half worn.

To make a Grommet Strop



Grommet Strop.

After the rope is cut to length, unlay the strands ; each strand will form a strop ; thus, one length of rope will make three strops ; lay each strand up, as if making a common grommet and worm them, the block and thimble is then seized in place, as in any other strop.

These strops are always used for gun-tackles.

To fit a Salvagee or Warped Strop.

Lash two hooks, or seize two bolts at the length the strop is required apart, then pass roundabout-turns sufficient with whatever you intend making your strop, until you have it to the required thickness, then pass marling-turns all round, taking care each part of the strop has equal strain, it is either grafted over or covered with leather, the block and thimble are then seized in place. These strops are frequently used for boom-sheet and reef-tackle blocks for boom-mainsails.

To form a Double-Strop for a Double-Scored Block.

According to the size of the rope, it is got on a stretch and wormed, parcelled, and served, or only served ; it is then cut to length, and the two ends short-spliced together, the block is placed, and the four parts of the strop seized together, the two

bights forming two lashing eyes. These strops are used for quarter-blocks on lower yards for topsail sheets, lower yard brace-block, upper or masthead jeer-blocks.

To fit two Single Strops.

These strops are also used for double-scored blocks, such as lower jeer-blocks, or topsail brace-blocks. After the strops are cut to length, the ends are short-spliced together, each strop is placed on the block separately, and the four parts of the strop seized together. In the case of lower jeer-blocks, one strop is fitted longer than the other.

To make a Jumpsurgee Strop.

After the strop is cut to length, which will be three times the round of the block and once the round of the thimble and rope, put a mark on each end at once the round of the block, unlay the strands on each end to the mark, marry their together, and put a temporary seizing on to keep them in place, then unlay each strand and make them into nettles, divide the nettles when made equally, picking up every alternate nettle and graft both ways from where the strands are married, finishing off on the quarter, then seize the block, or block and thimble, in place. A strop thus made is considered to be three times the strength of a common strop.

To make a Jew Strop.

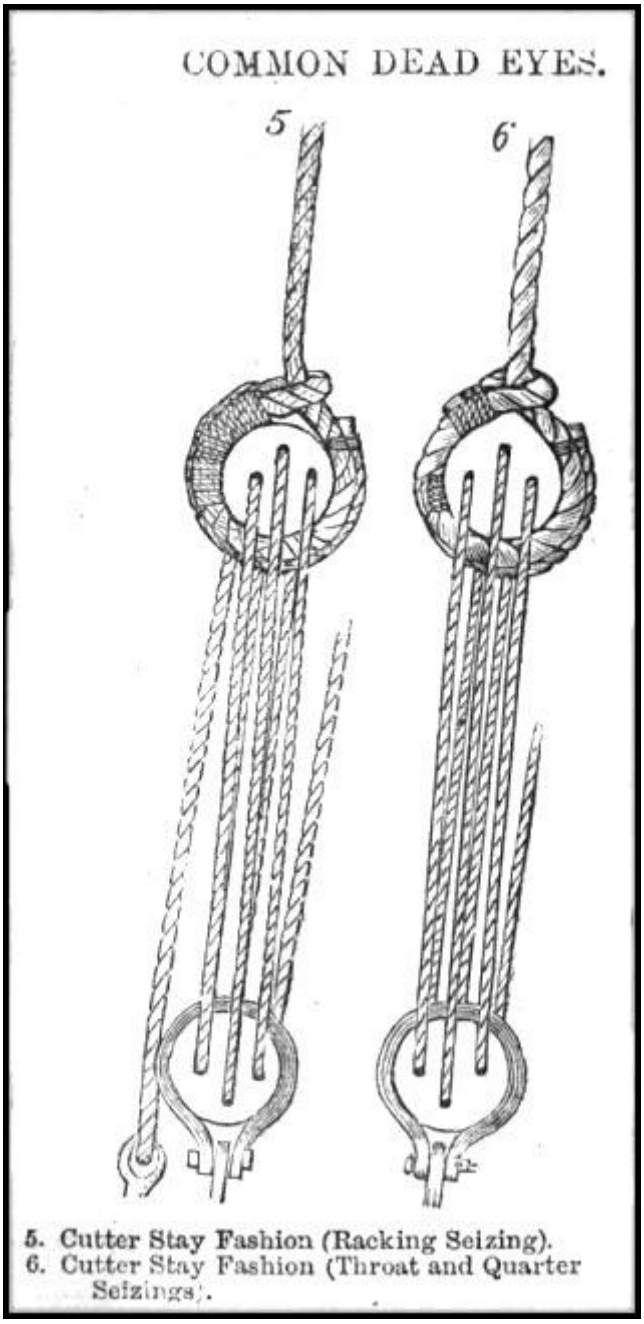
A jew strop is used when a single-scored block is required to be given a particular stand in the absence of a double-scored block ; for instance, it can be used with efficiency in the event of a lower jeer-block being carried away, and having no double-scored block to replace it. It is merely fitting a single block with a long lashing eye, working a grommet round the eye which rests round the strop between the lower yard and the crown of the block, the eye goes round the yard in a similar way to the long eye of a lower jeer-block, up before all, and is lashed to the grommet.

TABLE FOR FITTING BLOCKS				
	How to Measure for			
DESCRIPTION OF STROP.	**Cutting the Strop.**	**Marrying the Strop.**	**What it is used for.**	**Remarks.**
Seizing Strop.	Twice the round of block and rope.	Once the round of block and four times the round of rope.	Leech-lines, slab-lines, &c.	As a rule allow in cutting five times the round of a rope for splicing in
Long Seizing Strop.	Twice the round of block	Once the round of block and six times	Jib-stay, purchase,	

	and four times the round of rope.	the round of rope.	topgallant royal halyards, &c.	addition to the measure for marrying
Hook and Thimble Strop.	Once the round of block, hook, and thimble, and six times the round of rope.	Once the round of block, hook, thimble, and rope.	Leading blocks, &c.	
Hook and Thimble Strop with two Seizings or double Seizing Strop.	Twice the round of block and six times the round of rope	Twice the round of block and once the round of rope.	Lower blocks of yards and stay-tackles.	
Hook and Thimble Strop with two Seizings or double Seizing Strop.	Three times the round of block and once the round of rope.	Twice the round of block and three times the round of rope.	Lower blocks of burton's.	
Quarter Blocks.	Once the round of block and yard, and six times the round of rope.	Once the round of block, yard, and rope.	Quarter blocks for topsail, topgallant, and royal yards.	
Quarter Blocks.	Twice the round of yard and rope and three times the round of block.	Twice the round of yard and block and four times the round of rope.	Topsail sheet blocks on lower yards.	
Hanging Jeer-Blocks.	Four times the round of masthead, twice the round of block; and seven times the round of rope.	Four times the round of the round masthead, twice of yard and block.	Upper jeer-blocks.	
Jeer Blocks On the Yard.	*Long leg*, the same as for marrying, but six times the round of rope. Short *leg* as above.	*Long leg*, once and a third the round of yards, once and the round of block rope. Short *leg*, two-thirds the round of yard, once the round of block and rope.	Jeer-blocks on the yard.	

Brace-Block.	Allow in cutting five times the round of rope, in addition to the length given for marrying.	Twice the round of block and thimble, and three times the round of rope. *Dog Strop*, once the round of yard-arm and thimble, and three times the round of rope.	Brace-block on lower yards.	

Q. How do you turn a dead-eye in, and mark the shroud for cutter stay fashion ?



5. Cutter Stay Fashion (Racking Seizing).
6. Cutter Stay Fashion (Throat and Quarter Seizings).

A. After all the shrouds are over the masthead, and steadied taut alike by means of strands round the shrouds, and rove through the lower dead-eyes with as much strain as they will bear, mark the rigging off for turning in as follows: Put a mark on the foremost and after shroud about 6ft. from the channels, fasten a line to the mark on the foremost shroud haul it taut aft, and secure it to the mark on the after shroud, then mark each shroud where the line cuts, which will be for the lower part of the dead-eye, then put another mark below it, at the distance of half the round of the dead-eye, and once the round of the rope, which will be the mark for the nip or crown of the dead-eye ; then bring the end round the standing part of the shroud so as to have the marks in their proper places, the ends of the shrouds in and aft, and heave the two parts together, as close as the standing part of the shroud will allow, by means of a Spanish windlass, put a rope-yarn strop to keep them in place, and

then put the seizings on, place the dead-eye, and beat the nip of the shroud well down, this is done by putting a good strand over the nip and beating it down with a commander, until the shroud takes the score of the dead-eye in all parts.

N.B. In Portsmouth Yard a racking-seizing is now used, instead of a throat and quarter-seizing, as formerly.

Q. What should be most attended to in turning rigging in?

A. To keep the lay in the rope, to prevent the wet getting in.

Q. How do you reeve a lanyard for setting up lower or topmast rigging?

A. For lower rigging, the, standing part is either secured by a single wall-crowned or a new stopper-knot, or by being spliced round a thimble in an eye-bolt in the chains. A Matthew Walker is liable to capsize.

The standing part of a lanyard for the topmast rigging is secured by either a Matthew Walker knot in the end, or a running-eye round the lower dead-eye.

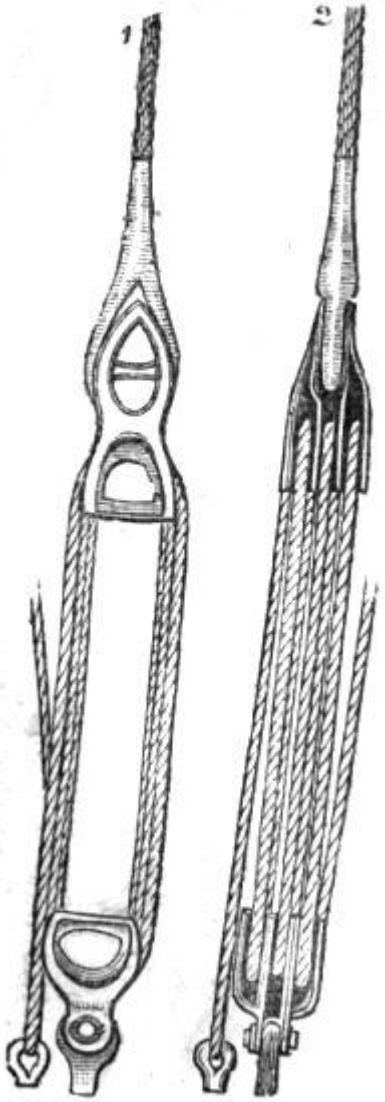
To reeve the Lanyard.

The end is first rove through the after hole in the upper dead-eye from in out, then through the after hole in the lower dead-eye from out in, and so on until it is rove in full.

When the rigging is hemp, the lanyard is half the size of the shroud ; when wire, the lanyard is the same size as the shroud.

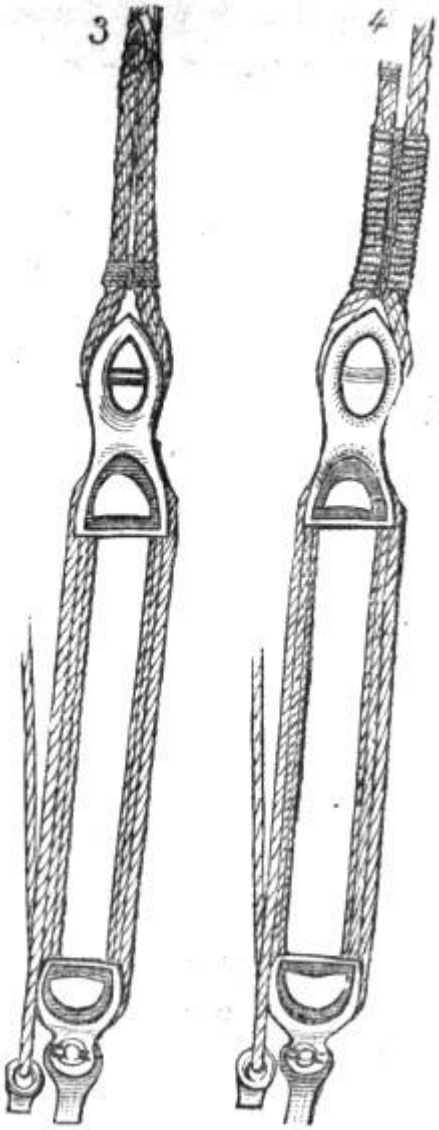
Q. Describe the mode of rattling-down the rigging

DEAD EYES.

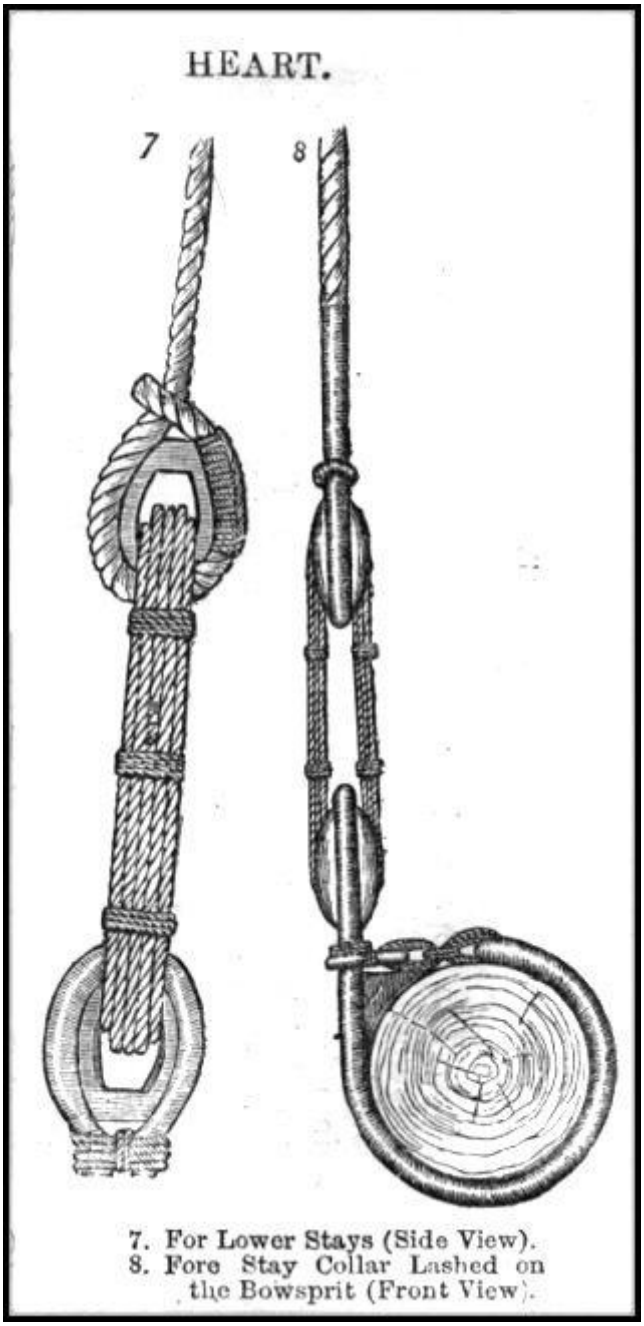


1. Front View.
2. Side View. } Spliced in.

PATENT DEAD EYES.



3. Splice and Seizing.
4. End turned up (Racking Seizing).



7. For Lower Stays (Side View).
8. Fore Stay Collar Lashed on the Bowsprit (Front View).

A. The rope to be used for the ratlines should be well stretched. Before commencing; to rattle-down, put two swifters on each side, and slightly frap the shrouds together in a fore and aft line, mark the foremost shroud all the way up 15 ins. apart for the foremost eye of each rattling, then place spars about 5 ft. apart, parallel with the sheer pole, all the spare ends of spars should be aft; otherwise they will interfere with lower yards and sails going up ; the two lower ratlines are of larger rope than the others, and sufficiently strong to bear the weight of the number of men who crowd there at the order "man the rigging," waiting for orders to go aloft ; great care should be taken that the marline-spikes in use for rattling-down should be fitted with lanyards, and either worn round the neck of the man at work, or hitched round the shroud. In sparring and rattling the rigging, commence

from below, thus insuring both being placed horizontally; ratlines are clove-hitched on the intervening shrouds, and seized to the foremost and after one but one. Every fifth ratline is taken to the after-shroud, which is called a catch ratline.

To Rattle-Down.

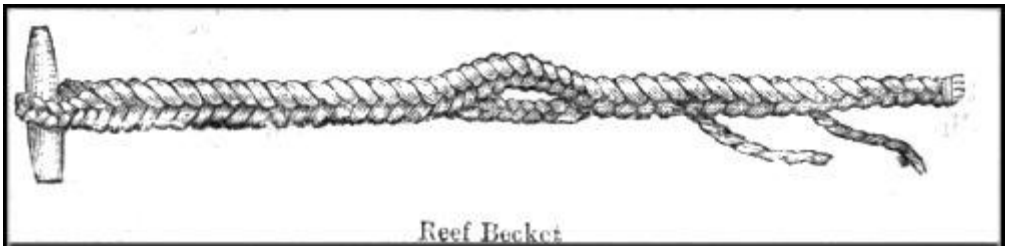
Splice a small eye in one end, hitch your rattling stuff round the third shroud from aft, then round each shroud in succession taking care the hitches are all formed the same way ; lower part of hitch aft, seize the eye to the foremost shroud with two-yarn, nettle-stuff, with about 3 in. drift, after the hitches are all hove taut round the shrouds, splice an eye in the other end, and seize it, in a similar way to the fore, to the after shroud but one ; if a catch ratline, to the after shroud ; every man should be furnished with a thin batten 14.5 ins. long, to measure between the ratlines, that they may be all square with the sheer pole ; the batten should be held perpendicularly between the ratlines, and not with a rake, the same as the after shroud, which are four or five feet longer than the foremost shrouds; when all the ratlines are in place, ease up the frapping.

Q. How do you point or graft a rope ?

A. Put a stop on at once the circumference of the rope from the end or eye, which will leave about the length for pointing or grafting, unlay the rope to the stop, then unlay the strands, split a number of the outside yarns and make a nettle out of each yarn ; when the nettles are made, stop them back on the standing part of the rope ; then form the point with the rest of the yarns, by scraping them down to a proper size with a knife, and marl them down together with twine ; divide the nettles, taking every other one up, and every other one down ; pass three turns with a piece of twine which is called the warp very taut round the part where the nettles separate, taking a hitch with the last turn, continue to repeat this process by placing every alternate nettle up and down, passing the warp, or filling, taking a hitch each time until the point is to its required length ; you can either form a bight with the last lay by passing the warp through the bights, haul them taut, and cut them off, or work a becket in the end, by taking a small piece of rope one fourth the size of the rope, form a bight, unlay the ends, and twist the six strands up again by twos, take some of the inside yarns and lay them up as rope, then short-splice that and the becket together and marl it down.

6. Seamanship Third Instruction Part 2:

Q. How is a reef-becket and toggle fitted ?



Reef Becket

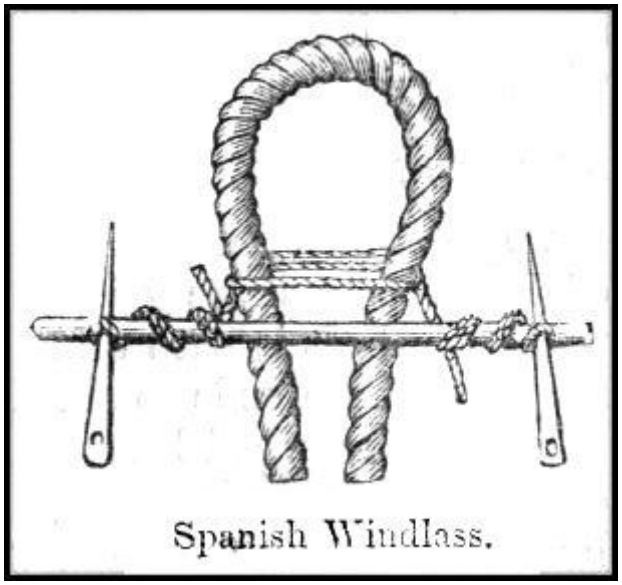
A. The becket is a piece of 2-inch rope with a long eye in one end, the other end being well whipped, in the bight of the eye a toggle is seized, the becket is then rove round the jackstay of the yard to which it belongs, and is seized with the toggle uppermost ; in reefing, the other end of the becket is rove through the reef-line, and hauled up, until the eye is high enough to go over the toggle. Toggles are fitted to the jackstay in pairs, one being for the first and third-reefs, and the other being for the second and fourth reefs. In taking in the third and fourth reefs the first reef-beckets must be untoggled when taking in the third reef, and the second reef-beckets when taking in the fourth reef. When the first and second reef-beckets are let go in taking the third or fourth reefs in, care should be taken to haul the slacksail taut up by the slab-points. Slab-points are now usually fitted to all topsails, about four of a side, or more if necessary, according to the size of a topsail. This precaution is very necessary; if the slacksail was allowed to hang down abaft the yard in a gale, and beat about, it would chafe the sail through. A preventer jackstay is generally fitted for the second and fourth reefs, so as all the strain should not be on one jackstay.

To make a Reef-Becket and Toggle, as done in Portsmouth Dockyard.

Form the eye with five parts of spunyarn, then work down with nine ends, work 1-ft. 2-ins., then form an eye with five parts one side, and four parts the other, make the eye 7-ins., then marry and work down with the nine ends 1-ft. 2-ins. more, put on a good whipping at the end and the lower part of the eye.

N.B.-For small ships form your eye with four parts, and work down with 7, as above.

To Rig a Spanish Windlass



Spanish Windlass.

A good strand, well greased in the centre, is generally used for this purpose ; place the strand over the two parts of the rope that are to be hove together, and bring the ends of the strand up again, place a bolt close to the strand, take the ends of the strand and lay them up with their own parts (so as to form a bight), take a round turn with this round the bolt, put a bolt or marline-spike through each bight, and heave round. A bolt is the best, as a marline-spike is apt to slip.

To make a Knettle

It is made of two or three yarns laid up together by a jack ; it is also made by hand, by twisting them between the thumb and finger, and laying them up against the twist of the yarn. They are used for clews of hammocks, for making harbour-gaskets, and other purposes.

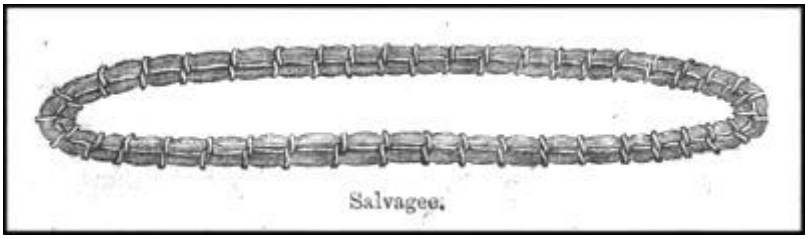
To make a Fox.

Make two or three yarns fast to a belaying pin, or some other convenient place, stretch them out taut, and twist them together, then rub it down smooth with yarns, or a piece of old canvas; it is used for making gaskets, mats, plaits, and temporary seizings, &c., and many other purposes.

To make a Spanish Fox.

This is made by taking a single rope-yarn, making one end fast to a belaying pin, untwisting and twisting it up again the reverse way, and rubbing it smooth with a few yarns or a piece of canvas. It is generally used for small seizings.

A Salvagee Strop.

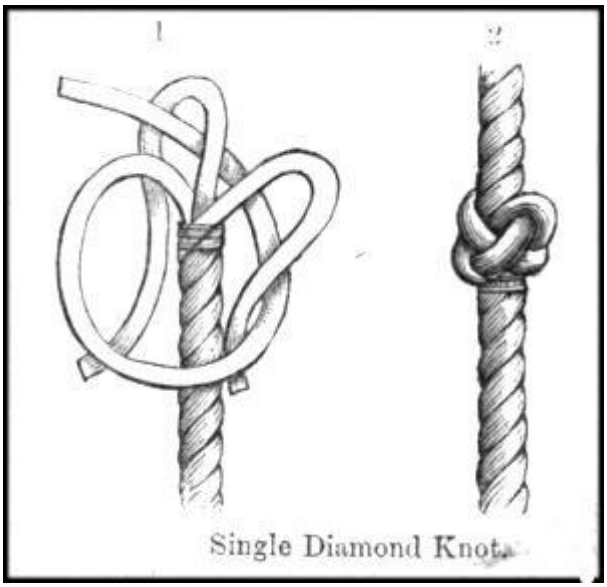


Salvagee.

Drive a couple of bolts or large nails into a piece of plank, or any convenient place; or else seize a couple of hooks which will answer the same purpose ; put the nails or hooks at the required distance apart, according to the length of strop you want, take the ends of the ball of ropeyarns and make it fast to one of the spikes or hooks, then take it round the other one, keep passing roundabout-turns, taking care to have every turn well taut until the strop is to the required thickness. If it is to be a very large strop, marl it down with spunyarn, if a small strop two-rope yarn.

A Single Diamond Knot

To make the knot.- Unlay the end of a rope to the required distance for making the knot, with the strands, form three bights down the side of the rope, holding them fast with the left hand.

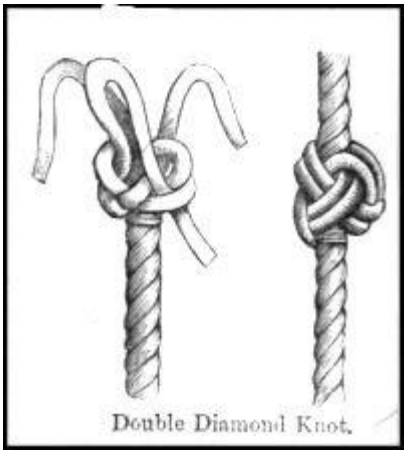


Single Diamond Knot.

Take the end of one strand, and pass it with the lay of the rope over the strand next to it, and up through the bight of the third. Take the end of the second strand over the third, and up through the bight of the first. Take the end of the third strand over the first, and up through the bight of the second. Haul taut, and lay the ends up together.

This knot is used by men-of-wars'-men to form the eye in their knife lanyards, for going over their heads.

A Double Diamond Knot

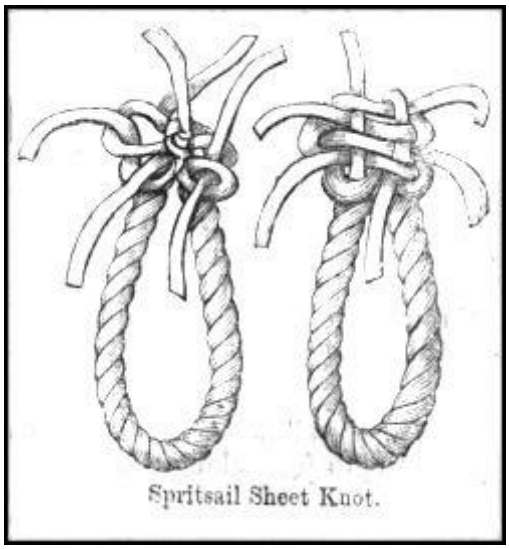


Double Diamond Knot.

