

Robert Henry Thurston

A Gift to

Cornell University Library

1903

Cornell University Library
VK541 .T71 1862

Naval text-book, and dictionary,



3 1924 030 898 583
olin



Cornell University
Library

The original of this book is in
the Cornell University Library.

There are no known copyright restrictions in
the United States on the use of the text.

NAVAL TEXT-BOOK

AND

DICTIONARY,

FOR THE USE OF THE

MIDSHIPMEN OF THE U. S. NAVY.

BY

B. J. TOTTEN,

COMMANDER U. S. NAVY.

NEW EDITION, REVISED.

NEW YORK:
D. VAN NOSTRAND, 192 BROADWAY.
1864.

Entered according to Act of Congress, in the year 1862,

BY D. VAN NOSTRAND,

In the Clerk's Office of the District Court of the United States for the
Southern District of New York.

C. A. ALVORD, STEREOTYPER AND PRINTER.

TO FLAG OFFICER

ANDREW H. FOOTE, U. S. N.,

WHOSE NAUTICAL SKILL, INDOMITABLE BRAVERY

AND

CHRISTIAN VIRTUES,

HAVE WON

THE ADMIRATION OF THE COUNTRY,

AND THE ESTEEM OF ALL

LOYAL HEARTS,

THIS WORK IS RESPECTFULLY DEDICATED, BY THE

AUTHOR.....

ADVERTISEMENT.

THIS second edition of the Naval Text-Book, is prepared, as was the first, for the use of the Midshipmen of the Navy. Many inaccuracies and typographical errors have been corrected, and additional matter introduced.

The Stationing Tables, and the Naval Gun Exercise, I have omitted, the former because imperfect, and circumstances preclude my substitution of more extended ones at present; the latter, because the "Ordnance Instructions" supply an exercise by authority.

I have but to hope that this edition may be acceptable to those for whose use it is prepared.

CONTENTS.

	Page.
DEDICATION.	5
INTRODUCTION. To the Midshipmen of the United States Navy.	13

CHAPTER I.

MASTING AND RIGGING.

Shore up the decks—Parbuckle on board, raise, and secure shears—Shear-head lashing—Purchases, and blocks, and falls—Girt-lines, canting-tackle and guys—Heel and thwartship-tackles—Raising the shears—Mast garland—Sway up the mast—Trestle-trees and pendants—Step the mast and secure it—Transport the shears—rake them over the bows—secure them—Sway up and step the bowsprit—Get shears over-board. No. 1-36 <i>a</i>	21
---	----

CHAPTER II.

MASTING AND RIGGING—CONTINUED.

To rig the bowsprit—Gammoning—Bobstays—Stay-collars—Get on the bowsprit cap—Get the trestle-trees on the mast-head—Rig the foremast—Girtlines, and break-rope—Send up and get over the lower rigging—Set up the lower rigging—Get the mast upright—Get over the fore-and-aft stays—Dimensions of, and cutting, the lower rigging—To fit the lower rigging—To turn in the dead-eyes—Seizings—Reeve the lanyards—Pendants—Stay-collars—Hearts and straps to lower stays—Get the tops over the mast-heads—Cat-harping in the lower rigging—Futtock shrouds. No. 37-95.....	30
---	----

CHAPTER III.

MASTING AND RIGGING—CONTINUED.

Point the topmasts—Get the lower cap on by the topmast—Top blocks and pendants—Get over topmast cross-trees, and	
--	--

rig the topmasts—Top pendants—Topmast shrouds and stays
—Gin blocks—Rig the topmasts “on end”—Dimensions of,
and fitting, the topmast rigging—Cat-harping in do.—Fut-
tock staves—Backstays and stays—Stay-collars. No. 96-127. 46

CHAPTER IV.

MASTING AND RIGGING—CONTINUED.

Get on the topmast cap—Get out and rig the jib-boom—Martin-
gale—Rig out and secure the jib-boom—Jib-guys—Foot-
ropes—Martingale stays—Jib-guys—Jib-stays—Rattle down
the lower rigging. No. 128-139. 54

CHAPTER V.

MASTING AND RIGGING—CONTINUED.

Get on board a lower yard—Rig a fore or main-yard—D-thim-
ble—Quarter-blocks—Trusses—Clew-garnet-blocks—Leech
line-blocks—Jackstays—Head-earring straps—Foot-ropes—
Stirrups—Yard-tackle straps—Brace and lift-blocks—Straps
and thimbles—Rig a cross-jack yard—Reeve the lower braces
and lower lifts—Slings—Jear-pendants and pendant-tackles
—Sway up the lower yards—Chain slings—Reeve the trusses
—Get on board the topsail yards—Rig them—Tye-blocks—
Parral—Quarter-blocks—Straps and thimbles—Rig the yard-
arms—Jackstay—Head-earring straps—Foot-ropes and Flem-
ish horses—Brace blocks and lifts—Sway aloft the topsail
yards—Reeve the tyes—Fly-blocks—The topsail halyards—
Reeve the fore, main, and mizzen topsail braces—Get on
board and rig a spritsail yard—Parral, tye, jib-guys, stirrups,
and foot-ropes—Send out and secure the spritsail yard—Guy
Blocks—Spritsail braces and lifts—Spritsail yard lashed
across the knight-heads—Whiskers. No. 140-193 a. 58

CHAPTER VI.

MASTING AND RIGGING—CONTINUED.

To rig a spanker-boom—Foot-ropes, guys, and sheet—Topping
lifts—To rig a gaff—Vangs—Peak and throat halyard blocks

—Brail blocks—Jaw-rope—Top-gallant and royal masts— Pole, short, and stump—To rig and sway aloft—Jack-cross- trees—Top-gallant rigging—Dimensions of, and fitting, the top-gallant, royal, and skysail rigging—Futtock shrouds— Fore-and-aft stays—Breast and standing backstays—Rattle down top-gallant rigging—Send up a fidded royal-mast— Royal rigging—Skysail rigging—Flying jib-boom, to send out and rig—Rig and cross top-gallant and royal yards. No. 194–261 <i>a</i>	74
--	----

CHAPTER VII.

PURCHASES.

Securing lower yards—Purchases used for hoisting in—The yard-tackle—Top-pendant and tackle—Winding-pendant and tackle—Quarter-tackle—Triatic-stay and tackles—Mast-head pendant and tackles—Hoisting in casks or boats—Spans— Leading the purchase-falls—Hoisting in boats at sea, or on both sides—a purchase for hoisting in guns—A rolling- tackle. No. 262–284.....	90
---	----

CHAPTER VIII.

ANCHORS.

The different parts of—Complement allowed to all vessels— Bowers, sheet, spare, stream, kedges—For determining the weight of anchors for any vessel—Purchasing anchors, bow- er or sheet—Transporting anchors. No. 285–309.....	101
--	-----

CHAPTER IX.

GROUND TACKLE.

Chain and hemp—Navy commissioners' regulations—Length of—Coiling hemp cables—Fake—Sheave—Shot—Crown- ropes—To French-fake—To crown—To cap—To tail the ends of—Splicing—Bending—To bend a chain-cable—To bend a sheet cable—Marking hemp and chain cables—To range a chain cable—To bitt and stopper cables—Cable stop- pers—A rule for finding the weight of a hemp cable of 120 fathoms. No. 310–346.....	107
---	-----

CHAPTER X.

GROUND TACKLE.

Messenger, to pass, lash, and dip—Nippers, to pass—Hanging nippers—Stoppers, deck, dog, bitt, wing, and hatch—Iron stoppers—To heave the anchor up to the bows—Belaying stoppers—Cathead stoppers—Fish-pendant—Shank-painter—Getting the anchor off the bows—Buoys and buoy ropes. No. 347-377.....	117
---	-----

CHAPTER XI.

BENDING AND UNBENDING SAILS.

To bend a course—Bend a topsail—Riding down the head in bending—Sending up a topsail forward of the mast—Top-gallant sails and royals—Bend a jib—Bend a spanker—Fore and main trysails—Foretopmast-staysail and flying-jib—To unbend a course, topsail, jib, and spanker—Bending and unbending at sea. No. 378-418.....	126
---	-----

CHAPTER XII.

STOWING A HOLD AND SPIRIT ROOM.

Dunnage—Ballast, how stowed—Water-tanks or casks—Provisions—Naval stores—Movable lumber—Orlop deck—Shot—Chain cables—Spirit-room. No. 419-435 <i>a</i>	137
--	-----

CHAPTER XIII.

MAKING AND SHORTENING SAIL—RUNNING RIGGING.

To set or take in courses, topsails, top-gallant sails, royals, skysails, the head sails, trysails, spanker, staysails, and studding sails—How reeve, secure, and belay the running rigging. No. 436-508.....	142
---	-----

CHAPTER XIV.

REEFING AND HOISTING—TURNING OUT REEFS.

To reef the topsails, braced up, or before the wind—Preventer braces—To reef a course—Top-gallant sails—A topmast studding sail—To turn out reefs, topsail or course. No. 509-529.....	161
--	-----

CHAPTER XV.

HINTS ON PREPARING A VESSEL FOR SEA—SPARE SPARS.

No. 530-539..... 166

CHAPTER XVI.

GETTING UNDER WAY FROM SINGLE ANCHOR.

Under various circumstances, and by different methods, with or without a tide—From fixed moorings. No. 540-573 *a.*.. 171

CHAPTER XVII.

WORKING TO WINDWARD.

Tacking—The proper moment to tack—Swinging the after yards—To trim the yards when close hauled—Swinging all the yards together—Missing stays—Wearing or veering, in moderate weather or in a gale—Box-hauling—Wearing short round—Club-hauling—Making a half-board. No. 574-617 *a.* 182

CHAPTER XVIII.

IN A TIDE-WAY.

Drifting or working—Backing and filling—Clubbing. No. 618-630..... 198

CHAPTER XIX.

Coming to against the helm—Taken aback—Chapelling—To trim the yards and regulate the sails for the wind drawing aft—Do. for the wind drawing forward—Taken aback, the common practice—A calm—How brace the yards for any wind. No. 631-663..... 201

CHAPTER XX.

COUNTER-BRACING THE YARDS.

Two or more vessels communicating at sea—Heaving to—To fill away—Struck with a squall—A man overboard—Precaution in bracing yards. No. 664-698..... 211

CHAPTER XXI.

IN A GALE OF WIND.

Brought by the lee—Broached to—To bring by the wind and

	Page.
lie to—Rudder—Wheel-ropes and relieving-tackles—To steer by a cable. No. 699-718.....	223

CHAPTER XXII.

LOSING A FOREMAST—BOWSPRIT, ETC.

How to proceed to secure the masts. No. 719-730... ..	229
---	-----

CHAPTER XXIII.

SOUNDING AT SEA.

How mark the hand and deep-sea-lines—Sounding by hand-lead—Breast-band—Sounding by the deep-sea lead. No. 731-739 <i>b</i>	233
--	-----

CHAPTER XXIV.

COMING TO ANCHOR.

Preparations for—Anchoring—Selecting a berth—Anchoring in a tide-way—Riding at single anchor—Anchoring with a spring. No. 740-768 <i>a</i>	237
--	-----

CHAPTER XXV.

MOORING. /

With or without a tide—Making a flying moor—Sheet cable—Remarks on the duties of a watch officer at anchor. No. 769-787.....	245
--	-----

CHAPTER XXVI.

CLEARING HAWSE.

By the leeward cable—By the riding cable—Tending ship at single anchor. No. 788-802.....	251
--	-----

CHAPTER XXVII.

STATIONING A CREW.

At quarters—Partners—Distributing the force at each station—For all evolutions. No. 803-817.....	255
--	-----

A NAVAL DICTIONARY.....	263
-------------------------	-----

INTRODUCTION.

TO THE MIDSHIPMEN OF THE UNITED STATES NAVY.

To you—and for your instruction alone—do I offer the second edition of the Naval Text Book. In the following pages, corrected from the first edition, and with some additions, I have endeavored to embody information that I trust will be useful to you, in acquiring a knowledge of your profession, and which is submitted, not without much anxiety as to its reception. I cannot but feel that my task will be imperfectly accomplished, if I leave a very important subject untouched; I mean you professional obligations to your country, to the corps of which you are members, and to your brother officers.

You are placed on board of a public vessel in order that you may learn efficiently to serve your country, to prepare yourselves in every way to command a naval force, to support the discipline and standing of the service, and to represent your country abroad. If you set out with the proper feelings, with a determination to fulfil your obligations, and to be faithful to the trust

placed in you, you would do well to satisfy yourselves as to the nature of those obligations, and the extent of that trust. I regard them thus:—

In accepting an appointment in the Navy of the United States, you bind yourselves, by your oath of allegiance, and by every moral and sacred obligation, and unreservedly, to the service of your country, subject at all times and at any moment to be called upon for any duty she may require of you; all your powers she expects you to devote to her service, whenever and in whatever way and under whatever circumstances she may please to command them. You are expected not only to be constantly improving yourselves in all the practical branches of your profession, but also in storing your minds with information on all subjects that can enlarge your sphere of usefulness. In short, you give yourselves up entirely, your talents, your time, and even your lives, to your country, and to the *whole* country, for in accepting your appointment you become voluntarily, and in virtue of a most solemn compact, irrespective of all local ties or attachments, of all party or geographical lines, a servant of the country, subject to the orders and directions of the Federal Government, and in return for this devotion, she “reposes special trust and confidence in your patriotism, valor, fidelity, and abilities;” confers upon you support, respectability, opportunities of great distinction, and—commits her safety and her honor to your care.

Among the obligations of your position are those which you owe to the service in supporting, by your authority, influence, and example, an unbending discipline, an unhesitating subordination, and a due ob-

servance of the rights, privileges, and relations of different ranks.

Your first sphere of action will, of course, be in a subordinate capacity, wherein the usages of the service allow you but a limited authority, and you are bound by all military rules, and by your oath of office, to practise in yourselves a ready and cheerful obedience to the authority of all who are superior to you in office. Let no consideration prevent your prompt and unhesitating compliance with all the orders of your superiors. When any duty is going on, give it your whole attention; mark well the orders of the commanding officer, and see them executed, as he directs, to the best of your ability; be respectful in your manner, and carefully shun anything that may call forth a rebuke or harsh word toward you. I am well aware, that, notwithstanding all this caution, you may, at times, be spoken to harshly, perhaps unjustly; but let not this cause you to commit an impropriety, and by disrespectful bearing to place yourselves in the wrong, and at the same time in the power of your superior officer.

A young officer under the excitement of a censure, cannot be in a proper state of mind to determine correctly whether or not the treatment of his superior is oppressive. Believe me, many things are likely to occur, indeed must occur daily, during your first years of service, to your personal inconvenience or discomfort, of which you cannot see the advantage or necessity, merely because of your inexperience, and want of knowledge of the usages and necessities of a Naval life.

Not only the salutary influence that your example would have upon others, but also a laudable ambition

for advancement in the service, should induce you to pursue the course I recommend, for there is nothing so likely to contribute to both, as a diligent performance of your duties, and a watchful desire of pleasing all those whose orders you are bound to obey.

It is important that you should impress upon your minds the wide distinction between the civil and military orders. In the one, all are equal and have equal rights, and whatever superiority does exist, is only that which depends on relative moral worth, talents, and intelligence; while in the other, you only know your superior or inferior by their rank—the one you must obey, and the other is subject to your orders, whatever the private character, talents, or acquirements of either may be. As citizens, you would have a right to regulate your own movements, your time, your occupations, according to your own interest or inclinations; as military men, you are regulated by those placed over you, for the welfare of the service and interests of the country, which no inclination of yours can or should interfere with.

I dwell upon this subject because I would impress upon you its great importance, and would make you feel that the principles by which you are governed now, will affect, not only your own standing, but also the future character of the service. That the Navy is the popular branch of the public service, we owe to those who have gone before us, to their brilliant acts and untiring services—none of which are more brilliant, or the result of a more pure and holy patriotism, than have appeared during the terrible and unnatural struggle now pending; to you the country looks for similar efforts in after days,

and while you enjoy a portion of that favor, the fruits of their services, you should not lose sight of the causes which produced them, but should endeavor to keep alive and spread around you, wherever your example may be felt, that spirit of rigid discipline which will not only prepare for yourselves distinction in some future command, but will insure to those who will follow in your footsteps, an impression on the public mind not less favorable.

You would do well to act with this view of the case, and while performing your duties, keep a steady eye to the future welfare and respectability of the corps of which you are members, to the best interests of your country, which honors you with her confidence, and looks to you to fill efficiently offices of great trust and responsibility.

I leave you now to the study offered to you in the following pages. I have endeavored so to arrange the matter contained in them, that you may readily turn to whatever subject you seek. You must not expect to become seamen in a day, nor in one or two cruises; nor can you, merely by the information acquired on ship-board, while in the actual performance of duty, without superadding hard study, become competent to acquit yourselves creditably before a board of Examiners. The common occurrences, the every-day manœuvres and exercises, will of course become familiar to you, and you may be soon competent to perform the duties of a Watch Officer: so far you will have acquired lessons useful and indispensable, but, after all, they are but the first steps in the formation of a Naval Officer.

Even though you acquire sufficient professional knowl-

edge to gain a respectable standing in your class, to satisfy the Examiners of your capacities, and your promise of future usefulness; do not let your labors and your studies cease at this point, let not this partial advancement satisfy your ambition, nor *will* it answer the expectations of your country: let this be but a new starting-point from which to extend your course of studies; continue to seek information in all branches of your profession; acquire those languages which will be useful to you on foreign stations; study the history of your own and of all other countries; read attentively the standard works on international law—and, in short, place no limit to your acquisition of information, on all subjects which may make you efficient, and competent to any service.

B. J. TOTTEN,

Commander.

NEW YORK, *May*, 1862.

NAVAL TEXT-BOOK.

NAVAL TEXT-BOOK.

CHAPTER I.

MASTING AND RIGGING.

GETTING ON BOARD, RAISING, AND SECURING SHEARS FOR HOISTING IN AND STEPPING THE LOWER MASTS.—STEPPING THE LOWER MASTS, AND GETTING THE SHEARS OVERBOARD.

PAR. 1. In the first six chapters I propose to confine myself entirely to the process of rigging a vessel—or, more properly, a ship—commencing with the bare hull, as it leaves the ways or dock, without a mast standing, or a spar rigged; and, without having recourse to the convenient use of permanent dock-yard shears, will proceed to rig her, giving the necessary instruction as to the fitting, size, and proportions of the rigging; and the process of stepping, rigging, and sending aloft, the masts and yards.

2. Before erecting temporary shears on board, by which to step the lower masts, your first care will be to support the decks, so that they may bear the great weight of the shears and masts, without injury. This is done

by *shoring* them up, fore and aft, from the kelson up, placing the *shores* immediately below those beams upon which the heels of the shears will rest when raised. By placing those on one deck immediately over those on the next lower deck, a continuous line of support is formed from the kelson to the deck on which the heels of the shears will rest.

2 *a*. **Shores** used for this purpose, are pieces of timber placed upright between the decks, resting on one beam, and supporting the one immediately over it.

3. The spars, of which you will form your shears, being alongside, with their heads aft, you may *parbuckle* on board in the following manner: Pass two stout ropes fast in board, over the rail, one forward and the other aft, down the ship's side, under the spar, then up and over the rail—having fenders up and down the ship's side, to keep the spars clear of the channels, and a half-rounded spar, well greased, and lashed on the rail, and mats on the quarter-galleries. Sway away on the parbuckles, and when the spars are up, ease them down in board by means of counter-parbuckles.

4. You may get them in, in small vessels, through the stern ports, by means of a small pair of shears, erected over the stern.

5. Or, in larger vessels, you may hoist them in over the side, by means of two pairs of smaller shears, erected to rake over the side, or by *derricks*, using stump top-gallant masts for the purpose. In most cases, however, you may use the parbuckle, as the simplest and a sufficient means.

6. After the spars are in, launch them aft, and having raised their heads on the taffrail, cross them at equal

distances from their heels, having only sufficient distance between the cross and the heads of the spars, to secure the purchase blocks and to make fast girtline blocks.

7. **To prepare the Shears for raising—Lash on Purchases.** If the heels of the shears are spread to the bulwarks, close them three or four feet, and then pass the shear-head or throat-lashing; after which the heels are spread to the bulwarks, which brings the lashing taut and more secure.

8. **The shear-head or throat-lashing** should be of well-stretched rope, and passed in the following manner: Middle the lashing, and take a good turn around both legs in the cross; pass one end up and the other down, around and over the cross, until half of the lashing is expended; then ride both ends back again on their own parts, and knot in the middle; frap the first and riding turns together, on each side, with sennet, to prevent the latter from getting out of their places; eleven or twelve turns of the latter will be sufficient. After the lashing is passed, render it more secure by wedging.

9. Lash the upper block of the main purchase, so that it may hang under the cross, and pass the lashing so as to act as a preventer-lashing to the shears.

10. The upper block of the smaller purchase must be lashed on so as to play clear of the larger purchase, the cheek resting against the after part of the throat-lashing. Its strap must be long enough to admit of its being passed around one of the forks of the shears, cross them, and have the two bights lashed together around the other fork.

11. The upper blocks of both the large and smaller purchase must be threefold, the lower blocks double or

threefold. They should be double strapped, with a toggle to each of the lower blocks.

12. In lifting masts, the practice in the navy varies at different stations, and it is altogether a matter of judgment, as to the proper size for purchase-block straps. It is, however, a good rule to use ten-inch for a seventy-four, and reduce the size one inch for each of the three classes of vessels below.

13. The purchase fall should be of white rope, and the fall or hauling part rove through the middle sheave, which will prevent the block from sluing in its strap.

14. **To raise the Shears and place them.** The purchases being rove, secure the lower blocks forward to the breast-hook, or to a toggle in the hawse holes, snatch the falls, and bring the larger one to the capstan.

15. Have a girtline from one shear-head, and a small tackle from the other, for canting the mast and for other purposes. Put over the shear-head guys, two forward and two aft; and, if necessary, the same number of belly-guys, upper and lower; all being hawsers, secured to the shears by clove-hitches, cleats being driven on the shears to prevent their slipping.

16. Have also four large heel-tackles, two leading forward, and two aft; the after ones must have luff purchases on their falls to rouse the heels aft as the shears are raised.

17. Spread the heels the proper width, and place them on the shoes, which should be made of oak plank, and be sufficiently large to rest upon two of the vessel's beams. Then clap on a thwartship tackle between the heels, to prevent their spreading more, and lash the heels to the shoes.

18. To prevent a great strain upon the water-ways, it is advisable to fit a stout plank, or spar, between the heels of the shears, then set taut the thwartship tackle, or lash from heel to heel; the heels may also be lashed to the bulwarks.

19. Every thing being in readiness, man the capstan, the forward guy-tackles, and after heel-tackles, and raise the shears. Place their heels to rest upon a beam forward of the partners of the mizzenmast, the shears raking aft at an angle of 75 or 80 degrees with the deck, and the main purchase hanging plumb with the partners of the mast.

20. The angle formed by the shears and purchase, before the former are raised, being so small, it may be necessary to raise the head of the shears (by some other means) sufficiently, that the purchase may act upon it. This may be done by the use of a small pair of shears, erected over the taffrail; or by a single spar, as follows:

21. Having lashed and secured the shears as directed in the foregoing paragraphs, place a spar of the same size and about two-thirds the length of the shears, fore and aft on the deck, with the heel, or largest end, towards the cross of the shears, and a little abaft the shear heels. Connect the heel of this spar with the heels of both shear legs, by stout tackles, so that it may be equidistant from each, and place a shoe (as for the shear legs, 17) under its heel. From the forward end, or head of this spar, have stout guys, of equal length, leading one on each side of the deck, and well secured; these guys to be of only sufficient length to allow the head to be raised so that the spar may form an angle between 60 and 70 degrees with the deck. Now bring the lower block of

the small purchase (10) around the cross of the shears, and secure it to the forward end, or head of the spar, the fall leading forward. Secure forward, also, the lower block of the main purchase (14). Being ready, man the small purchase, and have some hands to take in the slack of the large; hoist away; the spar being lighter than the shears, will rise by the power of the purchase, the heel being steadied by the tackles from the shear heels (*b*), and these being prevented from closing by the thwartship plank or spar (18). The guys being brought taut (*c*), the spar will rise no further, but the purchase now acts upon the shears at an angle sufficient to raise them readily. Take in, as the shears rise, the slack of the large purchase, and as soon as it will act upon them clear of the spar and its guys, apply all the force to it; lower down the spar, unrig and get it out of the way.

22. To Step the lower Masts and Bowsprit. The shears being raised and properly secured, get in the mizzenmast first, for the reason that the breadth of beam increases from aft, and in transporting the shears forward, as you spread the heels, you keep the throat-lashing taut, and that, after getting in the foremast, you have the shears to get in the bowsprit by, before launching them overboard.

23. The **garlands** to which the lower blocks of the purchases are toggled, are gromets; and should be lashed on to the mast before it is brought alongside. They may either be selvagees, or made of rope sufficiently large to bear the weight of the masts. They are lashed on the forward part of the mast, above the centre, with well-stretched rope, taking jaming turns every six or seven fathoms; or they may be secured with cross

lashings, backed by large rope, taking two turns around the mast, above the garland, and dogging the ends around the lashing down toward the heel of the mast.

24. In lashing on the garland for the main purchase, be sure to place it high enough for the mast to hang heel-heavy, and at the same time to leave room for the purchase blocks to lift the heel of the mast clear of the partners. The proper place may be ascertained by measurement, having reference to the distance from the step to the partners, and from the partners to the upper purchase block.

25. The garland for the smaller purchase should be lashed on as much above the main as practicable, that the purchase may not come "*two blocks*" before the mast is sufficiently high.

25 *a.* If, however, this should be the case before the heel, or tenon, of the mast is clear to be pointed through the partners, it will become necessary to place chocks under the heel to steady the mast, that you may fleet the purchase; or if the want of space is trifling, making the shears more perpendicular may answer the purpose.

26. Overhaul down the purchases and toggle them to their garlands (the mast having been previously towed alongside, with its head aft). Man the capstan and heave around until the head of the mast is over the bulwarks.

27. Then, with the canting-tackle from the shear-head, sway up the trestle-trees, and, having put on a coat of white lead, place them over the mast-head; place the after chock and bolt it; sway up the pendants and place them over the mast-head; clove hitch a break-rope over the mast-head, and lash a girtline block on the after

part of each trestle-tree, and reeve girtlines. Now hook the canting tackle to a selvagee strap, under the bibbs of the mast.

28. Sway on the main purchase, easing in the mast by a tackle from the bulwarks, and direct it by hand and by the canting tackle. When plumb with the partners, lower away, giving the tenon and mortice a coat of white lead.

29. In stepping, you may, if necessary, give the mast the proper slue by means of a capstan bar, rigged as a Spanish windlass, on the mast. Step the mast and wedge it temporarily; sway up, by the girtlines, as many hands as necessary, to the trestle-trees, then sway up the pendant tackles, hook them into the pendants, with which, and a hawser, if necessary, stay and secure the mast.

30. Now come up the purchases, and transport the shears to the forward partners of the mainmast by means of the heel tackles and guys (wetting the decks in the wake of the shoes), and secure them for getting in the mainmast, as before directed for the mizzen.

30 *a*. It would be proper to observe that, in getting in the mizzenmast, you would only use the main purchase; but for the main and fore, you would use both the main and smaller purchases.

31. Having stepped the mainmast, transport the shears forward, and get in the foremast, securing them as they are gotten in, as directed for the mizzen (29), and then prepare to get in the bowsprit, as follows:

32. Rake the shears over the bows, by easing off the after guys, so that the main purchase block may just clear the partners of the bowsprit; bring the forward guys aft and set them up. Lash the heels of the shears

to the bow port, or to the cat-head; hook the smaller purchase to the head of the foremast, which is supported by a hawser, clove hitched around it, and set up at the main beam.

33. Having put on the cap, and lashed on the garland so that the bowsprit may hang, when weighed, a little head-heavy, tow the bowsprit to the bows; toggle the main purchase to the garland, and hook the canting tackle to a selvagee strap just within the cap; hook breast tackles to eye bolts on each side of the cap, leading to each cat-head, and a heel tackle from inboard, through the partners, to the heel of the bowsprit.

34. Being in readiness, bring the purchase fall to the capstan, and sway up, directing by the canting tackle, and rousing in by the heel tackle and breast tackles; white lead the heel, and rouse it into its place.

35. Come up the purchases, take off the breast tackles, and, before unrigging the shears, sway up the jib-boom, place it on the bowsprit and lash it.

36. The shears being of no further use, get them overboard, either by lowering them down on the bowsprit, unrigging them, and using a tackle from the bowsprit end and fore pendant tackles; or, having swayed them aft into the gangways, by the pendant tackles, parbuckle them over the side.

36 *a*. In a vessel with a topgallant fore-castle, the shear legs may not be used for getting in, or stepping, the bowsprit. In this case, after the foremast is sufficiently secured, the foreyard may be swayed up high enough on the foremast, secured by lashings and leading guys, and the bowsprit got in and stepped by it.

CHAPTER II.

MASTING AND RIGGING, CONTINUED.

TO RIG THE BOWSPRIT.—GAMMONING.—BOBSTAYS.—BOWSPRIT CAP.—GET OVER THE TRESTLE-TREES.—RIG THE LOWER MASTS.—SET UP THE LOWER RIGGING.—PENDANTS.—STAYS.—CUTTING AND FITTING THE LOWER RIGGING.—TURNING IN THE DEAD-EYES.—STAY COLLARS.—GET OVER THE TOPS.—CAT-HARPIN IN THE LOWER RIGGING.—FUTTOCK SHROUDS.

37. **Gammoning the Bowsprit.** Suspend, from the bowsprit end, a boat, anchor, or any thing of sufficient weight to depress it for gammoning; fill in between the fishes of a made bowsprit with wood, to make (as the bolsters on lower mast-heads) a smooth surface, and also between the bowsprit and gammoning scuttle on each side of the cutwater, in the wake of the gammoning; lay over this, on the bowsprit, leather wide enough to cover the gammoning, when passed. Gammoning on a stage is preferred, or a boat full of water to depress the bowsprit.

38. The size of gammoning varies, according to the judgment or fancy of the rigger; a bowsprit will be well secured by using 7-inch for a ship of the line, 6-inch for frigates, and 5-inch for sloops of war. It should be well stretched, water or hawser-laid rope.