To make the knot.- Make a single diamond, as before described, laying the ends up. Follow the lead of the single knot through two single bights, and the ends will come out at the top of the knot. Point the last strand through two double bights, and steady them, and lay the ends up.

This knot is used for lanyards of fire buckets.

A Spritsail Sheet Knot



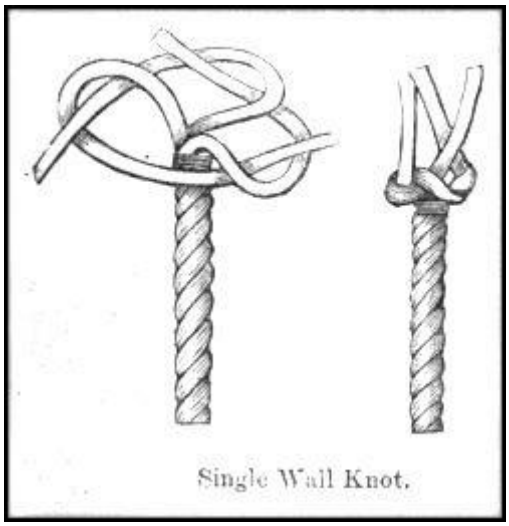
Spritsail Sheet Knot.

To make the knot.- Unlay two ends of a rope to a sufficient length to form the knot, and place them together, making a bight with one strand, walling the six strands together, similar to a single-walling made with three strands, by putting the second over the first, and the third over the second, the fourth over the third, the fifth over the fourth, and the sixth over the fifth, and through the bight of the first. Then haul taut. You can crown it by taking two strands, and laying them over the top of the knot, and passing the other strands alternately over and under those two, hauling them taut. You may also double-wall it, by next passing the strands under the wallings on the left of them, and through the small bights, when the ends will come

up for the second crowning. This is done by following the lead of the single-crowning, and putting the ends through the single-walling, as with three strands.

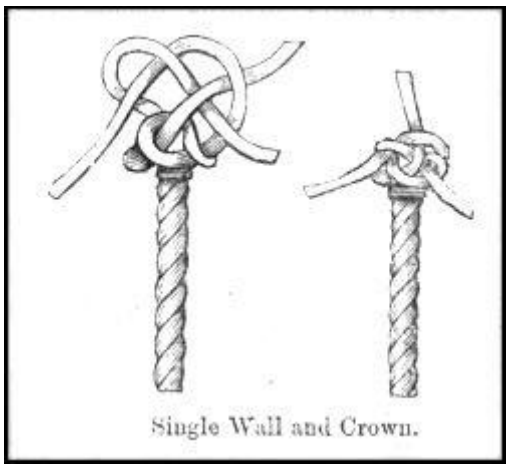
It is sometimes used for a stopper-knot, and other purposes.

A Single-wall Knot



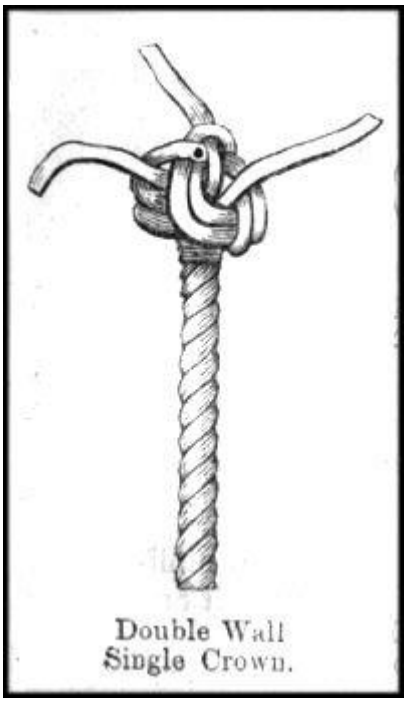
To make the knot.- Unlay the end of a rope to a sufficient length for making the knot, then form a bight with one strand, holding its end down to the standing part in your left hand. Pass the end of the next strand round the strand so formed. Pass the remaining strand round the end of the second strand, and up through the bight you formed with the strand. Haul the ends taut with care, one by one. I is used on the end of a rope, rove through a hole to prevent it unreeving, such as the standing part of the throat halyards.

A Single Wall Crown



To make the knot.- Make the single-wall as described and then lay one end over the top of the knot, lay the second end over the first, and then the third over the second

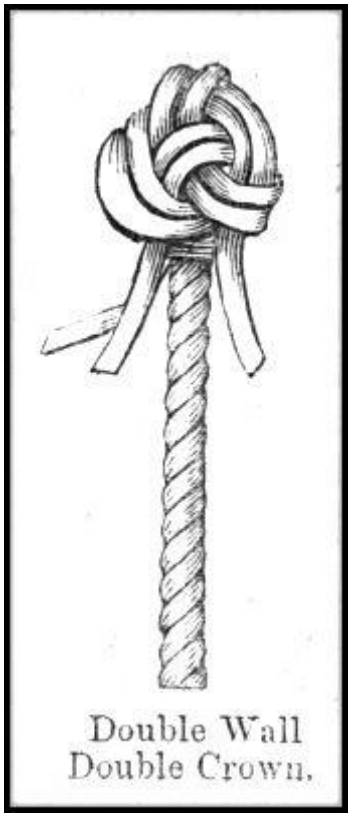
and through the bight of the first. It is used on the end of a rope, rove through a hole, in a similar way that a single-wall knot is.



A Double Wall

To make the knot.- Make a single-wall slack, and crown it, then take one end, bring it underneath the part of the first walling next to it, and put it up through the same bight. Repeat the same with the other strands, putting them up through two bights. When made it forms a double-wall and a single-crown. It is used on the end of a rope, rove through a hole, such as throat halyards.

A Double-wall, Double-Crowned



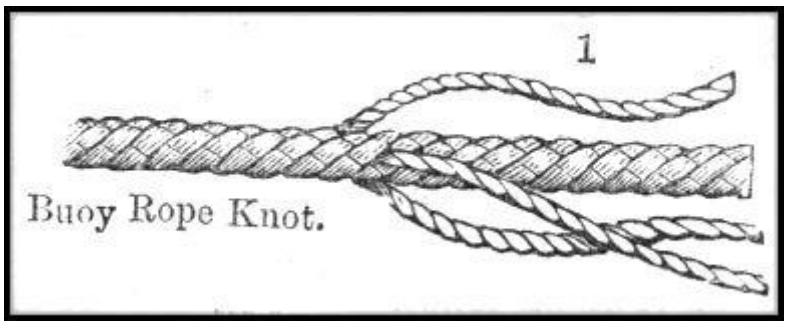
Double Wall
Double Crown.

To make the knot.-Form a double-wall, single-crowned, then lay the strands by the sides of those, in the single-crown putting them through the same bight in the single-crown, and down through the double-walling.

It is used for man-ropes, stopper-knots, &c., also called man-rope knot, tack or topsail-sheet-knot.

A Buoy-rope Knot

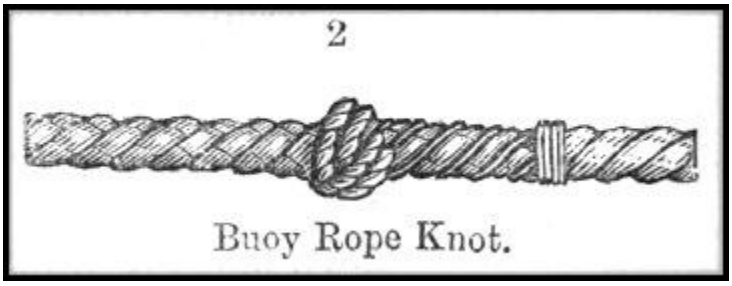
To make the knot.- Unlay the three large strands of a cablelaid rope, and then the three small strands forming the large strand, which will be nine in all. Lay the large ones up again as before, leaving the small ones out.



Buoy Rope Knot.

Single and double-wall the small strands (as for a stopper knot)

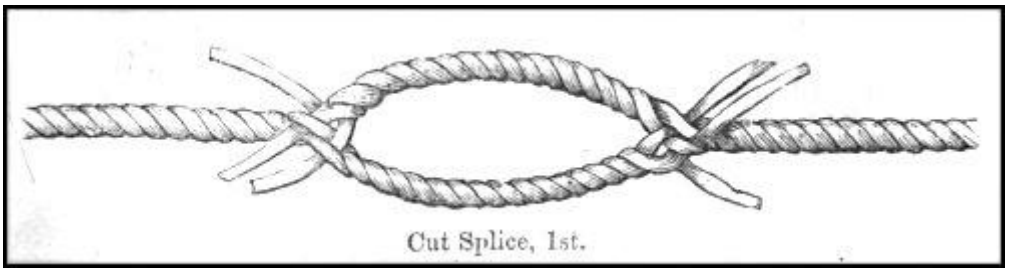
round the rope, worm them along the divisions, and stop their ends with spunyarn.



Buoy Rope Knot.

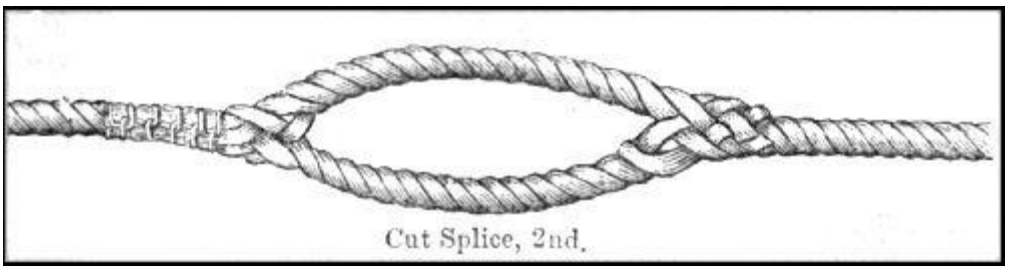
This knot is used for a buoy, to prevent the buoy-rope slipping through the seizing.

A Cut Splice



Cut Splice, 1st.

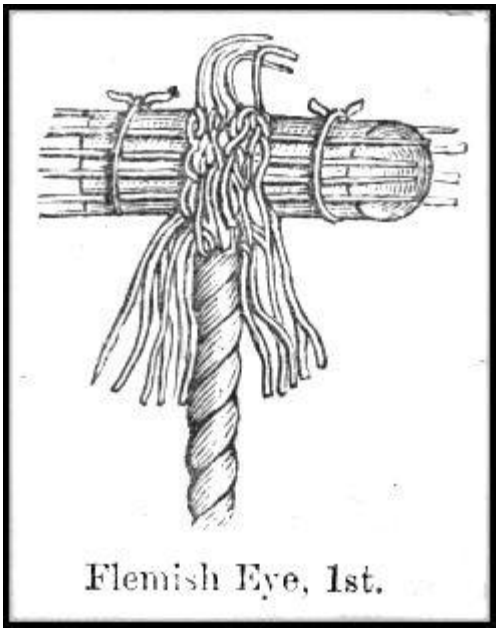
This splice is formed by cutting a piece of rope in two and laying the ends over the opposite standing parts of the two pieces of rope, at the distance you intend your eye to be in length;



Cut Splice, 2nd.

unlay the strands of the ends, and enter them under the strands of the standing parts, in a similar way to making an eye-splice, forming an oblong eye or collar in the bight of a rope. It is generally used for pendants for guys, breast back-stays, &c.

A Flemish Eye



Flemish Eye, 1st.

Having put a whipping on at the distance from the end of three and a half times the round of the rope, unlay the end to the whipping, then lash a piece of wood at least twice the size of the eye you are going to make, securely, in a convenient place for working, by some yarns on top of it, so as to stop the eye down after it is formed. With a four-stranded rope, unlay and divide the heart in two, then put the rope underneath the piece of wood with two strands, and halve the heart each side, pass the two parts of the heart over, and half-knot it on the top, heaving the rope close up to the piece of wood by means of a bolt on each side. The proper width for the eye is one-third the round of the rope. Take from each strand two yarns for every inch the rope is in circumference. Suppose it to be a 12-in. rope, take twenty-four yarns, which twist up and half-knot them on the top of the wood, heaving them taut and passing them down the lay of the rope for worming ; clap a seizing of spunyarn over it, close to the toggle, and another 9-ins. below it ; make a yarn fast round the ends, to keep them in the lay of the rope, then take two thirds as many-yarns from each strand as you did for worming, haul them taut up from the bosom, and half-knot them on top, haul them taut, and so continue till they are all expended.

Flemish Eye, 2nd.

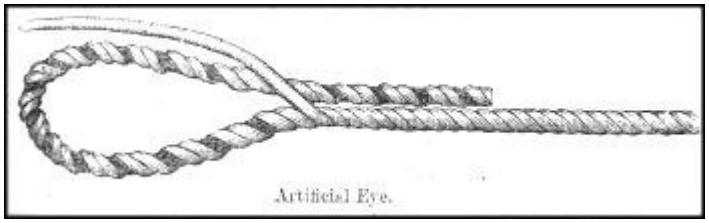
Care should be taken to haul the yarns taut up from the bosom, to ensure them bearing an equal strain. Smooth the yarns down, and put a stop round all, close underneath the wood, then half-knot the stops that are laid on the wood, heave them taut with a bolt each side of the eye ; form the other half-knot, and heave it taut.

Flemish Eye Finished.

The eye is then marled with two or three-yarn spunyarn, the hitches almost 1-in. apart, commencing at the centre of the eye and working both ways, cut the stops as you come to them ; when the marling of the eye is finished, pass a strand round all, close underneath the wood, and heave it taut by means of bolts ; take a part of the strand off, and put on a seizing of spunyarn, beating the strand down as you marl the yarns down,

If it is for a stay when the collar is spliced and served, the eye is finished by parcelling it, and serving it with spunyarn, when fidded out it is completed.

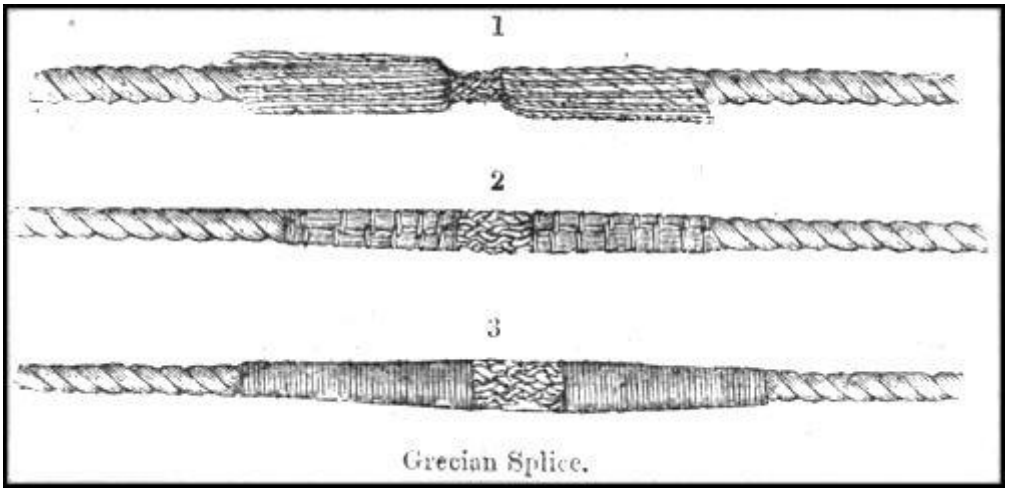
An Artificial Eye



Artificial Eye.

Is formed by unlaying one strand to the required distance, depending on the size of the eye you are about to form. The eye is formed by placing the two strands along the standing part of the rope, and crossing the odd strand over the standing part, and laying it in the vacant place you first took it from, filling up the vacancy until the strand comes out at the crutch again, and lies under the other two strands. Take a few yarns out of each strand for worming, and taper the remainder down.

A Grecian Splice.



Grecian Splice.

Put a whipping at twice the round of the rope from the ends of the two pieces of rope you are going to form the splice with, then unlay the ropes to the whippings, twist the outside yarns up into foxes, the number of yarns in each fox will depend upon the size of the rope being used for the splice, for example, about two yarns to every inch the rope is in circumference, leaving about one-fourth of each strand of the inside yarns to be laid up as rope, long enough to tuck the strands once each way, after which take out of each strand a sufficient number of yarns for laying them in the lay of the rope for worming, and cut the remainder off, then form a cross point with the foxes, by bringing the upper fox down, and the lower fox up, and crossing each other all round the rope ; then put the last lower fox under the bight of the first upper one that was brought down ; and is thus secured. Commence again by putting the end over one fox, and under the bight of the other, and so on until you have worked close up to the whipping, the foxes are then scraped and marled down, and served over with small spunyarn.

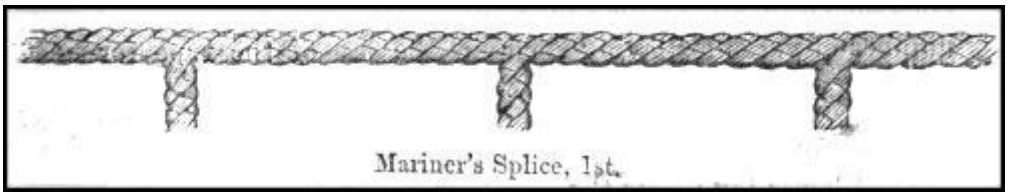
When properly made, the splice will be but very little larger than any other part of the rope, but strong enough to break the rope.

This splice, being much neater than a shroud-knot, is sometimes made in standing rigging instead of a shroud-knot.

There is also another way to make a Grecian splice, by making all the yarns into foxes, leaving no heart, but the first way is the strongest and best.

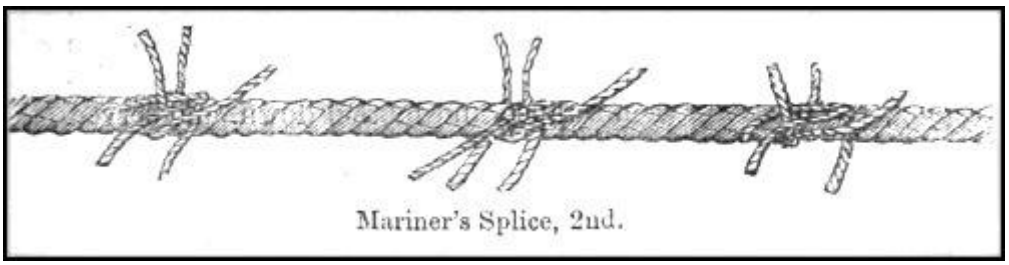
This splice is also used for tailing a smaller to a larger size rope, when it has to travel through a block such as lower lifts, when the lifts and falls are in one.

A Mariner's Splice (or To Long-splice A Cable Laid Rope)



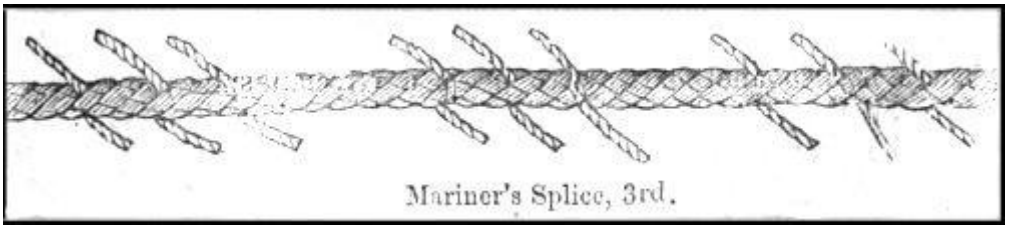
Mariner's Splice, 1st.

To form the splice.- Heave the turns out of the two ends of the warps you are going to use for this purpose, stretch it well, then beat it with a mallet to make it supple, unlay the strands of both ends to six times the round of the warp, which will be the required length to form the splice ; they are then crutched together in a similar way to forming a short-splice, but married much tauter ; put a stop round them, to keep them in place, taking care to leave out the strand to be unlaid ;



Mariner's Splice, 2nd.

you now commence to form the long-splice, by unlaying one strand, and filling up the space it leaves with the opposite strand next to it, to about three times the round of the rope; these strands being composed of three small strands, which are called readies, they are then unlaid and crutched together, a good stop being put round them, leaving out the ready to be unlaid, then unlay one ready, fill up the space it leaves with the opposite ready, the distance of twice the round of the rope, half-knot them together, and stick the end under one strand ; or, instead of half-knotting them, lay them across each other, and stick their ends under the next strand to them ; then put the end underneath two strands or readies, and the end will come out under the strand, and when cut off will be out of sight.



Mariner's Splice, 3rd.

Then take hold of the next two readies that will come opposite their respective lays, unlay the ready, and fill up the space it leaves with the other, the same distance as before, and splice them the same ; then the two readies in the place where they were first married, half-knot them, and stick them the same as with the first readies, after which turn the work round, and take the stop off from the place the strands were first crutched together, leave out the two next strands that will come opposite their respective lays, and put the stop on again, to secure the two strands that remain, then repeat the process, by unlaying one strand, and filling up the space it leaves with the other, the same distance as before from the place they were married, then unlay the strands, marry the readies together, and long-splice them as before, then turn the work round to the two strands where they were first crutched together, and long-splice the six readies the same as before directed. Well stretch the splice, cut the ends off.

To put a Strand in a Rope.

It is frequently done when the part of a strand is chafed, and the other strands are good ; cut the strands at the place where it is chafed, unlay it about two feet each way, then take a strand of a rope of the same size, and lay it in the vacancy of the rope, half-knot, and tuck the ends the same as a long-splice.

Snaking a Seizing.

Take the end under and over the outer turns of the seizing alternately, passing over the whole. There should be a marline-hitch at each turn.

A Rope-Maker's Eye

Is generally made in the end of a jibstay when fitted with a slip at the jib-boom end, and has a thimble in it to receive the slip ; it is also used for the collars of topmasts and jibstays, for forming the lashing eyes, being quicker made, and quite equal in strength to a Flemish eye, it forms a ropemaker's eye, with two strands round the thimble.

To form a Rope-Maker's Eye with a Four-Stranded Rope.

Unlay the rope eight times the round of the rope, from the end which will be the required length; marl two strands together to the distance of the round of the thimble ; form the eye with these strands, to the size of allowing the thimble to go

in after it is parcelled ; put the thimble in, well-tarring the eye first, then unlay the other two strands, one at a time, and fill up the vacancy with the opposite strand that formed the eye, about two feet from the thimble ; unlay the other strand one foot from the thimble, and lay in the other strand that formed the eye, then cross, and stick the ends in once, the same as a long-splice ; after which, well stretch the splice, and serve it over with spunyarn.

A Lashing Eye.

Put a whipping on at about twice and a half the round of the rope from the end, then enter the marline-spike at the eleventh lay from the whipping, bend the rope up, and form the eye, thus leaving nine clear lays from the strand ; the marline-spike is under to the first strand to be entered. Enter the strands once and a half and serve them over with spunyarn.

The above will be found the right length for a lashing eye for bowsprit-shroud and bobstay-collars, strops for clew garnet-blocks, topsail clew-line, and topgallant sheet-blocks, the inner ends of foot-ropes, &c.

How do you Long-Splice a Three and Four-Strand Rope together ?

To form a long-splice with a piece of three and four-strand-rope, such as tailing a royal backstay when used for a fall for the topgallant breast backstays. Unlay the ends of the two ropes to the required distance, and crutch them together, then unlay one strand of the three-strand rope, and fill up the vacancy with a strand of the four-strand rope, turn the rope round, and unlay a strand of the four-strand rope and fill up the vacancy with a strand of the three-strand rope, as far as required; there will 'then remain two strands from the four-strand rope, and one from the three ; lessen the latter, by taking one-third out of it, and knot it to one of the strands of the four-strand rope; then unlay the other strand, and fill up the vacancy with the reduced strand of the three-strand rope ; then knot them together, and tuck them once under one strand with all eight strands ; the splice should be well-stretched before cutting the ends off.

Another plan is, instead of dividing the strand of the three-strand rope, knot the whole of the strands, and tuck the remaining strand of the four-strand rope under the strands of the rope. This is called sinking a strand.

NOTE:- The first plan is the neatest.

How do you Short-Splice a Three and Four-Strand Rope together ?

You unlay the ends of the two ropes to a sufficient distance, make four strands out of the three by dividing one strand in two, and lay the four strands up a sufficient

length for the ends of the other rope to be put in once, then crutch them together, and splice them as two four-strand ropes.

Another method for splicing a three and four-stranded rope together for a short-splice is, divide the fourth strand into three parts, and lay one part in with each of the three-strands, arid splice it as a three-stranded rope.

For a long-splice, work three strands in in the usual way, and when finished tuck the fourth strand in, as convenient, under the nearest strands to it.

N.B.- This is called sinking a strand.

To make a paunch Mat.

This mat is used to take the chafe of the lower yards off the lower rigging in bracing up, and is seized to the lower rigging in the wake of the yards.

To make the Mat

Stretch a piece of rope, according to the size of the mat required, in any convenient place, in a horizontal position and the foxes which are used for making the mat are middled and hung over it, close together, from end to end, or as far as the width required for the mat. Then take the fox nearest the left hand and twist a turn in the two parts; one part give to the man opposite. The next fox has a turn twisted in its two parts, and one part given back to your party, the remainder is twisted round the first, which is given back and then again round its own part ; and so on with the remainder of the foxes until you get it the breadth required. The bottom of the mat is selvaged, by taking a piece of rope the same size as used for the top. The two parts of the foxes which are twisted together at the bottom are divided, and the piece of rope put between them ; the foxes are hitched round it, and the ends put through its own lay with a marline-spike.

Q. How do you make a nipper?

A. Nippers are made in a similar way to a salvagee strop. According to the size of the nipper required, either yarns or foxes are marled together; they are from four to five fathoms in length.

To make a Nipper.

Get the yarns or foxes on a stretch, make a grommet the size of the nipper required, and fill it up until it fits quite taut round the end of the yarns or foxes, then secure one end of them to any convenient place, put a small tackle on the other end, and steady them well taut ; as you pass your marling turns you fleet the grommet along, which presses the yarns or foxes into place, so an equal strain will come on each when the marling turns are passed. Two-yarn spunyarn or a fox, is generally used

for marling. Rumble makes very good nippers, and is always used when it can be obtained by the captains of foretops.