39. Pass the first turn with a running eye, around the bowsprit, and fair with the after part of the gammoning scuttle, which should be cut in such a manner, that the turns of the gammoning may form right angles with the

plane of the bowsprit; have a large rope (a pendant) rove through a block secured to the cutwater, with an eye spliced in its outer end large enough to take the bight of the gammoning; the inner end leads through the hawse-hole, and has a tackle hooked to it. After the running eye is passed around the bowsprit, jamb it by use of this pendant; then pass the end down through the gammoning scuttle, with the sun, and then up over the bowsprit; toggle the gammoning into the pendant, and bouse it well taut; rack the parts well together; after which, come up the tackle, pass the remaining turns in the same manner, rousing every turn well taut, and racking it before you come up the purchase. The whole being expended, secure the end by taking a half hitch around the parts on one side, and stopping it to the last turn. Frap the parts of the gammoning under the bowsprit with right-hand laid rope, half its size, which must be passed on both ends, having leather in the wake; secure the leather on top of the bowsprit, unreeve the pendant and take off the tackle.

40. The outer gammoning is passed as the inner, having two turns less.

41. Some officers approve of setting up the bowsprit shrouds and bobstays before passing the gammoning, for the purpose of rousing the heel well into the step, which is certainly advisable.

42. **Rigging the Bowsprit.** Lash on the collar of the heart of the fore stay two-thirds of the distance from the night-heads out; next to that, the strap for the inner bobstays, with one dead-eye; then the strap for the inner bowsprit shrouds; collar of the heart of the fore spring stay; strap for the middle bobstay; and strap for the

cat-head bowsprit shrouds. The cap-bobstay strap, and that for the cap shrouds, are lashed on just outside of the bees.

42 *a.* In sloops of war the fore topmast stay leads through a spectacle strap, and from thence to the bows.

43. **Bobstays.** Reeve them through their respective holes in the cutwater, splice the ends of each together, and turn in the dead-eyes; set them up with a luff-and-luff purchase. The length of bobstays should be twice the distance from their holes in the cutwater to their respective dead-eyes, making a proper allowance for stretching. The size of bobstays should be from eight to nine inches for a seventy-four; from seven to eight for a frigate, and from six to seven for sloops of war, and so on; and the size of the straps should be one inch less than their respective bobstays. They should be wormed, parcelled, served, and leathered, in the wake of the cutwater, and served about one-half the distance from the cutwater to the bowsprit.

43 *a.* The foregoing rule has reference altogether to rope bobstays; chains are now getting into general use.

44. The length of the collars of the fore and spring stays must be determined by measurement of the bowsprit in the wake of each; but be particular to have them long enough to allow the jib-boom to be gotten in or out easily through them. In size they should be half of their stays, being a double strap; wormed, parcelled, served, and leathered.

45. Seize on the fair-leader for the martingale stays, and fit the fore and top bowline blocks.

46. **To get on the Bowsprit Cap.** If not done before stepping the bowsprit, rig a pair of shears of two

capstan bars, their heels resting on the bees, to which they must be securely lashed; have a tackle from the shear-head, and guys leading to the cat-head; rake them so that the purchase may hang plumb with the tenon, and lash the heels securely to the bees; hook the tackle to the upper part of the cap, and bend the guys from inboard to the eye-bolts in the after part; snatch the fall, and hoist away; when high enough place it fair, rouse in on the guys, and bolt it.

47. If the jib-boom is lashed on the bowsprit (35), you may get the bowsprit cap on by it, thus: Hoist up the cap and lash it to the jib-boom end; raise the boom by means of a tackle from the foremast head, and rig it out by a heel rope, until the cap is beyond the bowsprit; then slue it by a slue-rope on its heel, until the square hole in the cap is fair with the tenon; then ease in the boom and let the cap come into its place. This is generally practised in smaller vessels.

48. Should you not get the trestle-trees over the lower mast-head as it comes over the gunwale (27), get them over in the following manner, after the mast is stepped:

49. Lash span blocks on the mast-head, through which reeve girtlines; and lash a tackle to the forward part of the mast-head, just below the girtline blocks; place the trestle-trees on the deck forward of the mast, with the after chock out; bend the forward ends of the girtlines to the forward part of the fore and aft pieces, stop them along to the after part, and hook the tackle from the mast-head to the middle. This being done, hoist them up by the tackle and girtlines; and when the forward parts are above the bibbs, cast off the stops on the girtlines, and let them fall into their places; send up

the after chock, ship and bolt it; send down the purchases.

50. They may also be sent up with the after chock in, and got over the mast-head by means of two spars lashed on each side, having chocks between them and the mast, to admit of their being lowered between. The girtlines from the ends of the spars being secured to the trestle-trees, so that it may hang level, or well poised, stop them to the after part, and have a guy from forward to keep it clear of the mast; sway up, and when the centre of the trestle-trees is over the mast-head, cut the stops, and it will hang clear for lowering.

51. **Proceed now to rig the Foremast.** Before getting the rigging over the mast-head, place and secure the bolsters on the trestle-trees, in the angle formed by it and the mast. They are made of soft pine; in the form of a quarter of a cylinder, and are of sufficient length to allow all the shrouds to rest upon them; they form a smooth surface for the shroud, and lengthen the nip; they are covered with tarred parcelling, which is marled on.

52. Have girtlines on the after part of the trestle-trees, one on each side, and two smaller ones on the mast-head; also, a break-rope, clove-hitched around the extremity of the mast-head.

52 *a.* Break-ropes may be dispensed with, if the eye of the shroud is sufficiently opened, over a dumb mast-head previously to being sent aloft.

53. Send down the girtlines for the mast-head pendant, which place, after tarring the mast-head in the wake of the rigging; bend a toggle to the forward end of the large girtlines, or take an overhanded knot in them.

54. The reason for placing over the starboard forward shroud first is, because the measurement for a gang of rigging generally commences there. The main rigging being of the same size as the fore, there is often enough left of the last shot of rope, after the fore rigging is cut, to make a pair for the main, commencing the measurement for the main as for the fore, with the starboard side first. Custom has more to do with this arrangement than any rule or reason.

55. Thrust the toggle of the starboard girtline through, between the shrouds, from in, out, at a distance from the seizing of the eye down, a little greater than the length of the mast-head, where the shrouds are seized together to receive the toggle; then stop the girtline along the shroud to the eye; bend the smaller girtline a little below the seizing of the eye, and stop it to the upper part of the eye.

56. The girtlines being bent, sway up the shroud, cut the stops as they approach the blocks; and when the eye is high enough, cut the stop of the smaller girtline; reeve the opposite break-rope, and break the eye over the mast-head; lower away, dipping the smaller girtline, and place the shroud fair upon the bolsters; cast off the girtlines and send them down; get over, in the same manner, the port forward pair of shrouds, and then the second starboard, and so on.

57. Hook the mast-head pendant tackles, reeve the lanyards of the rigging, and set them up with a luff-and-luff purchase, the men at the mast-head placing the eyes in the proper position.

58. After having over two pair of shrouds, one on each side, set them up before getting over the remain-

ing ones.* This gives you an opportunity of placing the eyes fair, and giving them the proper set, which you could not as well accomplish with all the rigging over the mast-head.

59. In setting up the rigging: to ascertain when the mast is upright, drive a staple in the after chock of the trestle-trees, at equal distances from the fore-and-aft pieces; bend a line to the staple so that it may traverse; carry it out to the water ways, and if the distance to each water way is equal, then the mast is of course upright. This is the only sure method of coming at the truth; a plumb line would answer, if the vessel were exactly on an even keel.

60. The shrouds being over, shift the girtlines from the after to the forward part of the trestle-trees, by which get up the fore stay, and fore spring stays; place them fair on the rigging, reeve the lanyards and set them up.

61. The main and mizzen rigging are gotten over in the same manner; there is one shroud more on the main, and three less on the mizzen; and your crew being divided, you will get the rigging over all the lower masts at the same time, while rigging the bowsprit.

62. **Length and size of, and cutting, the Lower Rigging.** Draw a line from the side of the partners abreast of the mast, on the deck, parallel to the channels, and to extend as far aft as they do. On this line mark the places of each dead-eye, corresponding to their places against the channels; send a line up to the mast-head, and secure the end by a nail to the mast, above the bibbs, in a range with the centre of the mast, and

opposite to the side the channel-line is drawn upon. After the line is thus secured, bring the bight around the forward part of the mast, and make it fast with another nail to the mast, opposite the first nail, so that the part contained between the nails will be half the circumference of the mast-head; then take the line down to the mark on the channel-line for the forward dead-eye, and mark it; after which take it to the mark for the next dead-eye, and mark it as before; and so on until you have got the distance between the mast, and each mark on the channel-line. Now cast off the line from the mast-head, and the distance between the end of the line, and each mark, will give you the length of each shroud from the lower part of the mast-head. And to make an allowance for one pair of shrouds overlaying another, you may increase the length of the second pair of shrouds, that is, the port forward ones, by twice the diameter of the rigging; the third pair by four times, &c.

62 *a*. There are several rules for cutting and fitting rigging. The foregoing is approved of, and thought to be as good as any other. It requires much practice, by any rule, to cut rigging to advantage, and without loss.

63. **Mast-head pendants** are fitted in pairs, having one leg long and the other short. The length of the long leg is generally the same as that of the mast-head, and the other leg one-third shorter, and placed over the mast-head with the longest leg aft.

64. **The size of lower rigging**, as now made at the Naval Rope Walk, is as follows: for vessels of the first class (74) ten and a half or eleven inch; for frigates,

nine and a half or ten inch; for sloops of war, eight and a half or nine inch; and so on, reducing by one inch for the next lowest. This, however, is regulated by the Bureau of Equipment.

65. For the length of fore and main stays, and spring stays, take the distance from the after part of the mast-head to their hearts, adding once the length of the mast-head for the collar. For the length of the mizzen, measure in the same manner to the place where it will set up.

66. The practice has been to have the standing stays, in size, once and a half that of the rigging, and the spring stays seven-ninths of the standing stays. The only reason for this difference was, that the spring stay was used formerly to set a staysail on. The present practice, when storm staysails are used, is to have stays fitted expressly for them, and not to set them on the spring stays; therefore, there is no reason why both the standing and spring stays should not be of the same size. By equalizing them the rule will be for each one and a half the size of the rigging.

67. Right-hand-laid rope of three strands has been found preferable to hawser-laid rope, for the lower rigging and for the bowsprit, being stronger. It must be made with care, and only sufficient tar to preserve the hemp.

68. The best method of cutting rigging is by a draught of the vessel's spars, giving the proper rake to the masts, by which you can ascertain the correct length of every rope on board; or you may reeve the rigging, and cut according to judgment.

68 *a*. The most approved plan for cutting all running rigging is to "*reeve and cut.*"

69. The rope intended for the rigging being stretched, cut it by the preceding method, and fit it by the following rule.

70. **To fit the Lower Rigging.** Get it on a stretch, and divide each pair of shrouds into thirds. The centre of the middle third will be the centre of the eye of the shroud, when fitted. Serve the middle third, commence by tarring the rope, worm it, put on tarred parcelling *with* the lay of the rope working toward the centre. Serve it *against* the lay, commencing where you left off parcelling. The service must be laid on the standing rigging as taut as it will bear.

71. The practice, formerly, was to serve also the outer third of the first and second pair of shrouds (fore and main); that is, the swifters; for the reason that they were more exposed to chafe. This is not now generally practised. The swifters are, instead, protected by coverings of mats or hide, which may be removed in port, and replaced when preparing for sea.

72. This being done, mark each pair of shrouds in the eye with spun yarn, one knot for the first pair, two for the second, and so on.

73. Cover the service with parcelling far enough for it to extend below the futtock staff, which must be put on in the same manner as it was beneath the service. This will prevent any water which may lodge in the eyes of the rigging from penetrating to the service. This outer parcelling is now discontinued by many, and rarely used in the merchant service. It cannot be necessary when the under parcelling and service are properly laid on, and it makes the eyes of the rigging stiff and

clumsy. If you serve, parcel with the lay of the rope, otherwise against it.

74. The eye of the first pair of shrouds must be five-fourths of the circumference of the mast-head, and is formed by seizing the two shrouds together with a round seizing, which must be as wide as the diameter of the rigging. The eye of the second pair must be the breadth of the seizing larger than the first, and all the remaining ones increased in the same ratio.

75. Turn in the dead-eyes against the sun, if the shrouds are hawser-laid, but otherwise, if of right-hand-laid rope, about three or four feet from the end.

76. **To turn in the Dead-Eyes.** Having tarred parcelling in the score, let the shroud be hove taut around it, before the seizing is passed. Pass the seizing (which is called the throat-seizing) with nine or ten turns over the parcelling; pass the outer turns slacker than the middle ones, that they may all bear an equal strain when the rigging is set up; and secure the end of the seizing around the standing part of the shroud. All seizings are passed the same way that the service is put on.

77. The throat-seizing being passed, bring up both parts of the shroud, and put on the quarter-seizings midway between that and the end of the shroud. Pass the end-seizing, and cap the shroud after it is set up.

77 *a.* In putting on the quarter-seizings of heavy rigging, the end of the shroud should be taken up one diameter more than the standing part, in order to give support to the throat-seizing when a strain is brought upon it in setting up. Though proper, it is of less importance in light rigging.

78. **Reeve the lanyards** out through the dead-eyes in the shrouds, and in through those in the channels, having the fall or hauling part on the same side as the shroud, the standing-part being on the side with the end of the shroud. Lanyards are generally one-half the size of the rope they set up ; the proper length must be determined by the distance between the dead-eyes and the channels, which varies in different vessels, and according to the fancy of the Rigger. The best knot for a lanyard is a *double wall* or *crown and wall*.

78 *a*. **Lanyards** for the lower rigging, and in fact for all other standing rigging, shrouds or backstays, should be rope, having the same lay as the shroud it is to set up ; thus, if the shroud be hawser-laid, or composed of but three strands, the lanyard must be the same ; but if the shroud or backstay be cable-laid, or composed of three strands, each being hawser-laid, the lanyard should be of left-handed rope. The advantage of this, is, that in setting up the rigging, the dead eyes will come down perfectly square, requiring no shear-pole.

79. The **mast-head pendants** have a thimble spliced in their ends, and must be wormed, parcelled, and served ; the service is covered with parcelling in the same manner that it was on the shrouds (73). Sometimes they are fitted in pairs, starboard and port ; or, if there should be an odd shroud, the after pendants form eyes with the swifters. Or, a better way is, to form but one eye with both the forward and after pendants, having them fitted separately and then connected by seizings, and to go over the mast-head together.

80. The **collars** of the lower stays are wormed, parcelled, served, and leathered; and are fitted with mousings or lashing-eyes. The length of stay-collars is that of the mast-head. The stays are served half the length of the mast-head below the mousing or splice. The main and spring stays are served also in the wake of the foremast.

81. The **hearts** are turned into the lower stays as the dead-eyes were into the lower rigging, and the end of the stay must be under the standing part when set up. The present practice however (and it is much neater), is to reeve the stay *down* through a bull's eye, and set its end up, securing it by several seizings to the standing part.

82. In line-of-battle ships and frigates, the lower heart-strap of the main-stay reeves through the scupper cut in the hawse-piece on the starboard side, a little above the deck; the long leg is passed around the bowsprit, inside of the gammoning, and the ends lashed together. The size of the strap should be two-thirds of the stay.

83. The lower heart-strap of the main spring-stay is thrust through a scupper hole cut in the *port* side of the hawse-piece, about a foot above that on the starboard side, and is toggled outside. It bears the same proportion to the spring-stay that the starboard strap does to the standing-stay. When stays are set up there should be purchases on both parts of the lanyards.

84. In sloops of war, the main stays set up to hearts iron-strapped, secured to the deck by bolts, a little forward, and on each side of the foremast.

85. The lower end of the mizzen stay has two legs,

with thimbles turned into each, and they set up to eye bolts in the deck on each side of the mainmast. In sloops of war and frigates, the end of the mizzen stay is sometimes rove through a strap on the main mast, leads down and sets up to an eye bolt in the deck abaft the mast.

86. To get the Tops over the Mast-Heads. Lash girt-line blocks at the mast-head and reeve girtlines; lash the upper block of a pendant tackle to the mast-head below the girtline blocks; send up the lower cross-trees by one of the girtlines, and secure them on the trestle-trees.

87. Place the top on the deck abaft the mast, with the forward part forward, pass the after ends of the girtlines under the top, reeve them through the holes in the after part of the top, clinch them to their own parts, and stop them to the forward part of the top with slip-stops; secure the tackle from the mast-head to the after part, underneath the top; make the ends of a span fast to the after corners of the top, to the bight of which bend a girtline from the mast-head, and stop it to the forward part of the top; have a guy from forward, bent to the pigeon hole in the forward part of the top, for the purpose of canting it when high enough.

88. Man the girtlines and pendant tackle, sway away (having a guy from aft secured to the after part of the top to keep it clear of the trestle-trees); when the forward part of the top is above the trestle-trees, cut the span-stops; and when the after part is above them, cast off the slip-stops on the girtlines; sway away, and when the forward part of the lubber's hole is high enough to clear the mast-head, haul on the forward

guy, and the top will fall over horizontally, and hang by the girtlines and pendant tackle ; lower away, place, and bolt it. Send down the purchases ; ship the dead-eyes for the topmast rigging, stancheons and rail ; both the fore and main tops are sent up abaft, and the mizzen top from forward, using the same gear and in a similar manner.

89. Sometimes the tops are got over the mast-head before the rigging ; the advantage of this is, that it affords a more convenient standing place for the men while placing the rigging.

90. **To cat-harpin in the Lower Rigging.** Set off from the centre of the trestle-trees, down the mast, the distance of half the length of the mast-head, and mark the place on the mast ; extend a line across horizontally from the rigging on one side to the other, intersecting this mark ; and mark the rigging by this line, drawing the mark parallel to the rail of the ship ; where these marks are on the rigging, will be the proper places to seize on the futtock staves. Lash capstan bars on the outside of the rigging, one on each side, a little below these marks ; to the capstan bars lash four luff-tackles, having their falls to lead across ; bouse away, swifter in the rigging once and a half its diameter if new, and once if old ; swifter in the forward shroud a little more than the after ones, which will afford more room for bracing up the lower yards.

91. When the rigging is sufficiently in, seize on the cat-harpin legs. Recollect to exclude the forward and after shrouds in line-of-battle ships and frigates, and the forward one in sloops of war and smaller vessels.

92. The cat-harpin legs must be wormed, parcelled,

served, and leathered, and have an eye turned in their ends. The length of the forward one must be half the length of the mast-head; the remaining ones must be increased in length in proportion to the spread of the rigging. Their size must be that of the topmast rigging.

93. Large vessels have cross cat-harpins, leading from the second forward shroud on one side to the second after one on the other. This is to prevent the forward cat-harpin leg from chafing against the after part of the mast.

94. The cat-harpins being secured, send down the capstan bars and tackles.

95. **Futtock Shrouds.** Hook them to the dead-eyes of the topmast rigging, and set them up with a Spanish windlass around the futtock staves and shrouds; or in large vessels, by the use of a jigger, the fall leading on deck. The forward ones must be wormed, parcelled, served, and leathered; the others only served over the splices in their ends. In the upper end, which is hooked to the topmast rigging dead-eyes, is turned a hook and thimble; in the lower end, which is seized to the lower rigging, only a thimble. The length of the forward ones must be equal to the length of the forward cat-harpin; the remaining ones increased, over this length, in proportion as the top widens. Their size must be four-fifths of the topmast rigging, or the same size.

CHAPTER III.

MASTING AND RIGGING, CONTINUED.

POINT THE TOPMAST.—GET ON THE LOWER CAP.—GET OVER THE TOPMAST CROSS-TREES.—RIG THE TOPMASTS.—GINS.—GIN-BLOCKS.—DIMENSIONS OF, CUTTING AND FITTING THE TOPMAST RIGGING.

96. **To point the Topmast.** Lash the top blocks to the mast-head just above the eyes of the rigging, one on each side; through these reeve two hawsers of sufficient size to bear the weight of the mast. The topmast being alongside, with its head forward, overhaul down the forward ends of the hawsers, reeve one through the upper sheave hole and hitch it around its own part, and reeve the end of the other through the fid hole, and hitch it as before; stop both of them along the mast toward the head; snatch the hawsers (one of which may be brought to the capstan) and man them.

97. Sway away, and get the mast up and down. To get it high enough that its heel may clear the bulwarks, it may be necessary to cast off the upper stop, letting the head of the mast go outside the top; then lower it down the scuttle forward of the lower mast, and point the head through the trestle-trees.

98. Fenders must be used to prevent the mast from rubbing against the side of the ship, and a guy to its heel to prevent its swinging in when clear of the bulwarks.

99. **To get on the Lower Cap.** Place the round hole in the cap over the square hole in the trestle-trees. Point the topmast through it and lash the cap to its head.

100. Suspend the mast by the pendant tackles, and then unreeve the hawsers; man the pendant tackles, and sway up the mast; when high enough, slue it by means of a capstan bar in the fid hole, place the lower cap on the lower mast-head, and cast off the lashing by which it was secured to the topmast.

100 *a.* Remember to cover the tenon of the mast-head with white lead before placing on the lower cap, and to nail a covering of sheet lead over the top of the cap.

101. Then hook the top-blocks to the eye-bolts in the lower cap, reeve the pointed ends of the top-pendants through them, from aft forward, through the sheave holes in the topmast, and then bring them up and reeve them through the forward eye-bolts in the cap, and secure them by taking half hitches around their own parts, and stopping the ends. To the eye in the other end of the pendant, hook or toggle the upper block of the top tackle, the lower block being hooked to eye-bolts in the deck, abreast of the mast.

102. **To get over Topmast Cross-Trees and rig Topmasts.** The topmast is now hanging by the pendants, the head being pointed through the round hole in the lower cap.

103. Secure the girtline blocks on the side of the lower cap, overhaul down the girtlines outside of the top, bend them to the cross-trees, and send them up in the same manner as is directed in getting over the tops (87, 88), the operation being performed at the side, instead of

abaft the mast. When high enough, bend canting lines to the upper horns, leading on the opposite side of the top; cut the forward stops, and let them fall over the topmast head; directing them by hauling on the canting lines.

104. Another method is, having swayed the topmast up the distance of the mast-head above the cap, sway up the cross-trees, and let the after part rest on the lower cap, while the forward part rests against the topmast; secure it to the lower cap, then lower away the topmast, and it will fall over into its place.

105. This being done, sway up the mast high enough to lodge them on the shoulders (having tarred the mast in the wake of them and the rigging), and lash on the bolsters, which are similar to those for the lower rigging (51).

106. Place the girtlines on the centre cross-tree; sway up the pendants, which go over the mast-head first. If there are an even number of shrouds, the pendants are separate; if not, they are joined to the forward pair.

106 *a*. A convenient and neat manner of fitting the topmast pendants is, with a hook in one end and a thimble in the other; when used, they may be hooked to eye-bolts in the under part of the trestle-trees; and when not in use, may be unhooked and kept in the top. This contributes to the light and neat appearance of the mast-head.

107. The topmast shrouds are put over the mast-head in the same order that the lower rigging was, starboard forward shroud first, and so on.

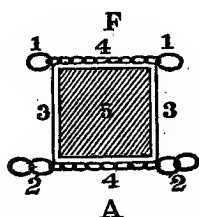
108. The shrouds being all over, shift the girtlines to the after horn of the cross-trees, send up and get on the

breast backstays, and then the standing backstays. (See 116).

109. Then shift the girtlines to the forward horn of the cross-trees, and send up the fore and aft stays, reeving the collar of the spring stay through that of the standing stay, keeping them raised above the rigging until it is set up.

110. Sometimes the gin blocks for the topsail tyes are lashed around the mast, under the eyes of the rigging; and sometimes they are hooked to an iron band around the topmast cap; the former is preferable of the two. But the best method is, to have them strapped with an eye, to go over the mast-head, under the rigging; placing them over next to the bolsters.

110 *a*. It is a neat way, and approved of, to fit the gin blocks for the topsail tye, fiddle blocks for the jib and staysail halyards, and topsail buntline blocks, spanned together, thus:—



- No. 1. The gin blocks.
2. The fiddle blocks.
3. The span lashing.
4. The connecting chain, or hide yarns selvageed.
5. Mast-head—F and A—forward and aft.

111. The topmast being rigged, sway it on end, and fid it; stay the mast and set up the rigging with a runner and tackle; after which come up the fore and aft stays, and place them fair over the eyes of the rigging.

112. The topmast may also be rigged after being swayed up and fidded; to do which, after the cross-trees

are on, get over the pendants, and hook the top-burtons to them; have girtlines on the cross-trees, and a light tackle below the cross-trees to answer the purpose of a stay; now sway up the mast and fid it, stay it, send up the rigging by the girtlines, and commence setting them up as soon as the first and second pair are over. After they are secured, send up the next two, and set them up as before, and so on, until they are all over and set up; after which the breast and standing backstays, and then the fore and aft stays; which being done, come up the backstays and stay the mast properly.

113. Dimensions of and Fitting the Topmast Rigging. Measure from the hounds of the topmast down to the after part of the lower trestle-trees. This distance, augmented by half the circumference of the mast-head at the hounds, will be the length of the swifter or forward shroud. To cut the rigging in the loft, place the samson-posts the above distance apart; to one of them make fast the end of the rope intended for the rigging, and flemish-coil all of it around both posts, having as many fakes as there are pairs of shrouds required. The inner fake being intended for the first pair, the next for the second, and so on. Now cut the bights of the fakes at the post to which the end is secured, which will leave each pair of shrouds separate. Before removing them, measure off on the bight of the first pair, once and a quarter the size of the mast-head, which will be the proper size for the eye of that pair. Draw a line across on all the shrouds, cutting this mark, which will show the proper places to put on the eye-seizings, forming the eyes of the shrouds.

114. The topmast rigging should be in size, six-tenths :

of the lower. The mast-head pendants bear the same proportion to the topmast, that the lower ones do to the lower mast in length. They are in size the same as the rigging.

115. For the length of topmast backstays, measure the distance from the hounds of the mast down to the centre of the deck, abreast of their dead-eyes in the channels, this being increased by one-half the circumference of the mast-head. The port pair being placed over the starboard, must be twice the diameter of the rope longer.

116. For the length of topmast breast backstays, measure from the hounds of the topmast down to the partners of the lower mast, which, augmented by one-half the circumference of the mast-head, will be the proper length for the starboard pair. The measure for the port pair will be the same, augmented as in the standing backstays, by twice the diameter of the rope.

117. The size of the fore and main standing topmast backstays is generally one-quarter less than the lower rigging. The size of the mizzen is the same as the main topmast rigging.

118. All breast backstays should be the same size as the standing ones.

118 *a*. I am disposed to think, that breast backstays may very well be dispensed with in all vessels, certainly in any under the size of frigates. Increase the size of the standing topmast backstays one-quarter, making them the same as the lower rigging, two on each side; and when properly set up, the topmast has quite sufficient support. The best argument in favor of them is, that in action you have "two strings to your bow," one.

of which being shot away leaves your topmast still supported. Use them, for this reason, in war, but dispense with all unnecessary top hamper in peace.

119. The proper length for the fore-and-aft stays can only be ascertained by a draught of the vessel's spars, giving the proper rake of each mast. The size of the standing stays is once and a half of the rigging, and the spring stays the same as the rigging, unless they are equalized, when the proper size for each will be once and a quarter of the rigging.

120. The topmast rigging is fitted in the same manner as the lower. It is cat-harpined in one-half of its diameter, the cat-harpin legs crossing each other abaft the mast; or fitted thus: The eye in one end of the cat-harpin leg is seized to the second forward shroud, it is then passed around the mast, and the eye in the other end seized to the second or third shroud on the same side.

121. See lower rigging (90) for the proper place to seize on the futtock staves, and the manner of fitting the cat-harpin legs. The size of the latter should be the same as the topmast rigging.

122. The eyes of the backstays are protected from the weather in the same manner as those of the shrouds; that is, they are served and covered with raw hide; they are also protected from chafe by being leathered in the wake of the lower yards and tops.

123. The standing backstays have dead-eyes turned into their ends, and are set up by lanyards to the channel dead-eye, in the same manner as the lower rigging. The breast backstays have blocks turned into their ends, and set up with a luff purchase; this is for the conve-

nience of coming up, for the purpose of bearing them abaft with the yards braced up.

124. The fore topmast stay reeves through the starboard forward sheave in the bees (or through a spectacle-strap and through bull's eyes), has a dead-eye turned into its end, and sets up to the starboard hawse-piece. The spring stay reeves through the port after sheave-hole in the bees, and sets up to the port hawse-piece in the same manner as the starboard one. The spring stay is used to hoist the fore-topmast stay sail on; though some officers recommend having a staysail stay, and not using the spring stay for this purpose.

124 *a.* I will here repeat that all stays are now set up, through bulls-eyes, to their own parts; and not by the use of dead-eyes and lanyards.

125. The main topmast stay, reeves through a heart secured abaft the foremast-head above the rigging, and sets up on deck, abaft the mast. The spring stay reeves *up* through a thimble strapped around the foremast, below the top, and sets up to the lower cap.

125 *a.* Or, as is now the general practice, since the use of trysails, both the topmast and spring stays are brought down and set up on deck, one on each side of the trysailmast.

126. The mizzen topmast stay sets up to the mainmast head, above the rigging. The spring stay reeves and sets up in the same manner as the main topmast spring stay.

127. The collars of all topmast stays are fitted with lashing eyes. For their proper lengths, and to preserve them from chafe, see lower rigging (5, 80). They should be well served, and leathered in their nips, as well as eyes.

CHAPTER IV.

MASTING AND RIGGING, CONTINUED.

TO GET ON A TOPMAST CAP.—TO GET OUT AND RIG A JIB-BOOM, AND SHIP THE MARTINGALE.—JIB-TRAVELLER.—DIMENSIONS OF RIGGING.—RATTLE DOWN THE LOWER RIGGING.

128. **To get on the Topmast Cap.** Sway it up to the cross-trees by the girtlines from the topmast head, and place it on the forward part; send aloft a topgallant studdingsail boom, point its upper end through the hole in the cross-trees for the topgallant mast, and lash the cap to it in the same manner as the lower cap was lashed to the topmast head (99). The top burtons being hooked to their pendants, hook their lower blocks to a strap around the lower end of the spar, which must be kept upright by a small rope passed around it and the topmast. A heaver or handspike must be attached to the heel of the spar for the purpose of slueing it. Now sway up by the burtons, and when the cap is high enough to clear the head of the mast, slue it by the heaver; and when the square hole in the cap is directly over the head of the mast, lower away and place it; unlash the spar and send it down on deck; ship the cap-shore and beat it down; cover the cap with sheet-lead, as was directed for the lower cap.

129. **To get on and rig a Jib-boom.** If you have not already placed the jib-boom on before rigging the

bowsprit (35), hoist it up now by one of the pendant tackles with its outer end forward. Point it through the heart-collars by a fore-and-aft tackle, and one on the fore stay. Reeve the heel-rope through a block at the bowsprit cap, through the sheave hole at the heel of the boom, and secure the end to an eye-bolt in the cap on the opposite side. This being done, rig the boom out far enough to put on the rigging, that is, with the inner sheave hole clear of the cap. Tar the boom end, and then put on the horses or foot-ropes, guys, blocks for the martingale stay, and the blocks for the topgallant bowlines. Reeve the jib-stay through the inner sheave hole in the boom, and bring the end in on the port side.

130. Single martingales are preferred to double ones, because they are neater, are less liable to stretch, and keep down the boom better.

131. Have a tackle on the jib-boom outside of the cap, by which hoist up the martingale; ship, and secure it. Reeve the standing part of the martingale stays through the upper sheave holes in the legs of the martingale, up through the blocks at the boom end, then through the hole in the martingale above the sheaves, and secure their ends by a knot. Put the gaub-ropes on the extremity of the martingale legs, and bring them in board.

132. Rig out the jib-boom by the heel-rope, until it is two-thirds of its length beyond the cap. Reeve the martingale stays through the fair leaders on the bowsprit, and set them up to bolts in the hawse-piece; set up also the jib-stay. After the boom is out the requisite distance, its heel is supported by a strap passed around it and the bowsprit, the two parts being frapped together between; and also by a chock from the heel of the boom

in on the bowsprit. This chock is generally confined to the bowsprit by screws, that it may be readily removed for rigging in the boom.

133. The **guys** are fitted in pairs, starboard and port, are rove through straps on the spritsail yard, and set up to eye-bolts inside of, or abaft the cat-heads.

134. The **foot-ropes** are in length three-fourths of the whole length of the jib-boom. They are fitted together with a cut-splice, which is served and goes over the boom end. There are overhanded knots taken, or turks heads worked in, at equal distances apart on them, to prevent the men from slipping while laying out on them.

135. The only method of determining the proper length for martingale stays and jib guys, is by a draught of the bowsprit and jib-boom. The size of the guys should be the same as the mizzen topmast rigging. The size of martingale stays, if double, is the same as the topgallant stay; if single, it must be proportionably larger.

136. The eyes of the foot-ropes and guys are wormed, parcelled, served, and leathered; the latter are also leathered in the wake of the thimbles through which they reeve, as are also the martingale stays in the wake of the martingale and fair leader.

137. The blocks for the martingale and topgallant bow-line are fitted with leathered straps.

138. The **collar of the jib-stay** is fitted in the same manner as that of the topmast stay (127), and is lashed around the fore topmast head above the other stays, or lashed to the topmast stay. The stay is served ten feet above the boom; it is also served and leathered in the wake of the traveller and sheave, and sets up by a luff

purchase, or by a lanyard to an eye-bolt, or over a thimble to its own part.

139. To rattle down the Lower Rigging. This should be done as soon as it is set up, for the convenience of the men in going aloft, while sending up and rigging the topmast. Commence below at the sheer-poles; lash capstan bars or other small spars on, outside of the rigging, and parallel with the sheer-pole, at convenient distances apart, up the rigging, for the men to stand on. Lash the eye, turned into the end of the ratline, to the forward shroud, clove-hitch it around the next, and so on to the after one, where it is seized as to the forward. It is hauled taut between each shroud, and the hitches well jambed. The ratlines should be fourteen inches apart on the lower rigging, and twelve or thirteen on the topmast. The men should have measuring rods to assist them. After the vessel is rigged, and before going to sea, particularly if the rigging is new, it will be necessary to set it up again, square the ratlines, and put on new seizings. Be particular at all times to keep them square and equidistant, which will greatly contribute to the neat and seamanlike appearance of the vessel; and at sea, have them frequently examined, insecure seizings renewed, and worn ratlines immediately replaced by new ones; that you may avoid accidents, and the men may feel a confidence in going aloft.

CHAPTER V.

MASTING AND RIGGING, CONTINUED.

GETTING ON BOARD, RIGGING AND CROSSING LOWER, TOPSAIL, AND SPRITSAIL YARDS.—FITTING AND REEVING BRACES, LIFTS, TYES, TRUSSES, SLINGS, HALYARDS, ETC.—GIVING THE DIMENSIONS OF THE RIGGING.

140. HAVING advanced thus far in rigging ship—the topmasts being on end, and jib-boom rigged out, and rigging set up—it will be proper now to rig and cross the lower topsail, and spritsail yards. It is proper to remark here, that you should attend to the stowage of the hold, to bring the vessel down in the water, before advancing further in the rigging than is contained in the foregoing chapter, with the addition of crossing the lower yards, which will be useful in hoisting on board tanks, provisions, etc. But we will leave the stowage of the hold for a separate chapter, and continue on in this until we have completed the rigging, and until she is “*all a tarnt.*”

141. **To hoist on board a Lower Yard** (fore, main, or cross-jack), proceed as follows:—If the yard is on the port side, see that the starboard yard-arm is forward. Reeve a hawser through the jear-pendant block, or other block, lashed to the head of the lower mast; bring its end down over the side, bend it to the slings of the yard, and stop it along to the forward or starboard yard-arm; place fenders up and down the side of the ship, and over

the bulwarks; you may also assist the hawser with pendant tackles; sway up, and as the yard-arm comes over the gunwale, cut the stops, and rest the yard on water-casks, or on the rail athwartships, immediately forward of its mast; and hang it by pendant tackles on each side of the slings, leaving room to put on the rigging. Both the fore and main yards are got in in the same manner. The cross-jack yard you may get in by the hawser used for the main. In a large vessel you may use two hawsers for the fore and main yards. The lower yards being in, and placed each before its respective mast, proceed to rig, and get them ready for swaying aloft.

142. **The Fore and Main Yards are rigged as follows.** Commence by leathering the yards in the slings, or centre, having the thickest part of the leather on the after part of the yard; place the D thimble, covered with parcelling, on the top, and exactly in the centre of the yard; lash it on with a strand of well-stretched rope (having leather underneath of sufficient width to cover the lashing), passed on the bight, with turns sufficient to fill up the score of the thimble, each turn to be hove taut with a Spanish windlass, or tackle; frap the parts of the lashing together with the ends, between the thimble and yard, and then cover them with the leather; sometimes wedges are driven in between the lashing and yard, to bring the lashing more taut, and the thimble more secure.

143. Next to the D thimble, and directly under the yard, seize on the *quarter-blocks* for the topsail sheets, the eyes of their straps seized together on top of the yard. The size of these straps must be that of the topsail sheets; they are wormed, parcelled, and leathered. After these blocks are seized on, they are spanned together; and on

this span, directly under the centre of the yard, is seized on a small double block for the slablines. The reason of this span is to keep the blocks in their places, and prevent their working out in hauling home the topsail sheets.

144. Next to the quarter-blocks are placed on the *trusses* and their straps. Each truss (starboard and port) is secured to the yard with a running eye: and directly outside of them is a thimble strapped around the yard, large enough for the truss to reeve through. Each truss leads around abaft the mast, then through its thimble on the other side, through a check-block on the trestle-trees, and (a block being turned *into* its end) leads up into the top; through which block, and another at the lower cap, reeves the truss fall, the hauling part of which leads down on deck.

145. That the trusses may lead fair, you must have one above the other; have the starboard one above; to do which you must slue the starboard truss and the thimble through which it leads, above the port ones. There is sometimes a cleat on the after part of the mast, having two holes for the trusses to lead through, being a *fair-leader*, to keep them from overlaying. But you must be careful that the holes are so large that the trusses may render easily.

146. The straps which confine the thimbles to the yard are wormed, served, and leathered, and are fitted double; the thimble embracing two parts of the strap, and the two bights seized together on the forward part of the yard. The rope used should be of the same size as the clewgarnet. The trusses must be wormed, served, and leathered, and be of the same size as the topmast rigging.

Their proper length can only be ascertained by measurement.

146. *a.* If the lower yards are fitted with iron trusses, which are now in general use, even for the largest vessels, the rope trusses, as described in the foregoing paragraphs, are, of course, not needed.

147. Next, and a very little outside of the trusses, seize on the *clewgarnet-blocks*. These are single blocks, and the eyes of their straps are seized together on the top of the yard; which being done, slue the blocks so far forward that the after part of the strap may be clear of the topsail sheet. The straps are wormed, served, and leathered, and should be of the same size as the clewgarnet. Next to this is a strap, to which is secured the standing part of the clewgarnet.

148. Seize on the *leechline-blocks* along the yard, so placing them as to bring the leech of the sail, when hauled up, taut along the yard. Their straps are the same size as the leechlines.

149. **To rig the Yard Arms.** Tar them where you are about to place the rigging. Put over the *jackstays*, the outer ends of which are fitted with eyes made to go closely up to the shoulders of the yard; these eyes are served; the other ends are led in through staples driven into the yard, and are set up, by thimbles spliced into their ends, to each other, at the slings of the yard. They are served their whole length, and leathered in the wake of the thimbles. The jackstay is for the purpose of bending the head of the sail to, and must be one-tenth larger than the head-rope of the sail that is bent to it.

149. *a.* Iron jackstays are now in general use, and are

with the iron trusses, fitted to the yard before being taken on board.

150. Next to these, are put over the yard-arms the straps and thimbles for the *head-earings*. These are two-thirds the size of the jackstay, and are served. They are for the purpose of hauling out the head of the sail to, by its earings. See *Bending Sails*.

151. Next to these are put over the *foot-ropes*. Their outer ends are fitted as the jackstays, with eyes sufficiently large to go over the yard-arm snugly to their places. Their inner ends are rove through stirrups attached to the yard (152.) After which, thimbles are spliced into their ends, by which, and a lanyard, they are connected, and then triced up to the D thimble. The length of the foot-rope should be such, that when fitted to the yard, the men may conveniently stand upon it in furling or loosing the sail.

152. The *stirrups* have thimbles spliced into their lower ends, through which the foot-ropes reeve. Their upper ends are formed into plats, which are passed twice around the yard, over and under from abaft, and secured to the bolts of the jackstay. They are one-third smaller than the foot-ropes.

153. Next to the foot-ropes are put on the *straps* for the yard tackles, having thimbles seized into them which hang under the yard. They are in size the same as the yard tackle, are served, and leathered.

153 *a*. Straps for the yard-tackles are now generally omitted in rigging the yard arms. A selvagee-strap being passed around the yard when required.

154. The *brace-block* is next put on. This is filled

with two straps connected by lock-thimbles. The one strap embracing the yard, and the other the block.

155. The strap for the *lift-block* goes on next, the block being strapped on top of the yard; the lift is rove through this, and another block hooked to an eye-bolt in the lower cap. If the lift is single, the block on the yard arm is unnecessary; the end or standing part goes over the yard arm with an eye, and the hauling part leads through a single block at the cap. This gives a neater appearance to the yard arm. The straps for lift and brace blocks are served and leathered, and are of the same size as the lift and brace.

156. Put on *straps* with thimbles; one a little within the sheave hole for the topsail sheet, for the burtons, the thimble being on top of the yard; another to secure the heel of the topmast studding-sail boom to, and another about half the distance in from the shoulders to the slings, for the rolling tackle: each strap to be the size of the rope for which it is used.

157. **The Cross-jack Yard is rigged thus:** The D thimble, quarter-blocks, and foot-ropes are fitted as for the fore and main yards, and with the like proportions. The truss being single, is fitted like the starboard truss to the fore and main yards. There being no sail bent to this yard, the jackstay, head-earing strap, clew-garnet, leechline, and stabline blocks are dispensed with, as are also the burton and yard-tackle straps. The brace-blocks are fitted on the forward part of the yard, one-sixth the whole length of the yard in from the extremity of the yard arm. The lifts are single, and their eyes are placed over the yard arms next after the foot-ropes,

leading, as the fore and main, through blocks at the lower cap.

158. The lower yards being rigged, reeve the braces, lifts, and purchase for swaying aloft, as follows:—*The fore braces* are rove *up* through blocks on the mainmast below the eyes of the rigging, *down* through the brace blocks on the yard, and the ends or standing parts secured to the main stay a little below the collar, or in at the main mast. *The main braces* are rove *up* through their leading block on the brace-bumpkin, *down* through the blocks on the yard, and their standing parts secured around the end of the bumpkin. *The cross-jack braces* are rove *up* through blocks on the mainmast, or on the after swifter of the main rigging, *up* through the blocks on the yard, and the standing parts spliced to bolts in the mainmast inside of the block, or secured to the after swifter above the leading block.

159. **The lower lifts**, if they are double, lead up through the blocks at the lower cap, *in* through the blocks at the yard arms, and the standing part secured around the strap at the breast of the block at the cap, or to the bolt to which the block is hooked. If the lift is triple, commence reeving *up* through the forward sheave hole of the block at the cap (which must be a double block), *down* through the block at the yard arm, *up* again through the remaining sheave of the block at the cap, and the standing part fitted with an eye, goes over the yard arm outside of the lift block, which eye must be slued aft sufficiently to clear the score of the block. Single lifts are fitted and rove as before directed (155). They are served in the wake of the topmast rigging, the tops, the blocks at the cap, and over the eye

on the yard arm. Into the lower end, or hauling part which leads from the cap-block down by the mast, is turned a thimble, to which is hooked the double block of a tackle, the single block of which is hooked to an eye-bolt in the deck.

160. Send aloft the *slings* for the lower yards. They are fitted with eyes spliced in their ends, which lash together abaft the mast and over the rigging; and in large vessels, sometimes over the lower mast-head, in which case they have a back-lashing abaft the mast. In the bight of the slings is seized a large thimble, of a size equal to the D thimble on the yard; this leads down through the pigeon hole in the forward part of the top, and hangs a very little below it. The length of the slings must be determined by measurement, which will vary according to the manner of fitting them. The main should be, in size, equal to the main stay or messenger; the fore nine-tenths of the main; and the cross-jack the size of the mizzen rigging. They are wormed, parcelled, served, and leathered; and their eyes are parcelled, and marled with spun yarn.

160 *a*. Chain slings are now in general use for all lower yards.

161. In large vessels *jeer-pendants* may be used to strike or sway aloft the lower yards by, and are rigged thus: The ends, which are pointed, are rove through the jeer-blocks at the lower mast-head, one on each side, from aft forward, are brought down, and made fast to the quarters of the yard by a fisherman's bend. The other ends of the pendants are toggled to the upper blocks of the jeer purchases, the lower blocks being secured on the spar or main decks. For the size of jeer-

pendants allow once and a half, in inches, the circumference of the yard at the slings, in feet. Their length should be twice the distance from the hounds of the lower mast to its partners.

162. In frigates and smaller vessels, the pendant-tackles are used instead of jeers, to sway aloft or strike the lower yards with ; by securing the upper block at the cap, and hooking the lower block to straps around the quarters of the yard. And, indeed, most officers of the highest standing in point of experience and intelligence, ridicule the practice of using any other means than the pendant-tackles, in vessels of any class.

163. But to proceed. Man the lifts and jeer-falls or pendant-tackles, and sway up the yard, steadying it by the braces, and keeping it clear of the mast by guys leading forward ; when it is up as high as the futtock staff, or a little above, to allow for the stretch of the slings and lanyard, reeve the lanyard, which is spliced to the slings, alternately through the D thimble on the yard, and the thimble in the slings, until it is expended. As a rule, the size of the lanyard should be one-third or one-half the size of the slings. If smaller, more turns must be taken. It should be also of *stretched* or quarter-worn rope.

164. The lower yards in larger vessels are frequently, and should always be, slung in chains, which are infinitely more secure, and always keep the yard in its place. And all vessels have *chain slings* fitted, both for the lower yards and gaffs, to hang them by during an action.

165. Reeve the trusses (144, 145, 146) and truss falls ; haul them taut ; square the yards by the lifts and braces ;

unrig the jear pendants, or send down the pendant tackles.

166. There are other blocks on the fore yard, for the lower studding-sail clewlines and inner halyards; but those will be spoken of in the proper places.

167. The **topsail yards** are taken on board in the same manner as the lower yards, having the hawsers rove through blocks at the topmast head. When clear of the bulwarks, bear them aft or into the gangways, place them for rigging, and cast off the hawsers.

168. **To rig the Topsail Yards.** Commence by leath-ering the yard in the slings, and then lash on the *tye-blocks*. In line-of-battle ships and frigates there are two, and they are lashed on as near, on each side of the centre of the yard, as possible; they stand with their sheaves fore and aft on the top of the yard; they are double strapped, and the bights of their straps are seized together on the forward part of the yard. The size of the strap is that of the topgallant shroud.

168 *a*. Some officers approve of fitting the *tye-blocks* with two straps and lock thimbles, the straps around the yard being formed of a strand, hove on in the manner of a D thimble (142), and the blocks to stand athwart. An iron band around the yard, with an eye in it, is preferable.

169. In sloops or smaller vessels there is but one *tye-block*, which stands with its sheave athwart-ship, is exactly in the centre, and lashed as before directed.

170. The **parral**, which is used to confine the yard to the mast, is next to be put on. It is fitted of one piece of rope, in small vessels, and of two in large. In the former case an eye is spliced into each end, one end

is passed under the yard, over, and seized together by the eye close to the yard; and after the yard is crossed, the other end is taken around abaft the mast, and secured around the yard as the first was. In the other case, the long leg is passed as in a single parral, and seized together close to the yard around both parts, leaving the eye (which must be on top), clear; the short leg (having an eye in each of its ends) is only long enough to go around the mast above the long leg, and seized to the eyes of the long leg; another seizing is passed around both legs on each side of the mast, called quarter-seizings. Of course but one side of the parral is secured, until the yard is crossed. They must be preserved from the weather and from chafe, by worming, service, and leather.

171. The **quarter-blocks** for the topgallant sheets and topsail clewlines, are next seized on around the quarters of the yard; place them near enough to the slings for the topgallant sheets and topsail clewlines to lead down fair through the lubber's hole. The blocks are double, are under the yard, and the eyes of the straps seized on the top (143).

172. Outside of these are seized on *straps* for the standing parts of the topsail clewlines; then the straps for the rolling tackles, and for the heel of the topgallant studding-sail booms; and two straps a little within the topgallant-sheet sheave-hole for the burtons to hook to. These straps are served, leathered, and have thimbles seized into their bights, and are slued in a position fair for the tackles that hook to them. The size of the straps is the same as the falls of their tackles.

173. Tar the yard-arms preparatory to placing over

the rigging; put on the *jack-stay*, and *straps* for the head-earring (149, 150); the *foot-ropes* and stirrups (151, 152), differing from those on the lower yard, in this; that the inner ends cross each other at the slings of the yard, each one setting up at the opposite quarter of the yard.

174. The **Flemish horses**—for the men to stand on when laying out on the yard arm—are spliced around thimbles on the boom-iron or goose-neck at the extremity of the yard, and the inner end is seized to the yard within the topgallant sheet sheave-hole; they are served in the wake of the foot-ropes, and over the eye; and are not put on until the yard is across and rigged. They are three times the length of the yard-arm, and are the size of the foot-ropes.

175. Next to the foot-ropes are put on the *brace-blocks and lifts*, but not until the yard is swayed up and down. The brace-blocks are fitted, and with the like proportions, as those for the lower yards. The lifts are single; they go with eyes over the yard-arms, and are leathered, and served over their eyes; their other ends lead through the lower sheaves of the sister blocks in the topmast rigging; have thimbles turned into them, and set up by lanyards to the trestle-trees.

176. The fore and main topsail yards are rigged alike. The mizzen is without the straps for studding-sail booms and burtons, has but one tye-block, and a single tye and parral.

177. The yards being ready for swaying aloft, bend one of the hawsers (167) to the slings, and stop it out to the forward yard-arm; double the other hawser by reeving it through one of the tye-blocks; by these sway

the yard up and down, and rig the yard-arms; the upper lift is put on in the top, the lower one on deck, and the braces rove. Now sway aloft, cast off the stops as required, and take through the slack of the lower lift as the yard rises. When high enough, hook the burton to the lower yard-arm, cast off the quarter stop, and cross the yard by the burton and lower lift. Square the yard by the lift and braces, and secure the parral (170). Generally, particularly in smaller vessels, but one hawser is used.

178. **Reeve the tyes** through the gin-blocks at the topmast head (110), through the tye-block on the yard, from aft forward, and then secure the ends around the topmast head by clinching. To the other end of the tyes are attached the *fly-blocks*, which are the upper blocks of the purchase by which the yard is hoisted. For the length of tyes, allow twice the extreme length of the topmast to which they belong; for their size, one inch less than the topmast rigging; they are served two-thirds of their length from their standing parts.

179. Sometimes there is a double and a single tye; the double fitted as before directed; and the single one rove through the gin-block at the mast-head, and the standing part secured around the slings of the yard.

180. The **topsail halyards** are a luff-purchase; the lower block is hooked to a bolt in the channels, through which, and the fly-block in the lower end of the tye, are rove the halyards; the standing part being secured to the lower block. The halyards are one-half the size of the tye.

181. **To reeve the Fore-topsail Braces.** Com-

mence with that which will be the standing part, reeve it up through the blocks secured to the bibbs at the mast-head, through the span blocks seized on below the collar of the main stay, *up* through the blocks on the yard, and secure the ends to the main topmast head; sometimes the standing part is secured to the stay, and the running part rove through blocks at the topmast head, but the former is preferred.

182. The **main-topsail braces** are rove through span blocks at the mizzenmast below the top, *up* through the blocks on the yard, and the end secured to the mizzen topmast head; or, both the braces being in one, it may be middled and clove-hitched around the mizzenmast, the ends rove *up* through the blocks on the yard, and *down* through blocks at the mizzen-topmast head.

183. The **mizzen-topsail braces** are rove through blocks at the mainmast head, through small double blocks at the after part of the lower cap, through the blocks on the yard, and the ends made fast near the blocks at the mainmast head. The hauling parts of all braces lead through their proper leading blocks at the belaying rails by the masts.

184. **To get on board a spritsail yard**, proceed in the same manner as for a fore topsail yard, getting it in on the port side.

185. Leather it in the slings, and seize on the *parral*, which is fitted in the same manner as for a topsail yard, with the exception of its being long enough to be passed around the bowsprit.

186. The *tye* is fitted in the manner of a pair of slings, with a hook and thimble seized in one of its

bights; it is passed around the yard, the hook and thimble rove through the other bight, and jambed.

187. Seize on the *straps* with thimbles for the jib guys, and further out, a little inside of the shoulders, straps for the flying-jib guys, and inside of these straps for the flying-jib sheets. Nail on the stirrups and put on the foot-ropes over the yard-arms.

188. Bring the starboard lift and brace around under the bowsprit, rig the outer yard-arm, and put on the port lift and brace.

189. Reeve a hawser through a block lashed to the fore topmast stay, pass the end under the bowsprit, bring it in on the port side, bend it to the starboard quarter of the yard, and stop it along to the outer yard-arm; have a tackle from the extremity of the bowsprit, which hook to a strap around the slings of the yard; and another from the fore stay for the purpose of lighting it off the bulwarks. With these tackles and the hawser get out the yard, casting off the stops of the hawser as the starboard yard-arm passes the bowsprit. When the yard is out, hook the tye to an eye-belt under the bowsprit, square it by the lifts and braces, and secure the parral.

190. Put, on each yard-arm, *guy-blocks* for the lower boom-guys, and two on the quarters of the yard. Reeve the jib and flying-jib guys and set them up.

191. The **spritsail braces** lead through blocks seized to the collar of the fore-stay, through span-blocks on the stay below the collar, through the blocks on the yard, and the standing part secured to the stay below the span-blocks. The braces should be of a size between the fore and mizzen topsail braces.

192. The **lifts**, similar to the topsail lifts, reeve through blocks at the bowsprit cap, and set up at the knight-heads. They are in size nine-tenths of the topsail lifts.

193. It is now a common practice to lash the spritsail yard across the knight-heads above the bowsprit; in which case, the parral, tye, and lift, are of course dispensed with. The jib and flying-jib guys lead through their respective straps on the yard, and set up abaft the cat-head. This gives the vessel a neater appearance forward, and the yard affords a sufficient support to the head booms, which support might be augmented by having the yard squarer than if suspended under the bowsprit.

193 *a*. **Whiskers**. Iron outriggers, projecting from the cat-head, are much used, in smaller vessels, in place of spritsail yards, or gaffs—through which the head guys &c. are rove, and set up at the fore chain—but clear of the anchor-flukes.

CHAPTER VI.

MASTING AND RIGGING, CONTINUED.

RIGGING A SPANKER BOOM.—GAFFS FOR SPANKER AND TRY-SAIL.—TOP-GALLANT, ROYAL, AND SKYSAIL MASTS.—FLYING JIB-BOOM.—DIMENSIONS OF, AND FITTING THE RIGGING.—RIG AND CROSS TOP-GALLANT AND ROYAL YARDS.

194. **To rig a Spanker Boom.** First put over its outer end, the *foot-ropes*; these are fitted with a cut splice, which is covered with canvas; the inner ends, one on each side of the boom, have eyes spliced in them, and are seized to the boom with a rose seizing, one-third the distance in from the outer end, that third being abaft the taffrail; they are served a short distance from the eyes; their length is half the extreme length of the boom, and their size the same as the foot-ropes on the mizzen-topsail yard.

195. Then put on the *guys*; their outer ends are joined by a cut splice, which is covered with canvas; the other ends have single blocks turned in them, and are set taut by a luff-purchase leading to the main brace bumpkin; they are served a short distance from both ends; are four-tenths the length of the boom, and twelfthths the size of the topping-lifts.

196. Fit two single blocks for the spanker sheet, to the band for that purpose around the boom, just within the taffrail; two double blocks of the same size are fitted to hook to the bolts in the taffrail: through these blocks

are rove the spanker sheet. Their straps are leathered, and are the same size as the sheet, and main topsail braces.

197. The **spanker sheets and guys** are sometimes fitted together, thus:—The standing part goes over the end of the boom as the guy is fitted (195). It is then rove alternately through two double blocks, one hooked to the taffrail, the other to the band on the boom—the fall, or hauling part, leading from the boom, and belayed to a cleat on the taffrail. It is a neat arrangement, and all parts will bear the proper, and an equal strain.

198. About one-fourth the distance from the outer end of the boom, is secured an iron band, having a round semi-circular piece of iron projecting from the upper part of it athwart, around which the outer ends of the *topping-lifts* are spliced; the other ends are rove through blocks toggled under the top; into the lower end of each is turned a double block, which is the upper block of a luff-purchase, the single or lower block being hooked down by the mizzen chains. The topping-lifts are served in the wake of the gaff and blocks and over the eye-splice; their size should be the same as the cross-jack lifts. Their length obtained by measurement.

199. Sometimes, in small vessels, the boom is supported by a single lift, leading from its outer extremity through a *cheek-block*, or bull's eye, on the gaff; from thence to the topmast head, and sets up to the lower trestle-trees. It is rarely fitted thus in vessels of war.

200. **To rig a Gaff.** The *vangs* (serving as guys, to support the end, or peak, of the gaff,) are fitted with an eye formed in the bight, or with a clove-hitch, which is secured on the gaff at about one-sixth from the end, in; their lower ends are set up to the extremes of the taff-

rail by gun-tackle purchases ; service is put over the eye, extending a short distance below the gaff, and over the splices of the blocks. For size of vang, see *throat and peak halyards* (206).

201. The outer *peak halyard block* is put on the gaff one-third of its length from the outer end, or a very little, if any, within the leech of the sail ; the inner one two-thirds, the straps of these are fitted around the gaff like gromets ; or in the common mode, having the splice at the breast of the blocks. They are kept in their places by cleats on the gaff, inside of the strap. The double block for the peak halyards is strapped to the bolt in the after part of the mizzen cap ; the halyards are rove *up* through this, *in* through the blocks on the gaff, the inner one first ; and the standing part secured to the block at the cap, the fall leading on deck.

202. The upper block of the *throat-halyards* is secured under the top, and the lower block is hooked to an eye-bolt in the gaff, on the jaws ; the straps of these blocks are leathered, or covered with canvas, and are the same size as the halyards (206).

203. Seize two pair of small span-blocks on the gaff, for the *peak brails*, as the leechline blocks of a course (148), so that the after leech of the sail may be hauled up taut along the gaff ; two triple-blocks are strapped, one on each side, to the eye-bolts under the jaws of the gaff, for the *throat brails* and for leaders to the peak brails. The straps of these blocks are covered with canvas.

204. Fit a small double block for the *ensign halyards*, to an eye-bolt driven into the outer extremity of the gaff.

205. Fit the *jaw-rope* with its rollers to the gaff.

206. Having rove the throat and peak halyards, hoist up the gaff a sufficient height to secure the jaws to the trysail mast by the jaw-rope; reeve the ensign halyards; hoist up the gaff to its place, and steady it by the vang. The size of the throat and peak halyards is the same as the spanker sheet.

207. Gaffs for the fore and main trysails are rigged in the same manner.

207 *a*. A spanker is sometimes bent to hoops, which traverse on the gaff, the head of the sail hauling out by an outhaul, termed the *peak outhaul*. In which case the peak *halyards* must be fitted differently, thus—It reeves *up* through a single block on the after part of the mizzen cap, *in* through a single block on the shoulders of the gaff, outside the sheave-hole for the peak outhaul, the standing part secured at the cap, and the fall leading on deck. The *outhaul* leads *out* through a single block under the top, *down* through the sheave-hole within the shoulder of the gaff, and the standing part secured to the peak of the sail. The *downhaul* leads out through a block at the jaws of the gaff, along the gaff, and is secured to the peak of the sail. Brails are fitted as before, the leading blocks being secured to the hoops on the gaff. This manner of fitting a spanker is not as neat as the former, nor does it possess any advantage over it for a vessel of war.

208. **Top-gallant and royal-masts** are generally in one stick, in which case the whole is termed a *pole top-gallant-mast*; but if they are distinct, as is sometimes the case in vessels of the largest class, then the top-gallantmast is called a *short top-gallantmast*, and the royal-

mast either a *fidded* or *sliding-gunter* royal-mast, as the case may be.

208 *a.* A *stump* top-gallantmast is different from a *short* top-gallantmast, in this. The former, being used only in heavy weather, is fitted without cross-trees, and not intended for any mast above it; the latter, as directed above (208), is fitted with cross-trees, and carries a fidded royal-mast.

209. **To rig a short Top-gallant Mast.** Send up the top-gallant cross-trees, as was directed for the topmast (103, 104); to which, before it is sent aloft, is secured the bolsters (see topmast, 105); send the rigging up by girt-lines, and place the eyes over the hole in the cross-trees, through which the mast will be pointed, in the same order that the rigging of the topmast was put over (105 to 109).

210. Reeve the top-gallant yard-rope, for a long mast-rope, through a block hooked to the topmast cap, on the side opposite to that intended for the mast pendant; overhaul down its forward end through the hole in the cross-trees, forward of the top and yards. The mast being previously laid upon the deck, with its head forward, bend the mast-rope to the fid hole, and stop it along to the head.