A Pudding Fender

Pudding Fenders are used in the Navy for large boats such as cutters, pinnaces, &c., &c. and sometimes on lower yards, to take the chafe on the inside part of the quarter-yard

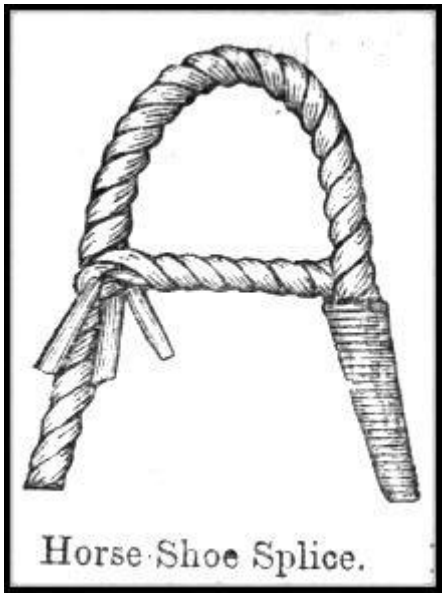
When fitted as Fenders for Boats.

A piece of rope the required length is cut, and an eye spliced in each end, by which it is, set up to small eye-bolts on the stern ; the rope is then marked where the pudding or fenders are to be worked, one to fit the stem, and two others to fit, one on each quarter, so as to save the sharp edge of the quarters and the stem when lying alongside a ship or boats, or a landing-place ; a number at proper intervals are also worked along each side of the boat, projecting far enough to save her sides also from chafing.

To make a Pudding Fender.

Get your rope, already marked on a stretch, and worm it ; the marks where the puddings are to be formed are filled up with any old stuff, such as old strands, spunyarn, &c. ; in forming it take care the sides intended to be next the boat are flat, and the outer sides a half-round, the largest part is in the middle, tapering gradually off at both ends. When it is formed to the required shape, parcel it with strips of canvas and mark it down, beginning in the middle and marling both ways to the ends. It is then either grafted over or covered with leather ; the latter is the neatest. When fitted as a single fender, for a yard or any other purpose, an eye is worked in each end.

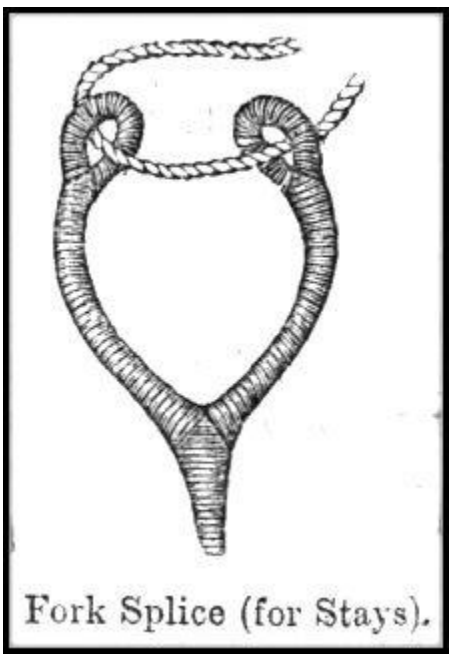
A Horse-Shoe Splice



Horse Shoe Splice.

It is so named from resembling a horse-shoe in shape, and is used for joining topmast shrouds or backstays when there is an odd one of a side, and it is desired to form an eye on the bight ; it is also used sometimes for gib-guys. It is formed by splicing the two ends of a piece of rope into the topmast shroud or backstay, one end on either side of the bight; where the eye is to be formed, the strands are entered once and a half, marled down, and served over. The length of the piece of rope to be used for this purpose is one-third the length of the eye required, allowing twice the round of the rope on each end in addition for splicing. The ends are tucked under the strands in splicing, exactly the same as when forming an eye-splice.

A Fork Splice



Fork Splice (for Stays).

Is made like an eye-splice ; it is used in fitting lower and topmast stays. A piece of the rope intended for the stay is cut off according to the length of eye required, allowing sufficient length on both ends, one end to be tucked once and a half in the rope where you intend to form the fork ; the strands are scraped and marled down ready for serving over. A Flemish eye is formed in the other end, and a corresponding Flemish eye is also formed in the end of the stay for lashing abaft the mast, as shown in the plate. It is wormed, parcelled, and served over. The shoulders of the Flemish eyes, and of the fork are cavilled or shouldered over, which is to pass layers of spunyarn down each side of the crutch of the fork and eyes, to preserve the rope and prevent the wet from entering.

Q. How do you splice wire rope ?

A. Precisely the same as splicing hemp rope, only taking the precaution when the marline-spike is entered under the strands you wish to put your first tuck into, to beat the strands on either side of the marline-spike with a hammer, so as to keep them open, or else, as soon as you withdraw the marlinespike, before you could possibly enter the end of your strands, the opening made by the spike would close ; when the strand is entered, a hemp strand, kept ready for the purpose, is dogged round it, brought to the windlass bolt, and set well taut, heaving the strand close in place, taking great care your strand, being hove in, is kept quite straight : once kinked it could never be straightened again. The ends are generally put in once, two-thirds, and one-third, as it cannot be tapered down like hemp. The windlass-bolt is a bar of iron, stuck in the stool, used by riggers for splicing. It is worked in a similar way to hemp rigging, and with equal ease. Non-riggers are getting familiar with it.

In splicing an eye with more than three strands, the second left-hand strand is tucked from right to left under the first convenient strand.

A Coach-Whipping Plait

Is used for tails of jiggers or stoppers for fore or main-tacks or sheets, &c. &c.

To make it

Put a whipping on a piece of rope, leaving the required length for the stopper-knot, unlay each strand, if a three, stranded rope, then divide the three into four parts, work these parts into four foxes, then take the two centre foxes in your left hand, and work the two outside foxes from left to right, and right to left, under one and over one, each fox in turn becoming an outside fox. It is finished off. by either whipping the end or working the foxes into nettles and pointing it.

Cross-Pointing

Man-ropes are sometimes made of cross-pointing.

To make them

Take a piece of 2½ in., or any other size rope, and cut it to the required length, then get it on a stretch ; take sufficient parts of white line to cover the rope, taking care you have an even number, then put a good whipping round all parts where you intend the upper part of your man-rope to be, leaving outside the whipping sufficient length of all parts of the white line to form a man-rope knot when they are worked up into strands.

To Cross-Point the Rope

Divide the parts, taking every alternate part up, and working round and round continually,. taking each part under and over, forming a cross each time. So continue to the end ; it is finished off by unlaying the white line, twisting it into nettles, and pointing it.

Four-Square Plait.

A four-square plait is made of white line ; sixteen parts are generally used, or any other number that will form a square according to the size required; never less than twelve parts ought to be used to form the square properly; it is used for making man-ropes.

To make it

Put a good whipping on, and secure the ends to any convenient place, and commence by keeping four parts in the middle to form a centre. When made of sixteen parts, keep four parts for the centre working, the remaining parts from left to right, and right to left, passing each part under four and over four, thus in turn each centre part becomes an outside part, and forms a complete square. When it is worked to its required length, the ends are worked into nettles, and it is finished off by pointing it; before commencing it, it must be decided whether you intend working a Flemish eye in the upper end or a man-rope knot, so as to know what length of ends to leave ; if a knot is to be worked, the parts are laid up together to form the required number of strands. It is sometimes finished off at the upper end by driving two copper nails through the whipping, so as to form a cross; cut the nails off to the length required, then wold the parts of the nails round with yarns, until the points are covered, then work a Turk's head over it.

Elliot's Eye

To make the Eye

Put a whipping on, allowing 6-ins. for every inch of the size of the rope, that is for an 18-in. rope put a whipping on at 9-ft. from the end, unlay all three strands to the whipping, well stretch them, take the lay out, and beat them well with a commander.

1st. Take the first strand round the thimble, and long-splice it to the second strand.

2nd. In the third strand form an eye-splice rather larger in size than the thimble (as shown in plate 1), taking care that the ends of the strand forming the eye-splice come out in the lay of the rope for worming.

3rd. Take the whipping off, put a capstan-bar or handspike through the eye-splice and long-splice, and heave all these strands up together to the size of the eye-splice (as shown in plate 2), withdraw the capstan-bar or handspike, and hitch the two parts of the eye together with small rope ; the eye formed by the first and second strands being long-spliced together, and the third strand having an eye-splice in it, the thimble is then put in place, and the seizing put on, which is a common throat or round seizing (as shown in plate 3), the cable is then served, or, as is termed, kackled with 2½ in. rounding, for the distance of 9-ft. from the eye. The eye is now finished and ready to receive the shackles.

7. Table for Fitting Blocks:

TABLE FOR FITTING BLOCKS				
	How to Measure for			
DESCRIPTION OF STROP.	**Cutting the Strop.**	**Marrying the Strop.**	**What it is used for.**	**Remarks.**
Seizing Strop.	Twice the round of block and rope.	Once the round of block and four times the round of rope.	Leech-lines, slab-lines, &c.	As a rule allow in cutting five times the round of a rope for splicing in addition to the measure for marrying
Long Seizing Strop.	Twice the round of block and four times the round of rope.	Once the round of block and six times the round of rope.	Jib-stay, purchase, topgallant royal halyards, &c.	
Hook and Thimble Strop.	Once the round of block, hook, and thimble, and six times the round of rope.	Once the round of block, hook, thimble, and rope.	Leading blocks, &c.	
Hook and Thimble	Twice the	Twice the round of	Lower	

Strop with two Seizings or double Seizing Strop.	round of block and six times the round of rope	block and once the round of rope.	blocks of yards and stay-tackles.
Hook and Thimble Strop with two Seizings or double Seizing Strop.	Three times the round of block and once the round of rope.	Twice the round of block and three times the round of rope.	Lower blocks of burton's.
Quarter Blocks.	Once the round of block and yard, and six times the round of rope.	Once the round of block, yard, and rope.	Quarter blocks for topsail, topgallant, and royal yards.
Quarter Blocks.	Twice the round of yard and rope and three times the round of block.	Twice the round of yard and block and four times the round of rope.	Topsail sheet blocks on lower yards.
Hanging Jeer-Blocks.	Four times the round of masthead, twice the round of block; and seven times the round of rope.	Four times the round of the round masthead, twice of yard and block.	Upper jeer-blocks.
Jeer Blocks On the Yard.	*Long leg*, the same as for marrying, but six times the round of rope. Short *leg* as above.	*Long leg*, once and a third the round of yards, once and the round of block rope. Short *leg*, two-thirds the round of yard, once the round of block and rope.	Jeer-blocks on the yard.
Brace-Block.	Allow in cutting five times the round of rope, in addition to the length given for marrying.	Twice the round of block and thimble, and three times the round of rope. *Dog Strop*, once the round of yard-arm and thimble, and three times the round of rope.	Brace-block on lower yards

8. Seamanship Fourth Instruction Part 1:

Is composed of pendants, shrouds, stays, and backstays ; each mast is supported forward by stays, aft by backstays, and sideways by shrouds ; the pendants are for applying extra purchases for additional support, staying the mast, or setting up the shrouds ; the foremast is supported forward by the bowsprit, therefore the latter has an additional number of shrouds, bobstays, &c., to meet the strain thus brought on it.

Iron masts are rigged similar to wooden ; iron yards occasionally have bands with eyes for lifts, braces, clew-garnets, &c.

Iron bowsprits are seldom or never-used in the Service, those ships that are supplied with iron masts, such as Rams, have wooden bowsprits for running in, which are fitted as follows :

Bobstay-chain	set up with slip and screw	
Bowsprit	set up with slip and screw	
Shrouds	set up with slip and screw	
Heel-pendants	set up with slip and screw	Blocks iron 2 No.
Heel-pendants		Tackles 2 No

To Rig a Lower Mast

The masts are supposed to be placed in their proper positions by means of wedges driven in at the partners. A measuring batten is placed against the mast to indicate the stand, also to guard against bellying the mast in setting up the stays and shrouds.

Gantlines are always placed on the mastheads before the masts are stepped.

Q. How do you get the lower crosstrees in place ?

A. Supposing the foremost crosstree to be on the starboard side of the deck, the starboard gantline is bent to it amidships, on its upper side, and stopped to the port-arm three parts out.

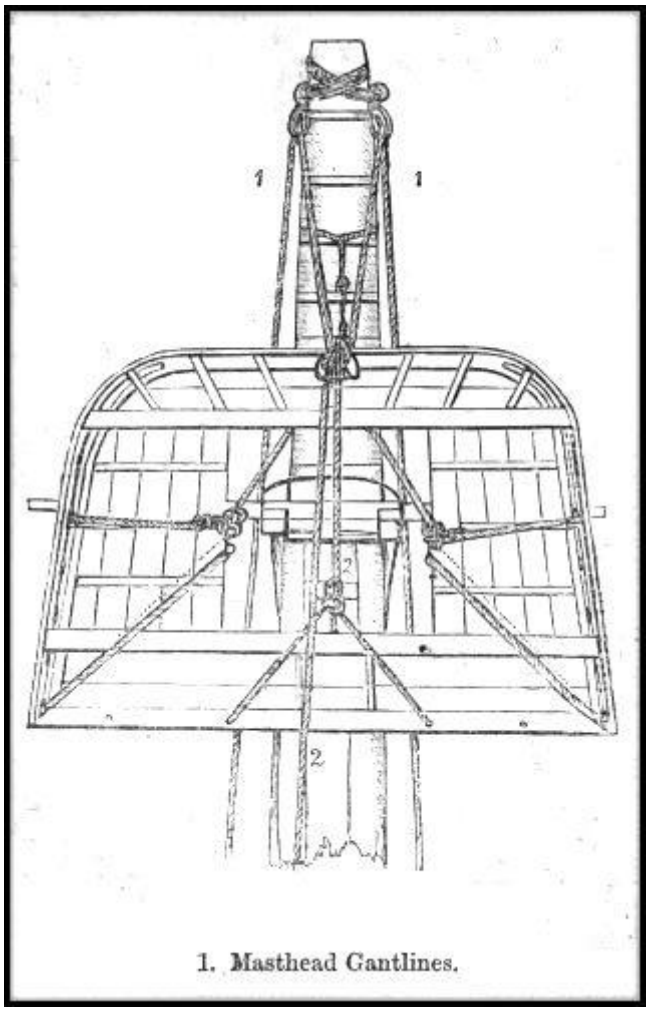
When the arm is well over the trestle-tree, cut the stop and sway across. The after one is crossed in a similar way.

Q. How do you get a top over ?

A. There is no rule for getting a top over either before or after the lower rigging, but it is much better to do it before, as it gives the men placing the eyes of the rigging a sure footing, more room to work, and less chance in letting things fall on deck.

Sending a Whole Top aloft - Main

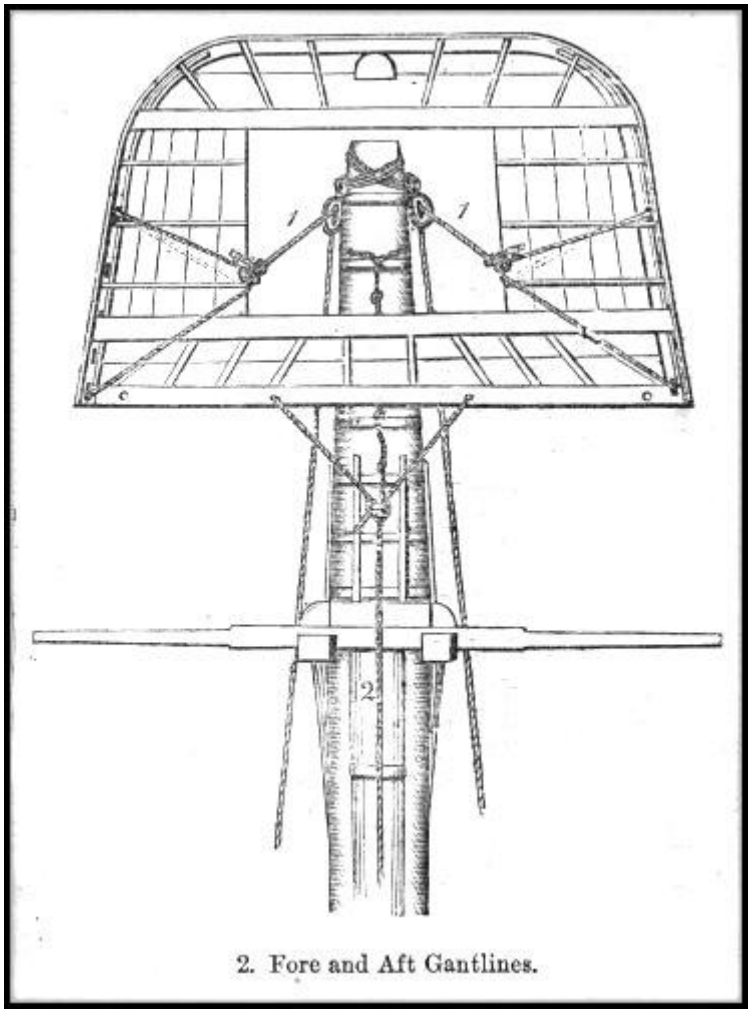
Stand the top abaft the mast on its after-edge, lower side facing forward, overhaul the gantlines down abaft all, the hauling parts being between the crosstrees, bend the gantlines on their own sides by passing them under the top, up through the after futtock plate-hole, down through lubber's-hole, up through the foremost futtock plate-hole, and hitch the ends to their own standing parts, thus having the heaviest part uppermost and forward ; stop the gantlines to the fore part of the top, through holes made for that purpose.



1. Masthead Gantlines.

Bend the mizen-gantline to the after part through the stanchion-holes, guy aft and sway away, when the stops which confine the gantlines to the foremost rim of the top are up to the gantline-blocks, the foremost edge of the top will be pointed over the masthead ; by keeping a strain on the mizen-gantline it will keep the top from canting aft when the tops are cut. When stops are cut, pull up on the gantlines, and the top will fall over in place. A foretop is got over in a similar way, the main

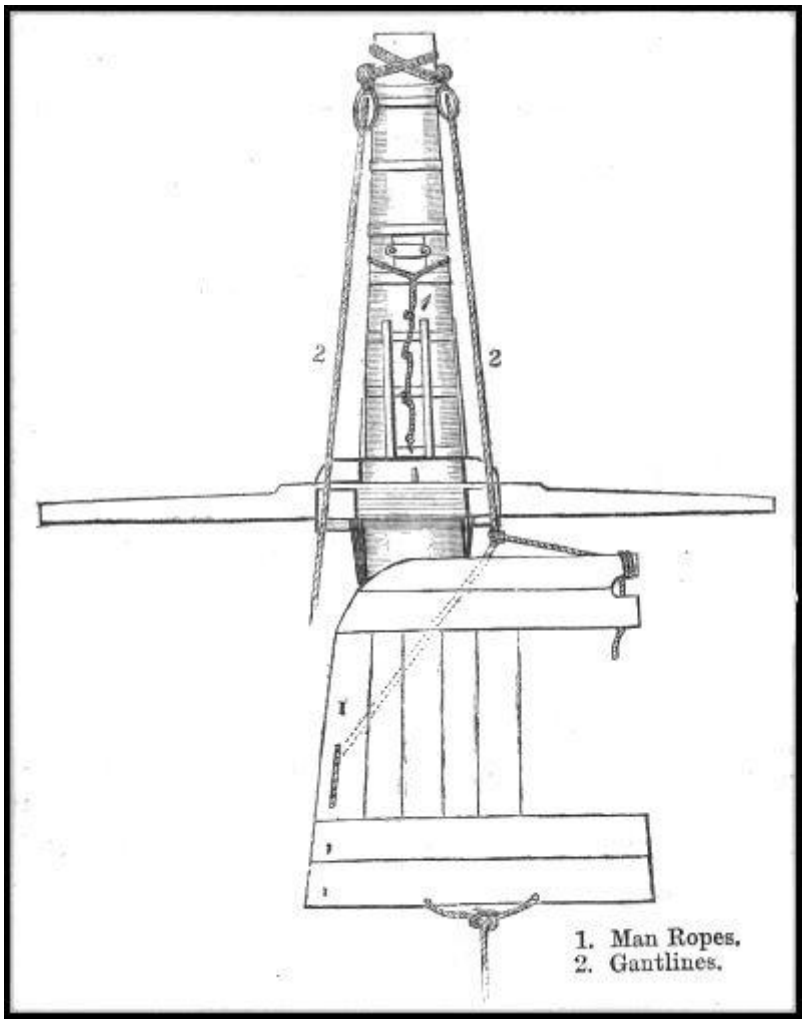
gantlines being used instead of the mizen. A mizen-top is sent up before the mast, so as to have the assistance of the main-gantlines to guy it clear, the after rim being sent up uppermost, the gantlines are passed under the top up through the foremost futtock-hole, down through lubber's-hole, up through the after futtock-hole, and the ends secured as in sending a main or fore top aloft, the gantlines being stopped to the after rim, so as to have the after and uppermost part of the top heaviest. In sending tops down, they are slung the contrary way, so as to have the heaviest part under : therefore if you reeve the gantlines through the foremost futtock-holes in sending a top up before all, you must reeve them through the after-holes in sending it down before all.



2. Fore and Aft Gantlines.

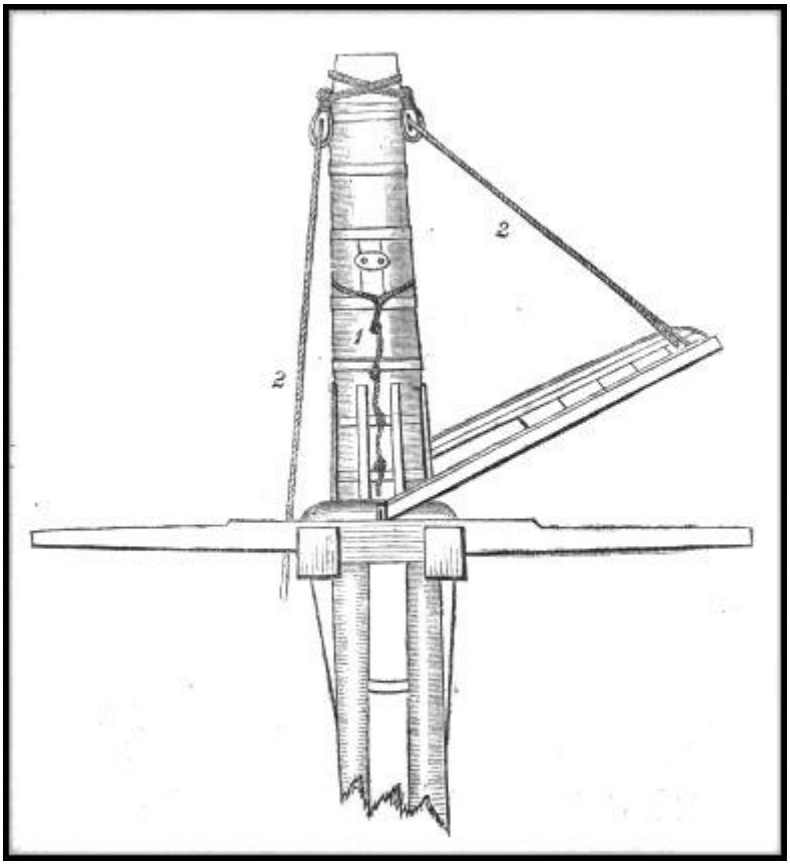
Getting Half-Tops over.

Suppose the starboard-half to be on the starboard side of the deck, and the port-half on the port side.



To send the starboard-half over the masthead, place both gantlines the starboard side of the masthead, hauling part between the crosstrees, and bending parts abaft it ; the half tops are placed on their own sides, foremost ends forward, bottom of the top next the deck.

Hitch the ends of the gantlines round the middle of lubber's-hole trap, then stop them down to the top rim, at the futtock-hole abreast the hitch ; bend the mizen gantlines to the after part of the top through one of the stanchion holes. Sway away, taking care to guy aft with the mizen gantlines clear of the after crosstree. When the half-top is above the crosstrees, it is easily placed in its proper position.



Q. What are bolster-cloths ?

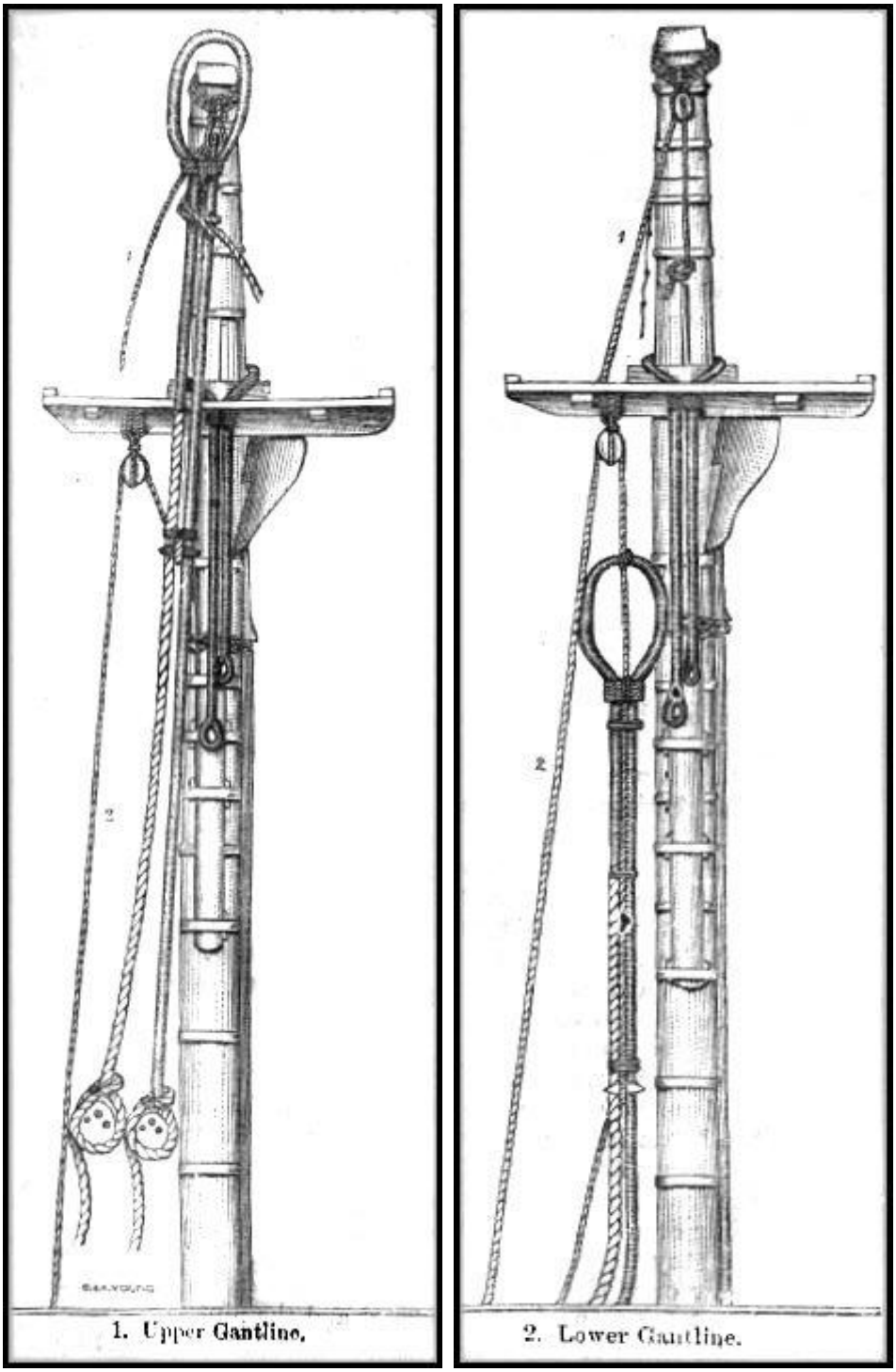
A. Six parts of canvas, the length and breadth of the bolster dipped in Stockholm tar and nailed on the bolster for the eyes of the pendants and rigging to rest on.