211. Sway up the mast, steadying it by a heel-rope from the deck: as it enters the topmast cross-trees, cast off the upper stops, and when high enough for the cross-trees to rest upon the shoulders, take a turn with the mast-rope; tar the head of the mast, place the rigging, and put on the top-gallant cap.

212. Reeve the mast-pendants as you were directed for the top-mast (101); a tackle is attached to it abaft,

leading to the lower trestle-trees; after this is secured set it taut, and unreeve the long mast-rope.

213. The mast being rigged, sway it on end; stay it, and set up the shrouds and backstays.

214. **To rig a Pole Top-gallant Mast.** Send up and place on the topmast cap, the *jack-cross-trees*, or (as they are usually termed) *jacks*. It is formed of iron, having an iron cylinder called a *funnel* connected with it, to fit the eyes of the rigging, and of sufficient capacity to admit the royal-mast to pass through it with ease; it is covered with tarred parcelling, and has a gromet around it to supply the place of bolsters; it is sometimes fitted without a funnel, and with only one horn, which gives the mast-head a neater appearance.

215. Send up the *top-gallant* rigging, as by the former method, and place it over the funnel in the order before directed, having the fore-and-aft stays under; after which the *royal* rigging is sent up, and placed on the funnel in the same manner that the rigging of the top-gallant mast was; then the *skysail* stays and back stays.

216. Have also the *truck*, with its signal halyards rove, and the spindle for the lightning conductor, aloft in readiness.

217. Send up the mast, proceeding as before, having previously placed gromets on the shoulders, for the royal and skysail rigging to rest upon.

218. As the end of the *pole* goes through the funnel, secure the truck for the signal halyards, and the spindle for the lightning conductor; hook the conductor to the spindle; then sway up the mast, and place the *skysail* rigging; having done which, sway up again and place the *royal* rigging; and then sway up and place the funnel,

on which is the *top-gallant* rigging; forcing down and placing square the rigging, and keeping the mast on the right slue, that the sheaves in it, for the top-gallant, royal, and skysail halyards, may be exactly fore and aft.

219. Before placing the rigging, as the mast goes up, tar the head of each mast over the gromet.

220. **Dimensions of, and fitting the Top-gallant, Royal, and Skysail Rigging.** The top-gallant rigging is set up to the futtock shrouds at the topmast cross-trees; or, being rove through the holes in the horns of the cross-trees, set up to an iron band, or a strap, around the topmast in the wake of the futtock staves; or, after leading through the cross-trees, and between the topmast shrouds above the futtock staff, lead down and set up in the top. The first may be the better method in ships of the first class; the second is most practised in frigates and sloops of war. In the first case, the proper length of the star-board forward shroud will be the length of the mast, from the hounds to the heel, augmented by half the circumference of the mast-head in the wake of the rigging. In the second case, the former measurement increased by the distance from the iron band around the mast, to the holes in the cross-trees; and in the third case, increased by the length of the topmast, exclusive of mast-head.

221. **The top-gallant rigging** should be five-sevenths of the topmast. For the manner of cutting the rope intended for the rigging, with reference to the proper length of each shroud, and the place to pass the eye-seizings, I refer you to the method given for the topmast rigging (113.)

222. There are never more than three shrouds on a side, and frequently there are but two; the two forward ones on each side are fitted in pairs; the after

ones, one on each side, form a pair, and are connected by a *cut or horse-shoe splice*.

223. Each pair of shrouds should be served over the worming and parcelling, low enough to extend below the futtock staves. The swifsters are served their whole length, and if the rigging leads into the top, the service must extend below the futtock staves of the topmast rigging.

224. **The futtock-shrouds** have thimbles spliced in their upper, and eyes in their lower, ends; they are rove down through the holes in the horns of the cross-trees, and set up around the topmast shrouds and futtock-staves (95); they are served their whole length. To the thimble in the upper ends sets up the top-gallant rigging (220).

225. The length of the forward futtock-shroud should be half the length of the topmast head; and the after ones increased in length, in proportion as the after horns of the cross-trees exceed the forward ones; they are of the same size as the rigging.

226. **The fore-and-aft stays** for stump masts are fitted like the topmast stays; but for the pole mast they are fitted with eyes to go snugly around the funnel or mast-head; the eyes, and a short distance below them, are wormed, parcelled, and served.

227. For length and size see *topmast stays* (119).

228. **The fore top-gallant stay** leads through the outer sheave-hole in the jib-boom, comes in on the star-board side, and sets up to a bolt in the hawse-piece; the *main* leads through a chock in the after part of the fore topmast cross-trees, and sets up in the top, or on deck, abaft the foremast. The *mizzen*, in some vessels, leads

through a chock in the after part of the main topmast cross-trees, and in others reeves through a thimble secured to the main cap, and sets up in the top.

229. To determine the length of *breast-backstays*, measure from the hounds of the top-gallant mast down to the partners of the lower mast. For fitting them, see *topmast* (123). In size, the breast backstays are six-sevenths of the standing backstays. There is a double block turned in the ends, which is the upper block of a triple purchase; the fall leading from the threefold block in the chains, inboard. They are served a little below the eye, above the block, and in the wake of the lower yards.

230. There is but one *standing-backstay* on each side. For the length of each, measure from the mast-head down to the centre of the deck abreast of its bolts in the channels. The size of the fore and main should be that of the mizzen topmast rigging, and the mizzen that of the main top-gallant rigging. They have thimbles turned in their lower ends, are set up to bolts in the channels, and served as the breast backstays.

231. **The topgallant shrouds** should always be rattled down. If the objection to this is, that a ship looks neater and lighter aloft without it, I answer, take off the ratlines in port, but keep them on at sea. The distance between the ratlines to be the same as on the topmast rigging.

232. **To send up a fidded royal-mast**, proceed as before directed in sending up a top-gallant mast, having the royal mast-rope rove, from aft forward, through a block hooked to the topgallant cap, through the square hole in the cross-trees, and down forward of the yards

and top. The end is then rove through the sheave-hole in the heel of the mast, after which take a clove-hitch with it around the mast and mast-rope, rack the two parts of the mast-rope together abaft the mast, below the clove-hitch, and stop the mast-rope to the head of the mast.

233. Sway the mast aloft, proceeding as before, and casting off the upper stop when the head of the mast is above the cross-trees. After it is pointed through the cap, put on the truck, spindle, and skysail rigging; cast off the end of the mast-rope, and make it fast to an eye-bolt in the cap; the mast hanging in the mean time by the racking abaft around both parts of the rope: after the end is secure, cast off this racking, and sway up the mast sufficiently to place the royal rigging.

234. There are but two *royal shrouds* on a side. For the proper length of royal rigging, and fitting it, see topgallant rigging (220, 221, 222). For the size, use the same proportion to the topgallant, that that bears to the topmast rigging.

235. The **standing-backstays** to the fore and main, should be the same size as the topgallant shrouds; and the mizzen, the same as the main royal shrouds. The *breast-backstays* six-sevenths of standing ones.

236. For length and size of *fore-and-aft stays* see topmast (119). The *fore* reeves through the outer sheave hole in the flying jib-boom, and sets up to an eye-bolt in the port hawse-piece. The *main* leads through a thimble or block at the top-gallant cross-trees or jack, and sets up in the fore top. The *mizzen* leads through a thimble at the main topmast cap, and sets up in the main top.

237. Sometimes, with a *short top-gallant mast*, a *sliding-gunter royal-and-skysail mast* is used instead of a fidded one. The difference is that it is sent up abaft, pointed through a withe at the top-gallant mast-head, similar to the one used on the end of the jib-boom (239); and when "*on end*" the heel rests on the topmast cap, where it is secured by a step or lashing. The rigging does not differ from that already directed. And sometimes, with a "*short pole*," terminating a little above the royal mast, a *sliding-gunter skysail-mast* is used. These masts are easily struck in blowing weather, are light, and present a neat appearance.

238. One *fore and aft stay*, and one *standing-back-stay* on each side, constitutes the skysail rigging. They bear the same proportion to the royal rigging that that does to the topgallant. The *fore* skysail stay leads through a strap and thimble at the flying jibboom end. The *main* through a strap and thimble at the fore royal-mast head, and the *mizzen* through a thimble strapped at the main topgallantmast head.

239. **Flying Jib-boom.** Before swaying up the fore topgallant mast you should get out and rig the flying jib-boom. Ship the *withe*, which is made of iron, the square part being fitted on the end of the jib-boom, and the round part, being on the starboard side, through which the flying jib-boom is to be pointed.

240. Reeve a heel-rope through a block at the jib-boom end, bring it in, bend it to the heel of the flying jib-boom, and stop it along to the outer end. Launch the boom out over the bulwarks, and haul out on the heel rope, having slip-ropes around the boom, and along the bowsprit, to keep it up as it goes out; and in a large

vessel you may have a small tackle or jigger from the fore topmast stay, to assist the slip-ropes.

241. When the outer end is through the withe, put on the rigging, in the same order that you did on the jib-boom. Reeve the guys, martingale, flying-jib, royal, and skysail stays; after which rig out the boom, and set up the rigging.

242. The heel of the flying jib-boom rests against the bowsprit cap, and is lashed to the jib-boom, resting on a saddle between it and the jib-boom.

243. The **flying jib stay** is lashed to the collar of the fore topgallant stay, or goes around the topgallant mast head with lashing eyes above the rigging; the end is rove through the inner sheave hole in the boom, leads in on the starboard side, and through an iron cleat on the side of the dolphin-striker, and through a strap inside of the head to the bow, and is set up as the jib-stay does. For its length and manner of fitting, see jib-stays (138). Its size should be that of the fore topgallant stay.

244. There should be one *flying-jib guy* on each side, of the same size as the flying-jib stay.

245. For the manner of fitting and reeving the gear on the flying jib-boom, see the rigging of the jib-boom (135, 136).

246. The boom being out in its place, secured, and rigging set up, unreeve the heel-ropes.

247. **Rig and cross Top-gallant and Royal Yards.** The general directions given for rigging a topsail yard, will be observed in a top-gallant and royal yard. Commence in the slings, and strap a thimble on top of the yard for the tye; fit the parral, which is a single one;

and the quarter blocks, which are double, for the clew-lines of its own sail, and the sheets of the sail above. The jack-stay and foot-ropes are fitted as on the topsail yard.

247 *a.* Top-gallant and royal yards are now fitted with iron sling bands.

248. The lifts and braces on each side are connected, being fitted together with an eye to go snugly over the yard arms. There is also a thimble strapped on the top-gallant yard for the heel of the royal studding-sail boom.

249. The proportions to be observed for the rigging of the yards you will easily determine, by reference to the rigging of the topsail, as compared with that of the lower, yards. The same diminishing ratio being observed from one yard to the next above.

250. When not crossed they are kept in the lower rigging, the top-gallant yard on one side and the royal yard on the other; their lower ends resting in the channels, or in a becket; and the upper end secured to the forward shroud. They are generally kept rigged with the sails unbent, until on the eve of sailing; the sails kept in the sail-room unexposed to the weather.

251. The top-men are exercised in vessels of war, morning and evening, in crossing and sending down these light yards, as the colors are hoisted or hauled down; which, being one of those exercises witnessed by all the vessels around you, should never be performed in an unseamanlike manner.

252. In preparing to *cross a top-gallant yard*, the yard-rope is rove through the jack-block (which is a large single block); the forward end is taken over the topmast cross trees, between the rigging and mast, brought down

forward of the yards and top, and bent or hooked to the thimble in the slings of the yard; it is confined to the upper yard arm by a gromet around both; and to the quarter of the yard by a lizard, which traverses on the yard-rope, is rove through the thimble on the yard for the royal studding-sail boom, and the end secured at the slings. The after or hauling part of the yard-rope is kept coiled down in the top. The jack-block is then triced up to the top-gallant mast head by the top-gallant halyards; and the after part of the yard-rope paid down on deck, and rove through a snatch block hooked to the deck abaft the mast.

253. The lift and brace, for the upper yard arm, is kept at the topmast head, and the lower one is overhauled down to the topmast rigging, abreast of the topsail yard, or forward of the yard down into the top, a man being stationed to attend to each. In swaying the yard up, as the upper end reaches the topmast cross-trees, the yard arm is released from the gromet, and the lift and brace put on; and when the lower yard arm is high enough, the lower lift and brace are put on—the lower lift is immediately hauled taut by a man in the top, who takes in the slack, keeping it taut as the yard goes up.

254. The yard is then swayed up higher, until its centre is above the topmast cap. The man in the cross-trees casts off the lizard from the slings of the yard, and keeps it up-and-down ready for crossing.

255. Have hands by the braces and lifts, man the yard-rope, and when ready sway up on the yard-rope, and lower lift, steadying the yard by the braces. When it is across, settle it down on the cap and secure the parral.

256. Trice down the jack-block, by letting go the hal-

yards and hauling down on the yard-rope. Cast off the yard-rope from the slings of the yard, and hook the tye to its thimble; haul taut the halyards, and square the yard by the lifts and braces.

257. Round the yard-rope up into the top and coil it down snugly.

258. **To send it down.** After tricing up the jack-block as before; and having the yard-rope bent to the slings of the yard, and confined to the quarter by the lizard; and a tripping line from the opposite yard arm leading down on deck; the lift on the side the yard is going down overhauled, and a little of the brace hauled in to clear the yard of the rigging; hands by the braces and lifts. Man the yard-rope, and lift on the side that the lizard is. Sway, and the yard will go clear of the cap and hang by the yard-rope, then lower away, clearing the yard arms of the lifts and braces, and bearing it clear as it goes down. Secure it in the lower rigging as before.

259. Stop the lifts and braces in snugly at the mast-head, trice down the jack-block, and coil down the yard-rope.

260. If the top-gallant yard-rope is used in place of the tye, it is rove through the sheave-hole at the mast-head, and the jack-block is then dispensed with in sending the yard up and down. And when the yard is crossed at sea, the double block of a luff purchase is attached to the yard-rope abaft the mast, the single block hooked or secured in the top. The fall (being the halyards) leading down on deck.

261. For the royal yards the halyards are single, leading from the sheave-hole in the mast down on deck, the

forward end being attached to the slings of the yard. It is a good arrangement, at sea, to have the royal halyards to lead down on each side of the deck; thus, Take up another rope, of the same size, and bend it to the royal halyards abaft the mast, leaving enough of the halyards, above the bend, to allow the yard to be settled down to taut lifts. By this arrangement you can always have the weather halyards taut, to aid in supporting the mast, without shifting them over from side to side, as often as the tack is changed.

261 *a*. In exercising topgallant and royal yards in port, you should have checking-lines attached to the eyes of the lifts and braces, by which they may be hauled in to the mast-head the moment they are freed from the yard arms.

CHAPTER VII.

PURCHASES.

SECURING THE LOWER YARDS.—PURCHASES USED FOR HOISTING IN BOATS, GUNS, ANCHORS AND OTHER ARTICLES.—HOISTING IN BOATS, AT ANCHOR AND AT SEA.

262. IN all those operations, on shipboard, requiring the application of power, for hoisting, transporting, swaying aloft, or lowering articles, of more or less weight, *purchases* are used of the power requisite for the purpose. A *single whip*, formed by a rope traversing over a single sheave, will be used to raise a light article, as an empty cask; which power can be increased by applying another whip to the fall of the former, this is termed *whip on whip*. A *gun-tackle purchase*, formed by two single blocks and fall, will be used when a still greater power is required; and if more is still necessary a *luff-tackle purchase*, being a double and single block and fall. And beyond these the power of the purchase may be magnified at pleasure, by increasing the number of sheaves over which the fall passes, or by applying one purchase to the fall of another, or to a runner. In the latter case a purchase is termed *movable*, in the former *fixed*. All purchases, of whatever power, are named from the uses to which they are applied, or from their peculiar construction. Some of which will be described in the exercises contained in the present chapter.

262 *a*. In hoisting on board any article from without the ship, one, or both, of the lower yards are used, generally the main yard. And it is an important matter that the yard on which the purchase is used should be well secured, or supported, that it may not be sprung, or the rigging endangered during the operation.

263. In rigging the fore and main yards (142), there should be straps with thimbles placed within the shoulders, for burtons. To these straps are hooked the single blocks, and to eye-bolts in the lower caps the double blocks, of the burtons (the fall leading on deck). These are for the purpose of relieving the lifts, and are hauled taut to bear an equal strain with them. In hoisting in any heavy article, as a gun or an anchor, two or more burtons are used, all being hauled equally taut. In hoisting in boats, or articles of less weight than anchors, guns, or a launch; it will be sufficient to have the trusses hauled well taut, and to use but one burton in addition to the lift.

264. The *main yard* should be braced *up*; and, if both purchases are used, the fore yard braced *in*, sufficiently to clear the fore rigging, and to render the force of the purchase nearly vertical; and the yards topped up on the side used, before the strain on the lifts and burtons is equalized. It is also advisable, in hoisting out, or in, a launch, to have a preventer brace from the fore yard to the bowsprit, on the side used, as the fore yard purchase will scarcely act vertically.

265. The weight of the article purchased is, in a great measure, communicated from the yard to the mast-head, while the force of the yard inwards acts upon the lee lift trusses, and slings, which must be relieved by haul-

ing well taut the opposite lift and the trusses; also hook a burton to the opposite yard-arm, and its double block to a selvagee around the mast in the wake of the trusses (fall leading on deck), which burton must be hauled well taut.

265 *a*. The following are the principal purchases used in raising and transporting weighty articles, viz. :—The *yard-tackle*, *winding-pendant and tackle*, *quarter-tackle*, *stay-tackle*, and *mast-head pendant-tackle*. Other purchases besides these, used in purchasing anchors, and in other operations, will appear in the following chapter, in their appropriate places.

266. The *yard-tackle* is composed of a long tackle or fiddle block, a single block, and the fall. The fiddle block is strapped with a pendant, in the end of which is turned a hook and thimble; the single block is also strapped with a hook and thimble. The pendant to the double block is either short, and intended to be hooked to a strap on the yard just within the burton strap; or (as is most approved), is fitted long enough to reach from the lower mast-head to the lower yard-arms—lizards are fitted on these pendants. The pendant is hooked to the lower cap, and the lizard (having tails long enough to be secured with two round turns around the yard-arms), when secured, allows the fiddle block to play a few feet below the yard.

267. The *top-pendant and tackle* are used in the following manner. Lash a large thimble or single block on the yard within the sheave-hole, reeve the pointed end of the top-pendant *up* through this thimble (forward of the yard), then *down* through the top-block hooked to the lower cap, or a stout strap around the mast-head;

then on deck. Having hooked to the thimble in the lower end of the pendant the upper block of the tackle, haul down on the other end until the double block is the requisite height, when the end of the pendant must be well secured on deck.

268. The *winding-pendant and tackle* answers the same purpose as the top-pendant and tackle, but is differently rigged—thus: The pendant to which the double block is strapped, is of sufficient length to reach from the burton strap on the yard-arm to the lower cap, to which it is hooked. On this pendant another short pendant traverses with a thimble, in the other end of which is turned a hook, which hooks to a stout strap around the yard, just within the burton thimble. Thus, when used, the double block of the purchase hangs below the yard.

269. When both the top and winding purchases are used, the pendant of the former may be secured around the topmast head, sitting well up the opposite backstays. These purchases, varying so little in their construction, should be each of sufficient strength to hoist in or out the launch, so that but one purchase on the yard may be used. They, and the quarter-tackle, are used to raise the articles, while the stay-tackles serve to guy them inboard, and lower them to their respective places.

270. The *quarter-tackle* is a tackle of less power than the yard, winding, or top tackle—is used on the fore or main yards (generally the latter), to hoist in or out water casks, or lighter articles. It is a long-tackle purchase with a pendant to the double block, which is hooked generally to the strap, for the purpose, on the

yard, or to a selvagee around the yard; used further in, on the quarter of the yard, than the yard-tackle, hence the title.

271. The *triatric-stay* consists of three parts, two pendants, and span. The pendants with hooks in their upper ends, which hook to bolts in the lower caps (fore and main), or are secured around the mast-head. In the lower ends of these pendants are turned thimbles, into which the stay-tackles hook. These pendants are spanned together by another rope, the ends of which span are turned around thimbles which traverse on the pendants. The length of the span will be the distance you wish to have your pendants apart.

271 *a*. Vessels stowing two tiers of boats should always be supplied with two triatic-stays, so as to hoist in the boats on their respective sides.

272. **Mast-head pendant-tackles** are used to hoist any heavy articles out of the fore or main hold; to transport or fish anchors; or in any case where the purchase is required immediately over the deck. They are also used in place of stay-tackles, to get the boats in when the vessel is not supplied with a triatic-stay, and for securing masts when stays are shot away. They do not answer as well for hoisting in boats, as they act too obliquely, and are seldom thus used.

273. In hoisting in lighter articles, as water casks, with the main yard, a quarter-tackle and a single whip only on the main stay are used. The fall of the yard-tackle leads through a snatch-block hooked to an eye-bolt in the deck by the mainmast on the same side; and the fall of the whip leads over on the opposite side of the deck. While hoisting on the yard-tackle, a few

hands take in the slack of the whip. When the cask is sufficiently high to clear the hammocks, a turn is taken with the whip, and the fall of the yard-tackle is eased over a pin or cleat abaft, until the cask is over the hatch or gangway, when the tackle and whip are lowered together, and the cask landed.

273 *a.* In port, when it is desirable to keep the quarter-deck clear and clean, the snatch-block for the yard-tackle fall may be hooked abreast of the forward coamings of the main hatch, the fall leading forward.

274. **Hoisting in a Launch and other Boats.** In stationing the crew of a vessel of war, certain men should be detailed for the different stations in hoisting in boats, viz., on the yards, tops, &c. When all hands are called to "*in*" or "*out boats*," these men are to be ready at the ladders to go aloft when ordered, while a portion of the fore and main topmen are stationed to clear away the booms for the reception of the boats, or in clearing away the boats to be hoisted out. Some of the boats' crew are stationed in the boats to pass out the oars, masts, sails, &c., to haul them alongside, and be in readiness to hook the purchases.

274 *a.* The men being reported up, the officer of the deck gives the order, *Lay aloft!* when the men detailed will proceed to their stations. The men on the yard will receive the burtons and whips from the tops; when ready, give the order *Lay out!* The yardmen will lay out together; secure the tail-block, through which is rove the whip, to the lift above the burton strap; hook the burtons; and be in readiness to secure the purchase, when swayed up to them. The men in the tops hook the burtons to the lower cap, lead the falls and the haul-

ing part of the whip down on deck, send down from the forward part of the main and after part of the fore top, the hauling lines for the triatic stay-pendants, which whips and hauling lines are bent on deck to their respective tackles and pendants; and the double blocks of the stay-tackles hooked to the thimbles in the pendants and the hooks moused. The fore and main braces, the whips, and hauling lines being manned, give the order *Trice up, brace in!* At which the main yard is braced *up*, the fore yard *in*, the purchases are whipped up to the yards, and the ends of the triatic-pendants to the tops. The yards are then secured, and the purchases hooked and moused, as directed in the foregoing paragraphs. While this is going on, the launch is hauled up alongside, oars, masts, thwarts, sails, &c., are passed out of her, and the booms prepared for her reception. The lower blocks of the yard and stay-tackles are hooked to the rings in her stem and stern-posts, and the hooks moused.

274 *b*. In hoisting in a boat, particularly an old one, it is advisable to be prepared for the ring-bolts, in the stem and stern, drawing. To do so, have two spans. The after one hooked to an eye-bolt that is riveted through the keel nearly under the after thwart, and to the ring-bolt through the stern-post. The forward span hooks to an eye-bolt riveted through the keel forward, and to the ring-bolt through the stem. The purchases are hooked to thimbles in the bight of each span.

275. The falls of the purchases lead thus: That of the *main* yard purchase, through a snatch-block hooked to an eye-bolt in the deck by the main rail, and then aft. The *fore* leads through one hooked by the fore rail

leading aft. The *fore stay* through one hooked by the fore rail, and the *main* through one by the main; both the latter on the opposite side of the deck, leading aft.

276. Every thing being in readiness, give the order, *Man the yards!* At which the men lay in from the yards to the top. The yard purchases are manned, and a sufficient number of men at the stay purchases to take in the slack as the boat is purchased; one man in the bows and another in the stern of the boat. Now give the order *Walk away with the yards!* When the boat is sufficiently high, order *Turn with the yards!* *Man the stays!* At this a turn is taken, with the yards, two men remaining by each to ease off as the boat comes in, while the remainder of the men man the stays.

Walk away with the stays! As the boat comes in the yard-tacks are eased off, until she is over the boat chocks; then, *Lower away of all!* Both the yard and stay tackles are lowered, and she is landed on the chocks, the men in the boats overhauling the purchases; the carpenter and his mates being ready as she is lowered, to place her properly.

277. It may be necessary to use the ordinary main stay-tackle, or mast-head pendant tackle, as a fore-and-aft stay, to guy the boat clear of the fore rigging, backstays, &c.

278. Hoist in the smaller boats in the same manner, using the yard and stay-tackles; for these burtons are unnecessary.

279. After the boats are in or out, give the order, *Lay out!* The men lay out on the lower yards, cast off the lizards, unhook the burtons, &c.; the topmen cast off the end of the stay-pendant; hands being stationed

by the whips and hauling lines and the braces manned ; order, *Square away the yards!* At this the purchases are lowered down on deck, the yards squared, the whip and tail-block taken off the lifts, the men on deck make up the purchases to be stowed away, and having given the topmen sufficient time to stow away their gear ; give the order, *Lay down from aloft!* when all the men are to leave the tops.

280. Hoisting in a Launch at Sea, on the Wind. Having the purchases and triatic-stay ready, brace aback the main yard and secure it, as before directed, by hauling taut the lifts, trusses, &c., and with burtons on the lee yard-arm ; pass a lashing around the yard and mast, and hook the weather yard-tackle for a rolling-tackle. Having your yard well secured, send up your purchases, yard and stay-tackles, overhaul down and hook them into the boat, and hoist it up to leeward, as before directed. Then fill away and send down the purchases.

281. Hoisting in a Launch and First Cutter together, at Anchor. This may be necessary if in great haste to leave the harbor, all the boats being out. The fore and main yards must be kept square by the lifts and braces, and means used to rouse the boats, when weighed, clear of the fore rigging, and to divide the purchases properly ; both the yards must be properly secured as before directed, and have burtons, on the side that the launch is to be purchased, to assist the lifts. In this case the preventer brace, from the fore yard to the bowsprit (264), will be proper.

281 *a.* Send up the purchases on both sides, using the heaviest purchases for the launch. If you have two

triatric-stays, use them on both sides ; if only one, use it for the launch ; and use the fore topsail halyards and main pendant-tackle, to supply the place of the triatic-stay and tackle, for the first cutter. Hook also the main pendant-tackle to the stern of the launch.

281 *b*. Weigh them as before, and rouse them clear of the fore rigging by the main pendant tackles. Land the launch on the chocks, and the first cutter in the gangway until the launch is placed, then weigh the first cutter with the stay-tackles, and place it in the launch. Unless, as in large vessels, the boats are stowed in two tiers, in which case you place the first cutter at once.

282. To hoist in Boats at Sea, having the Wind aft. In the event of chasing, or being chased by, an enemy, the boats all out towing ship, a breeze should spring up, and wishing to lose no time by heaving to, they may be gotten in in the following manner. Having the boats well secured by towlines, put the vessel before the wind, and make sail. Secure the yards as before directed. Haul up the launch on the port side, get a stout hawser from the port quarter, and secure it to the stern of the launch ; secure it also inboard. Get the purchases up, hook and mouse them, and proceed to hoist her in as before directed. The only difficulty is, that with headway on the vessel, the moment the boat is freed from the resistance she meets with in moving through the water, she will surge forward with a violence in proportion to the velocity of the vessel, and not only endanger the yard and purchases, but also the rings to which the purchases are hooked. The hawser from the quarter to the stern of the boat prevents this, and renders the operation,

as soon as the boat leaves the water, as simple as under ordinary circumstances.

283. **To rig a Purchase for hoisting in Guns.** The following is recommended. Having secured your yard well, as directed in paragraphs from 262, lash a double purchase to the yard far enough out to be well clear of the ship's side, overhaul down the lower double block, with the fall part leading from it, *up* through a single block lashed securely on the quarter of the yard, directly over the gangway; then through a block at the mast-head, and then *down* through the leading block on deck. The advantage of this purchase is, that it answers the double purpose of purchase and guy. It would also be advisable to have the yard lashed in the slings (as for getting in the bowsprit by the fore yard) when hoisting in a great weight.

284. **A rolling tackle,** "used in securing and steady-ing lower or topsail yards, should be a luff-tackle purchase. The single block hooked to a strap around the yard, and the double block to an eye-bolt in the cap or selvagee around the mast-head, the fall leading on deck."

CHAPTER VIII.

ANCHORS.

ANCHORS.—WEIGHT OF.—PURCHASING AND TRANSPORTING.

285. "AN anchor is composed of four parts: the *ring*, the *shank*, the *arms*, and the *stock*. The ring, to which the cable is attached, is fixed on one extremity of the shank, and the arms on the other extremity. These arms consist of the *palms* or *flukes* and the *bill*; the palms are the broad plates of a triangular form, at nearly the extremity of the arm; and the bills are the sharp points at the very extremity of the arms. The *throat* of the arms is the rounded angular point where the arm is joined to the shank. A distance equal to that between the throat of one arm and its bill, is marked on the shank from the place where it joins the arm, and is called the *trend*. The *crown* is the place where the arms are joined to the shank. The *small round* is the diameter of the shank where it is smallest, which is near the square part where the stock is fixed. The *stock* is a beam of wood fixed on the extremity of the shank, at right angles to the plane passing through the arms."

286. The number of anchors allowed to vessels in the U. S. Navy, as also their relative weights, may be seen by reference to the Book of Allowances.

287. If one of the *bower* anchors is heavier than the other it is called the *best bower*, both of them being kent.

at the bows of the vessel ready for immediate use. Of the *sheets*, one is termed the *spare* anchor, both being kept or stowed in the waist. The *stream* anchor is generally kept stowed up and down in the main hatch.

288. A rule for determining the weight for anchors of any vessel, is as follows:—*For the bowers*, two-thirds the draught of water when loaded, + the greatest breadth of beam, allowing one cwt. for each foot of the same. *For the stream*, one-third of the bower.

289. Or the simple rule of five cwt. for every hundred tons burthen, may be adopted.

290. **Purchasing Anchors.** The bower anchors are got up to the bows by means of the cat and fish purchases, and are secured in their places at the cat-head by the cat-head-stoppers and shank painters. The sheet and spare anchors are purchased in the following manner:—

291. Having secured the lower yards well (Chapter VII.), and topped them up on the side used, brace *in* the fore, and *forward* the main yard.

292. Send up the purchases. The yard, winding, or top-pendant and tackle may be used, having the strap on the yard, or regulating the lizard; so that the purchase may be far enough out to take the anchor clear of the side.

293. Having the anchor alongside with the crown aft, pass a long strap around the shank, near the stock, to which it must be lashed about one-third the distance up, for the purpose of keeping the stock perpendicular when the anchor is raised. Hook or toggle the fore purchase to this strap above the lashing, and hook the main purchase to another strap around the crown of the anchor.

294. The fore topsail halyards may also be used to

assist the top-tackle; it will relieve the lower yards, and serve to rouse the anchor into its place in the waist; but bear this always in mind, that whenever you use the topsail halyards as a purchase, except to perform its own peculiar office, the tye should be racked aloft, either forward of the topmast to its own part, or else to the topmast rigging abaft.

295. Having swayed the anchor up, rouse it in with thwartship jiggers, place the bills in shoes, or its arm upon the gunwale, place the shores, trip-stoppers, &c., and pass the stock and shank lashings.

296. **For purchasing a sheet anchor** to get it in its proper place in the waist, I subjoin the following notes, taken by an officer of the Navy in 1833-4, during the equipment of the frigate Brandywine at the Navy Yard, Brooklyn.

297. "The fore yard, being braced up sufficiently on the side used, was topped up. Trusses set taut, rolling-tackles hooked, and hauled taut. Both burtons from topmast head overhauled down, and hooked to straps on the yard; and a pendant-tackle, hooked to the lower cap, was also hooked to a strap on the yard; all the burtons, pendant tackle, and lift, hauled taut alike. The opposite topmast breast-backstays were well set up. A stout single block was lashed to the yard-arm with a long lashing, through which the pointed end of the top-pendant was rove *up*, and the end hitched around the topmast above the lower cap. To the thimble in the lower end of the top-pendant was hooked the upper block of a threefold purchase, another smaller purchase was lashed to the yard about three feet further in.

298. "The top-pendant' purchase was hooked to a

strap around the shank near the stock, while the smaller purchase was lashed to the stock, to assist in raising while it kept the stock perpendicular.

299. "The main yard, being braced up and secured as the fore, the main purchase was hooked to a stout lashing on the crown of the anchor. A hawser was bent to the ring of the anchor, and the other purchases made use of to guy the anchor forward and aft as might be required."

300. **Transporting Anchors.** The anchor intended to be stowed in the main hatch is gotten in by means as directed in the previous paragraphs. In addition to the purchases there spoken of, the mast-head pendant-tackle is used, hooked to a stout lashing around the crown of the anchor, and also one from forward to keep it clear of the mast and coamings of the hatch in lowering.

301. In any case where it is required to transport this anchor from its place to the bows, to supply the place of a lost one, it may be done by the mast-head pendant-tackles; thus, the lashings being cast off, the main pendant-tackle is hooked to a stout strap around the crown of the anchor; and a tackle, leading forward on the lower deck, is hooked to the shank of the anchor, to guy it clear as it goes up. Sway up, and as the crown comes above the upper deck, the pendant-tackle from the fore mast-head is hooked to a strap on the shank, two-thirds the distance from the crown to the stock, or on the small round within the square part. The berth deck tackle being unhooked, it is thus transported forward as far as the foremast.

302. The fore yard is previously braced up, and well secured, so that the purchases may hang clear of the cat-

head. The fore yard purchase is now hooked to a strap around the shank near the stock, by which the anchor is transported forward of the mast. Here it is lowered down on the deck, the lower bill resting on a shoe, and the shank placed properly on the stock, which is on the deck in readiness to receive it.

303. While the armorers are fitting and securing the stock, the main pendant-tackle is unhooked, being of no further use; the fore pendant-tackle is unhooked from the pendant abaft the cat-harpins, and hooked again forward.

304. The anchor now being stocked, and the purchases manned; transport it over the bows by means of the purchase on the fore yard and fore pendant-tackle. When high enough and clear of the side, lower away to the water's edge, hook the cat to the ring, and rouse it up to the cat-head; send down the purchases and square the yard; bend the cable, fish the anchor, and get it ready for letting go.

305. **To transport an Anchor from the Waist to the Bows.** Having the cable bent, and well bitted, get the anchor ready for letting go; pass the messenger, bring to on the cable, ship the capstan bars, and call *All hands to up anchor!* when ready, let go the anchor, and then heave it up to the bows, and purchase it by the cat and fish.

306. It may also be transported by the yard purchases, in case it may not be advisable to proceed by the foregoing plan, thus: Have the fore and main yards well secured with burtons from the topmast and lower mast-heads, with rolling tackles, and the opposite topmost backstays well set up; brace the main yard *up*

sharp, and the fore yard *in* a little; top them well up, particularly the fore yard; send up the yard and winding tackles; the triatic-stay and forward tackle. Hook the fore yard and triatic-stay tackle to a stout lashing around the shank just within the stock, the winding-tackle to the ring of the anchor, and the fore topsail halyards to the upper stock. Hook the main purchase to a lashing around the crown and both arms. Walk away with the yard purchases, keeping a strain upon the stay and topsail halyards to steady the anchor and keep the stock perpendicular. When the anchor is clear of the ship's side ease away on the main yard and stay purchases, hauling on those of the fore yard until the anchor hangs by the latter. Then man the fore brace and brace the yard up handsomely, until the anchor is plumb with the cat-head; then lower away, hook the cat and rouse it up to the cat-head. Unhook all the purchases and send them down.

307. You may hook the cat and fish as soon as the anchor is clear of the ship's side, and it may be advisable to do so, as the latter particularly will be serviceable in transporting to the bows.

308. The fore yard should not be braced in so far, that the burtons and lift will take against the rigging, for in bracing them up again they would not bear an equal strain.

309. By this plan you may transport anchors from the bows to the waist.

CHAPTER IX.

GROUND TACKLE.

CABLES. — CHAIN AND HEMP. — DIMENSIONS OF — COILING, CROWNING, TAILING, SPLICING, BENDING, MARKING, RANGING, BITTING, AND STOPPERING.

310. Although sheet cables are now in general use, not only for the bower, but also for the sheet anchors—still, as hemp cables are sometimes carried by the larger vessels, it is proper to be acquainted with the manner of fitting and working them.

311. It is a popular opinion that in a violent surge, bringing a sudden strain upon the cable, particularly in very cold weather, a chain is more liable to snap than hemp; and that defects in a chain cable may escape observation, while chafes in a hemp cable are easily discovered. This is doubtless true, and is the best argument in favor of hemp cables.

312. On the other hand. If you occasionally lose an anchor and part of a chain (which in nine cases out of ten may be recovered by dragging), you will still economize in time, space, and expense, by the use of chain cables for your working or bower anchors. The wear and tear of a hemp cable, in mooring or unmooring, and even while lying at anchor, is very great, while that of a chain is comparatively nothing. Added to which is the great advantage in the facility of its use, greatly recommending it.

313. It is also customary to use chain *sheet* cable, which should always be bent while at anchor, and if of hemp, may be guarded from the weather or from chafe by mats, or otherwise. It is probable, that in a few years all the cables of our public vessels will be of chain, and all that space in the tiers, now occupied in the stowage of hemp cables, will be more advantageously used for the stowage of other articles. See 781.

314. The *bower cables* are those which are bent to the anchors at the bows, or the working anchors. The *sheet cable* to one of the anchors stowed at the waist. Both the bower and sheet cables should be of equal size, a good rule for which is "*one inch in circumference for every two feet of the vessel's beam.*" Cables as well as all the other rigging, are supplied to the United States vessels, by classes. See table on opposite page.

315. Custom formerly limited the length of cables to 120 fathoms, for the reason that private rope-walks are seldom long enough to lay up strands of greater length, as a cable will take up one-third from the drawing down of the yarns, in laying up. In the United States rope-walk at Charlestown (Mass.), cables have been made 135, and could be made 140 fathoms in length. Chain cables, however, should be 150 fathoms in length.

316. In receiving a hemp cable in the lighter which is to convey it alongside of the vessel, you should coil it *with* the sun, by which each fake takes a turn in the cable—and in receiving it on board, from the lighter, it should be french-faked fore and aft the decks, by which the turn is taken out, and the cable then has its original lay.

NUMBER AND SIZE OF CABLES, HAWERS, MESSENGERS, AND TOWLINES, ALLOWED TO THE DIFFERENT CLASSES OF VESSELS IN THE UNITED STATES NAVY,

According to the Book of Allowances, January 20th, 1844.

Cable.	Sheet Hemp.	Sheet Chain.	Bower Chain.	Stream Hemp.	Hawser Hemp.	Mess'r. Hemp.	Towline Manila.	Chain for Launch												
No. & Size.	No. In. Fms.	No. In. Fms.	No. In. Fms.	No. In. Fms.	No. Inches.	No. In.	No. In.	No. In.												
74 of 8 decks	2	25	120	1	21-4	180	2	21-4	180	1	16	120	6	{ 2 of 7, 2 of 1 9, 2 of 11. }	1	16	5	5	1	8-8
1st class, 2 decks	2	24	120	1	21-4	180	2	21-4	180	1	15	120	6	2.6-2.8-2.10.	1	15	4	5	1	8-8
2d class, 2 decks	2	28	120	1	21-8	180	2	21-8	180	1	14	120	6	2.6-2.8-2.10.	1	14	4	5	1	5-8
Razees, 1st class	2	22½	120	1	21-8	165	2	21-8	165	1	18½	120	6	2.6-2.8-2.10.	1	18½	4	5	1	5-16
Frigates, 1st class	2	22	120	1	115-16	165	2	115-16	165	1	18	120	5	1.6-2.7-2.9.	1	18	3	5	1	5-16
Frigates, 2d class	2	21	120	1	113-16	165	2	113-16	165	1	12	120	5	2.6-2.8-1.9.	1	12	2	5	1	1-4
Sloops, 1st class	2	17	120	1	111-16	150	2	111-16	150	1	11	120	4	2.6-1.7-1.8.	1	11	2	5	1	1-4
Sloops, 2d class	2	16	120	1	110-16	120	2	110-16	150	1	10	120	3	1.5-1.6-1.7.	1	10	2	5	1	1-4
Sloops, 3d class	2	15	120	1	8-16	120	2	8-16	150	1	9	120	3	1.5-1.6-1.7.	1	9	2	5	1	8-16
Brigs	1	1	4-16	105	2	1	4-16	120	1	1	8	120	2	1 of 5.	1	8	2	5	1	8-16
Brigantines	1	1	2-16	105	2	1	2-16	120	1	1	7	120	2	1 of 6.	1	7	2	5	1	8-16
Schooners	1	1	1-16	105	2	1	1-16	120	1	1	7	120	2	1 of 5, 1 of 4½	1	7	2	5	1	8-16
Steamers, 1st class	1	1	18-16	150	2	1	18-16	150	1	1	18	120	4	1.6-2.8-1.9.	1	18	2	5	1	1-4
Steamers, 2d class	1	1	11-16	150	2	1	11-16	150	1	1	11	120	4	2.6-1.7-1.8.	1	11	2	5	1	1-4

317. In coiling a cable in the tier or on the deck, every oblong or circular figure formed, is termed a *fake*; and when several of these are formed, one within the other, the whole is termed a *sheave*.

318. *Shot* is a term used when there are two or more cables spliced together; thus, the bower or sheet cable may consist of two or more shots. When of but two, the inner end of the lower one and the outer end of the upper are crowned or capped, and the other ends tailed and spliced together. When there are three shots, the ends of the centre one are tailed, and spliced to the tailed ends of the upper and lower.

319. The lower ends of cables are secured around the orlop deck beams, or around the mainmast.

320. Hemp cables are coiled in the tiers *with* the sun, crossing in the hatchway; that is, the starboard one is coiled in the port, and the port one in the starboard tier.

321. Avoid having too many fakes in a sheave, for when there are, the cable composing the inner fake is injured in breaking in.

322. After forming the lower sheave, the cable is taken out to the sides of the tier, and another sheave formed over the first, and so on; leaving room in the centre of the tier, in which may be coiled hawsers, or where may be stowed nippers, deck-stoppers, &c.

323. *Crown-ropes* are used in the corners of the tiers, to keep the fakes in their places.

324. To *french-fake* a cable or hawser along the deck, the bends are made to lap, one over the other, and the different layers between the bends form parallel lines on the deck. This is the proper manner of coiling a cable

or hawser for running; the bending end forms the first fake, and is taken out toward the ship's side, and each succeeding fake approaches nearer to a straight line between the hatch and bitts, each bend underlapping the former one. Thus the running part of the cable or hawser will always form the upper fake.

325. To crown a Cable. Pass a seizing around it about one fathom from its end, and unlay the end to the seizing; lay up the three inside or heart strands, and make an over-handed wall-knot around them with three of the other strands, working them over the three remaining ones; after heaving them well taut, worm them in the lay of the cable, and pass three seizings around them; whip the ends of the other strands and cut them off. Sometimes a flemish-eye is worked with the inner strands, which must be done before the wall is formed.

326. Capping a hemp cable is thought by some officers preferable to crowning.

327. To tail the Ends of a Cable. A whipping must be put around each strand, about twice its circumference from the end; unlay them, and connect with the heart yarns, the tails, which should be about four fathoms in length. Sennet is made of the outside yarns for pointing. The ends are then tapered, marled, and pointed. The length of the pointing must not exceed once and a half the circumference of the strand.

328. Splicing. Cables are connected by a short-splice, thus; the ends of one are passed through the strands of the other twice, and the ends of the other only once. The ends of the best cable should be passed twice. After splicing, worm the tails in the lay of the cable, and put on the seizings, thus, one around the middle of the splice,

and two around the ends or at the termination of the splice, and three or four around the tails.

329. **To bend a Cable.** Rouse it out of the tier by means of the hook-ropes, and having its end forward by the hawse-hole, reeve the ring-rope, thus :

330. If for the starboard cable, reeve it through the ring of the anchor, from in, out ; pass the end in at the inner hawse-hole, and bend it to the cable with a rolling-hitch a short distance from its end, to which it must be stopped.

331. The ring-rope for the port cable is rove through the ring of the anchor from out, in, and secured to the cable in the same manner as the starboard one.

332. Man the ring-ropes and rouse the cable out of the hawse-hole and through the ring of the anchor ; when far enough out to allow for clinching, stop it to the ring. Make an inside clinch, *with* the sun, with the end around the other part. Put two bends on each clinch, one around the end of each and its adjoining part, and the other opposite to the end ones around both parts.

333. The *bends* are passed with the bights, and are crossed with sennet.

334. When bent, haul the clinches close up to the ring of the anchor, and rouse the cable in taut by deck-tackles.

335. A clinch should always be smaller than the ring of the anchor.

336. **To bend a Chain Cable.** Reeve the ring-rope through a tail-block on the cat-head, then through the hawse-hole, and bend it to the cable as before ; by which rouse it out of the hawse-hole and up to the cat-head ;

where the armorer shackles it to the ring of the anchor. A hawse-rope may be used to assist the ring-rope.

337. To bend a Sheet Cable. Reeve the ring-rope as before directed for the chain, hitch it to the cable some distance in, and stop it along at every five fathoms toward the end. Having roused it up to the cat-head, cut the first stop, and hitch on to its end another ring-rope, rove through a tail-block on the stock of the anchor, and through the ring. Rouse it out of the hawse, cutting the stops as they come up to the cat-head, and rousing the cable aft by the second ring-rope. Hang it between the cat-head and sheet anchor by slip-ropes. Having roused it through the ring, clinch and bend it as before directed. If the end of the first ring-rope comes to the cat-head, before the cable is sufficiently out for bending, hang it at the cat-head, pass the ring-rope in, and hitch it to the cable as before.

338. The rings of anchors should be woulded for a hemp cable, and that part of the cable which forms the clinch should be parcelled. Hemp cables should be keckled about five fathoms from the clinch.

339. Be particular in marking the cables. The sheet is not of as much consequence, for, knowing the scope you have out on the bower when you let go the sheet, the marks on the former will always point out the scope you have veered to of the latter.

340. To mark a Hemp Cable. Put on one round turn of spun yarn at five fathoms from the clinch, two round turns at ten, one knot at fifteen, two at twenty, one knot at twenty-five, and three at thirty, one at thirty-five, and four at forty, and so on.

341. To mark a Chain Cable. At five fathoms from

the ring-shackle, or jews-harp, mark the stretcher of a link with one turn of wire, at ten fathoms with two turns, at fifteen with three, at twenty with four, at twenty-five with one turn, at thirty with three, at thirty-five with one, at forty with four, and so on. This is merely to point out a rule for marking. Chain cables are always marked at the foundry with a shackle at every five fathoms. After the first shackle, which will be fifteen fathoms from the ring of the anchor, measure off five fathoms, and mark with two turns of wire for the twenty-fathom mark, one for the twenty-five, three for the thirty, and so on.

342. To range a Hemp Cable. Having bent it, rouse up in the same manner from the tier, a scope for the requisite range, and french-fake it fore and aft the deck, inside of the first part, or that attached to the anchor.

343. To range a Chain Cable. The chain should be ranged fore and aft in parallel lines, the running part being outside. Some officers have a range forward of the bitts, of sufficient length to allow the anchor to reach the bottom. But others disapprove of this, and contend that the anchor should be let go with a tight cable, the range running around the bitts. I am clearly of the latter opinion, particularly if the bitts are round-cased, for a range of ten to twenty fathoms of chain following the anchor, will drag the after range with it; and even if the anchor has landed, the whole will be likely to fall on top of and foul it, particularly if the vessel has little or no head way or stern-board. Some officers also let go the anchor without having any range abaft the bitts, letting the vessel take it from the chain locker; this can only be done safely with an iron stopper in the corner of the

hatch (359). But the safest plan is, to range the cable abaft the bitts, and have check-stoppers as directed in paragraph 754, which, parting as the strain is brought upon them, checks the cable as it runs out.

344. To bitt a Cable. The port one should be bitted *against*, and the starboard one *with* the sun, thus : Suppose the cable lying fore and aft the deck, under the bitts. Raise the cable up abaft the bitts, and place the bight over the bitt-head, so that the inner end of the cable shall lead from the outer side of the bitt-head to the hatch. This is the rule for a hemp as well as a chain.

345. To stopper a Cable. For a hemp cable, deck-stoppers and dog-bitt stoppers are used. Abaft the bitts are three deck-stoppers, passed thus : Place the stopper (356) in the lay of the cable, and pass the lanyard around the cable and stopper *against* the sun, leaving a fathom of the end to worm forward in the lay of the cable. Forward of the bitts is another stopper passed in the same manner. And a bitt-stopper (used principally in heavy weather) is passed thus : Put the bight over the tier part of the cable, abaft the bitts, take the ends under the cross-piece and dog them forward of the bitts around the cable. Or it may be used thus : Having passed it through the hole between the standard and bitts, the two ends are passed around with dogging turns, and the ends seized to the cable.

345 a. Ring Stoppers are also very useful and neat. The bights are passed over the cable abaft the ring-bolt, both ends are rove through the ring, and dogged around the cable forward of the bolts ; the ends are tapered, coach-whipped, and laid up in square sennet. See 358 a.

346. For a Chain. Besides the deck, ring and bitt-

stoppers directed above, *iron stoppers*, in the corners of the hatches, are used, and are, in fact, sufficient in themselves in ordinary cases. In heavy weather the deck and ring-stoppers may be used as additional security.

A Rule for finding the Weight (nearly) of a Hemp Cable, of one hundred and twenty fathoms. The square of half the circumference will be the weight nearly in cwt. Thus, a twenty-four inch cable will weigh one hundred and forty-four cwt.

CHAPTER X.

GROUND-TACKLE.

MESSENGER.—NIPPERS.—STOPPERS.—HEAVING THE ANCHOR UP TO THE BOWS.—BUOYS—BUOY-ROPES.

347. The **messenger**, used for heaving in the cable, is a cable-laid rope of the same size as the stream cable, or five-eighths of the working cable; in length it should be three times the distance from the capstan to the hawse-hole, having in each end an eye for lashing together.

348. **To pass the Messenger.** If it is your intention to bring to on the port cable first, the end of the messenger is passed up on the port side of the deck, taken aft, and passed around the capstan with three turns, and the end taken forward as far as the main hatch; that part of the messenger which brings in the cable, or rather, that upon which the capstan directly acts, forming the lower turn around the capstan. The other end of the messenger is, in the mean time, taken forward on the port side of the deck, passed around the roller under the bowsprit, and taken aft on the starboard side to the main hatch; where the two ends are lashed together, thus:

349. In one of the eyes (347) is spliced the lashing, which is passed alternately through each eye in a figure-of-eight form, each part crossing the one adjoining it; the eyes being kept one and a half fathoms apart; the

end of the lashing is secured by seizings; the slack of the messenger is then hauled around on the starboard side of the deck, bringing that on the port side taut between the capstan and roller.

350. **To dip the Messenger.** After heaving in one cable, it becomes necessary to reverse the turns around the capstan, that the lower one may be convenient for heaving in the other cable. It is only necessary to unlash the eyes, slack the turns around the capstan, and pass the lower end up, or the upper end down (which ever may be most convenient), through the turns. After which, haul taut the turns around the capstan, and lash the eyes as before.

351. **Nippers**, by which the messenger is secured to the cable, are formed of yarns marled together like selvagees, or of foxes laid up after the manner of a coach-whip; the former are of more general use; they are about four fathoms in length.

352. **In passing the Nippers.** If in light weather, and only to heave in the slack of the cable, or heave short; a round turn is taken on the messenger with the after end, and the remainder of the nipper is expended around the cable and messenger, against the sun; leaving end enough to twist up with the end of the next nearest nipper.

353. When short apeak, or when blowing fresh, two round turns are taken with the after end around the messenger, and two with the forward end around the cable, twisting the ends up with the adjoining nippers as before; and in heavy heaving, racking or jaming turns may be taken.

354. **Hanging nippers** are much used in heavy

heaving, and are found very useful owing to the facility with which they are applied or removed. They are selvagees of sufficient length to enclose the cable and messenger, and admit heavers to be thrust through their bights; which heavers are hove around until the nippers are taut: they may be also applied over the common long nipper, when the cable comes in covered with mud, to prevent the nippers from slipping.

355. *Stoppers*, used for securing the cable, when at anchor, are the *deck, dog, ring, bitt*, and *hatch* stoppers.

356. *Deck-stoppers* are made of hawser-laid rope, are one fathom in length, when fitted; and are, in size, one-half that of the cable on which they are applied; in one end is spliced a hook and thimble, which is hooked to the stopper ring-bolts in the deck; in the other end is formed a double wall-and-crown knot, with a lanyard, one-third the size of the stopper, attached with a running eye around the stopper close to the knot; the knotted end of the stopper is passed with the lay of the cable, and the lanyard is passed against the sun, around the cable and stopper, with several turns; leaving a fathom of the end to worm forward in the lay of the cable; the end is then secured with a seizing.

357. *Dog-stoppers*, are four-fifths the size of the cable on which they are used, and are from four to five fathoms in length; they are unlaidd nearly their whole length from the ends, and are gradually tailed and marled after the manner of selvagees; or the yarns are laid up in foxes, and the tails formed of square sennet, or coach-whipped.

358. They assume different names, according to the purposes for which they are used; such as *bitt, wing* or

hatch stoppers; they are termed *bitt-stoppers* when used at the bitts (345), *wing-stoppers* when secured to the knees in the wings of large vessels, in readiness to apply to the cable when veering in heavy weather; and they are termed *hatch-stoppers* when used at the hatches for the same purpose.

358 *a.* *Ring-stoppers* are unlaid from the ends toward the centre, and worked up nipper-fashion; enough being left laid up in the centre to clove-hitch to the ring-bolts in the deck; being thus secured, one end is passed on each side of the cable, one worked into its lay, and the other passed across the first. Their length will depend upon the size of the cable. See 345 *a.*

359. *Iron-stoppers* in the corners of the hatch, and even at the bitts, are used; principally the former, and very rarely the latter; those at the hatch are much approved of, on account of the certainty with which they check the cable, and the facility in using them; the great objection to using them at the bitts is, that they are often obstacles in the way of biting the cable with dispatch, and that they weaken the cross-piece. These iron stoppers have entirely done away with the use of the wing and hatch stoppers, and by their use the dog-stoppers at the bitts are rarely ever needed.

360. The messenger being passed; capstan bars shipped and swiftered; and the messenger "*brought to*" on the port cable (351); proceed to heave the anchor up to the bows.

360 *a.* *Man the bars! Heave taut!* take off the stoppers; unbitt the cable; and *Heave round!* As the cable comes in at the hawse-hole, the nippers are passed (351 to 354), the men, holding on to their twisted ends,

and to the heavers in the hanging nippers, walk aft with them as far as the after part of the fore hatch. There they are taken off and passed forward again. The cable and messenger should be lifted up on the bitts, over which it passes, being more easily worked thus, nippers applied and taken off, than on the deck. When there is much mud on the cable, it is necessary to use a quantity of sand on the nippers to make them hold, and also on the deck to prevent the men from slipping.

360 *b*. By the capstan, on the port side, are quarter gunners with heavers, to fleet up the turns of the messenger around the capstan, and prevent that part which approaches the capstan from overlaying; on the starboard side are men stationed, to hold on to that part of the messenger which leaves the capstan, to keep the turns taut; they are seated on the deck, facing aft, and hold on as it passes through their hands. Others are stationed forward to light it around the roller and keep it clear.

360 *c*. The cable, as it comes in, is either paid below (after being cleansed) or ranged on the deck ready for running.

361. When a vessel is moored, with two anchors down, in heaving in on one cable it becomes necessary to veer to on the other. To do this, if the veering cable is the weather one, and in a stiff breeze, you will veer around the bitts, having taken off the forward deck-stoppers, and slacking the lanyards of those abaft the bitts; the cable being roused out of the tier as it goes out; or being previously ranged on the deck.

362. But if the veering cable be the lee one, it may be previously unbitted, and veered through the deck or dog-stoppers.

362 *a*. If both anchors are ahead, as may be the case after riding to a gale, it will be necessary to heave in on both together. Bring to with the messenger on that which has the longest scope out, and, with deck-tackles on the other, *heave in* on one and *rouse in* on the other, until the latter is *up and down*. Then, if your anchors are rightly placed for mooring, with an equal scope on each, or if you wish to weigh the former, continue to heave on that and veer to on the latter. But if you wish to weigh the one which is under foot, stopper the other, dip the messenger, and bring it to the cable.

363. If, owing to the quantity of mud on the messenger, it does not hold on at the capstan, it may be necessary to use a tackle on that part which leaves the capstan. This is rarely the case, and only in heavy heaving.

364. **Stoppers** with which to hold on, while hauling taut a brace, sheet, or other rope, are fitted with a hook and thimble at one end, or they are otherwise secured to eye or ring-bolts near the rope for which they are required; from the other end to nearly the whole length they are formed as the dog-stopper (357). In using them, a half-hitch is formed around the rope; which, after the rope is hauled taut through it, is jambed, and the tail wormed along in the lay of the rope; this will hold it while being belayed.

365. **Cat-head stoppers**, by which the ring of the anchor is kept at the cat-head, should be one-third the size of the cable. In one end, when fitted, is turned a *crown and wall* knot, and the other end pointed; the pointed end is rove *down* through a hole in the cat-head, *in* through the ring of the anchor, then over a cleat or

check on the forward part of the cat-head, and then in-board; and it is secured over its pin. It must be of sufficient length to have end enough, after being rove, to take three or four turns over the pin.

366. After the anchor is catted, and the stopper passed, it is fished thus. The *fish-pendant* is a rope of a size equal to the cat-stopper; in one end of it is turned a large hook capable of containing the shank of the anchor, and in the other end is a large thimble to which is hooked the fore pendant-tackle.

367. The fish-davit having been placed in its step in the channels, the pendant, hooked to the shank of the anchor, traverses over the sheave in its upper end.

368. By this purchase the flukes of the anchor are raised until up to the gunwale, when the *shank-painter* is passed; this is made partly of chain, so that, when passed, the chain shall enclose the shank, while the end, which is of rope, is belayed around its pin. The shank-painter being secured, the purchase is unrigged, the fish-davit taken in board, and the anchor now hangs by the cat-stopper and shank-painter.

369. In securing the anchor for sea, the flukes are raised to rest on the gunwale, and securely lashed; and additional lashings passed through the ring and over the cat-head.

370. And in preparing to anchor, after the cable is bent the lashings are taken off, the flukes cleared of the gunwale, and the anchor hangs by the cat and fish as before; this is termed "*getting the anchor off the bows.*"

371. **Buoys, Buoy-Ropes.** *Buoys*, attached by their buoy ropes to the crown of the anchor, float on the surface of the water, and point out at all times, the situa-

tion of the anchor. The *can* buoy is in the form of a cone, the base floats uppermost and the buoy-rope is attached to the apex. The *nut* or *nun* buoy is largest in the centre, tapering off towards each end. The latter form, and made of sheet iron, is now in general use.

372. The size of *buoy-ropes* is one-third of the cable. The length varies, for it is shortened or lengthened according to the depth of the water in which you will drop the anchor.

373. It is bent to the crown of the anchor, by taking a half-hitch around one arm, and putting the running eye in its end over the other arm; or a clove-hitch is formed over the crown, and the end stopped along the shank, or to its own part.

374. The buoy-rope is sometimes used for the purpose of weighing the anchor, when the cable may have parted; for which reason it is of the size previously mentioned.

375. A buoy-rope may be fitted in the following manner. Attach a large thimble to the crown of the anchor, by a stout strap of the size of the buoy-rope (one-third the cable). Through this thimble is rove the buoy-rope, both parts leading up to the buoy. The advantage of this is, that the buoy-rope may be smaller, and when necessary, a stout rope, of the required size, may be, by it, rove through this thimble in the crown of the anchor, thereby affording a greater purchase than that of a single rope, for weighing.

375 *a*. This method of fitting a buoy-rope, however, is not approved of by many officers, for the reason that the two parts of the small buoy-rope are apt to lay themselves up, and render uncertain the possibility of reeving a larger one by it.

376. Sometimes a buoy will not *watch*, from its having filled with water, or from the buoy-rope being too short, particularly in a tide way. By this is meant that it does not float on the surface of the water. In the former case it will be necessary to *bleed it*, that is, to let the water out. In the latter, to lengthen the buoy-rope.

377. Buoys are generally kept, one in each of the fore channels for common use. Spare ones are kept rigged and stowed in the hold.

377 *a.* It is recommended, in a book of "Practical Hints on Some Points of Seamanship," by Captain A. J. Griffiths, R. N., not to "*stream the buoy*," as is ordinarily done, before letting go the anchor; for the reasons, that "if from a fresh wind, or other circumstances, you shoot too far, the anchor not instantly running; or you allow the ship to drop after losing way, for a better berth, the rope becomes slack in the water, and the buoy gets under the bows; under such circumstances, as the anchor goes down, the rope will generally take many turns around it and the cable. The deeper the water, the more likely is this to occur. The buoy will then not watch, which renders you liable to be overlaid; and when getting under way, the buoy-rope will materially impede the hooking the fish." He recommends, instead, that the buoy-rope should be kept perfectly clear for running, with a man to attend it, and the buoy hanging ready to let go the instant the rope begins to tauten. "It will not get foul, your buoy will watch, and these inconveniences be avoided."