Q. How are shrouds numbered?

A. By knots in a rope-yarn made fast to the crown of the eye, the first pair the starboard side has one knot ; the first pair the port side has two knots, and so on, thus, all the odd numbers will be the starboard shrouds, and all the even numbers the port shrouds. If the dead-eyes are turned in, the starboard shrouds would easily be known from the port, and vice versa by the seizings being aft, and the ends being inside and aft on both sides.

Q. How do you send the lower rigging over the masthead ?

A. The gantlines are shifted to the after part of the trestle-trees. A large toggle is seized on the end of each gantline to which a rounding line is bent. The starboard lower pendant is first sent up, a good temporary seizing is put on about three feet down the long or after leg, and instead of bending the gantline, the toggle is inserted under the seizing, and the upper part of the eye is stopped to the gantline.



1. Upper Gantline.

2. Lower Gantline.

When the eye of the pendant is triced up to the gantline-block, the stop is cut, and the pendant is placed over the masthead, the seizing is cast off, and the gantline is rounded down by the rounding line, the port pendant is then sent up, then the first or foremost pair of shrouds the starboard side, then the first or foremost pair the port side, and so on, until all the rigging is over the masthead ; in sending the shrouds up, the temporary seizing under which the toggle of the gantline is inserted

is placed about one-third down the shroud, and the gantline is stopped to the crown of the eye in a similar way to the lower pendants.

In large ships where the mastheads are very long, it is necessary to have a short gantline to assist the eye of the rigging over ; which is lashed as high as possible up the lower masthead and worked from the top, the hauling part of the gantline being dipped through the eyes of the rigging as soon as it is over the masthead.

When the lower pendants are in place, the runners should be triced up and lashed to the long or after legs, and the up and down tackles to the short or foremost legs, so as to get a good up and down pull to settle the pendants down in place, and make a foundation for the lower rigging : each pair of shrouds should be set up when placed over the masthead ; in ships with nine shrouds of a side the single or after shroud is usually put on first ; by so doing it gives more spread for the other shrouds, and the seizings lie clear of each other. There is also more certainty of placing the mast in the position you wish, if the after-swifters are put on the first thing after the pendants ; and the mast placed by them and the runners. Before sending the lower pendants or shrouds aloft, open the eyes, which is done by lashing one side of the eyes to an eye-bolt, or any convenient place, and clapping a jigger on the other side, and haul the eyes sufficiently open to go over the masthead ; by attending to this, it saves much time when the rigging goes aloft, as the men at the masthead have neither the means nor space to do it. After having got an up and down pull of the runners, pass a lashing across abaft the mast, from the after leg of one pendant, to the after leg of the other, carry the runners forward, and steady them hand taut.

Q. How do you send lower stays up?

A. If for a foremast or mainmast, which have always two stays, send them up together by placing the upper one, which is always the starboard stay, upon top of the lower one, bend your gantlines to the fork of the stays, having first placed them fair with each other, and seize the two forks of the stays together, also put a good seizing on each side of the collars, about half way up (this applies to topmast stays also : for large ships, two seizings are put on each side of the collars), then put two seizings to the gantlines on each half-collar ; when high enough, cut the seizings on the collar, lash the stays abaft the mast ; they sometimes go over the foremast crosstree, so as to give more room for the lower yards to brace up. A mizenstay is sent up in a similar way.

Q. For what reason are the lower and topmast stays put over the mastheads after the shrouds ?

A. The lower the shrouds are placed, the sharper the yards will brace up. If the stays were placed over the masthead first, the eyes of the rigging would chafe the lashing of the eyes of the stays through, and the rigging would not lay snug.

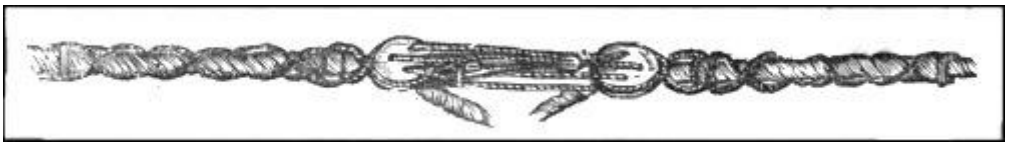
Q. How are the lower stays turned in ?

A. Either cutter-stay fashion, or on end. When turned in cutter-stay fashion, hearts are used instead of dead-eyes ; when on end, thimbles ; sometimes the mainstays are passed round the cross-piece of the fore bitts, and secured to their own parts. Hearts are turned in and secured in a similar way that dead-eyes are in shrouds - the starboard stay the same as a starboard shroud, and the port stay the same as a port shroud.

To mark a Fore or Mainstay, for turning in.

Measure with a line from the after-part of the masthead to the heart in the collar on the bowsprit for a forestay, and to the heart at the knight-heads or fore bitts whichever place the mainstays are going to be set up to for the mainstays. Four or five feet less than the measure will be the length of the stay from the eyes to the lower part of the heart, then allow once the round of the stay and half the round of the heart for going half-round the heart and the nip.

In ships of the " Warrior " class, the mainstays are set up to hearts, secured by bolts through chocks on the upper deck, and clenched underneath on the main deck, to one of the beams about 30 ft. or 40 ft. abaft the foremast.



Note: A temporary method of securing a Shroud that has been shot away, with a pair of dead eyes that are always kept fitted The lanyard is fitted with a Matthew Walker knot, and an eye in each end to hook the jigger to, the dead eyes, fitted with two tails each, are secured round the two parts *of* the shroud and the lanyard housed taut *with* the jigger and secured.

Q. What size is a lanyard of lower stays in proportion to the stay ?

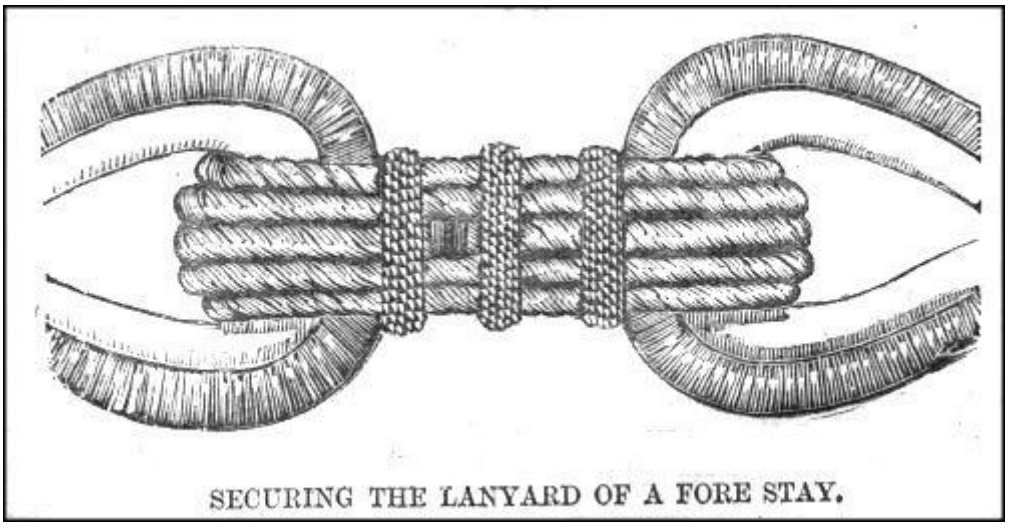
A. Half an inch less than half the size of the stay.

Q. How many turns are there rove through a heart for securing lower stays ?

A. Four lower turns, and three riding turns ; should there be any end left after these turns are rove, it is expended in riding turns, if there is sufficient room left in the heart ; the four lower and three riding turns generally fill the heart up.

Q. How are lanyards of lower stays rove ?

A. Generally on. the bight, and set up on both ends ; sometimes they are only set up on one end, in which case the standing part of the lanyard is secured with a running eye round the underneath part of the lower heart.



SECURING THE LANYARD OF A FORE STAY.

When the hearts for the forestays are turned in on the bowsprit, with what is termed a long collar, the standing part of the lanyard of the stay is spliced in the lower heart. It is then rove in a similar way that a lanyard for lower rigging is, the hauling part of the lanyard on the standing part of the stay, each turn being placed in the notch or score in the heart. In large hearts there are four scores, and in small ones three, every turn is hauled well taut and is racked. After the riding turns are passed, the end is seized to its own part ; three good spunyarn seizings are passed round the lanyard, at equal distances, to keep all parts in place.

Q. What purchases are used for setting up lower stays, and how are they applied ?

A. When setting up with lanyards rove on the end, the same purchase is used as for setting up lower rigging, viz., up and down and luff ; a boatswain's toggle is also used. Both stays should be set up at the same time, the luff being applied to a stay in a similar way that it is to a shroud, the single block well up the stay, hooked to a salvagee-strop, and the double block to the strop of the boatswain's toggle - the up and down to the fall of the luff.

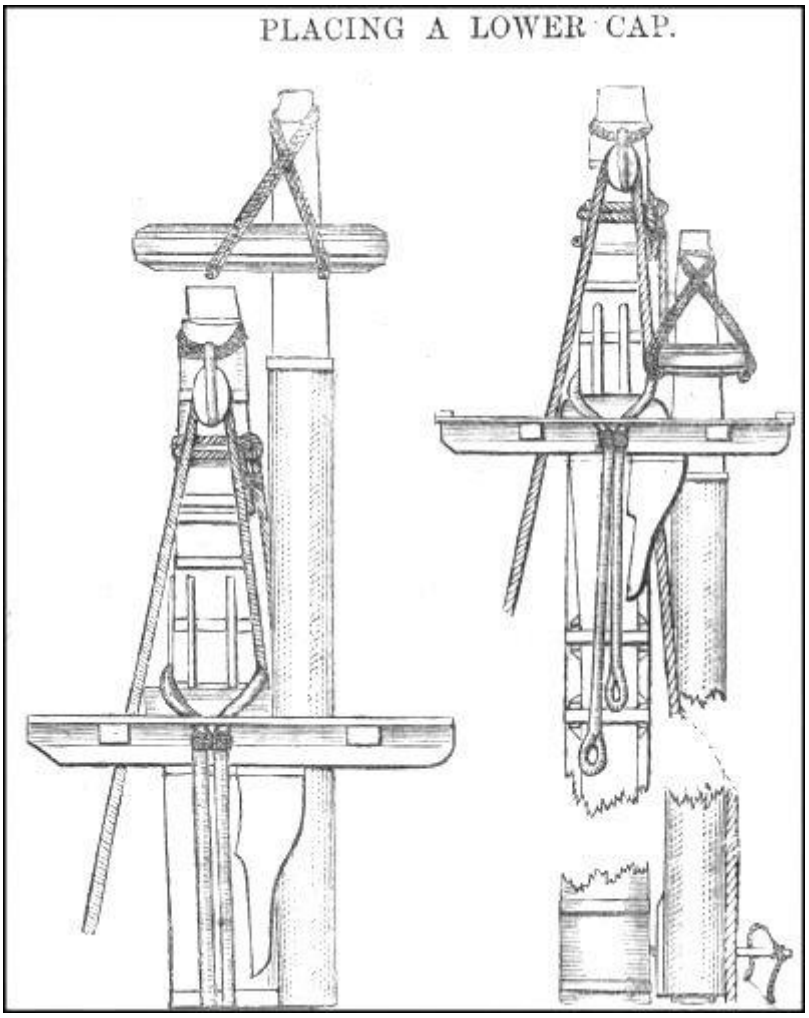
The mast having been placed in the required position by the runners and tackles, the stays are set up until they have the strain of the mast.

When the lanyard is rove on the bight, top-Burton's, on luffs, are sufficient purchase. Great care must be taken to keep the eyes and lashing clear of each other at the masthead ; and the fork of the stays exactly middled. Men are stationed each side of the lubber's-hole with a strand, to keep the stays close to the crosstrees while setting up. If the seizings are well secured that are put on the forks of the stays before they are sent aloft, there is little fear of the stays getting out of place at

the masthead when setting up ; seizings thus put on, have been known to last an entire commission, and not taken off until stripping the mast again.

Q. How do you send a lower cap up?

A. It is sometimes sent up before the lower rigging is put over the masthead, if after the lower mast is rigged, before the rigging is set up, so as to allow ample room for it to go through the lubber's-hole ; when one gantline only is used for sending the lower cap up, it is doubled by being rove through another block, the standing part being made fast to the masthead ; or both gantlines are shifted to the side of the mast you intend sending it up; there is sufficient room for it to lay in the fore part of the top, without in any way interfering with the rigging of the lower mast.



TO PUT A LOWER CAP ON.

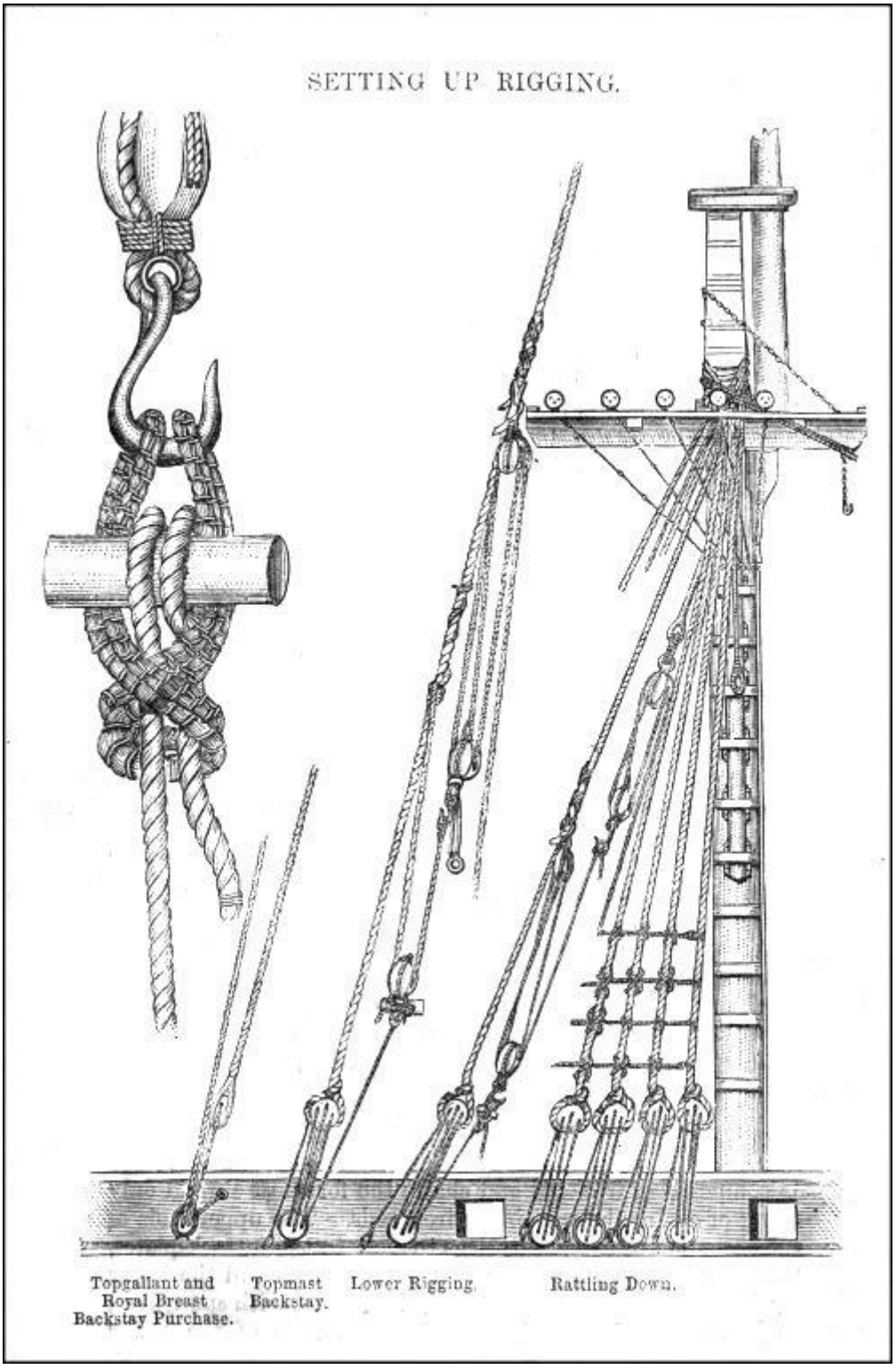
(A Topmast is always used for this purpose.)

The cap is swayed out of the top, and hung above the eyes of the lower rigging with the top-Burton tackles fair for the topmast to enter, taking care the after part

of the topmast is the same side as the top block is lashed ; hook the two up and down tackles to a strop round the heel of the topmast, to assist the hawser in swaying it up, put a small spar in the fid-hole, with a rope fast to it, so as to slew the mast as required. When the topmast is about 3 ft. through the fid-hole, slew it one square forward, then lash the cap to it with two pieces of rope, clove-hitched round the topmast-head, and through the eye-bolts in the cap, one forward and one aft each side, for the cap to go up square. When ready, bring the hawser to the capstan, heave round, and walk the up and downs up by hand at the same time. When the cap is above the lower masthead, slew the mast till the cap is fair for going on, then lower the mast, and the cap will go into its place, beat it well down with commanders, then make the end of the hawser fast to the foremost eye-bolt in the cap, keeping the weight of the mast in the tackles, unlash the top-block, and hook it to the after eye-bolt, in the cap on the opposite side to which the hawser is secured, take the lashing off the topmast-head and lower cap, and the up and down tackles off the heel, and the racking off the two parts of the hawser, put a gantline on the after-part of the topmast-head, ready for sending the topmast crosstrees up ; sway the topmast for this purpose, one-fourth up.

NOTE.- It is customary to fid the spare topmast first.

Q. How do you set up lower rigging ?



A. With an up and down and luff. The double block of the up and down is lashed to the short or foremost leg of the lower pendants, the single block is overhauled down ready to hook to the fall of the luff. The single block of the luff is hooked to a salvagee-strop, which is put on the shroud that is to be set up, about 10 ft. above the netting, a strip of canvas having previously been placed round the shroud to take the chafe of the salvagee-strop.

If setting up with what is termed a boatswain's toggle, the double block of the luff is hooked to a strop which goes round both parts of the lanyard under the toggle.

A boatswain's toggle is simply a piece of hard round wood; it is used by taking a round turn round it with the lanyard ; and then by taking two round turns round both the parts of the lanyard, under the toggle, with a salvagee-strop, taking care to have both parts of the strop on the same side of the toggle.

This plan is much approved of by riggers, as the lanyard never jambs, nor do you run a chance of bursting the yarns of the lanyard.

Another plan, for setting lower rigging up, is by making a cat's-paw in the end of the lanyard, and hooking the double block of the luff to it, this plan is most objectionable, as the lanyard invariably jambs, and in many cases you burst the outside yarns of the lanyards ; therefore, in all cases, a boatswain's toggle should be used.

Futtock Rigging

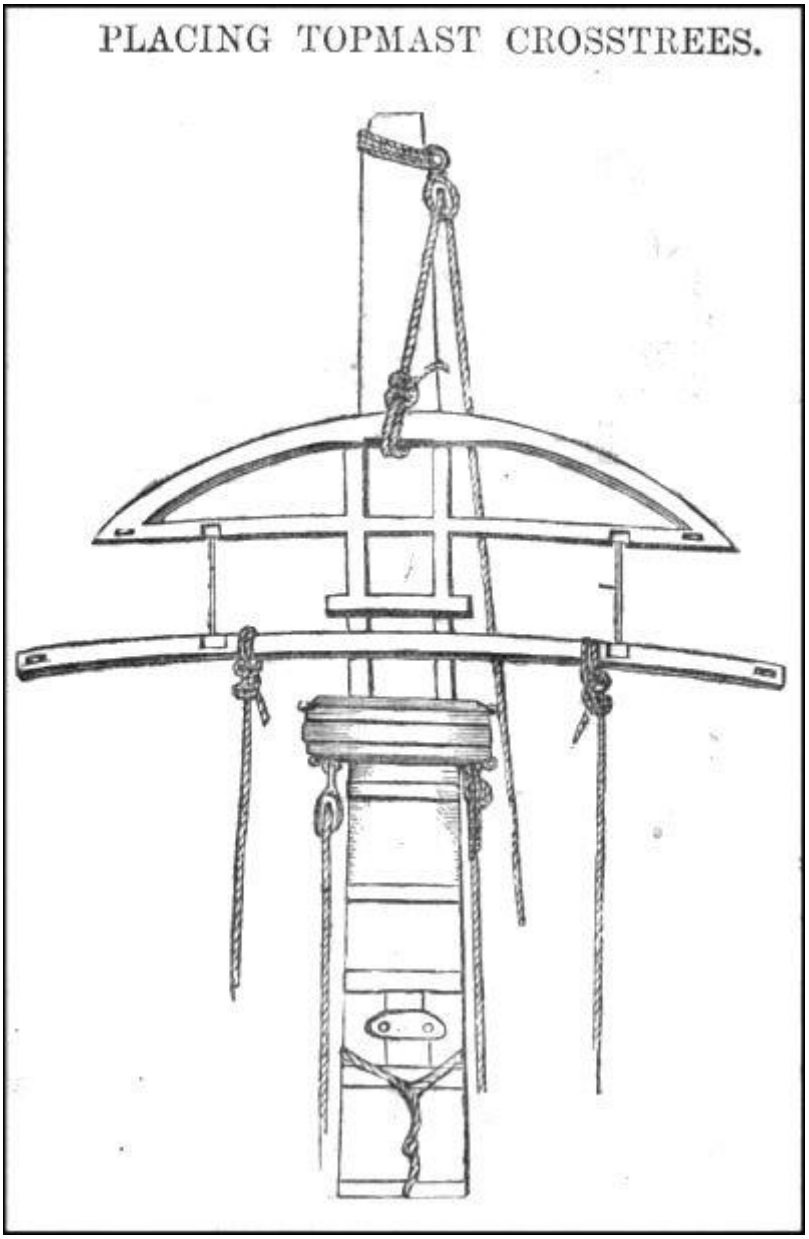
Is composed of iron rod and chain, the foremost shroud only being of chain, the remainder iron rods. The upper ends of the shrouds are fitted with legs to bolt to the futtock-plates, the lower ends are shackled to the necklace round the lower masthead, they are parcelled and served over with spunyarn ; an iron Scotchman is seized to the shrouds of the lower rigging, in the wake of the futtock-rigging, to prevent it chafing.

When the futtock-plates are sent up, and rove down through their respective holes in the top rim, send the futtock-shrouds up one at a time and shackle them on in place.

Q. How do you send topmast crosstrees in place ?

A. Gantlines are placed on the topmast-head for this purpose.

PLACING TOPMAST CROSSTREES.



Send the end of the gantline down abaft the top, make it fast to the centre forepart of the crosstrees, bend an after-gantline to keep it clear of the top and lower cap, sway the crosstrees above the cap, slack the after-gantline, let the fore part rest against the mast, and the after part on the cap, make a rope fast to the after part of the crosstrees, and reeve it through the eye-bolt in the cap each side, and a man in the top to attend them to prevent them slipping off, lower the topmast, take the gantlines off the topmast-head. As the topmast goes down, the crosstrees will gradually come down on the lower cap in the right position to go over the topmast-head when the mast is again swayed up. The spare topmast is generally used for this purpose, and after the crosstrees are in place, the mast is swayed up, and fidded, to ascertain all is right ; they are then sent down, and stowed in the booms or chains. The heel of the fore-topmast being taken aft, and the main and wizen forward.

Q. How do you rig a topmast a

A. Sway the mast up, so as to have the crosstrees about 4 ft. above the lower cap, and put the gantline or gantlines, on for sending the topmast rigging up. There are two plans for sending topmast rigging over the topmast-head, either by, putting a gantline and two man-ropes on the after part of the topmast-head, or by placing two gantlines on the after part of the tressletrees, and the man-ropes on opposite sides of the topmast-head.

Shackle the tye-blocks to the foremost legs of both the necklaces, and the jib halyard-block to the after-leg the starboard side, and topmast-staysail halyard or jibstay-block to the after-leg the port side of the fore-topmast necklace.

The jib and staysail halyard blocks are sometimes shackled to eye-bolts, driven up through the fore-part of the topmast tressletrees and crosstrees, and clenched above, which forms a much better lead ; it saves time to get the hanging-blocks in place, before sending or setting the topmast rigging up.

The iron binding of the blocks should be smoothed down at the edges, and the ends of the pins covered with leather, to prevent them cutting into the masts.

Nail the bolster cloths in place, the same as for the lower rigging, put the sail-tackle pendant round the topmast below the crosstrees.

For Staying the Masts.

Hook the to lower block of the fore to the bowsprit cap the main to an eye-bolt in the foremast-head, or a strop round the foremast-head, and the mizen to an eye-bolt in the mainmast-head, or a strop round the mainmast-head.

The topmast rigging is fitted in the eyes, and the deadeyes turned in the same as the lower rigging, the top Burton pendant has only one leg of a side to hook the top-Burton to.

The topmast rigging is placed over the masthead the same as the lower rigging, after the Burton pendant is placed, the first pair of shrouds the starboard side, then the first pair the port side, so on until all the shrouds are in place ; then the first pair of backstays the starboard side, then the first pair of backstays the port side. Then the third and last pair of backstays, which is fitted with a single leg of a side and a horseshoe-eye, so the backstays shall lay fair on the quarter of the mast.

NOTE.- Single backstays, fitted with a horseshoe splice, are always put over the masthead first, after the shrouds, in Portsmouth Dockyard, therefore they become the quarter backstays.

All backstays are now turned in alike, and set up with dead-eyes the same as the rigging, as quarter backstays.

There are always three of a side down to second class frigates, below that, only one pair of a side.