CHAPTER XI.

BENDING AND UNBENDING SAILS.

378. **To bend a Course.** Foresail or mainsail, of a square-rigged vessel: Stretch the sail across the deck, forward of the mast, and under its yard; take off the stops, and see that the head and reef-earings, bowline-bridles, and reef-bands are properly fitted; lash to the clews of the sail the tack, sheet, and clewgarnet blocks.

379. Send the sail-loosers on the yard to overhaul down the clewgarnets, buntlines, and leechlines; and to get the yard-jiggers on the extremities of the yard.

380. Reeve the buntlines through the thimbles on the first reef-band forward, toggle their ends to the foot of the sail, and stop them to the head of the sail, with a seizing of spunyarn; reeve the clewgarnets and leechlines (143, 147, 148).

381. Hook the bunt-jigger to the cringle in the centre of the head-rope; the yard-jiggers to the first reef-crinkle, and hitch the head-earings to their standing parts.

382. The gear being bent and manned, send aloft the lower-yard men, and give the order, *Trice up the booms! Sway up and haul out! Lay out and bring to!* The men lay out while the sail is run up to the yard. The head-earings are then passed *in* through their straps on the yard-arms, and *out* through the head cringle. Haul out on both sides, keeping the centre of the sail amidships of the yard, until the head of the sail is taut; then take another turn as before, and expend the earing around the

yard, and through the cringle. Let the men on the yard ride down the head of the sail, particularly if a new one, then pass the head-earings afresh, and secure the ends around the first turn. Secure the headrope to the jackstay by rope-bands, or with spunyarn. Send down the yard-jiggers, and take the stops off the buntlines. The sail being bent, hook the bunt-jigger to the glut, haul up, and furl it.

382 *a*. Some officers disapprove of riding down the head of a sail in bending, on the ground that the head-rope is always sufficiently stretched before it is sewed to the sail, and that the sail does not set as well. I cannot see sufficient reason for discontinuing this old custom, nor do I think that the sail will set as well without it; for if the rope is new, however much it may have been stretched in the sail-loft, it will require a greater force than the men on the yards can apply to it with their hands, to bring it taut along the yard.

383. **To bend a Topsail.** Examine the sail to see if all the head and reef-earings, reef-points, and rope-bands are complete and in good order. Then make the sail up with its head and foot together, having the head and first reef-cringles together, and out. The bowline, buntline and centre cringle in the head of the sail, and the clews, out. Then bight it in three parts on a pair of slings, having the end of the sail that belongs to the opposite yard-arm on top; that is, if you send it up on the port side, the starboard yard-arm must be uppermost.

384. This is the preparation for sending the sail up, by means of the topsail halyards, abaft the top, which is the general practice; though other methods are used which will be spoken of. Hook a burton to the fly-

block of the topsail halyards, and round it up sufficiently high to admit the sail over the top-rim; rack the tye to the topmast backstay or after shroud; hook the lower block of the halyards to the slings around the sail, hook also to the slings a snatch block and secure it by a mousing; to this snatch the hauling part of the halyards, which being again snatched at the deck, will steady the sail (serving as a guy), as it goes up. Man the halyards and hoist up the sail; when high enough lower away and haul it into the top. Then, having taken off the slings and unhooked the halyards, pass the upper end of the sail around forward of the mast, ready for bending.

385. In the mean time, and before swaying aloft the sail, send aloft the sail-loosers to get the jiggers on the yard-arms, to overhaul down the gear, and have the clewlines, buntlines, sheets, bowlines, reef-tackles, and bunt-jigger, ready for reeving, toggling, or hooking.

386. The sail being as in 384, hook the yard-jiggers, as for a course, into the first reef-crinkle, the head-ear-ring being secured to its standing part; and the bunt-jigger to the centre of the head of the sail. Man the clewlines, reef-tackles, yard and bunt-jiggers, and buntlines, and rouse the sail up to the yard; send aloft all the yardmen; haul out and bend the sail, bringing it to the yard as for a course (382).

387. Take off the yard-jiggers, cast off the racking from the tye and backstay, round down the lower block of the halyards and hook it in the chains. Pass in the leeches of the sail, and furl it.

388. Topsails are often sent up for bending forward of the top by the buntlines, by burtons from the top-

mast head, or by a topgallant yard-rope. If by the former, overhaul them down forward of the yard, on either side of the stay, and toggle or otherwise secure them to their proper places in the foot of the sail; then take the bights around under the sail, and rack them with stout rackings to their own parts; stop also the head of the sail to the buntlines below the racking. Have the bowline from forward, on the side you are sending up, secured to the centre of the sail to guy it clear in swaying aloft; the lower blocks of the yard-jiggers being in the top, the clewlines, sheets, and reef-tackles rove and ready for bending; *Man the buntlines! Sway aloft!* Have some hands on the yard, others in the top with the gear ready in their hands for bending, and some to cut the stops. As the sail passes the top, *Sway handsomely!* hook the bunt-jigger to the cringle in the centre of the head, and the long bunt-jigger to the upper glut. *Sway higher!* and haul the ends of the sail into the top, on their respective sides of the mast. Hook the yard-jiggers as before, reeve or toggle the sheets, clewlines, and reef-tackles. The gear being bent and manned, haul out on the jiggers and reef-tackles, lower away on the buntlines and bunt-jiggers (cutting the stop of the buntlines), until the head of the sail is level with the yard; pass the earings and bend the sail as before.

389. In case you use the top-burtons or yard-rope to send the sail up by; having overhauled them down forward of the yard as before, pass a stout lizard with a thimble turned in one end around the centre of the sail, taking two round turns, and hitching the end around the thimble part; hook the burtons or yard-rope to

this thimble, and use the bowline as before. Or, with the yard-rope, the lizard may be omitted, using the end of the yard-rope, passed as the lizard around the body of the sail. A long tackle also may be used to send the sail up by.

390. **Topgallant-sails and royals** are generally bent to their yards on deck, the latter always; for thus it is more conveniently and properly done, by placing the yards fore and aft, resting the ends clear of the deck. After being bent, they are furled with the clews out, ready for sending aloft.

391. In bending a topgallant-sail with the yard aloft, send the sail up to the topmast cross-trees by the clew-lines, or royal halyards. When there, bend the sheets, clewlines, buntlines, and toggle the bowlines. Bring it to the yard in the same manner as you would a topsail. Pass in the leeches and furl it.

392. **To bend a Jib.** Turn out the jib stay, unreeve it, and bring it in on either side; open the sail on the fore-castle; thrust the end of the stay down through its hanks, commencing at the top of the sail, and stop it to the lower hank near the nip, or that part of the stay which rests in the sheave when set up; bend the jib-halyards around the body of the sail, and the downhaul near the hanks; take out the end of the stay and reeve it through the inner sheave in the boom, and bend a rope to its end leading in board.

393. The sail now being ready to go out, hoist on the halyards until it is on a level with the end of the boom; haul out on the downhaul and stay, slacking the halyards as required, until the sail is out.

394. Set up the stay; unbend the halyards from

around the sail, and bend it to its head. Reeve the downhaul *up* through the hanks, and bend it to the head of the sail. Seize the tack down to the boom. Lash the jib-sheet blocks or pendants to the clews of the sail, and furl it.

395. To bend a Spanker. Lower down the gaff, and, having the sail ready, reeve the throat-rope, or nock-earring through the hole in the gaff near the jaws, and secure it. Then haul out the head of the sail by the peak-earring, which is passed similar to a head-earring of a topsail. When the head is taut along the gaff, pass the lacing around the gaff and through the eyelet-holes in the head of the sail, keeping the head-rope on a straight line under the gaff.

396. The head of the spanker being secured, seize the bights of the throat and peak brails to the leech of the sail, at a distance from the peak that will admit of its being brailed up taut along the gaff. Reeve them through blocks on the gaff on each side of the sail, then through blocks under the jaws of the gaff, and then on deck through their leaders. The foot brail is secured to the leach a short distance above the clew of the sail.

397. Seize the luff, which is the forward part of the sail, to the hoops around the mizzen or trysail mast; commencing with the upper hoop, and hoisting the gaff by the throat and peak halyards as they are secured.

398. When the sail is up, hook the tack-pendant or tackle, and rouse the tack down to its place. Reeve and haul out the outhaul, and trim the gaff by the throat and peak halyards until the sail has a proper set. Then rack the halyards aloft, come up the tack-tackle, ease off the outhaul, brail up, and furl the sail.

399. *Fore and main trysails*, sometimes called spencers, are bent in the same manner as the spanker; they are without booms, the clew of the sail being brought aft, in setting, by the sheet, hooked to eye-bolts in the deck.

400. *The fore-topmast staysail and flying-jib* are bent as a jib.

401. To **unbend a Course**. Haul it up, unshackle the tacks and sheets, cast off the rope-bands, secure the buntlines around the body of the sail, cast off the leech-lines and slablines, ease off the earings, and at the same time, lower away by the buntlines and clewgarnets; untoggle the bowlines, unreeve the tacks and sheets; and cast off the gear.

402. *A topsail* is unbent in the same manner, sending it down by the buntlines, and hauling it, as it is lowered, into either gangway.

403. **Unbending a Jib**. Having hauled it down, come up the stay ready for unreeving through its sheave; cast off the tack, bend the halyards and downhaul as for sending out or bending (392); set taut the halyards, hoisting the sail clear of the boom, and haul in on the downhaul, hoisting on the halyards sufficiently to keep the sail clear as it comes in, the sailors on the boom rendering the stay through the sheave.

403 *a*. **Unbending a Spanker** is also the reverse of bending, thus: Lower the gaff, casting off its luff from the hoops as it comes down; the gaff being down, unlace the head, cast off the peak and nock-earings, unreeve the brails, cast off the outhaul, and make up the sail.

404. In the foregoing operations of bending and unbending sails, the vessel is supposed to be lying at an-

chor with square yards; but as it is often the case at sea, in all varieties of weather, that sails require to be replaced by others, you should be acquainted with the process in such cases necessary.

405. In moderate weather with the yards braced up, it need not differ from that already explained; sending the sails up to windward. And in unbending it differs in this, that the lee head-earing is cast off first, rousing in the lee body of the sail, and securing it, by the earings, to the buntlines: then ease off the weather earing, and at the same time lower the sail as before.

406. But in a gale of wind, with the sails reefed; the process will be different. Suppose, for instance, that you have split a reefed course, and you wish to replace it by another.

407. **Shifting a Course.** Haul it up as in blowing weather (452); cast off a few of the reef-points and rope-bands along the yard, and clap on several good stops around the sail; secure the buntlines around the body of the sail, and then cast off all the reef-points, rope-bands, reef-earings, and leechlines; cast off the lee-head-earing and rouse the lee clew, by a line from the top, into the body of the sail, and secure it to the buntlines; then, having a line from the deck forward attached to the body of the sail, ease off the weather earing and lower away.

408. Having the other sail in readiness, stretched across the deck, and properly fitted for bending (378); bend the buntlines, reeve the clew-garnets, tacks, and sheets; and toggle the bowlines; pass several good stops around the body of the sail; hook the tackles from the yard-arms to the first reef-cringles, and clinch the head-

earings to the standing part of the tackle; hook the bunt-jigger to the centre of the head of the sail, and secure the buntlines to two or three of the first reef-points; man every thing and sway aloft, *Lay out lower-yard men!* Bring the sail to the yard square and a taut head, hook the reef-pendants, hook the burtons to them, and rouse them well up; reef the sail, bend the leech-lines, and set it as in blowing fresh (452).

409. Having split a close-reefed topsail in a gale, unbend it and bend another.

410. Take in the sail and furl it (463). Cast off a few reef-points of each reef, and rope-bands, to enable you to pass several good stops around the sail.

411. You may either send it down by the buntlines, or the topgallant yard-rope; if the latter, secure it around the body of the sail, cast off the buntlines, unreeve the clewlines, sheets, and reef-tackles, then cast off the reef-points and earings of each reef; cast off the rope bands, keeping fast the head-earings, bend a line to the lee head-earing, and rouse the sail into the top; then lower away by the yard-rope, bear the sail clear of the top, ease off the weather-earing, and guy it into the weather gangway as it is lowered.

412. Having the other sail in readiness and properly fitted, you may send it up by the topgallant yard-rope or by the buntlines, forward of the top; or by the topsail halyards abaft, as already described (384).

413. But it is desirable to have as little surface as possible exposed to the violence of the gale, which would retard the operation or endanger the sail; for this reason a topsail may be reefed from the foot with stout yarns before sending it aloft, and then, after the head is

brought to the yard (using the yard and bunt-jiggers as before), you may take the reefs out from the foot, as you take them in on the yard; to this there is an objection, the men on the yard finding it exceedingly difficult to cast off the reef-points from the foot; it is recommended instead, to make the sail up with the reef-bands together, the points all being out fair, and then to pass several good stops around the sail at certain distances apart, which will not prevent the men from bringing to or reefing the sail.

414. If in a chase you are unwilling to lose the effect of a sail, while replacing it by another, you may perform both operations at once, thus:

415. **If a Course.** Get the one you wish to bend (which we will distinguish as the new one), stretched across the deck under the yard; get up the yard-jiggers, and hook them to the first reef-criegles of the new sail; unbend the buntlines from the foot of the old sail, haul up the ends, and send them down between the yard and the old sail; bend them to the new one, stopping them to the head as before (380). Stopper the clews of the old sail, and lash the tack and sheet blocks to the clews of the new one; the topmast studdingsail halyards may be bent to the head-earings of the old sail to lower it by.

416. While this is doing, the men on the yard will hook the bunt-jiggers or a stout tackle, and stop the forward leechlines, to the head of the old sail; and cast off the rope-bands.

417. Man the yard-jiggers and buntlines, and run the new sail up to the yard abaft the old one; and while they bring the head of the former to the yard (832), the

latter is lowered on deck by the bunt-jiggers, forward leechlines, and head-earings, a line being attached to the head cringle to lower by; after the old sail is down, bend the forward leechlines to the new one.

418. **If a Topsail.** The new one must be previously swayed up into the top, and brought to the yard by the yard and bunt-jiggers; while the old one is lowered on deck by the buntlines.

CHAPTER XII.

STOWING A HOLD AND SPIRIT ROOM.

419. In performing this duty, an officer must be governed by the following considerations, viz. :—

1st. So to distribute the weight of ballast and tanks, which are permanent fixtures for the cruise, according to the form of the hold, that the vessel may be brought down in the water so as to preserve (as nearly as possible) her supposed best lines for sailing; which trim can be afterward kept in the distribution of the provisions and other articles.

2d. The proper stowage and security of all articles.

3d. Economy in space, and a general regard to the propriety of keeping near at hand certain articles for immediate use.

4th. To avoid, as far as possible, taking any article into the hold until it has been properly cleansed.

420. The first thing to be attended to is, to prepare the hold for the reception of the ballast, by having it thoroughly cleansed and whitewashed, and the limbers cleared; and then to stow the ballast.

421. Until within a few years it was customary to nail *dunnage*, that is, strips of board or hoop-poles athwart the skin, on which to stow the ballast. The object of this was to allow a free passage for the water, and circulation of the air. This is now discontinued; the ballast is laid on the skin, affording more room, and excluding much dirt.

422. *Pigs* of iron are used as ballast in vessels of war, which must be so placed as to promote an easy motion to the vessel. Commence stowing them next to, and on each side of, the kelson, on the skin of the vessel, extending forward and aft, from the greatest breadth of the beam toward the bulkheads, an equal quantity and similarly placed on each side; the greatest spread in winging out being athwart the greatest breadth of beam; each succeeding row of pigs placed close to the last, and gradually diminished in length to correspond nearly to the form of the hold.

423. It being necessary to place a given quantity of ballast near the kelson and about her greatest capacity—which quantity will be according to the model of the vessel—you will be obliged in a *sharp-bottom*, to place several tiers, one above the other, each one winged out beyond the last in conformity to the dead-rise; while on a *flat-floor* the same quantity will be contained in the spread of the first tier.

424. In winging and lengthening out the ballast, be careful not to form an uneven stowage for the tanks or casks above them—and still place it so compactly that the weight shall bear equally in the body of the hold.

425. After the ballast, are stowed the *water tanks, or casks*. The tanks are made to fit the form of the hold, and are placed, according to their marks, in their proper places. When stowed they should form on top an even surface, and be placed compactly. They are then wedged with slips of wood, and the seams calked and pitched, that no dirt may work down between them.

426. The tanks are then filled with water, after which the riding tier of casks are stowed above them, placed on

beds, and occupy the space between the forward part of the cable-tier and the after part of the fore hatch; the *breakage* being forward by the fore hatch.

427. *Water casks*, not only of the riding tier, but also those that form the ground tier in vessels without tanks, should occupy no more space than is absolutely necessary for their proper stowage; a few inches lost might probably prevent the stowage of a tier of provisions. Therefore, to economize in room, the beds should in all cases be made to fit the casks, and only high enough to allow their bilges to be free of the tanks or ballast.

428. Commence stowing the riding tier amidships, at the break of the orlop deck, and stow forward to the after part of the fore hatch, placing two beds under each cask. If the upper surface of the tanks is uneven, the breakages must be filled in with wood—chime pieces are also placed between the heads, if the chimes do not match; otherwise they are unnecessary. Stow the next row by the side of this in the same manner, placing hanging beds between the casks to keep the bilges of each row free. The remaining rows are stowed as before; and when all are stowed, level off with wood, filling up all the breakages under and between the casks. All wood stowed in the hold or spirit-room should be previously barked.

429. Then stow the provisions as compactly as possible, *pork* on one side and *beef* on the other—and fill in with wood as before.

430. The space from the forward part of the main hatch aft to the cable tiers, is generally sufficient for the stowage of the *dry provisions*; if not, the remainder may be disposed of in the wings over the *wet*.

431. In the breakage at the fore hold are stowed all

the *naval stores*, as tar, pitch, varnish, etc.—the *gang-casks*, and all the movable lumber, such as *spare buoys*, *buckets*, etc.

432. Previous to stowing the provisions, iron battens should be riveted to the beams fore and aft, in which you may stow *plank*, *boards*, *oars*, *shooks*, etc., placing those which will be most required in the battens over the orlop. Those in the fore hold are reserved for the small pieces of *iron*, *spare rammers*, *sponges*, *gun-scrapers*, *ladles*, etc. Under the orlop are stowed spare *gun-carriages*, *trucks*, *lower caps*, and other articles that will not probably be required.

433. The *orlop* is that part of the deck where the cables are stowed, immediately forward, and on each side of, the mainmast. The cables being stowed, there is room enough forward of, and within them, to stow the *stream cable*, *hawasers*, *messenger*, *cat and fish hooks*, *pendant-tackles*, *nippers*, etc., all of which should be so coiled that one or all of them may be passed up at a moment's notice. At anchor it is usual to keep one cable tier always clear, and in the other may be stowed all these spare articles as conveniently as possible. See paragraph 322.

434. If the vessel is without tanks, the casks forming the ground tier should be made to fit the form of the hold, and stowed as directed for the riding tier (427, 428), with floor and hanging beds, and chime-pieces. In all cases they should be stowed with their bungs up, and bilges free; commencing aft, and next to the kelson, and stowing forward.

434 a. The round-shot and chain-cables are stowed in their *crackers* under the main hatch. The grape and canister shot generally in the wings abreast of the main hatch.

435. In the stowage of the spirit-room, the general directions given for the hold will be sufficient to govern you. If any ballast is required there (as is sometimes the case), to preserve the vessel's trim, it is stowed first; then the spirit-casks, above which are stowed, as compactly as possible, all other articles, as sugar, tea, tobacco, and slop-clothing, etc.

435 *a*. Hawsers, in all vessels, should be kept on reels, and their ends convenient for being passed up when required.

CHAPTER XIII.

MAKING AND SHORTENING SAIL.—RUNNING RIGGING.

436. You should make yourself well acquainted with the manner in which the running rigging leads, where belayed, and the use to which each rope is applied. By *running rigging* you, of course, understand all those ropes used in bracing the yards, making and shortening sail, &c.

437. In the present chapter I will endeavor to show you their uses, and how rove; and the proper orders to be given by the officer while directing the operations of making and shortening sail, in which I will treat separately of each.

438. **To Set a Foresail.** Give the order, *Stand by to set the foresail!* or *Man the fore tack and sheet!*

438 a. The first would be most correct if before the wind, the latter if on the wind.

439. The fore tack is secured, by its standing part, to the fore tack bumpkin, is rove through a block on the clew of the sail, then through another block on the bumpkin, and the end leading in-board. The sheet is hooked to an eye-bolt on the ship's side abaft the fore channels, is rove through another block on the clew of the sail, then through a sheave hole in the side of the vessel, the end leading in-board. On each clew of the fore and mainsail are these two blocks, through which the tacks and sheets reeve. Thus the clew is either

hailed forward by the tack, or aft by the sheet, as the yards are braced.

440. At the above order (438) the men jump to their stations, the fore tack and sheet are manned, one hand being by each clewgarnet; the buntlines and leechlines are let go.

441. *Lay down on the fore yard and overhaul the rigging!* At this order one or two of the topmen lay down, and overhaul, through their blocks, the buntlines and leechlines, and are ready to overhaul the clewgarnets.

442. If the weather is moderate; as soon as the officer sees that the men are at the stations he orders *Clear away the rigging, Haul aboard!* At this the clewgarnets are let go, the tack hauled forward, and the sheet aft.

443. The mainsail is set in the same manner; and to get the tack close down, it is advisable, if the yard is braced up, to ease off the lee main brace, and slack the weather clewgarnet and main lift, the topsail clewline, reef tackle and bowline. After the tack is down and the sheet aft, brace up the yard, haul taut the lift and trusses, reeve and haul the bowline.

444. When the yards are square, and the wind directly aft, the mainsail is never set, but is hauled up snugly or furled; but with the wind quartering, the lee clew may be set to great advantage. To do so, *Man the main sheet!* The buntlines, leechlines, and slabline, are let go and overhauled. *Ease down the lee clewgarnet, Haul aft!* The weather clew is kept fast.

445. **To set the Foresail before the Wind.** *Man both fore sheets!* The rigging being let go and overhauled as before, order, *Down foresail!* As the sail

comes down take through the slack of the tacks; haul taut both lifts and trusses, and square the yard by the lifts.

446. The **clewgarnets**, are rove through the blocks under the yard (147), then through the clewgarnet blocks on the clew of the sail; the standing part is taken up and secured around the yard, or to a strap for that purpose on the yard; the fall or hauling part leads down, and through its leader by the mast.

447. The **buntlines** for the mainsail; the ends are rove through a double block under the forward part of the top, then down forward of the sail through thimbles in the first reef-band, and then hitched or toggled to the foot of the sail; in the bight of the buntline is a shoe-block, in the remaining sheave of which is rove the hauling part or fall, which is a separate rope, and leads forward to the fore rail; buntlines for the foresail lead through double blocks under the forward part of the fore top, then through blocks at the foot of the foremast; thus there are four buntline-legs to haul up the foot of the sail.

448. **Leechlines**. There are two forward and two after ones on each side, leading through small single blocks on the forward and after part of the yard, and up through a double block, turned in a short leg, which hooks to forward eye-bolts in the lower cap; which blocks are so arranged that the leech of the sail, when hauled up, may be taut along the yard; the standing parts of the leechlines are hitched or toggled, to the leeches of the sail.

449. *The slabline* is rove through a small single block under the slings of the yard, the end or stand-

ing part taken down abaft the sail, and secured to the centre of the foot, or traverses by a thimble on a short span.

450. To prevent mistakes in the leechlines it is advisable to lead their hauling parts differently, thus: the after ones through leaders by the mast, and the forward ones through leaders out at the side, and abreast of the mast.

451. **To take in a Course in moderate Weather.** If a foresail, order, *Stand by to take in the foresail!* or *Man the fore clewgarnets and buntlines!* The clewgarnets, buntlines, and leechlines, being manned, men stationed at the tack, sheet, and bowline, order, *Up foresail!* The tack, sheet, and bowline are let go, the clews of the sail are run up by the clewgarnets, the body by the buntlines, and the leechlines confine it snugly to the yard.

452. But in a fresh breeze, or gale of wind, it is necessary, in order to avoid shaking or flapping the sail, which may split it, to proceed, thus: If you wish to set a course, the yard being braced up; every thing being manned as in 440, order, *Ease down the lee clewgarnet, Haul aft!* Then when the lee clew is sufficiently aft to fill the sail; *Ease down the weather clewgarnet, Haul aboard!* To take it in under similar circumstances, the men being stationed as in 451, order, *Ease off the tack and bowline, Haul up the weather clewgarnet!* Then, *Ease off the sheet, Haul up to leeward!* Having the buntlines well manned, run them up the moment the sheet is started; the lee clew being the first set, and the last taken in, steadies the sail during the operation then haul taut the weather main braces

453. *Topsail sheets* are to stretch the foot, and confine its clews to the extremities of the lower yard, when set; the standing part is secured around the yard-arm by a running-eye, inside-clinch, or to a strap on the yard outside of the sheave-hole. It is then rove through a block on the clew of the sail, through the sheave-hole in the yard-arm, through the quarter block (143), and the end, leading down on deck, is rove through the topsail-sheet bitts and belayed around its head; between the sheave-hole in the yard-arm and the quarter-blocks, there should be cleats nailed to the yard, to keep the sheet clear of, and prevent their chafing, the straps on the yard.

454. *Topsail clewlines* lead as the clewgarnets of a course (147, 172).

455. **The Buntlines.** There are two legs, one on each side; their standing parts are hitched or toggled to the foot of the sail, at equal distances from the centre; their hauling parts rove through blocks at the mast-head, and then lead on deck. They are spanned together at the slings of the yard by lizards.

456. *The reef-tackles*, to haul the leeches of the topsail up to the yard for reefing, are rove *down* through a sheave-hole in the yard-arm outside the eyes of the rigging, *out* through a block strapped on the leech of the sail below the close reef-band, then taken up and the end secured to the extremity of the yard-arm. The hauling parts lead *down* through a block in the topmast rigging and then on deck.

457. *The bowlines*, toggled to a double span, or to bridles, on the leech of the sail lead forward, and are to support the weather leech when on the wind.

457 *a.* The fore top bowlines lead through blocks at the bowsprit cap. The main to under the fore top, the mizzen to the cross-jack brace block.

458. *Topsails*, are the first sail set in getting under way, under ordinary circumstances, and the last taken in in coming to anchor, except the spanker. At sea they remain constantly set, are reduced by reefing in fresh winds, but never taken in except in gales of wind, or for the purpose of repairing or unbending. The mizzen topsail is an exception, inasmuch as it is often settled down on the cap or furled, when sailing with the wind directly aft; and often taken in in heavy weather when the fore and main are close reefed.

458 *a.* A mizzen topsail is said to be *scandalized*, when it is clewed down, reef-tackles and buntlines hauled up when before the wind; that it may present a small surface to the wind.

459. **To set a Topsail.** In getting under way, the yard being square and on the cap, order, *Lay aloft sail-loosers! Man the boom tricing-lines!* When the men are aloft, *Trice up! Lay out, and loose!* The heels of the topgallant studding-sail booms are triced up, the men lay out on the yard, and loose the sail by casting off the gaskets from around it. While doing which, *Man the topsail sheets and halyards!* The clewlines and buntlines are let go, and overhauled aloft, the gaskets are cast off, the bunt-jigger unhooked; and, the men on the yard holding up the sail by hand, it is reported *ready.* The sheets being well manned the order is given, *Let fall! Lay in! Sheet home!* The clews of the sail are hauled out to the lower yard-arms by the sheets, until the foot of the sail is taut. The men being

in off the yard. *Hoist away the topsail!* The yard is hoisted up by the halyards, until the leeches of the sail are taut, keeping the gear well overhauled.

460. **To take in a topsail** in coming to anchor. *Man the topsail clewlines!* At this order the clewlines, clew-ropes, buntlines, and downhaul-tackle are manned; hands stationed by the sheets, halyards, bowlines, and braces; the latter for the purpose of squaring the yards if braced up: have a hand on each lower yard-arm to render the sheets through their sheaves; order, *Clear away the topsail sheets, clew up!* The clews are hauled up by the clewlines, and the body by the buntlines; when the sail is up, and the yard square by the braces, *Settle away the topsail halyards!* The yard is now lowered down on the cap, the buntlines are kept some distance above the yard, the clews roused forward by the clew-ropes, and the leeches passed in ready for furling.

461. **Clew-ropes and Clew-jiggers.** In preparing to shorten sail for furling, clew-ropes are taken down forward of the topsail and bent to the clews of the sail, leading through small tail blocks on the rigging above the cap; and the topsail sheets singled: small jiggers are used for this purpose on the courses, that is, to haul the clews forward for furling.

462. **Downhaul tackles** are used only in the larger sized vessels, and not always in them, for the purpose of rousing the yard down when the halyards are let go. In ordinary cases the yard will come down itself, by its own weight, assisted by the clewlines; but when the sail is full, in a squall, binding the parral against the mast, or being aback binding against the rigging, or

when the tye is jambed in the gins at the mast-head; the assistance of a downhaul tackle is necessary.

463. To take in a close-reefed Topsail in a Gale of Wind. Different opinions are held as to the proper mode of proceeding, under the circumstances, when on the wind. Some officers think that the yard should be braced aback and clewed down before the sheets are started; but the most general, and we think plausible, opinion is, as follows. Man the clewlines, buntlines, weather braces, and downhaul-tackle; tend the sheets, lee brace, and bowline. When ready, *Ease off the weather sheet and bowline! Clew up to windward!* Mind the weather helm, to keep the sail from shaking. When the weather clew is up, *Let go the lee sheet and halyards, and clew up briskly to leeward!* Running up the buntlines at the same time, bracing aback and clewing down the yard the moment the lee sheet is started.

464. To set a close-reef Topsail under similar Circumstances. Brace up the topsail yard sufficiently, and the lower yard more than the topsail yard. Haul taut the lee topsail brace, then *Lay out and loose! Man the topsail sheets!* Attend the gear, let go and overhaul the buntlines, *Ease down the lee clewline, and haul home the lee sheet!* Keeping the vessel off if necessary; then, *Ease down the weather clewline, and haul home the weather sheet!* Man the halyards, and sway the yard clear of the cap. Trim the yards, haul taut the weather-brace and rolling-tackle, and haul the bowline.

465. To set a Topgallant-sail. Order, *Lay aloft and loose the topgallant-sail! Man the topgallant sheets and halyards!* While the sail-loosers are loosing the sail, the sheets and halvards are manned, hands be-

ing by the clewlines and braces. When ready; *Let fall! Lay in! Sheet home!* While hauling home the sheets, if on the wind, brace up the yard sufficiently to shake the sail; take a turn with the weather brace, and let go the lee one. If before the wind, let go both braces; and if the wind is quartering, the lee one. *Hoist away!* Hoist the sail up "a taut lecch," *Belay the halyards!* Trim the yard to the wind, set taut the weather brace, keeping the lee one a little slack, and haul the bowline.

466. **To take in a Topgallant-sail.** *Man the topgallant clew-lines! Lay aloft to furl the topgallant sails! Tend the braces!* When the clewlines and weather braces are manned, hands by the sheets, lee brace, and bowline; if in a moderate breeze, order, *In topgallant-sails!* The sail is clewed up, halyards let go, and the yard braced in at the same time. If in a fresh breeze order, *Let go the lee sheet and halyards, clew down!* rounding in at the same time the weather brace. *Let go the weather sheet and bowline, clew up!* If the wind is aft, or on the quarter, order, *Let go the halyards, clew down! Let go the sheets, clew up!* Squaring the yard as it comes down by the braces, and starting the sheets when down. The sail being clewed up, steady the yard by the braces, haul taut the halyards, and then order, *Lay out and furl!*

467. Line-of-battle ships, frigates, and sometimes sloops of war, have buntlines to their topgallant-sails, which in a heavy sail are absolutely necessary, to haul up for furling.

468. **To set or take in a Standing Royal.** Proceed as with a topgallant-sail in moderate weather.

469. **Flying royals** are used in the smaller vessels, and

occasionally in sloops of war and frigates. In setting, the halyards are bent to the slings of the yard, and stopped out to the yard-arm opposite to the side from which it goes up, and a tripping-line to the other yard-arm. *Sway aloft!* When high enough, the sheets, previously rove through the sheave-holes in the topgallant yard, are toggled to the clews of the sail; the yard-arm stop cut, and sail loosed; the sheets and halyards being manned, *Sheet home!* *Hoist away!*

470. *To take it in.* The stripping-line, which is kept bent to the yard while the sail is set, leads down on deck on the weather side. *Stand by to take in the royal!* The tripping-line being manned, hands by the halyards and sheets, and two hands aloft to untoggle the sheets; order, *In royal!* The sheets are let go, the sail lowered by the halyards, and hauled down by the tripping-line. The men aloft untoggle the sheets from the clews as it comes down; the sail is either secured up and down the topmast rigging, or, which is more common, sent down on deck, and stowed, after being furled, in the boats.

471. When a vessel carries a flying royal, she rarely carries any sail above it. But with a standing royal, which is set and taken in as a topgallant-sail, skysails, and above them moonsails, are set in light winds.

472. **Skysails**, next above the royals; are set and taken in in the same manner as a flying royal.

473. **Moonsails**, next above skysails; are sometimes triangular sails, and generally only used at the main; are set like the skysail, being hoisted up by the signal halyards.

474. **Head-Sails**, a collective term, by which all those

sails set forward of the foremast are known. They are as follows.

475. **The fore topmast staysail**, the nearest in toward the ship, is set on the fore topmast spring stay, which is rove, in bending, through its hanks. This sail is seldom used except in heavy weather, when the topsails are reefed, and it becomes necessary to haul down the jib. It is kept stowed, when not in use, in a net-work or cross-lashing between the manropes of the bowsprit, just within the topmast spring stay.

476. **The jib**, set on the jib-stay, which is rove through its hanks in bending, is, as the topsails, constantly set, except in gales of wind or very fresh breezes, when its place is supplied by the topmast staysail. Before the wind, it is either brailed up or hauled down. In getting under way, it is used, with the fore topsail, to cast the ship; and in some cases (see Evolutions, 549), with the wind directly out of the harbor, the vessel is often got under way under the jib alone.

477. In coming to anchor the jib is hauled down when the topsails are clewed up.

478. **The flying-jib**, set on the flying-jib stay, which reeves through its hanks; is used with the royals, set and taken in with them.

479. **The jib-of-jib**, next without the flying-jib, is set in light weather with the skysails, and taken in with them.

480. The manner of setting and taking in all the head sails is the same. To set, give the order, *Clear away the jib!* (flying or jib-of-jib, as the case may be). *Man the halyards!* Have a hand by the downhaul to clear it away, and, in the case of the fore topmast staysail or jib,

send a hand out to light up the hanks. When ready, *Let go the downhaul, Hoist away!* When up taut, trim the sheet.

481. *To take it in. Man the jib downhaul!* Have a hand by the halyards and sheet. When manned, *Let go the halyards; haul down!* By easing off the sheet as the halyards are let go, the pressure of the hanks on the stay is relieved, and the sail comes down easily. *Lay out and stow the jib!* When stowed take in the slack of the halyards and sheet.

481 a. It is a good arrangement to have a spilling-line on the foot of the jib, and leading through a small single block or thimble on either side of the cap, and thence inboard. It facilitates furling the sail in a stiff breeze, and is convenient for flattening in, being more expeditious, and giving to the sail the desired effect.

482. The **Spanker**, an important sail, set abaft the mizzenmast, being at one extremity of the lever, governs the vessel more or less in all the evolutions. It serves to bring her to the wind, or to prevent her from falling off; is always set at sea, except with the wind aft or well on the quarter; and in coming to anchor is the last sail taken in, as it is used to bring the vessel up head to wind, after the topsails are clewed up.

483. **In Setting the Spanker.** Top the boom up by both topping-lifts, after which overhaul the lee one. *Man the spanker outhaul!* Have hands by the brails, and hands aloft to overhaul them. *Let go the brails, haul out!* Slack the weather vang, and trim the sheet.

484. *To take it in. Man the spanker brails!* Have the lee throat brail well manned, and hands to take in the slack of the weather one, and also the peak and foot

brails; and a hand by the outhaul. *Let go the outhaul, Brail up!* At the same time haul the boom amidships and crotch it, or in wearing, haul it over on the weather quarter, ready for the other tack; steady the gaff by the weather vang.

485. **Staysails**, set between the fore and main masts, are the main topmast, middle, topgallant, and royal staysails; the first is stowed, when not set, in the fore cat-harpins, and all the others in the fore top. After being cleared away for setting, those in the top are triced up with their stays; after which they are set as the head sails, the sheets leading down on deck, and belayed in the lee gangway.

486. These sails are only used in light weather with the wind free. They are termed lifting sails. They are not used in all vessels, as some officers object to them, it being a matter of much doubt whether they increase at all the speed of a vessel, or are a useless waste of canvas.

487. **Studding or steering sails**, in light or moderate weather, with the wind free or aft, are used with great advantage to increase the speed of a vessel. The weather topmast, top-gallant, and royal studding sails, may be set with the wind one point free, or forming an angle of seven points with the keel. The lower studding-sail can only be used to advantage with the wind abaft the beam. With the wind aft and yards square, they are set on both sides lower and aloft. We will now set and take them in, commencing with the one generally set first.

488. **The Top-gallant Studding-sail.** At sea this sail is kept in the top, stowed up and down in the topmast rigging. To set it, order, *Stand by to set the top-gallant studding-sail!* Haul taut the top-gallant lift. The sail

is cast loose in the top, having only a ropeyarn stop around it. The halyards manned on deck, and the tack in the top, a hand by the sheet, and also on the yard to rig out the boom; *Haul taut! Rig out! Hoist away!* When the boom is sufficiently out (which will be known by the mark on it), the heel is secured, keeping it on the right slue for the tack. As the sail goes up, the topmen take in the slack of the tack. When it is above the topsail yard, the stop is cut, tack hauled out, it is run up to the yard, and the sheet trimmed down.

489. **To take it in.** Order, *Stand by to take in the top-gallant studding-sail!* Man the sheet in the top, have a hand by the halyards, by the tack, and on the topsail yard to rig in the boom; order, *Lower away! haul down! rig in!* Let the topmen rouse the sail well abaft the top-gallant sail, easing off the tack before you lower the halyards, or it will fly forward of the top-gallant sail, and render the operation more difficult. When the sail is in, take the jiggers off the top-gallant lifts. The fore and main are set and taken in together.

489 a. It is a good plan to have a downhaul to a top-gallant studding-sail, bent to the outer end of the yard, and leading down into the top; by this it may be easily hauled down in taking in, and dipped forward when necessary.

490. **The royal studding-sails** are set and taken in in the same manner as the top-gallant.

491. **The Topmast Studding-sail.** To set it, order, *Stand by to set the topmast studding-sail!* Get a burton on the topsail yard and haul it well taut; get the sail out, and made up ready for sending aloft; overhaul down and bend on the halyards and tack; have one stop around

the sail, and another around the halyards and outer yard-arm, to keep it up and down in hoisting; hook the in-and-out jigger on the lower yard for rigging out the boom. Having the gear manned: *Rig out; hoist away!* As the sail passes the lower yard the outer stop is cut, and when high enough above the yard to clear the brace, the other stop is cut. As it is run up to the topsail yard-arm, take in the slack of the tack and light the downhaul over the brace-block. Haul the tack close out, hoist the sail up taut, and trim aft, in the top, the short sheet. As soon as the boom is out, its heel is lashed to the fore yard, and the in-and-out jigger shifted for rigging in.

492. **In-and-out Jigger.** A gun-tackle purchase, is used thus: To rig out, the outer tail-block is secured to the neck of the boom-iron, the inner one to the heel of the studding-sail boom; the fall is rove through a leading block, and then down on deck. In shifting it to rig in the boom, secure one of the tail-blocks to the slings of the yard, and the other to the heel of the boom, fall leading as before.

493. **To take in the Topmast Studding-sail.** Order, *Stand by to take in, etc.!* Man the downhaul, sheet, and in-and-out jigger; and have hands by the halyards, tack, and short sheet in the top. *Lower away, haul down, rig in!* Lower on the halyards, and haul the sail down to the boom by the downhaul; then let go the tack and haul down on the downhaul and sheet together, rigging in the boom at the same time. *Take the burton off the topsail yard!* Make up the sail, hitch the halyard to the clew of the topsail, and stop the tack along the boom.

494. A fore topmast studding-sail is often carried when running before a fresh breeze, such as would re-

duce a ship to double reefed topsails if close-hauled; in which case the boom should be well supported. In large vessels there is a brace to the boom, which is a sufficient support; but in want of this, the lower studding-sail halyards may be used, thus: Toggle them above the boom, bring the standing part aft, and set it up securely abaft the fore rigging. This acts as a martingale to the boom.

495. A main topmast studding-sail is carried, in some vessels, with the wind abaft the beam, and has great effect in increasing the speed. It is set and taken in like the fore.

496. "In some vessels the topmast studding-sail tack is brought in along the yard, and the boom brace fitted with a short pendant and whip purchase, which is thought to be a proper method for a large vessel, having only the brace to attend to in trimming the yard;" but it appears to me that if the brace and tack are rove through the sheaves of a double, or through two single tail-blocks in the main rigging, and both belayed together around the same pin, both may be attended to as conveniently as one.

497. Order, *Stand by to set the lower studding-sail!* Get it out and make it up for setting; overhaul down the outer and inner halyards, and bend them on, the former to the yard, and the latter to the inner head of the sail; overhaul in and bend on the outhaul to the clew; pass a stop around the sail, and secure it by a toggle, having a tripping line from it leading in on deck. Haul well taut the fore lift, brace, and trusses. Man the lower boom topping-lift, and forward guy, and have a hand by the after guy. Top up the boom and haul

forward on the forward guy, and at the same time, having every thing manned, halyards, outhaul, etc. ; *Hoist away, haul out!* taking in the slack of the out haul and inner halyards. When half way up between the deck and lower yard, haul out the toggle, and as the sail falls haul out the outhaul, and hoist it up taut to the topmast studding-sail boom ; then haul out the outhaul and hoist up on the inner halyards. Reeve the sheet through a thimble or block on the goose-neck of the lower boom, and haul it well taut. The lower boom is trimmed by the fore yard, so that the sail may set, as nearly as possible, parallel with the foresail.

498. *To take it in.* Order, *Stand by to take in the lower studding-sail!* Man the clewline and sheets, have hands by the halyards and outhaul, *Clew up!* The outhaul being let go, the clew is hauled up to the yard ; then *Lower away, haul in!* Ease off the outer halyards, and haul in on the sheets and clewline. When the sail is inboard and over the forecastle, *Lower away the inner halyards!* The sail being down, make it up. Get the lower boom alongside, and trice up the gear.

498 a. "A judicious luff while taking in a lower studding-sail will greatly facilitate the operation."

499. The lower studding-sail is sometimes set in the following manner. A small tackle or jigger is hooked to a strap on the inner end of the studding-sail yard, and its double block in toward the slings of the fore yard, the fall leading down on deck. Having the halyards and outhaul manned, run the sail up to the fore yard by the jigger and inner halyards (keeping the clewline hauled up close). Then haul out on the halyards

and outhaul, easing out the jigger and letting go the clewline as the sail goes bodily out.

500. And in taking it in ; man the clewline and jigger, clew up the sail and rouse it bodily in by the jigger and sheets, until inboard, and over the forecastle ; then lower away the halyards and jigger.

501. This last method, though not in general practice, seems to be the neatest and most seamanlike.

502. The topmast and lower studding-sails, after being taken in and made up (furled), are wrapped in a tarpaulin cover, and stowed on each side of the launch, or on the boats amidships. In sloops-of-war, having a topgallant forecastle, they are sometimes stowed thereon athwart-ships. The topgallant and royal studding-sails are stowed in the tops, up and down the topmast rigging, at sea ; and on the booms or in the sail room, in port.

503. **Trysails**—see 399—are set and taken in much like a spanker, the difference being, that the clew of the former is hauled aft by a sheet, while the latter is hauled out to the boom by an outhaul in setting. They are brailed up alike. These (the try sails), are rarely used except in gales of wind, when, together with the fore storm-staysail, they are excellent in riding out the gale ; and as it abates, and the sea rises, they serve to steady the ship. They have generally taken the places of storm-staysails, are easier worked, and neater in appearance.

504. There are a few other sails, of little use or importance, which are seen in some vessels, not so much for the service they render, as for display. They are as follow.

505. **A gaff-topsail.** Set above the spanker, halyards leading up to the topgallant-mast head, outhaul to the gaff end, and tacks leading on deck, one on each side of the gaff.

506. **A Ring-tail.** Set abaft the spanker, on a boom which rigs out beyond the spanker boom, set with halyards, outhaul, and sheet, like a lower studding sail.

507. **A Save-all.** Set under the lower studding-sail boom, with outer and inner halyards and sheet. It is kept down while set by weights attached to its foot.

508. **A Jib-topsail.** Set flying over the jib, the halyards leading to the topgallant-mast head, and the tack down to the jib-tack, while the clew is nearly half way from the tack to the head of the sail, the sheets leading down on the forecastle.

CHAPTER XIV.

REEFING AND HOISTING.

REEFING AND HOISTING.—TURNING OUT REEFS.

509. When it becomes necessary to reduce sail by reefing the topsails; *Call all hands to reef topsails! Man the topsail clewlines, buntlines, reef-tackles, and weather braces!* Have hands by the lee braces, bowlines, and halyards.

510. When ready; *Clear away the bowlines, round in the weather braces! Settle away the topsail halyards!* And when the yards are braced in sufficiently to lift the sails, *Let go the topsail halyards, clew down!* Brace the yard in so that the topmast rigging may not prevent it from being clewed down to the cap; haul up the buntlines, and haul out the reef-tackles, while the yard comes down; and when it is down on the cap, steady the yard by the lee braces, and haul taut the halyards.

511. *Lay aloft topmen! Trice up, lay out and take one reef!* Light the sail over to windward. Pass the weather earing forward and over the yard, rousing the reef-crinkle well up, and expending the earing in turns through the crinkle and over the yard, except sufficient to secure its end; then *Haul out to leeward!* hauling the reef-band well taut; and pass the lee earing in the same manner as the weather one. When they are se-

cured, tie the reef points, hauling the sail well up on the yard by the forward ones.

512. While the men are reefing, luff the ship up and spill the sale, that they may gather it up readily. Pass the after reef-points clear of the topgallant sheets; that is, between them and the yard; and be particular that the reef-points are all tied.

513. *Lay in! Down booms! Lay down from aloft! Man the topsail halyards!* Clear away all the rigging, buntlines, clewlines, and reef-tackles; and have them lighted up. *Attend the braces!* Let go the lee ones, and stand by to slack the weather ones. *Hoist away the topsails!* When up "a taut leech," *Belay the topsail halyards!* Trim the yards and haul the bowlines.

514. Be particular to brace the topsail yards well in before you let go the halyards, or you will endanger your lee topmast rigging. And after reefing and hoisting up the sail, see that the hanging mats are shifted on the rigging in the wake of the topsail yards.

515. In a sea way, and the vessel pitching, do not hoist the sails up, or haul the braces, too taut; it endangers the yard and the rigging; the lee braces should be kept slack to allow the yard a little play, but be particular that, though the brace is slack, it is securely belayed to its pin, ready for a shift of wind.

516. Frequently topgallant sails are set when you are about to reef the topsails, and if you intend to set them again over single reefed topsails, clew the sail up; or you may merely let go the sheets, and light them up as the topsail yard comes down, without furling them; and after the topsail is mast-headed, sheet home the topgallant sails.

517. If the wind still increases, and it becomes necessary to reduce sail still further, clew up and furl the topgallant sails, then take a *second*, and a *third* reef, proceeding as in the first, having each successive reef-band immediately below the preceding one.

518. And to reduce sail still further by taking the last or *close* reef, pass the earings abaft and over the yard, bring the reef-band under the yard, and covering the other reefs. It will be necessary in this reef to haul the reef-tackles close up, to do which you will be obliged to start a little of the topsail sheets, or brace in a little the lower yards.

519. After taking the third reef in your topsails, it is advisable to get *preventer-braces* on the weather topsail yard-arms, particularly if the braces are much worn.

520. Bracing in a topsail yard for reefing, in a fresh breeze, it requires great force, and not unfrequently the brace, from being much worn, becomes stranded; as soon as you discover it, put on a good stopper above the strand, man the weather clewline and clew the sail up, bend the lee bowline to the extremity of the lee yard-arm, and get a preventer-brace on the weather one; then, and by these, brace in the yard (easing off the lee sheet) and clew it down; and while you are reeving new braces or splicing the old ones, steady the yard by the bowlines bent to both yard-arms, as before directed.

521. After hoisting up a close-reefed topsail, haul taut the reef-tackles, so that they may bear a strain to relieve the reef-earing, and be particular that the yard is hoisted clear of the lower cap. Send the men down from

aloft, haul home the sheets, trim the yards, and haul the bowlines.

522. The mizzen topsail is generally furled when the fore and main are close reefed (458).

523. Line-of-battle ships, and some frigates, have downhaul tackles hooked under the slings of the yard, to assist in clewing down (462).

524. **To reef topsails before the wind**, you may, by putting the helm either way, and bringing the wind abeam, clew the yards down as the sails lift, and keep her in this position until they are reefed; or if you wish to continue on your course, wind blowing very fresh, clew the yards down, clew the sails up, and then reef as before directed (511, 512, 513), or you may reef the fore topsail first, which is becalmed by the main, hoist it; and then brace the main yard up, and bring the wind on the quarter. .

525. **To reef a Course.** Having the reef-pendants hooked to the second reef-cringles, on the leeches of the sail; hook the clew-jiggers, or a burton from the lower mast-head, to the thimble in the upper end of the pendant; *Man the clewgarnets, buntlines, and leechlines!* and haul the sail up as in a fresh breeze (452). Haul well taut both lifts, trusses, and rolling tackles. *Haul out the reef-pendants!* slacking the clewgarnets if necessary to get them well up. *Lay aloft lower yardmen! Man the boom tricing lines! Trice up, lay out and reef!* Proceed in reefing as in taking the first reef in a topsail (511, 512), being careful to secure every reef-point and tie them clear of the topsail sheets. *Lay in! Down booms! Lay down from aloft!* Let go and overhaul the reef-pendants, and set the sail as in 452.

526. *Top-gallant sails* have sometimes reef-bands fitted with points, and may be reefed as you would reef a topsail, but this is rarely done. When it blows too fresh to carry a whole topgallant-sail over a single reefed topsail, it is time to furl it.

527. *A topmast studding-sail*, when set with a reefed topsail before the wind, must also be reefed; this is done on deck before setting the sail.

528. **To shake or turn a Reef out of a Topsail.** *Haul taut the reef tackles and buntlines! Settle a little of the topsail halyards!* to take the strain off the leeches of the sail and reef-earring. Send aloft the sail-loosers. *Trice up, lay out!* Cast off the reef points, from the bunt out, and have the earings ready to ease away; when the reef-points are all clear, *Ease away! Let go and overhaul all the rigging!* reef-tackles, buntlines, clewlines, and topgallant sheets. *Lay in off the yard! Lay down from aloft! Man the topsail halyards! Attend the braces! Hoist away the topsails!* Trim the yards, and, if on a wind, haul the bowlines.

529. **To turn a reef out of a course**, proceed as in a topsail (528), easing off the tack and sheet to relieve the strain on the leeches of the sail, while you are hauling taut the reef-pendants; when done, haul aboard the tack, and aft the sheet.

CHAPTER XV.

HINTS ON PREPARING A VESSEL FOR SEA.—SPARE SPARS.

530. In getting a vessel in readiness for sea, an officer should be particular that every precaution is taken to prepare her to meet any emergency; and in all the internal arrangements, as well as in the rigging, he should combine, as much as possible, neatness and economy with strength and usefulness.

531. He should see that the provisions, water, and stores of every description, are on board in compliance with the requisitions made out and approved, and that they are properly stowed in those parts of the hold, spirit-room, or store rooms, where they belong; that the proper entries are made on the log, and on the books of the yeomen; and that proper and capable persons are appointed to attend to, and account for their expenditures. That the store rooms are properly regulated, so that any article required may be instantly obtained; that the rigging in the boatswain's store room may be so arranged, that the end of any sized rope may be, at any moment, passed up on deck. (It is a good arrangement to have a coil of each sized rope on reels, ready for instant use.) That the hawsers and tow-ropes are so stowed that their ends may be, at any moment, passed up.

532. That the sails bent are properly brought to the yards and gaffs, that every rope-band is well secured,

and that the earings are good. That the spare sails, properly fitted with rope-bands, bowline-bridles, reef-tackle blocks, head and reef-tringles, sheet and clew-line blocks, etc., are properly made up, enveloped in covers, and marked and stowed conveniently in the sail room.

533. He should see that the lanyards of the rigging are good, that the dead eyes and ends of the shrouds are square, and that the latter are properly capped. That the purchases, winding and rolling tackles, preventer shrouds, storm sails and gear, etc., are fitted and at hand—the latter should in all cases be made of well stretched rope. That the running rigging all leads fair, that mats and raw hide are placed about the rigging and yards, wherever they may prevent chafes. He should see that the ratlines of the lower and topmast rigging are trustworthy and square, and that defective ones are instantly replaced by new; so that the sailors may go aloft fearlessly, and with confidence. That each top is supplied with a top-maul, secured by a lanyard; and a small arm-chest to contain marlinspikes, stoppers, jiggers, etc. That the out-riggers are properly fitted in each top for the back-stays. That stoppers are prepared and ready to be applied to the braces, sheets, halyards, etc., wherever they are belayed; and that the captains of the fore-castle, masts, and tops, have always at hand tackles to be applied to any rope when necessary. That chain slings for the yards and gaffs are properly fitted, and at hand for instant use.

534. After the boats are in, he should see that they are properly stowed, and that they, the galley, spare spars, anchors, and every thing that may be affected by

the rolling and pitching of the vessel, are well secured. That there are stretchers in all the boats, and that one of the quarter or stern boats is always kept in readiness to be lowered at short notice. That the life buoy is properly hung, with a hatchet becketed near to cut it adrift. That there is an axe or hatchet, always kept at each mast secured in beackets.

535. He should see, previous to sailing, that the rudder be well hung and free in its movements, and that pieces to make a spare one are on board, and at hand in the hold. The tiller ropes should be properly attended to, and examined at least once a day at sea, and occasionally in port, to detect chafes. If they are of raw hide (which are the most serviceable), they should be occasionally oiled. That the air ports and lower deck ports are well lined and secured by calking, or that the apparatus for closing them is always within reach, and ready for immediate use. That the pumps are in good order, and that the carpenter or one of his assistants ascertains at least every hour while at sea, and occasionally in port, the quantity of water in the vessel, and that all the pump-gear and sounding rod are always kept in their proper places.

536. He should see that the compasses, timepieces, sandglasses, and log, have been verified; and that they and the chronometer are kept in their proper places and have a free motion. That the chronometers are well regulated, the rate known before sailing, and that they are regularly attended to. That every thing belonging to the capstan and cables, such as the bars and swifters, the messenger, nippers, stoppers, hook-ropes, voyal and its tackles and blocks, are ready for use. And that the

shackle-bolts for the chain are kept well greased, in order that they may be easily unshackled. That the vessel's draught of water be taken immediately before getting under way, and that hand-leads and lines, properly marked and fitted, are placed in the channels abreast the main mast. That the tarpaulin covers for the hammocks, boats, hatches, capstan, binnacle, etc., are in a good state, and that the carpenter is always ready with battens for the hatches, and shot plugs.

537. He should see that the whole apparatus for securing and working the guns is complete, bars and hand-spikes, port-lanyards, quoins for the breech, cleats for the trucks, muzzle-caps and lashings, priming wires and boring bits, aprons, rammers and sponges, the latter with good tarpaulin caps, side and train-tackles, port-bucklers, etc., and that the breeching is good and well fitted. That the fire buckets are well fitted with lanyards, and kept in their proper places; and that the wash-deck buckets are all marked. The powder being on board, he should see that there are a certain number of cartridges filled, not only of the full but reduced charges. That the shot, as it is received on board, be all passed through the formers.

538. The watch, quarter, and station bills should be carefully made out, and each person on board made acquainted with his proper station for each evolution, for action—and his proper berth and mess.

539. **Spare Spars.** Spare topmasts and stump topgallant masts are stowed between the fore and main masts—the fore and main with their heads forward, and the mizzen with its head aft—the jib-boom also is stowed midships with its outer end forward. Spare fore and

main-topsail yards, completely rigged, are stowed in the cranes placed for that purpose from the gangway aft; one-half of a fore and also of a main yard are also stowed in the cranes. Top-gallant and royal yards and studding-sail booms (of the latter there may be some spare ones stowed amidships with the topmasts) are more easily replaced, and are not of as much importance as those already mentioned. A vessel may be saved from a lee shore by having a topsail or lower yard to supply readily the place of one sprung—while the lighter yards may be of little use; though in case of chasing, or being chased by, an enemy, top-gallant sails or studding-sails should not be unused for the want of yards or booms. Spare spars should be at all times protected from the effects of the weather, by having all cracks and openings filled with white lead, and the yards painted; and when in their places, should be well secured with stout lashings, and covered with mats wherever they may be exposed to chafes.

CHAPTER XVI.

GETTING UNDER WAY FROM SINGLE ANCHOR.

UNDER VARIOUS CIRCUMSTANCES, AND BY DIFFERENT METHODS.
—WITH OR WITHOUT A TIDE.—FROM FIXED MOORINGS.

540. *Ques.* Having the vessel in readiness for sea, and unmoored, prepare to get under way as under ordinary circumstances, with the wind fair for standing out of the harbor.

541. Pass and lash the messenger (348, 349); get up the nippers and capstan bars; rig the fish, and reeve the cat and fish purchases; send a few topmen aloft to get the sails ready for loosing; ship the gratings; ship and swifter the bars; call *All hands up anchor!* Bring to on the cable; man the bars; *Heave around*, and rouse in the cable to a "*short stay*." (360. a).

542. It will be taken for granted, in the following different methods of getting under way, that you have made yourself well acquainted with all the matter contained in the foregoing chapters.

543. The cable being in to a short stay, *Pull the capstan!* stopper the cable well, and unship the bars; *Lay aloft sail-loosers!* *Man the boom tricing-lines!* and when the men are aloft and ready, *Trice up, lay out, and loose!* *Man the topsail sheets and halyards!* In the mean time the forecastle men are loosing the head sails, and the afterguard the spanker; when ready, *Let fall!* *Sheet home!* *Tail in!* *Down-hoome!* *Tail down from aloft!*

The men all lay down on deck, except a few hands in the tops to light up and overhaul the rigging; at the same time you will haul close home the topsail sheets and hoist the sails up taut (459). Sheet home and hoist up the top-gallant sails, and the royals if the wind is light. Brace *up* the after yards for the tack on which you wish to cast, and the head yards abox to pay her off. Top up the spanker-boom and bear it over on the side you wish to cast.

543 *a*. If circumstances are such that you are free to cast either way, it is always desirable to *cast from the anchor*; that is, if you get under way from the *starboard* anchor to *cast to port*. See 547.

544. The sails being set, *Man the bars!* ship and swifter them; *Heave around!* at the same time giving her a sheer with the helm. The officer of the fore-castle reports when the cable is "*up and down,*" and also when the "*anchor is away;*" at the latter report, *Man the jib and flying-jib halyards!* The fore topsail pays her head around; and as soon as the head sails will take the right way, *Let go the downhauls, hoist away!* Put the helm a-lee for stern-board, at the same time heave the anchor up to the bows; and as soon as it is high enough, *Avast heaving! Pall the capstan!* stopper the cable; cat and fish the anchor (291). When she has fallen off sufficiently, *Right the helm!* Brace around the head yards, and haul out the spanker. Trim the yards to the course, and stand out to sea, making sail as required.

545. In getting under way in a spacious harbor, where you have sufficient room, if circumstances will admit of it, it is advisable, particularly if blowing fresh, to keep

the fore topsail to the mast until the anchor is catted and fished; to do which, set the spanker as soon as, or before, she breaks ground, and keep the head sails down; or, having hoisted the jib, brail it up until the anchor is fished.

546. Should it blow sufficiently fresh, and present appearances of heavy weather outside, it is advisable to reef the topsails while setting them.

547. In some cases, particularly with the wind directly out of the harbor, vessels are gotten under way under the jib and spanker alone; thus, having those sails loosed and ready for setting, *Man the bars!* and heave the anchor right up to the bows, giving her a sheer with the helm whichever way you may wish to cast. It is always advisable, if possible, to cast from the anchor; that is, if heaving up the port anchor to cast to starboard; because it is easier thus hove up to the bows after it is a trip, and the cat more readily hooked. As soon as the anchor is aweigh, hoist the jib; and as she pays off, haul out the spanker. Keep her under this sail, until the anchor is catted and fished; then make sail and stand out.

548. *Ques.* To get under way in the shortest possible manner, lying in an open roadstead by the starboard anchor, head to wind, blowing directly out.