Breast or shifting backstays are done away with in the Navy, but if they should ever be used, after the topmast shrouds are placed, send the breast backstays up, which are one on each side ; they are spliced together to form the eye.

Bend the gantline, on 3 ft. below the eye, the port side, and stop it along the starboard-leg, sway it up, and cut the stops as they come to the block, sending the starboard breast backstays down its own side ; they are set up with a runner and tackle, instead of being set. up, like the others, with dead-eyes.

In French ships of war the topmast breast-backstays are used instead of yard-tackle pendants and whips, having fiddle blocks seized in them for reeving the falls.

When required for hoisting boats in or out they are run out to the yard-arms, to the required distance, by a single whip, and secured round the yard-arm by a strop and toggle, thus doing away with the lumber on the main and foreyards of yard-tackle pendants and whips, leaving them much clearer for working studdingsails.

NOTE.-The " London " and " Princess Royal," when commanded by Captain (now Admiral) Sir Lewis Tobias Jones, in the Black Sea, had their topmast breast backstays fitted in this way.

When not in use as yard-tackle pendants and whips, the single blocks are hooked in the chains, the hauling part of the falls are hitched round the ass of the lower block, and coiled down, the standing part of the fall, which is secured by being hitched round the backstay above the fiddle-block, is cast off, rove through the pipe in the ship-side inboard, and used as a temporary hauling-part to set the backstay up, thus doing away with the necessity of having the whole length of the fall on the upper deck.

All backstays are usually served with sennit in the wake of the braces, so as to do away with the use of mats.

To send the Topmast-Shrouds over the Topmast-Head.

Bend the gantline 3 ft. below the eye-seizing, and stop it to the eye, pull up on the gantlines when the first seizing is up to the gantline-block, cut it, pull up again on the gantlines, and place the shrouds over the masthead.

The quarter backstays are then set up in the usual way, one pair of a side and set up with dead-eyes.

If you are sending the topmast rigging up by a single gantline on the after-part of the topmast-head, you must hang the shroud by the man-ropes, cast of the gantlines, unreeve it, dip it clear of the eye of the shroud, reeve it the reverse way, and pay it down for the next pair.

If you are sending the shrouds up by gantlines placed on the after tressletree, as soon as the second seizing is up to the gantline block, reeve, if the starboard shroud, the port man-rope, which is placed on the topmast-head through the eye, and bouse it down in place ; this latter plan, for small vessels, is much to be preferred, and in ships where the topmast-heads are not too long, much time is saved in working the two gantlines.

In large ships, where the topmast rigging is very heavy, the single gantline on the after-part of the topmast-head is the best and easiest plan.

Funnels are used in small ships for, the topmast rigging, the same as for topgallant rigging, only they are square instead of round.

Q. How are the lower dead-eyes for the topmast rigging fitted

A. The lower dead-eyes of the topmast rigging are iron stropt, and, like the lower ones, swivel ; they are connected to the necklace of the lower mast by the futtock shrouds.

It requires great care in placing the lower rigging, so the futtock rigging will lead clear between the lower shrouds without chafing them ; but if the lower shrouds ride, there will be great difficulty in reeving them, and constant chafing afterwards.

Iron Scotchmen are placed on the lower rigging, so as to prevent chafing the lower shrouds.

Q. What is the difference in the fitting of the topmast shrouds

A. The first or foremost pair of shrouds each side, has a sister-block seized in them for the topsail lifts and reef-tackles, and the foremost shroud on each side is wormed, parcelled, and served all the way down.

Q. How do you send up and place the topmast stays, fore, main, and mizen over the topmast-head, and how are they set up ?

A. For the Fore or Main.- The stays are placed one on top of the other, seized together in the crutch, and two seizings are put on each side of the collar ; if the jib-stay is fitted to secure at the masthead and set up on the forecastle, all three stays can be sent up together, the jib-stay uppermost ; the gantlines are sent down before all, and bent to the crutch of the stays and stopped to the collars, swayed up,

and when the seizing on the collars are up to the gantline-blocks they are cut, and the eyes are lashed abaft the topmast rigging with a rose-seizing.

The legs of the collar of the jib-stay are passed down through the collars of the fore-topmast stays, and lashed in a similar way to the topmast stay abaft all, and below them. It takes it more clear of the foot of the fore top-gallant sail, and brings less strain on the topmast-head.

In large ships, where the stays are heavy, it is the best plan to send them up by a top-Burton, which is hooked to a strop round the fork of the stays.

The starboard stay is always the upper stay.

The fore-topmast stays are rove through the sheaves in the bees of the bowsprit, through holes in the spritsail gaff, and set up in the head, the port or inner stay having previously been rove through hanks for the topmast-staysail.

Main Topmast-stays.

In all screw ships they both lead through iron-bound clump blocks, shackled to the hooks at the foremast-head above the rigging, high enough to clear the peak of the gaff-foresail, and are set up to iron-bound hearts in the deck. Paddlewheel steamers have but one stay that reeves through the fore cap, and sets up to a collar under the third pair of shrouds.

The mizen topmast stays set up to a thimble, stropped round the eyes of the main shrouds ; in screw ships there is an iron-bound clump-block above the rigging, similar to the main topmast-stays.

In sailing ships, the upper main topmast-stay leads over a chock between the fore tressletrees ; the lower one leads through a clump-block bolted through the foremast, under the top ; both are set up to iron-bound hearts in the deck.

Q: How do you set up topmast rigging?

A. A top-Burton and runner are used for this purpose. The double block of the Burton is hooked to the Burton-pendant, and the single block to a thimble in the end of the runner ; the other end of the runner is secured round the shroud that is to be set up, about 10 ft. above the top, or as high up as the length of the runner will allow with two round turns, and the end is dogged round with the lay of the rope and stopped.

The end of the lanyard is rove through the thimble, in the crown of the runner-block.

A sheet-bend is formed round the neck of the strop, in which a belaying pin, or any round piece of wood is inserted, to prevent it from jambing.

The end of the Burton fall is led on deck, where it is worked.

If a hook were substituted in the crown of the runner-block, instead of the thimble, a boatswain's toggle could be used for setting up topmast rigging, the same as lower rigging, by which much time would be saved.

Q. How are topmast-stays turned in ?

A. On end, with the end parts in amidships. Hearts are generally used by the dockyard riggers in large ships, and in small vessels, thimbles. For neatness in large ships, dead-eyes are frequently substituted for hearts.

Q. How are the lanyards for topmast-stays rove ?

A. If dead-eyes are used in a similar way to lower or topmast rigging, the end is secured by a Matthew Walker knot in the upper dead-eyes. If hearts are used, the standing part of the lanyard is spliced in the bolt in the deck, to which the lower heart is secured. If thimbles, the standing part of the lanyard is spliced in the thimble in the stay.

Q. What purchases are used for setting topmast-stays up, and how are they applied ?

A. Luff upon luff.

For a Fore Topmast-stay.

The single block of the first luff or forecastle jigger is hooked to the lanyard of the stay, and the double block to a salvagee-strop on the stay, or the tail of the double block of the jigger dogged round the stay ; the fall is led in through one of the pipes on the forecastle, cat's-pawed, and the double block of another luff or forecastle jigger is hooked to it, the single block being hooked to a convenient place to form a fair lead, it is then steadily walked up until the topmast-stays have the strain of the mast, or the sail tackle by which the mast has been placed in the position required is slack.

To Set a Main Topmast-stay up.

Hook the single block of a luff to a salvagee-strop well up the stay, and the double block to the lanyard, then hook the double block of the second luff with another salvagee-strop well above the single block of the first luff, and below the clump-block through which the main topmast-stays are rove, and the single block to a cat's-paw in the hauling part of the first or lower luff ; reeve the fall through a

leading block on deck, and steadily walk it up until the stays have the strain ; both stays should be walked up together.

The mizen topmast-stays are set up with top-jiggers, the double block of the jigger is hooked about 10 ft. or 15 ft. up the stay, and the single block to the lanyard ; it is generally set up by hands in the top.

Q. What is the difference in the rigging of a fore, main, and mizen topmast?

A. The fore topmast has an extra stay to the main - viz., the jib-stay. The mizen has only one topmast-stay.

Q. How do you get a topmast cap in place ?

A. In small vessels it is swayed up by gantlines, and put on by hand.

In large ships a topgallant-mast is used in a similar way that a topmast is for a lower cap.

Lash the fore and mizen topgallant-mast rope blocks the starboard side, and the main the port side.

To reeve the mast-rope for this purpose, take the end up through lubber's-hole, on the starboard-side, for the fore or mizen, and the port side for the main, reeve it through the block at the topmast-head from aft forward, down through the mast-hole in the crosstrees, then through the thimble of the lizard, through the sheave-hole in the heel of the topgallant-mast, and through the thimble of the topgallant lizard ; haul enough through to reach the royalmast-head, and rack the two parts together ; reeve the lizard that is on the hauling part through the royal sheave-hole, and hitch it to its own part ; the lizard on the standing part is rove through the topgallant sheave-hole, and hitched to its own part.

Sway the mast up, and point it through the topmast crosstrees.

Two gantlines are secured to the topmast-head for thin purpose ; overhaul one of them down before all, bend it to the cap, and sway it up to the topmast-head.

Make the other gantlines fast, so that the cap will hang square above the eyes of the rigging, for the topgallant-mast to enter the round hole, then sway the topgallant-mast 2 ft. or 3 ft. through the cap, and lash it fair for going on the topmast-head, sway up until the cap is above the topmast-head, then slew the topgallant-mast until the cap is fair for going on, then lower away until the cap is in place ; beat it well down with a commander, when it bears fairly all round in place, make the standing part of the topgallant-mast rope fast to the foremost eyebolt in the topmast cap ; lower the mast, and let the weight come on the standing part with the same racking on ; then unlash the block, and hook it to the after eyebolt in the cap on the

port or starboard side, according which mast it is. Haul taut the mast-rope, take a turn with it and cast the racking off.

Q. How is a topmast necklace secured, and what is it made of ?

A. A topmast necklace is merely a chain-strop, the fore having two open links or legs on each side fox the hanging or topsail tye-blocks, jib and fore topmast staysail halyard-blocks and the main and mizen, one open link or leg each side for the topsail-tye, or hanging-blocks.

The necklace is placed over the topmast-head, above the crosstrees, and under the bolsters.

NOTE.-In Portsmouth Dockyard the chain strop is done away with, the necklace is now formed out of an iron plate, with lugs for long links for the hanging blocks.

Q. How are the bolsters on the topmast secured ?

A. The topmast bolsters, like the bolsters on the lower mast, are chocks of wood, half-rounded, so as to form a smooth surface for the eyes of the topmast rigging to lay on ; and are scored out underneath to fit snugly down on the necklace.

The necklace and bolsters are secured to the crosstrees, before the crosstrees are sent aloft.

Q. How do you rig a topgallant and royalmast ?

A. Topgallant rigging is placed over a funnel, which is made of copper to fit above the hounds of the topgallant-mast ; being of a smooth surface, it does not chafe the eyes of the rigging.

To rig a Fore Topgallant Funnel.

Send the gantlines down before all, and make it fast to the stays, about 6 ft. below the funnel, stop it to the funnel ; pull up on the gantline, and place the funnel over the hole in the topmast cap, in readiness to receive the topgallant-mast, stop the stays to the crosstrees ; send the gantlines down abaft the top for the starboard pair of shrouds, place them over the funnel, then send the port pair of shrouds up and place them ; then the starboard pair of backstays, then the port pair of backstays and place them.

The main and mizen topgallant-masts are rigged in a similar way, with the omission of a flying jibstay.

Main and mizen royalstays are now rove through sheaves in the after-part of the fore and main topmast crosstrees. Iron jacks, or arms, are also fitted to the lower

rim of topgallant funnels. The fore has six, the main five, and the mizen two. On the fore the blocks for the flying-jib halyards, fore topgallant-buntlines, and the topgallant studdingsail-halyard, are shackled to the four foremost ones, Jacob's ladder being shackled to the two after ones. On the three foremost lugs of the main, the main topgallant buntlines, and topgallant studdingsail halyard-blocks, are shackled, Jacob's ladder to the two after ones. The mizen Jacob's ladder is shackled to the two lugs which are on the after part of the funnel.

Royal Funnels.

A royal funnel is made of copper, and similar in shape to a topgallant funnel.

A false royal masthead is fitted to go far enough down the funnel to be secured by screws ; it is in every way the shape of the royal masthead, fitted with the lightning conductor, and a hole for the spindle.

Place the royalstays and backstays on the funnel, reeve the signal halyards and put the truck on. Send it up, and place it over the topgallant funnel, ready to ship on the head of the mast.

Sway on the mast-rope, when the head of the mast is through the topgallant funnel, place the royal funnel and track, and reeve the royal halyards ; when the mast is high enough, settle the topgallant funnel down in its place, and when the sheave is above the cap, reeve the topgallant yard-rope : shackle the span-blocks far topgallant studdingsail halyards and Jacob's ladder, abaft all to the jacks attached to the funnel. The spindle goes with a screw into the false masthead.

N.B.-In most cases the flying-jib halyards block-strop is worked round the chafing grommet when the funnel is not fitted with jacks.

A fore topgallant stay is rove through the dumb-sheave in the jib-boom end, through the dolphin-striker, and set up to one of the knight-heads.

The main and mizen are led through a hole in the lower caps, and set up, the mizen in the main, and the main in the fore-top

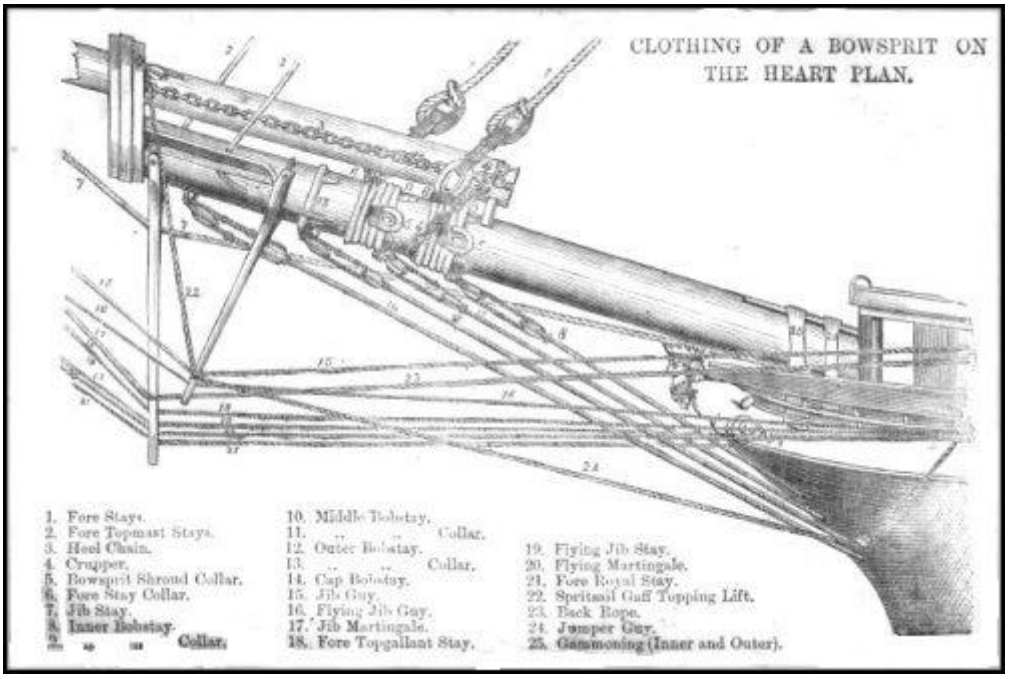
The fore royalstay is rove through the dumb-sheave in the flying jib-boom end, through the lower part of the dolphin-striker, and like the topgallant stay, is set up to one of the knight-heads.

The main and mizen are rove through a sheave in the after part of the main and fore-topmast crosstrees, and set up to a thimble a secured to the eyes of the lower rigging, the mizen in the main, and the main in the foretop.

Q. How do yon clothe a bowsprit ?

A. On whichever plan a bowsprit is rigged, the rule is, the clothing is commenced at two-thirds the length of the bowsprit from the knight-heads, but owing to the long bows ships now have, this must depend on the length of the cut-water.

There are two plans for clothing a bowsprit-viz., heart plan, or the strop or bale-sling plan.



HEART PLAN.

This plan is generally adopted in Portsmouth Dockyard

Inner bobstay collar	Outer bowsprit shroud collar
Inner bowsprit shroud collar	Outer forestay collar
Inner forestay collar	Outer bobstay collar
Middle bobstay collar	

N.B.-The bobstay collars are placed, the diameter of the bowsprit apart.

Strop or Bale-sling Plan

Inner forestay collar	Outer bowsprit shroud collar
Inner bowsprit shroud collar	
Inner bobstay collar	Middle bobstay
Outer forestay collar	Outer bobstay collar

In this way the forestay is planed inside, for convenience in removing the collar if necessary.

An extra bobstay is fitted, reaching from the lower stem-hole to the bowsprit, just inside the cap called the cap-bobstay.

In rigging a bowsprit, the first thing to be done is to rig a stage for the men to work on, as follows :- Take two topmast studdingsail-booms, or any other spars of that description, rig them out of the head-port over the rail, hook the double block of a luff to the cap of the bowsprit, and the single block, to a lashing on the end of the spars : haul them out, and secure their heels on the headrails ; lash a third spar across the outer ends, to keep them open, and secure them to the end of the bowsprit by slashing. Lash two planks athwart them, one near the inner, the other near the outer end of the spar ; then lay as many planks as required to form a platform, nailing them for security to the two athwart-ship planks.

The bowsprit is supported at the hole in the bows, which it passes through by wedges the same as the lower masts are at the partners ; it is also secured by chain or rope gammonings two in number, inner and outer gammonings, which are passed over the gammoning-fish, on the bowsprit, and through holes in the stem.

The gammoning-fish, or saddle is well-tarred, the ends of the chain are passed over the bowsprit, from the starboard side, through the holes in the stem, and over the bowsprit, and shackled to their own parts underneath ; the turns are then passed with the other ends, so that the foremost ones on the bowsprit are the after ones in the stem ; each turn is hove taut, as it is passed, by reeving the gammoning through snatch-blocks made fast to the bobstay-holes on the cutwater, bringing the bight through the hawse-hole, and toggling on to tackles led from the capstan.

Before coming up the tackles, the chain is secured, by nails driven through it, into the fish or gammoning pieces, also by the wedges driven into the gammoning-hole in the stem.

The last turns are frapping turns, passed over some well greased hide, and set up by a tackle or a runner led through a block on the bumpkin.

In rope-gammoning, racking turns with spunyarn would be used, instead of nails. Chain-gammoning stretches after much use, and should therefore be attended to, when about to set up rigging.

The man-ropes are spliced round a thimble, through an eye-bolt each side of the bowsprit-cap, and a thimble spliced in the other ends, to set up to the knight-heads with a lanyard, and attached to the forestay by stirrups.

The bowsprit is secured outside downwards by the bobstays, and sideways by the shrouds.

The forestays pull upwards, and are always placed between two bobstays, so as not to strain or distress the bowsprit.

The inner bobstay or inner forestay collar, according to the plan the bowsprit is to be rigged, is lashed on two-thirds the length of the bowsprit from the knight-heads.

All collars, before being placed, are well fidded out. The bobstay-collars are lashed on top.

The forestay-collars below, and the bowsprit shroud-collar,, on the quarter of the bowsprit, the lashings are hove taut by means of a Spanish windlass ; when all the collars are in place, cleats are nailed to keep them from shifting in or out.

In some cases they are fitted without being lashed, the thimble reeving through its own part.

Bowsprit-shrouds are usually of chain, secured to the collar by a rope lanyard, and to the eye-bolt in the bow by a slip ; all bobstay collars are placed the diameter of the bowsprit apart, which leaves a proper distance for the other collars.

Bobstays are rove through the hole in the cutwater, middled, and spliced, and the hearts seized in, ready for setting up, the drift for the lanyards between the heart in the bobstay, and the heart in the collar is, for the inner bobstay, the diameter of the bowsprit, the middle one 3 ins. less, and the outer one, 6 ins. less.

The lanyard is half the size of the bobstay ; if wire, the lanyard of the bobstay is the same size as the bobstay, and the standing part is made fast with a running-eye, either round the bowsprit close to the collar, or round the heart of the collar ; reeve as many turns as you can without riding, well tar and grease them, hook the double block of a luff to a strop round both parts of the bobstay near the cutwater, and the single block to the lanyard, bring the end of the fall through a block hooked to a strop round the bowsprit, haul through the slack, and make a cat's-paw in it, hook the double block of another luff to it, and single block to the knightheads, and haul every turn taut.

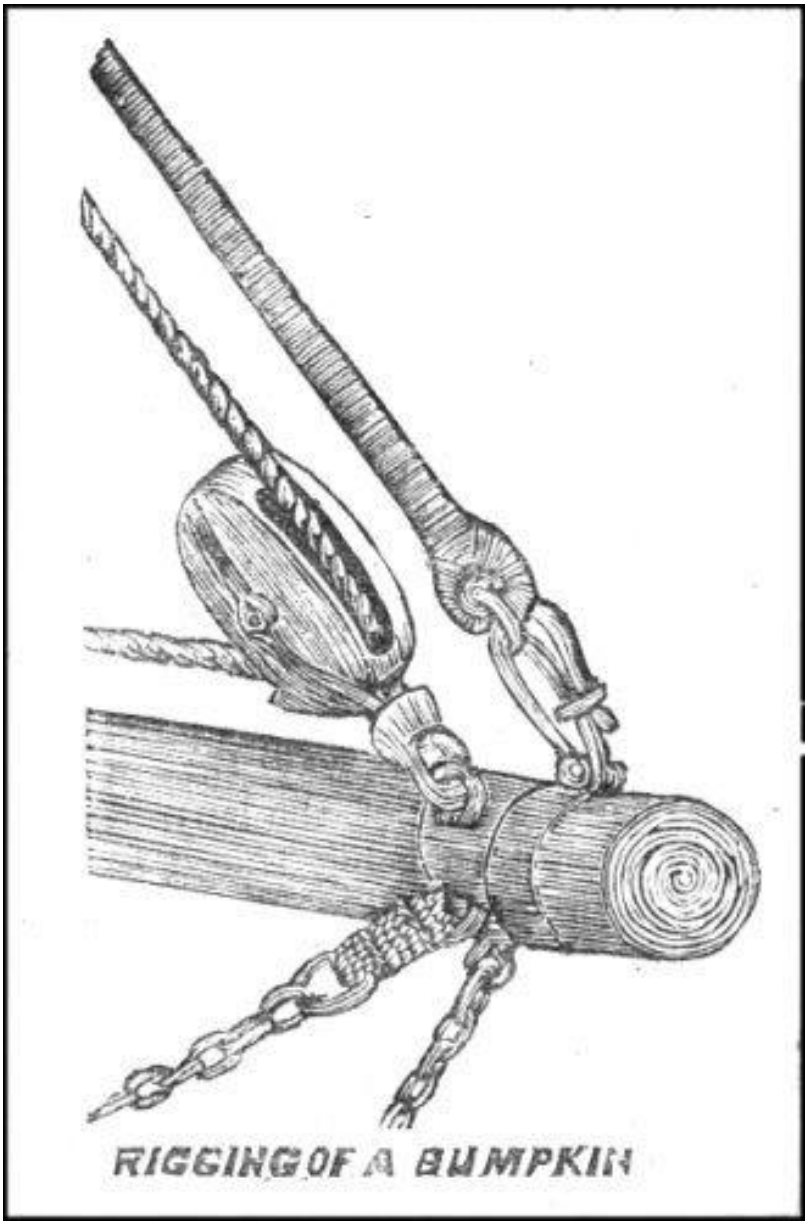
The standing parts of the lanyards should be made fast on opposite sides alternately, so as to endeavour to keep the blocks of the luff clear of each other in setting up.

After each bobstay has been drawn into place, shorten up for a final pull, and walk all three down together ; rack the turns, and pass the riders, rack these again, and when the last turn is taut, rack the end to the other part.

Sometimes the bobstays are set up on both ends of the lanyards, this is done by reeving one end through a leading block made fast round the bowsprit.

Bumpkins.

The bumpkins are stepped, one each side of the bows, to a beam fitted for the purpose, they are secured downwards, and sideways by chain guys, shackled to the bows, and set up to the bumpkin-end, to eye-bolts attached to an iron band that is on the bumpkin-end, and clamped to one of the crossbeams of the head-rail ; it is tapered off at the end, to prevent the foretack blocks from slipping in.



RIGGING OF A BUMPKIN

Q. How do you get a bowsprit cap on ?

A. Bowsprit caps are put on and taken off with the jib-boom, in a similar way that a lower cap is with a topmast.

Q. How do you rig a jib-boom ?

A. First point it over the knight-heads, lightning conductors downwards, get a whip on the forestay, and hook the single block to a strop round the jib-boom, about 10 ft. or 12 ft. from the jib-boom end, which will take it into its place on the bowsprit, with the end far enough through the bowsprit cap to admit of placing the funnel to receive the rigging.

The funnel is fitted with an iron band round it with two legs to it ; the one on top is for the slip of the jibstay, and the one underneath is to shackle the martingale stay ; before placing the funnel on, put the jib-traveller on, if it is intended to use one.

How to place the Rigging over the Funnel.

1st. A good chafing grommet, close to the iron band, driven well down to protect the eyes of the rigging from being cut.

2nd. Foot ropes.

3rd. The starboard jib or spritsail guy.

4th. The port one, seize the foot-ropes on to the guys, about 18 ins. from the eye.

5th. The jackstay, which is fitted in most cases with an eye over the funnel, and a small eye in the other end to set up to the bowsprit cap ; it is also fitted with stops for stowing the jib.

6th. Shackle the martingale stay on, one end to the eye-bolt under the iron round the funnel, and the other end to the dolphin-striker.

When the martingale stay is made of wire rope, there is an eye spliced at each end, one of which goes over the funnel and the other over, and close up to the shoulder, on the point of the dolphin-striker.

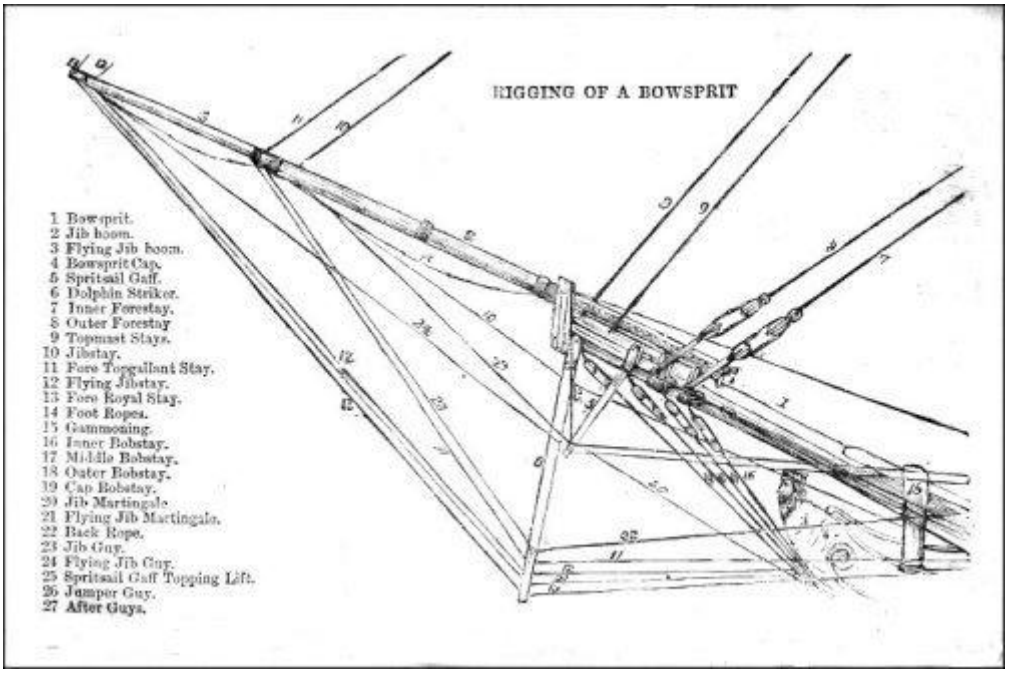
After the rigging is placed over the funnel, the flying jib-boom iron is put on the end of the jib-boom, with the hole for the flying jib-boom on the starboard side.

To rig the jib-boom out, reeve the heel rope, bend the jib-halyards, or hook the foretop sail tackle to the jib-boom end ; pull on the heel rope, and rig the jib-boom out, keep as much strain on the jib-halyards, or sail tackle, as will keep the heel from rising off the saddle.

When out, the heel is secured by two chains, the heel and crupper chain, both fitted with slips.

The heel chain is in two pieces, and shackled to eye-bolts on either side of the bowsprit cap. The starboard piece having a slip in the other end, the port piece is brought round the heel of the jib-boom, there being a score there to receive it, and extends about 2 ft. up the starboard side, when it is secured by the slip in the starboard piece.

The crupper chain is passed round the bowsprit, and over the notch in the jib-boom made to receive it, and secured to one of its own links by a slip.



To set up the Rigging.

Steady taut the jumper-guys, so as to allow the gaffs to come into their required position, pull up on the spritsail-lifts and guys, the gaffs will come nearly horizontal, then steady taut the back-ropes, and remove the jib-halyards or sail-tackle from the jib-boom end.

The jibstays are generally set up in the head, and seldom, shackled to the jib-boom funnel.

The jibstay is either rove through the sheave hole in the jib-boom end, through another in the dolphin-striker, and its end (which is pointed and fitted with a becket for bending a reeving-line) set up in the head, or it is secured by a slip to the eye-bolt in the upper part of the iron band that goes round the-jib-boom funnel.

Another plan is the jib-traveller, worked the same as in a cutter, only with a jib-stay, the standing part of the stay is secured by a slip, or seized to the traveller, the other end is rove through a block at the masthead, and set up by a tackle, or sometimes, in small vessels, by a runner and tackle on deck.

The traveller is worked by an outhaul, through the sheave-hole in the jib-boom end, and an inhaul.

The object of this plan is to be able to ease the jib in when blowing fresh.

Small ships have an iron martingale or dolphin-striker, and iron whiskers or outriggers, projecting from the catheads, instead of spritsail-gaffs, through the ends of which the jib-guys are rove, and set up in the fore chains clear of the anchors.

It is found convenient, when a jib-boom is fitted with a funnel, to fix two iron projections on the fore part of the. bowsprit cap, so as to be able to secure the funnel in a direct line with the jib-boom hole in the bowsprit-cap, in shifting jib-booms.

Q. How do you rig a flying jib-boom out?

A. By a heel-rope, fitted with a tail-block and made fast to the boom-iron, then make the end fast to the flying-boom end, and stop it to the head ; haul on the heel-rope, and point the boom through the iron.

How do you Rig a Flying Jib-boom ?

1st. Put on a chafing grommet close to the hounds.

2nd. The foot-ropes.

3rd. Flying-jib-guys.

4th. Flying martingale-stay.

5th. Reeve the flying jib-stay through the sheave-hole ; the royal stay leads over a notch, or half-sheave in the flying jib-boom end.

Splice an eye in the ends of the foot-ropes, then take a half-hitch, and seize it round the jib or spritsail-guys, and put another seizing on before the hitch.

Q. Where is the flying jibstay set up ?

A. It is rove through the sheave-hole in the end of the flying jib-boom, through the dolphin-striker, and set up with a purchase to the port knight-heads.

To Ship the Spritsail Gaffs

Put the jaws through the bow ports, clap a tackle on the topmast stays, hook the single block to a strop put inside the jaws of the gaff, and whip them out in place near the bees of the bowsprit, and just outside the outer bobstay collar ; there is a score cut in the jaws, for the topmast stays to lead through.

To Rig a Spritsail Gaff

1st. Put the brace on.

2nd. The lift.

3rd. The guys.

4th. The after-guys, and spritsail-martingale, it is sometimes called a jumper-guy.

Put a clump-block on the gaff outside, and close to the guys, for the foremost guy of the swinging boom.

A double strop is fitted round the gaff, half-way out from the jaws, with a thimble seized in it, for the flying jib-sheets to lead through.

To Ship a Dolphin-Striker in Place.

Hook the double block of a tackle to the bowsprit cap, and the single block to a strop below the jaws of the dolphin-striker; and trice it up close to the bowsprit, where it is secured by jaw-ropes round the bowsprit, just inside the cap.

Q. How are spanker, or trysail-gaffs fitted, and what gear is attached to them ?

A. In most cases the gaff is fitted with two iron bands round them, with eye-bolts on top, the inner one is half-way and the outer one five-sevenths out from the jaws, for hooking the peak halyards-blocks to, which are two single iron-bound blocks; on the gaff end is an iron spindle or outrigger, with a sheave in it, for reeving signal-halyards through, for hoisting the ensign.

The throat halyard-block is a double iron-bound block, and is hooked to an eye-bolt just abaft the jaws, which is clenched underneath.

In the gaff end, there is a sheave-hole for the outhaul, and in most cases a small iron band with an eye-bolt on each side for the vangs.

The jaws is the fork or foremost part of the gaff, that fits round the mast, and is formed by two chocks, secured to the gaff by iron hoops, or bands ; when the spanker-boom is near the binnacle, the hoops, or bands, for securing the chocks, or jaws, are always metal ; the jaws are covered in the wake of the mast with liquored [sic] leather.

Q. What rigging is attached to a gaff ?

A. Peak and throat halyards, vangs, downhaul and tack-tricing line ; inhaul, outhaul, and jaw-rope.

Q. How is the boom of a boom-mainsail, or spanker-boom fitted, and what rigging is attached to it?

A. It is fitted with jaws, the same as the gaff, which rests on a saddle, and is secured to the mizen trysail-mast or mainmast of a brig, with cleats and a clasp hoop.

If the sail is fitted with an outhaul, there is a sheave in the boom end.

There is an iron band, with an eye-bolt on each quarter of it, for the topping lift-blocks, the boom is coppered over the part that rests in the crutch, there are cleats, and eye-bolts fitted alternately each side of the boom-end for the reef-pendants, four in number.

There are two double blocks, or two single blocks, according how the boom or spanker-boom is fitted, on the after-part of the boom, for the boom-sheets, placed so as to make a fair lead with those placed in the stern of the ship on each quarter.

The standing rigging of a boom is, jackstays, foot-ropes, jaw-rope.

Main or Spanker-Boom Root-Ropes.

It is becoming very general to fit a foot-rope to spanker-booms.

To fit them.

Form a cut splice in the centre of a piece of rope to go over the boom-end, splice an eye in the two ends, and seize them round the boons about 3 ft. or 4 ft. inside the taffrail.

Main or Spanker-Boom Jackstay.

It is a very convenient thing to have a jackstay on the after part of a spanker-boom, for all it is not usual. It is merely a piece of rope with an eye spliced in each end, the outer one being sufficiently large to go over the boom-end, the inner one is set up to the strop of the boom-sheet block.

Another plan of fitting a spanker or main-boom jackstay, is to form a Matthew Walker's knot in the outer end, reeve it through an eye-bolt on top of the boom, splice an eye in the inner end, and set it up to another eye-bolt placed for the purpose.

How do you Rig a Main Yard ?

1st. Next the slings, on either side, jeer-blocks.

2nd. Topsail-sheets blocks.

3rd. Truss-strops.

4th. Clew-garnet blocks.

5th. Rolling tackle-strop.

At the Yard-Arm ?

1st. Chafing-grommet.

2nd. Foot-ropes.

3rd. Head-earring strop.

4th. Jackstay

5th. Yard tackle-pendants.

6th. Brace-blocks.

7th. Lift-blocks.

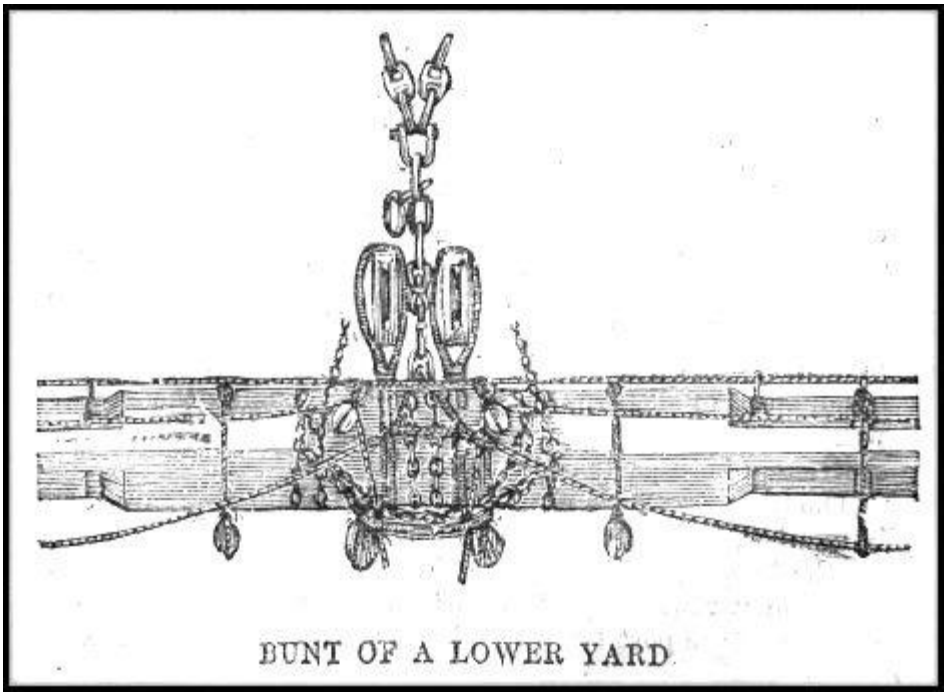
Leech-Line Blocks

There are two on each side of the yard, and the general rule for placing them is, the outer one is seized on the jackstay, about 6 ft. inside the quarter iron ; the inner one about the same distance outside the clew garnet-block ; but before seizing them on for a full due, their proper position should be determined on when the sail is bent.

Slab-Line Blocks

There are two on each side of the yard, fitted with tails, they are hitched to the jackstay, alongside the leech-line blocks. These blocks hang down before the yard, and abaft the courses.

There are two double blocks fitted also with tails, made fast to the jeer-block strops ; they also hang down before the yard, and abaft the courses, to lead the slab-lines on deck.

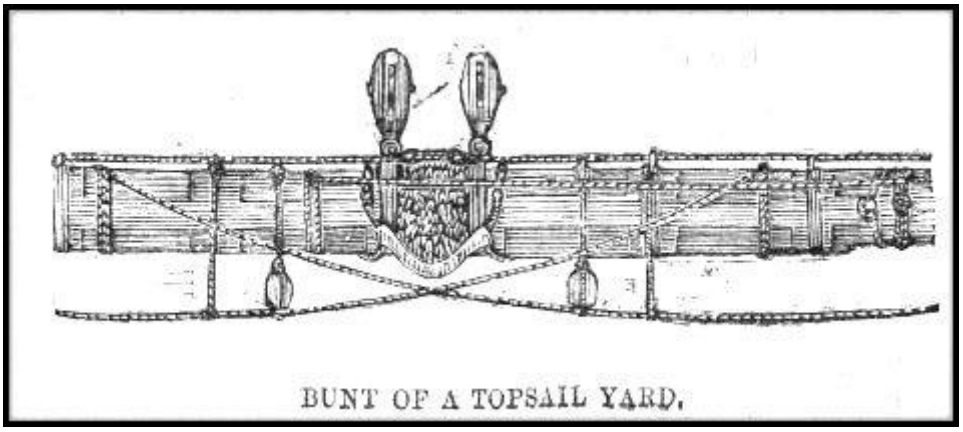


BUNT OF A LOWER YARD.

Bunt Slab-Line Block

Is a single block fitted with a tail, made fast to the slings of the yard, and hangs down before the yard and abaft the course.

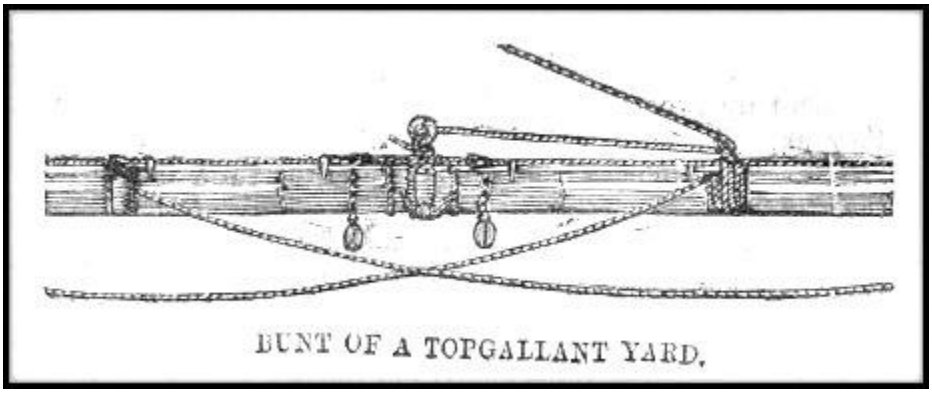
The only difference in rigging a main or fore yard is, a main yard has preventer brace-blocks on the fore side by which the yard is worked.



BUNT OF A TOPSAIL YARD.

The jeer blocks are single thick, double-stropped, having long and short legs.

The blocks stand fore and aft on top of the yards, the two eyes of the strops are lashed the fore side of the yard, leaving sufficient room between the blocks for the slings, the lashing is passed rose-seizing fashion, and should be half the size in circumference of the stropping of the block. There are two such blocks on both the fore and main yards. The crossjack yard is sent up and down by the mizen Burtons.



BUNT OF A TOPGALLANT YARD.

The topsail-sheet, or quarter-blocks, are single thick, double-stropped, stand athwartships under the yards outside the jeer-strops, and are lashed on top of the yards.

The size of the lashing should be half the circumference of the strop, and is passed rose-seizing fashion ; there is a span put round the strops, under the yards, above the blocks, to keep them in their place ; the two eyes of the span are lashed together. After passing sufficient number of turns, take a half-hitch with the end of the lashing, round the middle part of all turns of the lashing, expending the end by passing frapping turns in a fore and aft direction round the centre and both parts of the span.

The truss strops are usually of rigging chain ; they are four in number, two for shackling the standing parts to, and two for the hauling parts to reeve through ; they are lashed on the same as rope strops, the starboard truss standing part up and inside, the port truss standing part down and outside.

The clew garnet-blocks are single stropped, standing athwartships, and are lashed at twice the length of the block outside of the truss-strop, the blocks underneath the yard a little before the centre, so as to be clear of the topsail-sheets. The size of the lashing should be one-third the circumference of the strop, and passed rose-seizing fashion.

Rolling-tackle strop is generally a grommet ; an eye is formed in it and parcelled over on top of the yard, abaft the jackstay, and then it is driven taut up on the quarter, at two-thirds out from the slings, to the quarter iron.

Lower-yard slings are two pieces of chain, the length of each piece is about 2 ft. more than once the round of the yard, more or less, according to the size of the yard ; there is a ring welded in one end of each piece, and a long link at the other end, to receive the bolt of a shackle that connects the slip ; in reeving them round the centre of the yard the ends with the rings come up the aft side, and the two ends with the long links come up the fore side, and reeve through the ring ; the slings are hauled well taut, and seized to the ring, taking care to keep the ring well forward ; a shackle with its bolt through the two end links, is connected to the

slings, the slip goes through the shackle ; the other end of the slip is shackled to the two ends of a piece of chain called the masthead slings.

A chafing-grommet is a common grommet put on the yardarm, and beat well down for the rigging to lay on.

Q. How are foot-ropes fitted ? - if to go over yard-arm with standing eye - if over goose-neck with a welded thimble.

A. Foot-ropes are rove through the stirrups, the eyes are put over the yard-arms, and beat well home, or a thimble over the goose-neck ; the eyes of the stirrups are placed over the eyebolts of the jackstay, which are previously well served or hitched with spunyarn ; the thimbles in the other end of the foot-ropes are secured abaft the yard, in the bunt, to the slings. The length of the foot-rope, from the fork of the eye to the thimble, should be one foot less than the yard is from the centre to the shoulder of the yard-arm. It has been found convenient in large ships to put quarter foot-ropes, which, crossing the bunt from each quarter, enables the men to get a footing on that part of the yard

Head-Barring Strop

Is a strop with a thimble seized in it, placed over the yardarm, and beat well home to the foot-rope.

Jackstays.

The ends are rove through the eyebolt over the eyes of the stirrups, a thimble is then spliced in each end, the eyes over the yard-arm are beat well home to the head-earring strop, a lanyard half the size of the jackstay is placed in one thimble, and rove through the other, by which it is set taut up in the bunt of the yard ; a space of at least 6 ins. is left between the two thimbles for this purpose.

N.B.-All jackstays on lower and topsail yards are now of wire rope, and the thimbles are seized, not spliced in.

Yard-Tackle Pendant.

In large ships they are fitted to remain on the yards, the eye is put over the yard-arm, and beat close home to the jackstay ; in small ships they are fitted with a hook and thimble, and put on when required for use.

N.B.-Now the yard-tackle pendant is made of wire-rope it is fitted to a strop that goes over the yard-arm with union thimbles.

Brace Blocks

Put the strop over the yard-arm, and beat it close home to the yard-tackle pendants, with the head of the pin of the block upwards. The yard-arm strops are single ; those on the blocks are double, so that the blocks may lie horizontally. For greater ease in bracing up, the preventer blocks on the main yard are placed on the fore side.

Lift Blocks

Are single, and single-stropped. Put the strop over the yardarm, and beat it close to the brace block.

Q. How do you rig a crossjack yard

A. 1st. Topsail-sheet blocks.

2nd. Truss strops.

There is an iron band round the centre of the yard, with an eye in it, and a shackle to receive the slip, that is shackled to the masthead.

At the Yard-Arm.

1st. Foot-ropes.

2nd. Jackstays.

3rd. Brace-blocks.

4th. Standing part of lifts, which are always single.

Sometimes the topsail-sheets are rove through one double block in the bunt of the yard underneath, reaching the deck on opposite sides, which enables the yard to brace up easier and sharper.

Q. How do you rig a main topsail-yard ?

A. 1st. Tye-blocks are iron-bound, with swivel and lugs, and are connected by a bolt and forelock to an iron band round the yard, the ends of the bolts are covered with leather, and the edges of the iron stopping smoothed down, to prevent them cutting into the masts. Tye-blocks and boom-irons should always be fitted to spare yards.

2nd. Parrel.

3rd. Quarter-blocks. These are double blocks, for the topsail clew-line and topgallant-sheet to lead through, single-strop lashed outside parrel, and on top of the yard, lashing half the size of strop.

4th. Rolling tackle strop, is a grommet-strop made round the yard, with a thimble seized in it, and is placed half way out from the centre of the yard to the shoulder or cleat.

A pendant, for sending the topsail-yard up and down, is fitted with a running-eye round the quarter of the topsail-yard, the other end has an eye spliced in it ; it is well parcelled for hooking the sail tackle to, and is lashed close outside the quarter-strop, on the opposite side of the yard.

At the Yard Arms

1st. Chafing grommet, fitted the same as lower yard.

2nd. Foot-ropes, fitted with an eye to go over the yardarms, and beat close home to the chafing-grommet ; an eye spliced in the other end, and seized to the opposite quarter of the yard ; sometimes the outer eye goes over the goose-neck instead of the yard-arm ; when fitted this way an additional stirrup is required on the shoulder of the yard-arm.

3rd. Head-earring strop, fitted the same as a lower yard.

4th. Jackstay, fitted the same as lower yard.

5th. Brace-blocks. The strop is put over the yard-arm and beat close home to the jack stay.

6th. Lift-blocks, if double lifts ; if single lifts, the standing part of lift ; in the case of single lifts, the eye goes over the yard-arm close to the brace-block ; in the case of double lifts, the strop of the block goes over the yard-arm, and is beat close home to the strop of the brace-block.

7th. Second reef-tackle block. The blocks on the topsail-yards for the second reef-tackle are attached to the strop with union thimbles, the strop going with lashing eyes round the yard-arm outside all rigging.

8th. Flemish horse. A thimble is spliced in the outer end which goes over the goose-neck, an eye is spliced in the inner end and is seized inside the shoulder, at the distance of once and a half the length of the yard-arm from the shoulder. Not required when foot ropes go to goose-neck.

Topsail-yards (now that reef-beckets have come into general use) are fitted with two jackstays, so that by having two rows of toggles, the reef-beckets may be, more clear of each other, when there are two or more reefs in.

The only difference in the rigging of a fore and main topsail-yard is, there are no jewel-blocks to a main topsail-yard, now that main-topmast studdingsails are done away with in the Navy.

The difference in rigging a mizen topsail-yard from a main or fore is, the Flemish horse is fitted with clip-hooks to the eyebolt at the yard-arm, and the brace-blocks face forward.

A parrel to a topsail yard is what a truss is to a lower yard, or a traveller on a boat's mast is to the yard of the sail it is hooked to. It consists of two pieces of rope which are wormed, parcelled, and served, and an eye spliced in each end ; one piece is shorter than the other, and is placed, the centre of the short leg on top of the centre of the long leg, seize them together with two short flat seizings, fill up the cutling with strands, and cover the parrel with leather. When in use the parrel is placed abaft the topmast, taking care to have the seam of the leather outside. The long legs are passed underneath the yards, up before all, and lashed to the short legs with a piece of rope called a parrel-lashing : in shifting topsail-yards, only one lashing is cast adrift, so the parrel always remains fast to the yard. A small greasy mat is secured to the yard between it and the mast. The length of the long leg, when fitted, will be from eye to eye, twice the round of the yard, and two-thirds the round of the topmast ; and the length of the short leg, when fitted from eye to eye, will be two-thirds the round of the topmast ; allowing four times the round of the rope on each leg for splicing the two eyes, will give the proper length to cut the rope for fitting a topsail parrel without waste ; the ends are put in once and a half.

Q. How do you rig a topgallant yard ?

A. 1st. The slings. Put a strop on the centre of the yard with a thimble seized in it.

2nd. The parrel.

3rd. Quarter blocks, which are double for the royal sheets and topgallant clewlines to reeve through.

4th. A grommet-strop, placed one-third out from the centre with a thimble seized in it. Through this the lizard is rove when the yard-rope is stopped out.

At the Yard-Arms.

1st. The foot-ropes.

2nd. Head-earring strop.

3rd. The jackstay.

4th. Braces.

5th. Lifts.

The jackstay is secured to the yard by strips of leather nailed over it.

Royal yards are rigged in a similar way,

Topgallant Parrel.

A topgallant parrel consists of two strops, one long, and one short ; the long strop is spliced round the yard, and has two seizings on it, one close to the yard, the other to seize a thimble in. The short one is spliced round the yard with a thimble seized in it ; they are served with spunyarn, and, like a topsail parrel, are covered with leather.

The long strop is put on the port side of the fore and mizen, and on the starboard side of the main topgallant yard. The parrel lashing is spliced in the eye of the long strop. When secured in place, the lashing comes on the quarter of the mast ; pass three or four turns with the lashing through the thimbles of the strop, and hitch it round its own part.

To Fit the Parrel.

For the long strop. Take once the round of the yard, once the round of the mast, and once the round of the rope, which would be the length to marry the strop : then allow sufficient end to splice it.

The short strop is spliced round the yard with a thimble seized in it.

The Length to fit it

Take once the round of the yard, once the round of the thimble, and twice the round of the rope. The strands of the splice are put in once and a half, and served all over. The strops are spliced, served, and the seizings put on before placing them on the yard

N.B.- A royal parrel is fitted in a similar way.

9. Seamanship Fourth Instruction Part 2:

Reeving Running Rigging

Q. Reeve the gunning gear of a course ?

A. fore and main tack and sheet-blocks are clump-blocks, with a thimble in the strop to shackle to the clew of the sail.

To Reeve a Fore Tack

Splice a running eye in the end of the standing part, and put it over the bumpkin ; reeve the other end through the tack-block in the clew of the sail, from forward aft, through the block on the bumpkin, from out in, though the sheave hole in the bulwark inboard. If fitted with slips, fit the standing part of tack with a thimble.

To Reeve a Main Tack.

Splice a hook in the standing part, and hook it to an eye-bolt in the deck, placed for that purpose, near the main tack block ; reeve the other end through the block on the clew of the sail, from forward aft, and through the main tack block on the deck from forward aft.

The standing part is sometimes fitted with a slip.

To Reeve a Fore or Main Sheet.

Splice a hook in the end of the standing part, and hook it to an eye-bolt abaft the channels ; reeve the other end through the sheet-blocks in the clew of the sail, from out in, and through the sheave near the standing part inboard.

To Reeve a Fore or Main Clew Garnet

Take the end up through the clew garnet-block on the lower yard, reeve it from in out, down through the clew garnet-block, which is lashed or shackled to the clew of the sail from in out, take the end up, and secure it round the lower yard, outside the quarter-block, with a timber hitch.

To Reeve Fore and Main Buntlines.

Reeve the buntlines, through the upper sheave of the buntline-block, then reeve both ends through the double-block, which is hooked to the foremost eyebolt of the lower cap on either side, from aft forward, down through the sheave holes in the fore part of the top ; round the buntline-block, close up to the double block, then bend the ends of the buntlines to the foot of the course, either by toggling or clenching them. The buntline-whip is rove through the lower sheave of he buntline-block, and both ends led down through lubber's-hole on deck, and are rove through blocks or sheave holes. Two single blocks, in one strop, on end, are sometimes used instead of fiddle-blocks, as buntline-blocks ; they are called shoe-blocks. When there is sufficient drift, buntlines are sometimes rove with single legs, and double whips. The ends of the legs are rove through thimbles, spliced into the inner holes at the foot of the courses, and made fast to the outer holes.

To Reeve Leech Lines, Fore or Main

They are rove through a double-block under the top, from in out, down through the leech-line blocks that are seized on the jackstay of the lower yards before the sail, and are clenched or toggled to the leech of the sail ; there are two on each side in large ships, but only one in small vessels.

To Reeve Fore or Main Slab-Lines.

They are rove through a double-block, on the quarter of the yard, from in out, through the slab-line blocks seized on the jackstay of the lower yard, between the yard and the sail, down abaft the course, and are clenched or toggled to the leech of the sail, in a similar way to a leech-line ; when there are two leech-lines of a side, there are also two slab-lines ; in taking a course in they act the same as a brail would to a fore and aft sail.

To Reeve a Bunt Slab-Line.

It is a single rope rove through a tail block, fast to the slings of the lower yards, it leads down abaft the sail, and is clenched to the foot.

To Reeve a Reef Tackle.

Reeve the end of the fall through a leading block at the lower cap, from in out, through a cheek in the lower yard-arm from in out, then through a block which is secured to the reef-cringle in the leech of the sail by clip-hooks, from in out, and make the end fast to the boom-iron with an inside clinch, the other end of the fall is led on deck, with sufficient length to admit of lowering the sail on deck ; thus, in shifting or bending courses, there is no necessity for using a Burton.

To Reeve a Bunt-Whip

It is a single rope, with a clasp-hook in one end, to hook to the bunt becket, and rove through a single block, lashed to one of the upper links of the lower slings ; the hauling part being led on deck.

To Reeve a Fore Bowline

Reeve it through the block on the bowsprit, from down up ; splice a running eye in the end, and bend it over a toggle in the bowline-bridle, in the leech of the foresail. The fore bowline-blocks on the bowsprit are span-blocks, fitted round and under the bowsprit, outside the inner forestay collar.

To Reeve a Main Bowline

The main bowline is fitted with a light runner and tackle ; the runner is rove through a thimble, which is attached to the lower bowline-bridle, on the leech of the mainsail, by a slip toggle ; the runner and tackle are hooked forward by the foremast, and is always shifted from side to side in working ship, by the first part of quarter-deck men.

REEVE THE RUNNING GEAR OF A TOPSAIL

To Reeve a Rope Topsail Sheet

Reeve the end through the quarter-block on the quarter of the lower yards, from in out, up through the cheek at the lower yard-arm, through the block in the clew of the sail, from in out, and secure the end round the lower yard-arm with an outside clinch.

To Reeve a Chain Topsail Sheet

To reeve a chain topsail-sheet, bend a hauling-line to the inner end of the chain, reeve it down through the cheek at the lower yard-arm, in through the rollers underneath the lower yard, through the gin in the slings of the yard, and secure it to the lugs of the whip-block by a bolt ; the standing part of the whip is made fast to an eyebolt in the deck, and the hauling part is rove through a sheave-hole in the bitts, or a leading block ; the other end of the sheet is secured to the clew of the topsail with clasp hooks or shackled. The cheek at the lower yard-arm is of iron when it is intended to reeve chain sheets.

To Reeve a Topsail Clewline

Take the end up through lubber's-hole, reeve it through the foremost sheave of the quarter-block on the topsail-yard, from in out, through the block which is lashed on the after part of the clew of the sail, from in out, and secure it round the quarter of the topsail-yard outside the quarter-block, with a timber-hitch.

To Reeve a Topsail Buntline.

Take the end up through lubber's-hole, through the cheek of the tressletrees at the topmast-head, from aft forward, down through the thimble of the buntline-span ; splice a running eye in the end, and place it over the buntline-toggle, in the foot of the sail. In reeving a buntline that has been in use, or with a running eye already spliced in it, reeve it the reverse way, that is, place the eye over the toggle in the foot of the topsail, reeve the other end up through the thimble of the buntline-span, through the cheek of the topmast tressletrees, from forward aft, and pay the end down through lubber's-hole on deck, and reeve it through its proper sheave in the bitts.

Q. What are buntline spans, and their use ?

A. Buntline spans are simply two pieces of rope, about 2 ins. Or 2½ ins. in size, according to the size of the topsail, and about one fathom and a half in length, with a thimble spliced in one end, through which the buntlines are rove, the other ends are knotted abaft the tye (in harbour) with a reef knot, and round the neck of the tye block at sea ; the reason the buntline span is secured round the neck of the tye block at sea, is to prevent the foot of the sail rising above the yard, also to spill the sail in taking the third or fourth reef in.

To Reeve a Topsail Reef-tackle

Take the end up through lubber's-hole, inside the topmast rigging, through the upper sheave of the sister block, from in out, down through the sheave at the yard-arm ; through the reef-tackle block, from in out, and secure the end round the goose-neck with an inside clinch.

To Reeve the Second Reef-tackle.

To reeve the second reef-tackle, take it up through lubber's-hole through a tail-block at the topmast-head, from in out, down through the block on the yard-arm, and bend it to the second reef-tackle cringle in the sail with a half-hitch, and the end seized back, or with clip-hooks if a single reef-tackle. The second reef-tackle cringle is placed between the second and third reef-cringles.

If a double reef-tackle, it is rove through a block, toggled or hooked to the cringle in the leech of the sail, and secured with an inside clinch round the goose-neck of the topsail-yard.

To Reeve a Foretop Bowline

Take the end out through the sheave-hole in the head-rail, through the sheave-hole in the bees of the bowsprit, or through a block at the bowsprit end : splice a running eye in the end, and place it over the toggle in the lower bowline bridle in the leech of the sail.

To Reeve a Maintop Bowline.

Take the end up through lubber's-hole through a block lashed to the eyes of the fore rigging, and bend it with a running eye over the toggle of the middle bowline bridle in the leech of the main topsail.

To Reeve a Mizentop Bowline.

Take the end up through the inner sheave of the double block the crossjack brace is rove through, splice a running-eye, and put it over the toggle on the lower bowline bridle, in the leech of the mizen topsail, in a similar manner to the main and fore.

To Reeve a Bunt-Whip

A bunt-whip consists of three single blocks, forming a runner and tackle. The runner-block is fitted with a long tail, which is secured round the topmast-head, or a thimble in the strop, and lashed under the crosstrees, or to the necklace ; one end of it has a hook spliced in it for hooking to the bunt-becket - the other end, the tipper block of the tackle, is turned in it. The lower block of the tackle is fitted with a tail, or a thimble, in the strop of a block, and is secured to the eyes of the lower rigging ; when not in use it is hooked to a strop, to the eyes of the lower rigging, and kept up and down the mast ; the hauling part is worked from the top.

The long Bunt-Whip.

This-is simply a single rope, rove through a block, under the topmast crosstrees with a hook spliced in one end for hooking it to the bunt-becket ; the hauling part is on deck. It is used when hauling out to, or furling from a bowline

Reeve the Running Gear of a Topgallant Sail.

To reeve a topgallant sheet, take the end up through lubber's-hole, through the after sheave of the quarter-block on the topsail yard, from in out, up through the cheek at the yard-arm, before the lift and reef-tackle, up through the clew of the topgallant-sail, and place the sennit-eye over the spring-toggle, which is seized in the clew of the sail.

To Reeve a Topgallant Clewline

Take the end up through lubber's-hole, through the foremost sheave of the quarter-block, on the topgallant yard from in out, and bend it to the clew of the topgallant-sail with a sheet-bend.

To Reeve a Topgallant Buntline

A topgallant buntline is a single buntline, fitted with two legs, each leg has a running eye spliced in the end of it, which goes over the toggle in the foot of-the topgallant-sail, the other end is rove through the thimble of the lizard of the yard-rope, which acts as a buntline-span, then through a block from forward aft, which block is seized to the eye of the topgallant stay, down into the top, or through lubber's-hole on deck.

To Reeve a Fore Topgallant Bowline

Take the end out, and reeve it from down up, through a span-block, which is fitted round the jib-boom funnel or seized to the jib-guys, and bend it to leech of the topgallant-sail, with a running-eye over the toggle. A main topgallant bowline is rove up through a sheave-hole, in the after part of the fore topmast crosstrees ; a mizen topgallant bowline is rove through a block seized to the main topmast shrouds.

Reeve the Running Gear of a Royal.

To reeve a royal sheet, take the end up through lubber's-hole if led on deck ; if not, out of the top, up between the crosstrees, through the after-sheave in the quarter-block on the topgallant-yard, from in out, up through the cheek or sheave-hole at the yard-arm, up before the lift, and bend it to the clew of the royal with a sennit-eye over a spring toggle.

To Reeve a Royal Clewline.

Take the end up through lubber's-hole, if led on deck, or out of the top between the crosstrees, reeve it through the quarter-block on the royal yard, from in out, and bend it to the clew of the royal with a sheet bend. In large ships, royal sheets and clewlines are generally worked from the tops, and not led on deck.

RUNNING GEAR OF JIB AND FLYING-JIB.

To Reeve the Jib-Halyards.

Take the end up the starboard side abaft all, reeve it from aft forward, through the jib halyard-block, then make a bowline with the end round the jibstay, pay it down, splice a thimble, with a clasp-hook on a swivel in the end, and hook it to the head of the jib.

To Reeve a Jib Downhaul

Take the end out on the starboard side through the sheave-hole in the head-rail, through the jib downhaul-block at the jib-boom end, up through the upper hank or grommet,* and bend it to the head of the jib or over the thimble in the jib-halyards, with a sheet-bend. Jib-sheets, in large ships, are fitted with double whips and pendants, an eye being formed in the bight of the pendant, and attached to the clew of the jib by a strop and toggle ; in some cases they are lashed or fitted with a shackle and screw pin. In small vessels the jib-sheets are single. The luff of a jib is attached to the jibstay by hanks and lacing, and the tack is secured to the jib-boom end with a tack lashing, which is spliced in the tack thimble, two or three turns being passed round the jib-boom, and through the thimble in the tack of the jib, and the end hitched round its own part ; sometimes it is fitted with a strop and toggle instead of a tack-lashing.

* In addition to the lacing of a jib, there are always two or three hanks or a grommet, at the head of the luff.

To Reeve the Flying-Jib Halyards

Take the end up the port side, abaft all, reeve it from aft forward through the flying jib halyard-block, and pay it down on deck the port side of all the stays, splice a clasp-hook on a swivel in the end, and hook it to the head of the flying jib.

To Reeve a Flying-Jib Downhaul.

Reeve it through the sheave-hole in the head-rail on the port side, take it out underneath the man-ropes, and over the jib-guys, through the flying jib downhaul block, at the flying jib-boom end, from down up, through the three upper hanks, and bend it to the head of the sail, or over the thimble in the halyards, with a sheet bend. The flying jib is attached to the flying jibstay by a lacing : the tack is secured in like manner to the jib by a tack-lashing round the flying-boom end; the sheets are fitted exactly in a similar way to the jib-sheets, and connected in like manner to the clew of the sail. In small vessels they are single, similar to the jib-sheets, and attached to the sail in the same manner.

TO REEVE THE RUNNING GEAR OF STAYSAILS

Fore Topmast Staysail.

To reeve the fore topmast staysail halyards, take the end up the port side, through the fore topmast staysail halyard-blocks (which is shackled the port side of the topmast-necklace) from aft forward, down before all, through the block which is hooked to the head of the sail, send the end aloft, and secure it to a link in the topmast necklace close to the halyard-block. These halyards are of great use in shifting the fore topsail or jib-boom.

To Reeve a Fore Topmast Staysail Downhaul.

Reeve the end out on the port side, through the head-rail, through the downhaul-block on the bowsprit end, from down up, up through the three upper hanks, and make it fast with a sheet-bend to the head of the sail. Tack lashing is spliced in the thimble in the tack of the sail, and passed two or three times round the bowsprit, each turn being passed through the thimble in the tack of the sail, the end is hitched round all parts of the lashing. Fore topmast staysails are seized to hanks round the port fore topmast stay. If a lacing is used instead of hanks. it is only rove through every other eyelet-hole in the luff of the sail, and round the stay : being seized to the eyelet-holes, it is not rove through. The sheets are fitted with whips and a pendant.

TO REEVE THE RUNNING GEAR OF A SPANKER OR BOOM-MAINSAIL.

To Reeve the Peak Halyards.

Take the end up the port side, through lubber's-hole, and reeve it through the port sheave of the double-block, which is iron-stropped and hooked to the after part of the mizen lower cap ; then down abaft the top, through the outer block on the gaff, from forward aft, up through the starboard-sheave of the double-block at the cap, from up down ; down abaft the top again, and through the inner block on the gaff, from aft forward, send the end aloft, and secure it round the neck of the double-block with a running-eye.*

The standing part of the peak-halyards is frequently made fast with a running-eye round the mizen topmast head, in which case they are rove through the inner block on the gaff first, from aft forward, and through the outer block last, from forward aft, but in the same way as before, through the double-block on the after part of the lower cap.

* N.B.-This applies to the boom-mainsail of a brig.

To Reeve the Throat-Halyards of a Spanker.

Take the end up the starboard side, abaft the mast, reeve it through the foremost sheave in the chock, abaft the trysail-mast, from starboard to port ; down through the throat halyard-block on the jaws of the gaff, from port to starboard, up through the after-sheave in the chock, from starboard to port ; then send the end down, and secure it with a running-eye over the neck or lower part o£ the block on the gaff. If the gaff is fitted with a double-block, or a span with two single blocks round the jaws, the standing part is made fast round the neck of the upper block, or through a hole in the chock, with a stopper-knot.

To Reeve a Spanker-Foot Outhaul.

Reeve the end up through the sheave in the boom-end through a clump-block, fitted either with a lashing-eye or a clip-hook, to the clew of the sail, from forward aft, and secure it over the boom-end by an eyesplice ; sometimes it is fitted with a pendant and whip, in which case a block is spliced in the end of the pendant, and the other block of the whip is hooked to an eyebolt, under the jaws of the boom.

To Reeve a Spanker-Head Outhaul

When a spanker is fitted at the head with an outhaul and inhaul, the head of the sail is attached to small iron hoops which travel on an iron rod underneath the gaff.

The outhaul is fitted with a pendant and whip. The pendant is rove through a clump-block, which is lashed to the gaff end ; one end of the pendant has a thimble

and hook spliced in it, for hooking to the head-earring thimble in the sail, the other end has a thimble, or one of the blocks of the whip spliced in it ; the other block of the whip is fitted with a hook, which is hooked to a strop at the jaws of the gaff. It is frequently made of chain, in which case a treble ironbound block is hooked to the lower cap instead of a double-block for the peak-halyards, the third sheave is used to reeve the chain outhaul through.

To Reeve the Outhaul.

Reeve the end up through the starboard outer sheave of the treble-block, from forward aft, down through the sheave in the end of the gaff, and shackle it to the head-earring thimble of the spanker ; an iron-bound single block is shackled to the other end, through which a whip is rove to another iron-bound block, hoofed to the deck by the wizen mast.

The Inhaul.

The inhaul is a single rope, with a hook spliced in it, which is hooked to the thimble in the head of the sail, led along the gaff through a block at the jaws of the gaff on deck.

The Tack-Tracing Line.

The tack-tricing line is a double whip, the upper block secured to the jaws of the gaff, and the lower block is fitted with a tail, which is bent to a thimble in the lower part of the luff of the sail.

BRAILS

Peak-Brails

Span-blocks are fitted on the gaff or the inner and outer peak-brails. The outer blocks are single, and seized round the gaff two-thirds out ; the inner blocks are double, and seized on, one-third out on the gaff. Both the inner and outer peak-brails are rove through them.

The throat-brails are rove through a block seized to the jaws of the gaff.

Throat-Brails.

The middle brails are rove through single blocks fitted with a span round the trysail mast, half way down, or seized to the tuff of the sail.

Small vessels are only fitted with one peak-brail.

A treble block is now seized to the jaws of the gaff, which takes the peak and the throat-brails, therefore a fiddle-block is now used on the gaff for the inner peak-brails.

To Reeve Brails.

They are each in one piece of rope, and when the sail is bent and hoisted, the position for the brails is determined on ; they are middled, and the bight of each brail seized to the after-leech of the sails, as marked, and rove through their respective blocks, from aft forward down on deck.

BOOM-SHEETS

Spanker-Boom Sheet

In large screw or sailing ships there are two double blocks on the boom, and three single blocks each side of the ship aft, one acting as a leading block ; the standing part of the sheet is spliced in the eye-bolt at the boom-end.

Far small screws and paddle-wheel steam-vessels, there are two double and two single blocks, the single block being on the boom, the standing part is made fast to an eye-bolt in the boom-end ; where there is a stern gun, the blocks in the quarter should be fitted with a shackle.

In brigs, boom-sheets are rove through two double blocks on the boom, and two double blocks, and a leading block inboard on the quarter. Reeve the end through the leading block, from forward aft, through the lower sheave of the block on the boom from aft forward, through the lower sheave of the double block inboard from forward aft, so on, until the fall is rove in full, making the end fast round the boom, end with an eye-splice, or splicing it into an eye-bolt.

A Lazy Guy

Is a pendant with a hook spliced in one end, and a single block in the other ; the fall is rove through another single block with a hook, the standing part is spliced in the ass of the block, in the pendant.

When in use, the pendant goes round the boom, and hooks to its own part between the topping-lifts and sheets, the block of the fall is hooked in the main chain for a brig, and the wizen for a ship ; it is used when running free, to steady the boom.

Jaw Ropes

A jaw rope is apiece of rope rove through a hole in the jaws of the boom or gaff, from out in. A stopper-knot is worked in the end to keep it from coming through ; it is passed round before the mast through a number of round pieces of wood,

called trucks, through another hole in the jaws of the boom or gaff on the opposite side, from in out, and a figure-of-eight knot is made in the end, to keep it from slipping through ; it is to a boom or gaff what a parrel is to a yard.

To Reeve the Topping-Lifts

The standing part is spliced round a thimble to an eye-bolt attached to an iron band round the boom, about 12 ft. from the outer end, and is rove through a clump-block, iron-bound - in a brig, bolted to the main tressletrees, and in a ship, bolted to the mizen tressletrees, from aft forward, down, through the snatch on the boom, A thimble is spliced in the end for hooking the tackle to.

The tackle is rove through a single and a fiddle-block, the standing part of the fall being spliced in the ass of the single-block ; the fiddle-block is hooked to the weather-topping lift, and the single-block to an eye-bolt under the jaws of the boom. A stopper is fitted round the boom, inside the snatch, for stopping the topping-lift in tacking, so as to shift the tackle.

When the topping-lift is fitted single, after the end is rove through the clump-block at the tressletrees, a double-block is spliced in the end, and a fall is rove to a single block, hooked either in the chains or by the mast.

Pangs, or Peak-Downhauls

Vangs in large ships are double, and in small vessels single. There is an iron band round the gaff a short space, or about one-seventh in from the gaff end, with an eye-bolt on either side of it ; to these eye-bolts, the vang-blocks, which are single iron-bound blocks, are hooked with clasp -hooks.

The vangs are rove through the blocks, the standing part is spliced, if double, round a thimble in an eye-bolt in the ship's side, close to the fife-rail, or eye-splice put over the under part of a belaying pin, the hauling part rove through a sheave close to it.

In large ships they are fitted with a pendant and whip ; the standing part of the pendant is spliced round a thimble in the eye-bolt in the gaff, and a single block is spliced in the other end, through which the whip is rove, the hauling part being rove through a sheave in the fife-rail, and the standing part secured, as described for a vang.

A Single Vang

The end is merely spliced round the thimble in the eye-bolt on the gaff, and the other end rove through a sheave in the fife-rail.

STUDSAIL GEAR-LOWER STUDSAILS

To Reeve Lower Studsail Outer Halyards.

Take the end up before the top, through the span-block at the foretop masthead, from in out, down before the boom through the block at the topmast studsail boom-end, down on the forecastle, and bend it to the middle of the yard, to which the outer half of the sail is laced, with a studsail halyard-bend.

The halyards are sometimes bent only one-third out, according to the size of the sail.

The inner halyards are simple double whips ; the upper block being fitted with a tail, which is hitched to the collar or the forestay ; the lower block is either fitted with a hook or tail, and made fast to the inner corner of the head of the lower studsail.

To Reeve Lower Studsail-Tack.

Reeve the end out through the sheave-hole in the gangway, through the tack-block at the swinging boom-end, and bend it to the clew of the sail with a sheet-bend, or a running-eye and cross toggle, the long and short sheets are formed out of one piece of rope. The sheets are rove through the thimble in the inner clew according to the length required, crossed and seized ; the long sheet is rove through a tail-block, fast to the foremost dead-eye, through one of the ports inboard ; the short sheet is merely passed over the netting inboard, and is only used for taking the sail in.

To Reeve a Tripping-line.

Take the end up abaft the foreyard, and reeve it through a block under the top, or secured to the foremast-shroud of fore-rigging, through a block on the inner yard-arm of the lower studsail-yard, through a thimble in the after-part of the sail, and bend it to the tack with a sheet-bend.

TOPMAST STUDSAIL.

To Reeve the Topmast Studsail-Halyards

Take the end up through lubber's-hole, through the span-block at the topmast-cap from in out, down through the jewel-block on the goose-neck of the topsail yard-arm, between the yard and the boom, down abaft the lower yard inside the brace, and bend it to the yard to which the head of the sail is laced with a studsail halyard-bend one-third out.

To Reeve the Tack.

Take the tack up outside of the backstays and lower rigging, out to the lower yard-arm under the brace, reeve it from aft forward, through the tack-block at the topmast studsail boom-end, then in over the fore-brace, down on deck, and bend it with a sheet-bend to the clew of the sail.

The hauling part is rove through the inner sheave of double block, secured by a tail to the foremost shroud of the main rigging, the boom-brace being rove through the outer sheave of the same block, or through two sheaves in the ship's side, just before the gangway.

To Reeve a Topmast Studsail-Downhaul

Reeve the end up through the downhaul-blocks, which is seized to the outer clew of the sail, up abaft the sail, through a thimble on the outer leech ; splice a running-eye in the end, and place it over the outer yard-arm inside the earring.

Topmast Studsails

Are fitted with two sheets, a long and a short one ; the long one is worked from the deck, and the short one from the top, passing under the heel of the boom.

TOPGALLANT STUDSAIL-GEAR.

To Reeve Topgallant Studsail-Halyards.

Take the end up through lubber's-hole, through the span-block at the topgallant-mast head, from in out, down through a block at the topgallant yard-arm, before the yard, into the top, and bend it to the yard to which the sail is laced with a studsail halyard-bend one-third out.

To Reeve a Topgallant Studsail-Tack.

Reeve the end out through a block seized below the after dead-eye in the top, up, under, and outside the topsail-brace, through the tack-block at the topgallant studsail boom-end, in over the brace, and bend it with a sheet-bend to the outer clew of the sail.

The downhaul is bent to the inner yard-arm and led into the top.

The sheets are led over the topsail-yard into the top. Topgallant studsails have only one sheet. They are set and taken in from the top.

When blowing fresh, and a topmast-studsail is set, the lower studsail-halyards are often converted into a martingale for the topmost studsail-boom ; by taking an overhand-knot in them above the boom, placing a toggle to prevent the knot from

jambing, and hauling down on the underneath part, which is either rove through an eye-bolt in the forecastle or secured to a cleat.

LOWER YARDS-JEER FALLS.

To Reeve the Long Main Jeers.

Both ends of the fall are fitted with beckets for bending a reeving line to. Reeve the end through the sheave-hole of the main-bitts, the starboard side of the main deck, from aft forward, up through the fair leader in the upper deck aloft and through the starboard sheave of the upper jeer-block, under the main top, from aft forward, down through the starboard jeer-block on the yard from forward aft, up through the port sheave of the upper block, from aft forward, down through the port jeer-block on the yard, from forward aft, and secure the end either round the strop of the upper block, to the tressletrees, or round the lower masthead ; the fall thus rove forms five parts. When used, the hauling part is brought to the after-capstan, on the main deck, in all large ships. In small vessels it is worked on the upper deck.

The fore jeers are rove in a similar way, commencing on the port-side first, and are worked in all large ships by the foremast capstan on the main deck.

When the main and fore-yards are up, and hung by the slings, the long jeers are unrove, and the sea jeers rove exactly in the same way with respect to the lead through the jeer-blocks, only the end of the falls do not come on deck, they are expended round all parts of the fall and hitched ; in the event of the chain-slings carrying away, the short jeers take the weight of the yards, and prevents them from being sprung, which sometimes occurs.

The cross-jackyard is sent up and down by the mizen burton, which is two double blocks.

To Reeve a Fore arid Main Lift.

Take the end up through lubber's-hole, reeve it through the after-sheave in the block at the lower cap, from in out, down before the rigging, through the lift-block at the lower yard-arm, from out in, up through the foremost sheave of the block at the cap, from in out, splice a running-eye in the end of it, worm and serve it, and place it over the yard-arm. In some cases it is clenched, and about two fathoms end left to act as a stopper for the topsail-sheets.

Cross-jack lifts are single, being either rove through blocks hooked to the lower cap, or passed over a saddle which is scored out on top of the lower cap, they go over the yardarm with an eye-splice - a thimble or block is spliced in the other end by which they are set up.

To Reeve a Fore Brace.

Reeve the end through the sheave in the main bitts, from aft forward, up through the block at the cheek of the mainmast from aft forward, take the end forward outside all the rigging, through the brace block on the fore-yard, from out in, and secure the end with an eye-splice round the same eyebolt, as the block is stropped on at the cheeks of the mainmast head.

The starboard-brace is fitted with a tricing-line, in large ships, from the mainstay, so as to be able to frap the brace in out of the way, in shifting main topsail-yards.

To Reeve a Main After-Brace.

Reeve the end through the main brace-block on the quarter from in out, through the brace-block on the yard, from out in, turn a double block in the end, reeve a purchase to a single block, which is hooked to an eye-bolt close to the main brace-block on the quarter ; this purchase is for hauling the brace taut, after the slack has been gathered in on the long end.

A tricing-line is fitted either side, for the purpose of tricing the lee brace up clear of the quarter davits ; they have two legs to them, with thimbles through which the after main-braces are rove, the tricing-line is rove through a tail or lashing-block secured to the after main shroud on either side above the necklace.

To Reeve a Preventer, or fore Main Brace.

Reeve the end through the sheave-hole at the fore bitts from aft forward, up through the outer sheave of the double block at the cheek of the foremost head, through the preventer brace-block on the main-yard from out in, and down through the inner sheave of the double blocks at the cheeks of the foremost head ; both ends are led through pipes or fair-leaders, down through the sheaves on to the main deck, where they are always worked in large ships.

These braces are frequently led across for the convenience of working ship.

To Reeve a Cross Jack Brace

Reeve the end through the sheave in the fife-rail of main rigging, through the outer sheave of the double block fast to the necklace at the mainmast-head, through the brace-block on the yard-arm, from out in, and splice the end in one of the links of the main-necklace, close to the double block ; these braces are frequently led across for the convenience of working ship.

To Reeve Truss Pendants and Falls supposing them to be of Chain

Reeve them through the clump-blocks which are ironbound and shackled to a bolt in the after part of the trestletrees, from aft forward, through the thimble of the truss-strop on the yard, from up down, through an iron clamp abaft the mast, which has a division in it, one for the upper, the other for the lower pendant, so as to keep them from riding, and also to keep them up in place, and shackle them to the truss-strop on the opposite side of the yard.

The ends of the pendants hang about two-thirds of the way down to the deck, and have a double iron-bound block shackled to each, through which the falls are rove.

In reeving the pendant the standing part will be inside the hauling part of the one rove first, and outside the hauling part of the one rove last.

To Reeve the Truss Fall

A single iron-bound block is hooked to the deck, abaft the mast with a ring in the ass of it for the standing part of the fall to be spliced, the end of the fall is rove up through the double block from forward aft, down through the single block from aft forward, up through the double block from forward aft, and then through a sheave in the fife-rail.

A tricing-line is fitted to the tress pendants, it is spliced in a thimble fast to the same shackle as the double or upper block of the fall, or about half-way down, and rove through a single block seized to the after-shroud above the futtock-rigging, so as to light them up in working ship. Small ships have only a single iron-bound block in the pendant for the falls.

When a fore or main-yard is fitted with rope pendants, the standing part is secured round the yard with a running-eye, and the fall is rove through the sheave-holes in the after-part of the trestletrees in the following way : the standing part of the fall is rove with a running-eye round the trues-pendants, rove through the inner sheave on the trestletrees, from forward aft, through the block in the truss-pendant, from aft forward, through the outer sheave in the trestletrees, from forward aft, and then through a sheave in the fife-rail on deck.

The cross jack trusses are always fitted in this way. The single block in the end of the pendant is seized in what is termed a soft-eye, which is to admit of the block being turned out easily in sending the yard down.

To Reeve a Yard-Tackle Whip

Take the end up through the upper sheave of the fiddle-block in the yard-tackle pendant, from in out, through the lower block, from out in, up through the lower sheave in the fiddle-block, from in out, and splice the end in the ass of the lower block. The hauling part is rove through a leading-block, placed as convenient.

A yard-tackle pendant and whip is fitted with two tricing-lines, viz. : a quarter and bill tricing-line.

To Reeve the Quarter Tricing-Line

The end is rove through a leading block fitted with a tail, or seized to the after-part of the lower yard on the quarter, out through a block seized to the jackstay, which hangs down abaft the yard, and sufficiently far in to bring the pendant, when triced up taut, along the yard ; the end is secured with a running-eye between the two sheaves of the fiddle-block, the hauling part is rove through a sheave in the fife-rail on deck.

To Reeve a Bill Tricing-Line.

The end is rove through a block seized close up to the seizing of the eyes of the lower rigging, the thud shroud from forward, an eye is spliced in the end, it is then rove through the thimble in the lower block of the whip, and placed over the bill of the hook.

The hauling part is rove through a sheave next to the quarter tricing-line in the fife-rail on deck.

When the yard-tackle and whip are triced up, the lower block of the whip is hooked to a strop round the same shroud, and close to the bill-tricing line-block.

Rolling Tackle.

A luff-tackle is used for this purpose, the single block being hooked to the strop on the yard, the double block to a strop round the lower masthead above the necklace ; the end of the fall is rove through a leading block or spare sheave in the bitts.

Frequently the yard-tackle pendant and whip is used instead of a rolling-tackle, by letting go the quarter and bill tricing-lines, bringing it along the yard, and hooking the single block of the yard-whip to a strop round the lower masthead, above the necklace, and hooking a snatch-block to the same strop for the hauling part of the fall, so as to give it a fair lead on deck, where it is rove through a leading block or spare sheave in the bitts.

TOPSAIL YARDS

To Reeve Fore or Main Topsail-Tyes

Fore and main topsail-yards, in large ships, are fitted with two tyes, one on either side, a. long and a short tye ; the long tye is used for shifting topsail-yards. In the lower end of the tye a is spliced a long-eye, in which the fly-block is seized ; the other end is rove (if the starboard-tye) through the starboard hanging block at the

topmast-head, shackled to the topmast necklace from aft forward, down through the starboard tye-block, which is a swivel-block, bolted to the iron band round the topsail-yard, from aft forward ; the end is then sent aloft, hauled taut round the topmast-head, hitched to its own part, and the spare end stopped down to the foremost shroud, leaving sufficient drift for the fly-block to hang in a line with the lower cap ; hook the lower halyard-block to the after part of the chains, and reeve the halyards.

The standing part of the halyards is spliced in the ass of the upper fly-block, and rove through the lower block for the fore, from aft forward, through the upper block, from forward aft, and then through the sheave in the topsail-halyard bitts, or through a leading block hooked to an iron spur in the ship's side, from forward aft.

A main is rove in a similar way, only the hauling part is led forward ; and in large ships it is led through a pipe on to the main deck, through a leading-block, and there secured to a Samson-post.

A mizen topsail-yard, in small vessels, has only a single tye, which is rove through the sheave ,in the topmast-head, and shackled to the yard.

The halyards are rove on the port side exactly, and in the same way as the fore, and in line of battle ships worked on the poop.

In large ships the tye is generally rove on the bight in the following way : there is only one tye-block on a mizen topsail-yard, the tye is rove through either the starboard or port hanging-block at the topmast-head, from aft forward, down through the tye-block on the yard, if rove through the starboard masthead-block first, then reeve from starboard to port through the tye-block on the yard, up through the port hanging-block, from forward aft, splice a long-eye in each end of the tye, and seize the fly-blocks in. The halyards are rove in a similar way to the fore.

FORE AND MAIN TOPSAIL-LIFTS.

To Reeve a Double Topsail-Lift

Take the end from the chains up in a line with the third shroud, through lubber's-hole, inside the topmast-rigging, through the lower sheave of the sister-block, from in out, down to the yard-arm ; through the topsail lift-block, from in out, send the end aloft, and secure it round the topmast-head with a half-hitch, and the end seized back.

The lower end is rove through a clump-block in the chains, and in some cases led through a pipe in the ship's side inboard.

MIZEN TOPSAIL-LIFT

Mizen Topsail-Lift is Single.

To reeve it. Take the end out of the top, up inside the topmast rigging, through the lower sheave in the sister-block, from in out, splice an eye in the end, worm and serve it, and place it over the yard-arm.

A thimble is spliced in the other end, and it is set up in the top with a lanyard.

A single fore or main topsail-lift is rove in a similar way, only the end is set up in the chains.

FORE TOPSAIL-BRACE

To Reeve a Fore Topsail-Brace

Reeve the end through the sheave in the main bitts, from aft forward, through a block under the main trestletrees, through another block fast to the fork of the mainstay, then through the brace-block on the yard-arm from out in, and secure the end round the main topmast-head with a half-hitch, and seize the end back, or take a round turn round the topmasthead and splice the two ends of the braces together.

The leading-block on the fork of the mainstay leads the brace clear of the foot of the main-topsail ; sometimes the standing part is made fast to the mainmast-head with a seizing to the fork of the mainstay, to keep it clear of the main-topsail, and the hauling part is rove through a leading-block at the main topmast-head, under the eyes of the topmast-rigging ; it is generally considered the fore topsail-yard is more easily braced up.

MAIN TOPSAIL-BRACE

To Reeve a Main Topsail-Brace.

Reeve the end through the sheave in the mizen bitts, from aft forward, up through the leading-block, half way up the mizenmast, through the brace-block on the yard-arm, from down up, up to the mizen topmast-head, where it is secured ; but in most cases, in order to relieve the mizen topmast, it is led through a clump-block at the mizen topmast-head, fast under the eyes of the rigging, down to the after-part of the mizen chains ; a thimble is spliced in the end, and it is set up with a lanyard.

MIZEN TOPSAIL-BRACE

To Reeve a Mizen Topsail-Brace.

Reeve the end through a sheave in the main fife-rail up through lubber's-hole, through a leading-block at the mainmast-head, close up under the cap, stropped to an eye-bolt, from forward aft, through the brace-block on the mizen topsail yard-arm, from out in, and splice the end to the eye-bolt at the mainmast-head, where the leading block is secured.

These braces, like the cross jack braces, are frequently led across for the convenience of working ship.

Preventer Braces.

For lower yards, the yard-tackle pendant and whip is used, the bill and quarter tricing-lines are let go, the single or lower block of the whip is hooked, if the fore, in the main chains, and if the main, in the mizen chains, the hauling part is rove through a sheave in the ship's side, or leading block inboard.

For Topsail-Yards.

The sail-tackles are used for preventer-braces, or in some ships, tackles, fitted like sail-tackles, are kept in the tops ready to be used as preventer-braces, so as to have the sail-tackles always available for shifting topsails.

The pendant of the tackle goes round the yard inside the brace-block, and is hooked to its own part ; the lower block is hooked, if a fore topsail-yard, in the main chains, and the hauling part is rove through a tail-block secured to the foremost shroud of the main rigging, about the same height up as the double block for the topmast studsail-tack and boom-brace. If for a main topsail-yard it is secured in a similar way, the lower block being hooked in the mizen chains, and the hauling part rove through a tail-block, fast to the foremost shroud of the mizen rigging, about 10-ft. or 12-ft. above the nettings, or the hauling part is rove through the sheave where the main topmast studsail-tack was formerly rove when it was used in the Navy.

Rolling Tackle for a Topsail-Yard.

A top-Burton, or jigger, is used for this purpose ; the single block is hooked to the quarter-strop, and the double block to a strop round the topmast, above the parrell ; if a jigger is used, the hauling part is in the top, but if a Burton, the hauling part is sent down through lubber's-hole on deck,

TOPGALLANT GEAR

To Reeve Topgallant Halyards or Yard Rope

Reeve the end through the sheave in the bitts, from aft forward, up through lubber's-hole through the sheave-hole in the topgallantmast-head, from aft forward,

pay the end down before all, through the grommet and lizard, and bend it with a studsail halyard-bend to the slings of the yard. At sea, a topgallant purchase is used on the yard-rope or halyard.

In large ships it is a purchase rove through two double blocks, the upper block is fitted with two tails, for dogging round the yard-rope, the lower block is a hook-block, ironbound, hooked on deck. When in harbour, the upper block is made fast to the after-shroud, above the futtock-rigging. The main is worked the starboard side, and the fore and mizen the port side of the deck.

To Reeve a Topgallant Lift.

An eye is spliced in one end, served and marled to the eye of the brace ready to go over the yard-arm ; in large ships, where double-braces are used, it is marled to the eye of the brace-block ; the other end is rove through a roller or thimble, from out in, and (in large ships through a sister-block seized in the topgallant-shrouds), down inside the topmast-rigging into the top ; a thimble is spliced in the end, and they are set up with a lanyard, *i.e.*, the starboard lift of the fore and wizen, and the port of the main, they are called the short lifts. The other lifts, that is the port lifts of the fore and mizen, and the starboard lift of the main, are rove through thimbles secured by a strop to the eyes of the lower rigging, belayed to a cleat at the lower masthead, and are called the long lifts, so as to admit of the topgallant-yards canting; and is easily let go.

To Reeve a Fore Topgallant-Brace.

Reeve the end up through the sheave in the main fife-rail and lubber's-hole, and the block under the main topmast-crosstrees, through a leading-block fast to the collar of the main topmast-stay ; if a single brace, splice an eye in the end, and marl it to the fore topgallant lift, ready to go over the yardarm; if a double brace, reeve it through the fore topgallant brace-block, from out in, and make the end fast close to the block on the collar of the main topmast-stay.

All line of battle ships, and frigates above the sixth class, have double topgallant-braces ; the block on the yard-arm, however, is found inconvenient ; a good single brace, fitted with a whip under the lead, is found to give sufficient purchase.

To Reeve a Main Topgallant-Brace.

If a single brace, take the end up through lubber's-hole, through a block seized to the foremost shroud of the mizen topmast rigging, high enough to wont over the mizen topsail yard when hoisted. Splice an eye in the end, and place it over the topgallant yard-arm. If a double brace, instead of making an eye-splice in the end, it is rove through the brace-block on the topgallant yard-arm, brought back, and secured to the foremost shroud of the mizen-topmast, close to the block ; the

hauling part is rove through one of the sheaves of the fife-rail abreast the mizen mast.

NOTE.-For the convenience of working ship, the fore topgallant and royal braces often lead forward.

To Reeve a Mizen Topgallant-Brace.

If single, take the end up through lubber's-hole, through a block either seized to a bolt on the after-part of the main lower cap, or to the after main-topmast shroud, just below the crosstrees, from forward aft, form an eye-splice, and put it over the yard-arm. If double, the end is rove through the brace-block on the yard-arm, and brought back and secured alongside the block on the after main-topmast shroud ; if the block is secured to an eye-bolt in the main lower cap, the standing part of the brace is secured round the ass of the block. The hauling part is rove through a sheave in the fife-rail abreast the main-mast.

ROYAL HALYARDS.

To Reeve Royal Halyards or Yard-lope.

Reeve the end through the sheave in the bitts, up through lubber's hole, through the sheave-hole in the royal masthead, from aft forward, pay the end down before all, through the grommet and lizard, and bend it to the slings of the yard with a studsail halyard-bend.

Two single blocks are kept rove on the yard-rope, and stopped in the top to form a purchase when the sail is set ; one, a hook-block, which is the upper block on the yard-rope, but becomes the lower block of the purchase when rove, is hooked to the lower trestletrees, the other block is fitted with a long strop and eye, the purchase is formed by taking it well up the yard-rope, forming a hitch over the long-eye with a bight of the yard-rope and placing a bight of the yard-rope through the eye in which a toggle is placed, so as to keep it in place, thus forming three parts.

Topgallant purchases, in small vessels, are the same, the toggle is iron, and well served.

To Reeve a Royal Lift

Splice an eye in one end to go over the yard-arm, and marl it to the outside part of the eye of the brace, reeve the other end through a thimble seized to the royal backstay - in large ships, between the royal shrouds, from out in, down into the top; splice a thimble in the end, and set it up with a lanyard.

NOTE.-For the convenience of squaring yards, the ends of the topgallant and royal lifts are rove through thimbles secured to the eyes of the lower rigging, and belayed to cleats at the lower masthead.

TO REEVE ROYAL BRACES.

To Reeve a Fore Royal-Brace.

Place the eye, when marled, to the lift over the yard-arm, and reeve the other end through a block seized on the fore part of the main topgallant funnel, from forward aft, and pay the end down between the crosstrees, through lubber's hole on deck, and reeve it through a sheave in the fife-rail.

To Reeve a Main Royal-Brace

Place the eye, when marled, to the lift over the yard-arm, and reeve the other end through a block seized on the fore part of the wizen topgallant-stay, pay the end down between the crosstrees, through lubber's-hole on deck, and reeve it through a sheave in the mizen fife-rail.

To Reeve a Mizen Royal-Brace

Place the end, when marled, to the lift over the yard-arm, and reeve the other end through a sheave-hole in the after part of the main topmast-crosstrees, through lubber's-hole on deck, through a sheave in the fife-rail.

LOWER OR SWINGING BOOM.

To Reeve the Topping Lifts

They are taken up on either side, inside the fore-rigging, rove through a clump-block, from in out, seized between the second and third shrouds of the fore-rigging, through another clump-block, fitted with a tail for a lizard, which is made fast outside the lift round the yard-arm when getting the boom out ; when the boom is square, or fore and aft, the tail-block is rounded close up to the block, seized between the second and third shroud of the fore-rigging, and the tail is coiled snugly down inside the futtock-rigging.

To Reeve a Fore-Guy.

Reeve the end out through a fair lead in the forecastle-bulwark, through a sheave on the bees of the bowsprit, from in out, through a clump-block on the spritsail-gaff, seized between the jumper and jib-guys, from in out, under the jib-guys, and splice the end round a thimble, through an eye-bolt about one-fourth in from the end of the boom.

To Reeve an After-Guy.

Reeve the end out through the lower sheave in the after part of the waist nettings, and splice the end round a thimble, through an eye-bolt secured to the same band as the eyebolt, and thimble for the fore-guy.

TOPMAST STUDSAIL-BOOMS

To Reeve a Topping Lift.

Take the end up out of the top, inside the topmast rigging, through the upper sheave of the fiddle-block at the topmasthead, from in out; splice an eye in the end, and place it over the boom end; when in use the other end is set up by a jigger in the top.

OF MASTS.

Lower Masts.

Q. How is a fore or main runner and tackle fitted, and the fall rove ?

A. Twice the length of the mast from the deck to the upper part of the trestletrees is the length of the runner, a long eye is spliced in one end to seize the double block of the fall in, similar to the topsail halyard-block in the topsail-tye.

The length of the fall is four and a half times the length of the mast from the lower cap to the deck.

The standing part is spliced in the ass of the single block, the hauling part is rove through one of the sheaves of the double block in the end of the runner, then through the single, and through the double block again ; when in use the end is rove through a single leading block, which is hooked to a strop or eye-bolt, as convenient.

Topmast.

A toptackle-pendant has a thimble spliced in one end to hook the upper block of the toptackle-fall to.

If a main, it is rove up through lubber's-hole, through the top block, hooked to the after eye-bolt, the starboard side of the lower cap, from aft forward, through the sheave in the heel of the topmast, from starboard to port. Make the end fast to the foremost eye-bolt on the port side of the lower cap with a half-hitch, and seize the end back, taking care to well parcel the pendant first in the wake of the eye-bolt. The fore or mizen is rove through the sheave in the heel of the mast from port to starboard.

The pendant is fitted sufficiently long to house the mast, and allow the upper block of the tackle to be below the futtock-rigging.

To Reeve the Pall

The upper block is a treble or double iron-bound swivel-block, according to the size of the ship, hooked to the thimble in the end of the pendant ; the lower block is a similar block, they are not always both swivel-blocks, in some cases the lower block is a swivel, and the upper a standing block, and vice versa; it is more convenient to have them both swivel-blocks, so as to move readily ; take the turns out of the fall in swaying the topmast. The lower block is hooked to an eye-bolt, placed for that purpose on the deck the fall is to be worked ; in line of battle ships it is either worked on the main or lower deck, a trap-hatch, about three planks in width, being cut in the upper deck to pass all parts of the fall through. The fall is always rove on the standing part, being the shortest part of the fall ; it is rove so as to have the hauling part of the main forward, and of the fore aft.

To Reeve a Fore or Mizen Toptackle Pendant-Fall.

Reeve the end through the leading-block which is secured, round the hook of the lower block with a long-eye, from aft forward, up through the trap-hatch, through the upper block from forward aft, so on until the fall is rove in full ; the standing part is secured by being hitched round the neck of the upper block, or round the pendant above the thimble ; it will greatly depend on the lead you wish, whether it is rove through the inner or outer sheave of the fall blocks first ; thus rove, it forms five parts ; the main is generally worked the starboard, and the fore and mizen the port side of the deck, depending how the sheave-hole in the mast is cut.

To Reeve a Topgallant Mast-Rope

Reeve the end through the sheave in the bitts from aft forward, up through lubber's-bole, through a sheave in the topmast-cap, or a block hooked to an eye-bolt in the after-part of the topmast-cap, through the lizard, then through the sheave in the heel of the mast, from starboard to port if a main, and port to starboard for a fore and mizen, and make the end fast to the foremost bolt in the topmast-cap with a half-hitch, and seize the end back.

If the topgallantmasts are on deck, lay them abreast their respective parts of the ship to which they belong, heels aft, and lightning conductors upwards. The halyards are rove through the sheave in the bitts, the starboard or port side, according as the sheave in the heel of the mast is cut. The main is generally cut from starboard to port, and the fore and mizen from port to starboard, up through lubber's-hole, through the sheave in the after-part of the topmast-cap, or a block hooked to an eye-bolt in the after part of the topmast-cap, down through the tressletrees, through the fork of the topmast-stays, before all, on deck, the side of

the lower stay the mast is, through the lizard, through the sheave in the heel of the mast ; send the end aloft, and hitch it to the foremost eye-bolt in the topmast-cap, and seize the end back. Secure the lizard with two good half-hitches through the royal sheave-hole, or a hole made for that purpose, about 18-ins. below it, askant through the mast ; great care should be observed in securing the lizard well to prevent accidents.

To Reeve a Boom-Brace.

Reeve the end through the outer sheave of the double block secured by a tail to the foremost shroud of the main rigging, about 10 ft. or 15 ft. above the netting, from aft forward, or through one of the sheaves in the ship's side before the gangway; splice an eye in the end, and place it over the boom-end, inside the topping lift.

Boom-Jigger

Is fitted with two single blocks ; it is used for rigging the boom in or out, or tricing it up ; when used in rigging the boom in or out, the hauling part of the fall is rove through a leading block fast to the bunt of the yard on the after side.

To rig the boom out, the upper block is hooked to a strop round the standing part of the lower lift.

To rig the boom in, the upper block is hooked to a strop to the slings of the yard.

To trice the boom up, the upper block is hooked to a strop under the top, and secured by a toggle above.

Heel-Lashings.

The short one is spliced into the eye-bolt in the inner end of the boom, and secured round the jackstay, so as to prevent the boom moving.

The long heel-lashing is rove through a hole about 1-ft. or 18-ins. from the heel of the boom, an eye is spliced in the outer end, and finished off by forming a wall or stopper-knot, so as to prevent the eye from being drawn through the hole in the boom. This lashing is used to secure the heel of the boom, when it is in use for setting lower or topmast-studsails ; it is passed round the quarter-iron through the eye spliced in the other end of it, two or three times, to keep the boom from running in, then two or three frapping turns round the heel of the boom and jackstay, so as to keep it from rising.

TOPGALLANT STUDSAIL-BOOM

To Reeve a Tricing-Line

Take the end up out of the top, up inside the topmast rigging, through a single block seized to the foremast shroud of the topmast rigging, above the sister-block, from in out, pay the end down, and splice it in the eye-bolt in the heel of the boom.

To Reeve a Boom-Back

A boom-back is simply a short tricing-line, it is rove through a thimble seized to the foremost shroud of the topmast rigging, high enough to trice the boom up when reefing, furling, or shifting topsails ; the end is then spliced in the same eye-bolt as the tricing-line ; it is of great use in steadying the boom for the yard-arm men laying in or out.

Heel-Lashing

The standing part is spliced in the same eye-bolt as the tricing-line in the heel of the boom ; when the boom is rigged out for setting studsails, it is rove through the quarter-strop, and through the strop on the heel of the boom, two or three times, to keep the boom from running in, with two or three frapping turns round the jackstay and boom, to keep the heel down. When the boom is rigged in, it hangs down before the topsail, when the sails are furled it is passed round the topsoil and the heel of the boom, to keep the boom snugly down in place. There is a strop and toggle fitted to the eye-bolt in the heel of the boom, and another strop fitted to the jackstay, which goes over the toggle to keep the heel of the boom in place when the sails are set.

SPRITSAIL-GAFF

To Reeve a Spritsail-Gaff Brace

Splice one eye in one end, serve it and place it over the gaff-end, reeve the other end through a block, at the eyes of the fore-rigging, from forward aft, and set the end up in the fore chains.

NOTE.-Its use is now abolished in the service.

To Reeve a Spritsail-Gaff Lift.

Splice an eye in one end, serve it and place it over the gaff end, reeve the other end through a clump-block stropped to the upper eye-bolt in the bowsprit-cap, from out in, splice a thimble in the end, and set it up to an eye-bolt at the knight-heads.

Jaw-Ropes

Are rove through holes in the jaws of the gaff, and secured round the bowsprit, in a similar way to the jaw-ropes of a boom or gaff round a mast.

A Martingale Jaw-Rope

Is rove through holes in the bees of the bowsprit, and knotted on top ; an iron martingale or dolphin-striker has no jaws, it is shackled under the bowsprit.

To Reeve a Jib-Boom Heel-Rope.

To reeve the heel-rope. Reeve the end out through the block hooked to the bowsprit-cap, from out in, in through the sheave in the jib-boom end, take the end out and make it fast to the eye-bolt in the after-part of the bowsprit-cap with a half-hitch, and seize the end back on the opposite side to the block.

Q. How do you reeve a flying jib-boom heel-rope ?

A. To reeve a heel-rope. Reeve the end out through a tail-block secured to the jib-boom iron, on the starboard-side, from out in, in through the sheave in the flying jib-boom end, from starboard to port, take the end out, and make it fast round the jib-boom iron, on the port side, with a half-hitch, and seize the end back.

In small vessels the flying jib-boom heel-rope is single, the end being secured at the end of the boom, by being rove through a hole made for this purpose, and knotted.

10. Other Instructions:

- **Further Instructions**

Seizings
Whippings
Ropemaking
Sailmaker's Instruction
Sails, and how Fitted

- **Sail Instruction**

Part I - Sail Instruction
Part II - Bending or Stowage of Sails
Part III - Bending and Shifting Sails
Part IV - Reefing and Furling Sails

- **Boat Exercise**

Part I - Basic Questions and Answers
Part II - The Management of Boats Under Canvas
Part III -Things to be Observed whilst in the boat
Number & Type Of Boats Allowed to Different Classes of Ships in Navy
Life Boat and Life Belt

- Compass Instruction

- Conning Ship - Technical Terms used

- Lead Line Instruction

- Admiralty Notice respecting Lights and Fog Signals

- **Blocks & Purchases**

Blocks
Purchases

- **Fittings**

Fittings
Parts of a Capstan, &c.
Parts of an Anchor
Description of Chain Cables
Technical Terms relating to Anchors and Cables
Life Buoys, and their Use

Log Line - Log Ship
Log
Patent Log

- **Gunnery Training**

Gunnery Exercise
Preliminary Chapter in Manual of Gunnery
Truck Gun Exercise
Small Arms Training
Musketry Instruction
Snider Rifle Drill
Naval Cutlass Exercise
Sword Bayonet Exercise
Pistol Exercise