549. *Ans.* Having every thing in readiness (541), bring to on the cable (351), *Man the bars! Heave taut!* off stoppers, unbit the cable, and *Heave around!* When the cable is up and down, *Clear away the jib!* put the helm to port, and continue heaving until the anchor is up to the bows; *Pull the capstan!* Cat and fish the anchor (291), surging the messenger and sticking out the cable, as the

aweigh, hoist the jib. Range the cable, and have the anchor ready for letting go.

550. She is now paying off under the jib. As soon as she gathers headway, *Shift the helm! Lay aloft sail-loosers! Man the boom tricing-lines! Trice up, lay out, and loose! Man the topsail sheets!* When before the wind, and ready for letting fall, *Right the helm! Let fall, sheet home! Man the topsail halyards! Hoist away the topsails! Man the topgallant, and royal, sheets, and halyards! Sheet home and hoist away!* Set the foresail, and brail up the jib; sheet home the royals as the top-gallant yards are mast-headed. *Haul taut the lifts and trusses!* keeping the lower yards square by the lifts; hook the burtons on the topsail yards, and haul them well taut; haul taut the top-gallant and royal lifts, and *Stand by to set all the studding-sails!*

551. *Ques.* Riding head to wind, with a rock or shoal astern, and close aboard; get under way and make sail, by the wind, on the starboard tack. The object now is, to get the vessel under way without losing any thing, either in drift after the anchor is aweigh, or in falling off after casting.

552. *Ans.* Having hove in to a safe scope, run out a hawser ahead, with a kedge, from the starboard bow; and having let it go, haul the hawser well taut: mast-head the topsail and topgallant yards, having the sails loosed, and only confined to the yards by the quarter gaskets; brace the yards sharp up by the port braces, fore and aft: loose the courses, jib, and spanker, and have them ready for setting; the starboard jib sheet aft, and the fore and main tacks and sheets stretched along the deck.

553. Man the bars, and heave around briskly, until the anchor is up; taking in, at the same time, the slack of the hawser; cat and fish the anchor; range the cable; and have the anchor ready for letting go as soon as possible.

554. Man the hawser and warp the vessel ahead, sheering her with the starboard helm. Have the topsail sheets well manned, and as soon as the kedje is short apeak, or comes home, sheet home the topsails, run up the jib; and as soon as the jib takes, with the wind on the starboard bow, run the kedje up to the bows.

555. As she falls off, and the moment the topsails take, draw the jib, haul out the spanker, set the courses and topgallant sails, and right the helm. Should the kedje come home before it is apeak, make sail immediately, hauling in the hawser at the same time.

556. If she is falling off rapidly when the topsails take, set the spanker and mainsail alone, easing off the jib sheet; and as she comes to, board the fore tack, haul aft the jib sheet, and meet her with the helm.

557. If, when the kedje is aweigh, she should fall off to starboard, and bring the wind on the port bow, let go the anchor and bring her up. By this process you have warped considerably ahead of the first anchorage, and by counter bracing the head yards you may get under way, as under ordinary circumstances (541 to 544), or you may run out the kedje again, and make a second trial.

557. *a.* If, while warping ahead, the kedje comes home, or the hawser parts; proceed at once to make sail, or let go the anchor.

558. **Getting under Way in a Tidewav.** In the

foregoing examples you have had nothing to consider, in getting under way, but the effect of the sails and helm upon the vessel; but in a tideway, you have also the force of the current to guard against, or profit by, during the operation.

559. Lying at anchor in a tideway, a vessel will ride to the wind or tide whichever is the strongest; and whatever influence the rudder has upon her movements, caused by the resistance which either side of it presents to the force of the water against it, which will act upon the stern of the vessel, until checked by the cable, in proportion to the velocity of the current; that effect will evidently be the same, whether she is forced through the water by the sails, or by other means; or, being stationary, the water rushes past her.

560. *Ques.* You are riding head to wind and tide, get under way, casting to port, and stand out on the starboard tack.

561. *Ans.* Heave short, keeping the helm to starboard, which (the tide acting on the port side of the rudder) will bring the wind a little on the starboard bow. Set the topsails; brace the after yards up by the port, and the head yards by the starboard braces; have the jib and spankers ready for setting; man the bars and heave the anchor up to the bows. The moment it is aweigh, hoist the jib; and the moment she has paid off sufficiently (which she will) to port, brace around the head yards. If she gathers sternway before the head yards fill, shift the helm; and then proceed as in former evolutions.

562. But, if you have not room to cast, either to port or starboard, from your anchorage; suppose a vessel on

each quarter—weigh the anchor, and drift down between the vessels before you cast, thus :

563. Heave short ; set the topsails, jib, and spanker ; brace all the yards about half up by the port braces ; then heave in on the cable, and as soon as the anchor is aweigh, put the helm to port ; the tide acting against the starboard side of the rudder, casts her stern to port ; the sails being aback, she will soon gather sternboard, when the effect of the tide upon the rudder will be lost ; but the resistance by sternboard on the port side of the rudder, and the effect of the spanker, will counteract the tendency of the head sails to pay her off. In this manner let her drift down with the tide, between the two vessels. Should she pay off too much, you may bear the spanker-boom well over to windward, brace the mizzen topsail sharp up, and brail up the jib. Should she, in sternboard, be in danger of fouling the vessel astern she will increase the distance from the other vessel ; when you may brail up the spanker, shiver the after yards, haul aft the jib sheet, and let her go around before the wind ; righting the helm as she gathers headway.

564. *Ques.* You are riding wind-ride, with a weather tide : weigh anchor, cast to starboard, and get before the wind in the shortest manner possible.

565. *Ans.* Heave short, set the topsail and loose the jib, brace the head yards sharp up by the larboard braces, and square the after yards ; man the bars and heave around ; the moment the anchor is aweigh put the helm to starboard ; as soon as the jib will take, hoist it ; heaving the anchor up at the same time ; as soon as the after yards take brace full the head yards : and, as she gathers

headway, shift the helm; when before the wind, right the helm, cat and fish the anchor, and make sail on your course.

566. At the moment the anchor is aweigh, the wind being ahead and all the sails aback, she will immediately gather sternboard; while the foretopsail braced sharp up, together with the jib, and the surface presented by the starboard side of the rudder to the tide, increased in resistance by sternboard; force her stern to port, and consequently her head to starboard.

567. *Ques.* You are riding to the tide, with the wind two points on the starboard bow; get under way, casting to starboard.

568. *Ans.* Heave short, keeping the helm to port; which, from the effect of the tide upon the starboard side of the rudder, will bring her head to wind. Set the topsails, bracing up the after yards by the starboard and the head yards by the port braces; set the spanker and bear the boom well over on the starboard quarter; have the jib loosed and ready for setting, with the port sheet aft. In this position the vessel will not remain steady, but will come up and fall off; man the bars, and heave up-and-down; and as she comes head to wind, weigh the anchor and hoist the jib, still keeping the helm to port; the head sails, and the effect of the tide upon the rudder before she gathers sternboard, will pay her head off to starboard. The moment she gathers sternboard, shift the helm (544); as she falls off, having the wind on the port bow, draw the jib, brail up the spanker if necessary, and proceed as before directed in filling away and making sail (544).

569. Should she not pay off to starboard the moment

the anchor is aweigh, owing to her not being head to wind; or should she by the force of the tide on the port quarter, and wind on the after sails, be kept from falling off sufficiently to fill the head yards, it will be necessary to veer cable and bring her up; when the evolution may be performed with a spring from the port quarter (see club-hauling and 768).

570. *Ques.* You are riding at single anchor, to an ebb tide, with the wind on the starboard quarter; get underway, and make sail on the port tack; not having room to, or other impediments preventing you from, making the first stretch on the starboard tack.

571. *Ans.* Heave in to a safe scope, send aloft the sail-loosers, loose the courses, topsails, and topgallant sails; keeping the sails confined to the yards by stops and checking-lines, and keeping the bunt up by a stop sufficient to hold it; have all the rigging well overhauled aloft for running; mast-head the topsail and topgallant yards, and brace them up by the starboard braces fore and aft; have the sheets and tacks led along the decks; top up the spanker-boom by the port topping-lift, and bear it over on the starboard quarter; spanker and jib loosed and ready for setting, outhaul and hal-yards led along the decks. Keep a few top-men aloft to attend the checking-lines, and have a hand in the bunt of each sail to cut the stops; man the bars, heave around briskly, and bring the anchor up to the bows; the moment the anchor is aweigh, put the helm hard a-starboard, and she will fall off rapidly to port, by the force of the tide on the port side of the rudder. As soon as the spanker will take, haul it out, which will bring her rapidly to the wind; and as she comes to,

hoist the jib and right the helm; you may keep her under this sail until the anchor is catted and fished, meeting her with the helm, and keeping the wind abeam. Man the topsail and topgallant sheets, fore and main tacks and sheets; and, with the wind abeam, *Haul taut! Break the stops! Sheet home! Haul aboard!* Meet her with the helm as she comes to; bring her by the wind, trim the yards, haul the bowlines, and stand on to the opposite shore.

572. The vessel may be gotten under way differently; setting the topsails when the anchor is a short stay, bracing the head yards square, and the after yards up by the starboard braces. The moment the anchor is aweigh, put the helm hard a-starboard. The fore topsail being full will give her headway, which may be increased by letting fall the foresail, and hauling it aboard; and the starboard helm will pay her head around to port, hauling out the spanker as it will take; which, with the after yards, will bring her to the wind, bracing up the head yards as she comes to (see wearing), and meeting her with the helm. This is preferable to the foregoing method, being more certain of success.

573. Mast-heading the topsail and topgallant yards, and setting all the square sails together, was not necessary to the performance of 570, and was only mentioned in this case, as a method of making sail from single anchor, which an officer may adopt at his pleasure, when he feels confidence in a smart-working, active crew, and in every man knowing well his station. But though unnecessary in most cases, it certainly would be advisable in cases where it is important to expose as little surface as possible to the wind until the anchor is atrip,

and to have the ship under sail as soon as possible after, to prevent her losing any ground, as in 552 to 557 *a*.

573. *a*. **To get under way from fixed Moorings** you may proceed, as in 543, to make sail, bracing the yards as you may wish to cast; then slip your moorings, and proceed to trim your yards to the course; or you may use a spring from the moorings, to facilitate your casting either way, as circumstances may require.

CHAPTER XVII.

WORKING TO WINDWARD.

TACKING.—MISSING STAYS.—WEARING.—BOX-HAULING.—
WEARING SHORT ROUND.—CLUB-HAULING.—HALF-BOARDS.

574. WHEN a vessel is headed off from her course, the yards are braced up sharp, sheets trimmed aft, and by keeping her as near as possible to the wind, with the sails all full or drawing, she is then "*close-hauled*;" and the tack she is on is designated by the side of the vessel on which the wind blows; for instance—if the yards are braced up by the port braces, having the wind forward of the starboard beam, she is then "*close-hauled on the starboard tack*," or "*has her starboard tacks aboard*."

574 a. A vessel may, however, be on the starboard or port tack, and still not be close-hauled. She may have the wind free, from one to four points, and be standing on her course, with her "tacks aboard." But in this chapter we have only to consider the vessel as close-hauled, on either tack.

575. Your port of destination, or the point for which you wish to steer, being in the direction from which the wind blows; the nearest you can steer to that course, is when the vessel is close-hauled. In which case she will, if a square-rigged vessel, lie within from five and a half to six and a half points of the wind (some vessels work-

ing nearer to the wind than others). And if, after standing on one tack a certain length of time, you "*go about*," and stand on the other, and so on; you are approaching the object continually, in the proportion of about one-third of the distance sailed. This is termed "*working*," or "*beating to windward*."

576. *Tacking* is the usual method of going from one tack to the other, in moderate weather and with a good working breeze. It has this advantage over all others, that you lose nothing to leeward when it is properly performed; for vessels will frequently, if well managed, luff up head to the wind, and go about, without for a moment losing their headway, but on the contrary gain several times their length directly to windward while in stays.

577. Considerable judgment must be exercised, and attention paid, in performing this evolution properly. The qualities of the vessel are to be considered, some working quicker and some slower than others; some come rapidly up head to wind, and then fall off on the same tack, some require the head-sheets to be well overhauled when the helm is put alee, others tack by keeping them fast; some will go around until the after sails take on the other tack, and in bracing round the head yards, will luff up again into the wind, gather sternboard, and lose ground in stays, before they can be recovered on either tack; therefore care must be taken to perform this evolution to suit the qualities of the vessel, with which an officer will become acquainted in working her.

578. In **working to windward**, the wind frequently "*veers and hauls*" three or four points, heading the ves-

sel off or allowing her to come up; this is particularly the case in the vicinity of land. The proper moment to tack in such cases, is when the wind is heading her off, for on the other tack you will evidently gain more to windward. By watching attentively, and taking advantage of such slants of wind, keeping the vessel "*a good full*," and by the wind; you will gain much more on your course, than if you stood a certain number of miles or hours on each tack, let the wind veer and haul as it may.

579. We will now proceed to "*tack ship*" under courses, topsails, top gallant-sails, jib, and spanker; giving as nearly as possible the treatment for different vessels, and the necessary orders.

580. *Ready about!* Keep her a good full for stays, see the men at their stations, viz.: a hand by the jib sheet and a few at the brails; hands by all the bowlines, lifts, trusses, tacks, and sheets; hands in the chains to overhaul the lee main sheet; the clewgarnets manned; topmen at the breast backstays, and a few aloft to overhaul the lifts and trusses, and to attend to the outriggers; a good helmsman at the wheel; a quarter master at the conn; a few hands at the spanker sheet and lee topping-lift, and all the rest of the force at the weather main and lee cross-jack braces, lee main tack and weather main sheet. The men being at their stations, proceed as follows:

581. *Reddy! Ready! Ease down the helm!* Haul the spanker boom amidships—and the helm being down, order, *Helm's alee!* Ease off the fore and jib sheets. *Overhaul the lifts and trusses! Bear abaft the weather backstays!* The lifts, trusses, and backstay-

falls, are let go and overhauled, and the backstays borne abaft the tops. She is now coming up rapidly to the wind, and as soon as the sails shake, the wind being parallel with the yards,

582. *Rise tacks and sheets!* The fore and main tacks and sheets are let go, and the clews of the sails hauled up by the clewgarnets, high enough to clear the hammock rails; at the same time shortening in the lee main tack and weather sheet. Haul taut the lee spanker boom topping-lift, and overhaul the weather one; and as soon as the wind is directly ahead, or a little on the weather bow (589),

583. *Haul taut! Main-sail haul!* The lee braces and the bowlines are let go, and the yards swung around briskly by the weather braces; breasting and setting up the backstays, hauling aboard the main tack, and hauling aft the sheets. Brace the yards sharp up, trim them by the wind, and haul taut the weather braces, lifts, and trusses. She has now the sails on the foremast aback; which, with the jib, are paying her off rapidly. *Man the head braces!* fore tack, sheet, and head bowlines; and as soon as the after sails take, or are full,

584. *Haul well taut! Let go and haul!* Right the helm. Brace around the head yards briskly; boarding the fore tack and hauling aft the sheet, bearing abreast and setting up the backstays as the yards are swung. Brace up sharp, trim the yards, haul taut the weather braces. *Haul taut the lifts and trusses, and steady out the bowlines!* The lower lifts and trusses are hauled taut, and the weather leeches of the sails hauled out by the bowlines. Keep her by the wind.

585. When you swing the after yards, the wind being

ahead, brail up the jib and cant the spritsail yard; and when it will take the right way, trim aft the sheet.

586. Having the vessel a good full for stays, and particularly with a light breeze, or if she carries a weather helm, it is best to ease the helm down, and let her come up gradually into the wind.

587. If blowing a stiff breeze, do not overhaul the weather backstays until you rise tacks and sheets; and be particular to set up, and rig out, the opposite backstays, while bracing around the yards.

588. In vessels which are dull in stays, and go off slowly after coming up head to wind, and particularly in a light breeze, it is advisable to keep the fore tack fast, to pay her off, when you rise the main tack; in which case the order will be, *Rise main tack and sheet!* (582).

589. In determining the moment to swing the after yards, you must be governed by the strength of the wind and the qualities of the vessel. The general rule, and a safe one, is to do so when the wind is directly ahead. But with a good working breeze, and the vessel coming up briskly, it is best to haul them when the wind is about one point on the bow, before coming head to wind; for then the wind on the weather leeches of the sails forces them around smartly, and affords you time to brace up, trim the yards, and get the tack down, before it becomes necessary to swing the head yards.

590. When the after sails take, *i. e.*, when they begin to fill, and while bracing around the head yards, vessels frequently are falling off so rapidly, that before they can gather headway, they bring the wind abeam, and some-

times abaft. In which case, as soon as the head yards take, *Avast bracing! Ease off the head sheets!* putting the helm alee. As she comes up to the wind, *Brace up and gather aft the head sheets!* Brace up sharp, trim aft the head sheets, and meet her with the helm.

591. Some vessels, particularly those that carry a weather helm, requiring very little after sail when close-hauled with a stiff breeze, will not fall off after the after yards take, and frequently will fly up into the wind while you are bracing around the head yards. In which case be careful not to brace around the head yards until she is well around; and if she flies up into the wind, let go the main sheet, and, if necessary, brail up the spanker, and haul in the lee cross-jack braces, using the helm as necessary.

592. **To Trim the Yards when close-hauled.** First brace the lower yards up sharp, belay the lee braces and haul taut the weather one; then trim the topsail yard, if for a stiff breeze, with the weather yard-arm about a half point abaft the lower yard, and the topgallant trimmed by the topsail yard in the same way, and so on; for a light breeze, trim the upper yards a very little abaft the lower; and having the yards trimmed, and weather braces fast, slack the lee ones; keeping, however, a turn with them around the belaying pins, which is a precaution essential in case of a shift of wind.

592 a. "In a strong breeze accompanied by a 'topping sea,' it is sometimes desirable to keep in a little of the weather braces in order to lessen the lateral impulse of the vessel. But in smooth water, with a steady commanding topgallant breeze, the yards of no ship can be braced too sharply up."

593. In hauling aboard the main tack, it is necessary, from the manner in which the lee main brace leads, to ease it off, as well as the weather main lift. When the tack is close down, brace up the yard, haul taut the weather-brace, lift, and truss, and haul the bowline, (443). •

594. When the helm is put alee for stays, it should be kept so until she loses entirely her head way; then *Right the helm!* and if she gathers sternboard, *Shift it!*

595. If, in commencing the evolution, you perceive that she comes up to the wind sluggishly, and you have any doubts of her staying, brail up, or haul down, the jib, haul the spanker boom amidships, overhaul well the fore sheet, and as you "rise tacks and sheets" check the lee fore topsail brace, observing to brace it up again as soon as it is aback, and to hoist the jib or haul aft the sheet, as soon as it will take the right way. This will in most cases insure the evolution, though it tends to deaden the "*head-reach*," and should not be otherwise resorted to, except in working to windward in a narrow channel; when, having stood boldly on to either shore, particularly the weather one, you are fearful of head-reaching too much in stays.

596. The evolution of tacking may be performed in a smart-working vessel, and a light breeze, by swinging all the yards together. The crew must be properly divided at all the braces, weather-head and main, and lee cross-jack. Then let her come up head to wind (583), and fall off on the other tack, shifting the helm if she gathers sternboard, until she brings the wind five points on the other bow. Then give the order, *Haul well taut!*

Haul of all! swinging around all the yards briskly. *Right the helm!* Board the fore and main tacks, and haul aft the sheets. Trim the yards and haul the bow-lines (592). This is not a necessary operation, and only done to try the activity or force of a crew, and the qualities of the vessel.

597. *Missing Stays.* In performing the common evolution of tacking, vessels often miss stays; either because of the dulness of the ship, the want of judgment in the officer, the wind hauling while in stays, or more commonly—for the best seamen with the smartest vessels sometimes fail—owing to negligence or inattention.

598. A vessel will sometimes come up until the wind is ahead, and, although the after yards are swung properly, lie in that position dead in the water, and eventually fall off the wrong way; or the officer may have swung the after yards too soon; or it may be owing to other causes. If she gathers sternboard, she may be made to fall off the right way by shifting the helm; but should this be insufficient, haul up the mainsail and spanker, put the helm alee, square the after yards, and brace abox the head yards. As she falls off on the same tack, brace up the after yards, and when they take, *Let go and haul!* as in tacking (584). Board the fore tack, set the mainsail and spanker, and when she gathers headway try her again, or you may wear her round on her heel (611).

599. But if she should come to a stand, and fall off before the after yards are swung, it is only necessary to *Flatten in the head sheets!* ease off the spanker sheet, or brail it up; and board the fore and main tacks. Trim the jib and spanker sheets as she fills, and after getting

sufficient headway on, either make a second attempt or wear her (601).

600. **Wearing or veering**, is another method of going about from one tack to the other. This is only resorted to in heavy weather, with a sea on the weather bow; when under easy sail; or in light airs; when, in either case, the vessel has not sufficient headway for tacking. It is exactly the reverse of tacking, though tending to the same purpose—for you run the vessel off from her course, or the wind, until she comes around again on the other tack; having performed a sweep of the whole horizon, less that part of it which subtends the angles formed by a six-point course on either tack. In doing which she must lose considerably to leeward; therefore the evolution should be performed in such a manner that the loss should be as little as possible.

601. **To wear ship in a light breeze**, under courses, topsails, top-gallant sails, jib, and spanker; give the order, *Ready about! Stations for wearing!* or, *Stand by to wear ship!* Station the men as in tacking. *Man the main clew-garnets and buntlines, and spanker brails! Weather main and lee cross jack-braces!* The men being at their stations as directed, order, *Haul taut! Up mainsail and spanker! Up helm! Clear away the bowlines!* and as she falls off, *Brace in the after yards!* Keep the mizzen topsail lifting, and the main topsail full; the former to present no opposition to her falling off briskly, and the latter to keep up her headway; without which wearing is, in a very light breeze, a tedious operation. *Overhaul the lifts and trusses! Bear abaft the weather backstays!*

601 a. She falls off, bringing the wind abaft the beam, and you have braced in the main yard until it is square;

continue bracing the cross-jack yard, to keep the sail lifting, until it is braced up sharp on the other tack.

601 *b.* She continues falling off, and you have now the wind directly aft—*Man the weather head braces! Rise fore tack and sheet, clear away the head bowlines, lay the head yards square! Brail up the jib, and cant the sprit-sail yard!* She has now the wind on the other quarter. Haul out the spanker, and brace up sharp the after yards. *Man the main tack and sheet!* and when manned, *Clear away the rigging, haul aboard!*

601 *c.* The after yards being braced sharp up, with the mainsail and spanker, bring her to the wind. The head yards being square, and the jib in the brails, present no opposition to her coming to. As she comes up, brace up the head yards, keeping the sails full, board the fore tack, haul aft the sheet, and meet her, as she comes to, with the jib and helm (590). When by the wind, right the helm, trim the yards, *Haul taut the lifts, trusses, and weather braces; and haul the bowlines!*

601 *d.* There is no part of this evolution more imperative, in avoiding loss to leeward, than that of keeping the sails on the mainmast lifting until square, and continuing to brace those on the mizzen mast until braced on the other tack; and also in meeting her with the helm as she comes up to the wind, after she is around. An officer who performs this simple evolution carelessly, either shows his incapacity, or inattention to his duties.

602. In a fresh breeze, or even in a moderate one, vessels under easysail, "*standing off-and-on*" a port, with not sufficient sail set for tacking, will wear. The only difference in the evolution is, that you may with a good breeze, having headway on, that keeps her under the complete

management of the helm, keep the main topsail, as well as the mizzen, lifting as she goes off, which hastens the movement; and bracing the after yards sharp up on the other tack, before you touch the head yards. When before the wind, brace the head yards square (601 *b*), and brace them up as she comes to. All other parts of the evolution being exactly similar to the preceding (601, &c).

603. *Ques.* In a gale of wind, under a close reefed main topsail, fore, main, and mizzen storm staysails; prepare to, and wear ship.

604. *Ans.* *Call all hands to wear ship!* Clap a stout lashing around the bunt of the foresail and yard, and have a hand in the slings in readiness to overhaul the rigging. Hook the weather storm staysail sheets, stretch along the fore tack, *Man the main and mizzen staysail downhauls!* and have hands by the halyards and sheets. *Man the weather main, and lee cross-jack braces!*

605. In a gale, with a heavy sea, vessels lying to will come up and fall off four or five points. Watch for a smooth time, and when she is falling off put the helm up—*Haul down the mizzen staysail!* bracing in the after yards as she falls off, keeping the main topsail full, and the cross-jack yards pointed to the wind. Attend the lifts, trusses, and backstays, as in wearing under all sail. As the wind draws aft, ease off the main staysail sheet; and when of no further use in forcing her around, haul it down, shift over the sail, and gather aft the sheet.

606. If the vessel in this situation will go off no further, as is sometimes the case, man the weather fore tack, overhaul the gear, ease down the clewgarnet, and haul aboard the weather clew of the foresail; which will increase her

adway, and with the helm still aweather, will serve to
 ay her off. A foresail in this state is "*goose-winged.*"

606 *a.* When before the wind, haul up the foresail,
ight the helm! and square the yards fore and aft. Set
 > the backstays, take in the slack of the fore staysail
 eet. *Man the main and mizzen staysail halyards, and*
e main braces!

606 *b.* Watch for a smooth time, then ease down the
 helm, bracing up the after yards; *Hoist the main and*
izzen staysails! and brace up the head yards as she
 mes to; haul taut the lifts, trusses, weather braces,
 id main top-bowline. Hook and haul taut the rolling
 ckles.

607. As soon as the staysails are hauled down, shift
 em over to the other side of the deck, and take in the
 ack of the sheets to be in readiness for hoisting.

608. **Box-hauling**, is a third method of putting a ves-
 el on the other tack. This evolution may be performed
 working out of a narrow passage; when, having ap-
 oached the weather shore so near as to have no room
 r head-reaching, you are not willing to lose ground by
 e ordinary method of wearing. Or when situated as in
 ragraph 598.

609. *Ready about!* Station the men as for stays (596).
an the main clewgarnets and buntlines, and spanker
ails! Put the helm down! Light up the head sheets,
id check the lee head braces! to deaden her headway.
 s the sails lift, *Rise tacks and sheets! Up mainsail and*
anker! Man the weather head, and main, and lee cross-
 ck braces.

609 *a.* She comes head to wind, and as soon as she
 ses her headway. *Square away the after yards! Brace*

abox the head yards! Haul flat aft the head sheets! The helm is right for sternboard; she is going rapidly astern, and at the same time falling off; forming with her keel the segment of a circle, or "Wearing short round on her heel."

609 *b.* As the after sails lift, brace them in to keep them lifting, until they are braced up sharp on the other tack; and brace square the head yards. As soon as the sails on the foremast give her headway, *Shift the helm!* The spanker boom having been shifted over on the other quarter, *Man the outhaul, main tack and sheet!* When the wind is astern, *Brail up the jib, and cant the sprit-sail yard!* and as soon as the spanker will take, *Haul out the spanker! Board the main tack!* and haul aft the sheet.

609. *c.* The after yards being braced sharp up, with the spanker, head yards square, jib in the brails, and helm alee; she will come to the wind rapidly. Brace up the head yards as she comes to, and meet her with the helm and jib; trim the yards and haul the bowlines.

610. Some officers make a distinction between box-hauling and wearing short round, as follows, being a fourth method.

611. In any sudden emergency; haul up the mainsail and spanker, man the braces as above (596), and without going into the preliminary of luffing up into the wind as in box-hauling, put the helm hard up, square the after yards, and brace abox the head yards. The moment she loses her headway, shift the helm for sternboard. After which proceed as in box-hauling.

612. There is a decided difference in the commencement of the evolutions. Either of them may be termed

box-hauling—a term derived from the circumstance of bracing the head yards abox—and both have the effect of wearing the vessel short round. By the former you lose less ground than by the latter, for a vessel with good headway on, will range ahead some distance after the sails are all thrown flat aback.

613. **Club-hauling** is a fifth method of putting a vessel about. In working off a lee shore against a fresh breeze and head sea, when you cannot risk missing stays, and have not room to wear; you must then resort to this evolution.

614. Get the lee anchor off the bows, and ready for letting go; the cable ranged, bitted, and well stoppered; bend a hawser to the ring of the anchor, and lead it in at the lee quarter; have hands stationed at the anchor ready for letting go; the hawser led along the deck—a carpenter with an axe ready to cut away the cable, if a hempen one, or the armorer to unshackle, if a chain.

615. Station the men for stays (580), and proceed as in tacking, until she will come up to the wind no further; and the moment she loses her headway, let go the anchor, and brace around the after yards (583). As the anchor fetches her up, she will swing head to wind, bringing the head sails aback. *Man the hawser and head braces! Cut away the cable!* and spring around her stern by the hawser. As soon as the after sails take, *Cut away the hawser! Let go and haul!* swinging around the head yard. Bring her by the wind and right the helm; trim the yards and haul the bowlines.

616. You have expended, by this evolution, an anchor, part of a cable, and hawser; but if resorted to with

judgment, in an extreme case, you may have saved by it your vessel.

617. The advantage of letting go the lee anchor in preference to the weather one is, that when it fetches her up, it will bring the wind a little on the bow from which the cable leads, and in casting, as you cut the cable, it will run out clear of the stem.

617 *a*. **Making a Half-board.** Cases often occur in which this may be done with great advantage; it is executed thus: Station the crew for stays, and have a good force at the head sheets. Put the helm down, easing off the head sheets; meet her with the helm as she comes up so that she shall not get quite head to wind, and before she loses her headway, put the helm up, haul flat aft the head sheets, and, if necessary, flatten in the jib sheet. She will thus make a considerable stretch directly to windward, and, if properly managed, will not lose her headway at all, or lose any thing in falling off when you recover her again on her original tack.

Two vessels meeting on different tacks, so that it is doubtful if either can weather the other; the one which promptly and successfully performs a *half-board*, secures the weather gauge at once; for the other vessel, supposing that she is going in stays, will be forced to pass to leeward.

If the vessel will not fall off, after coming up to the wind, you will have to go about, hence the necessity of having the crew at their stations for stays.

One thing should always be borne in mind, that, by a custom of long standing and generally understood, the vessel on the port tack should always give way to one on the starboard, unless she may be able, beyond a rea-

sonable doubt, to pass to windward without danger of fouling. If situated, as in the case stated above, she, on the port tack, has no right to attempt a half-board, although, by doing so, she forces the other to pass to leeward of her.

CHAPTER XVIII.

IN A TIDE-WAY.

DRIFTING OR WORKING.—BACKING AND FILLING.—CLUBBING.

618. IN drifting or working down a river, with a strong tide, great care is necessary, to prevent falling afoul of other vessels which may be at anchor on the way, or to avoid endangering the vessel on rocks, shoals, etc.

619. With the wind directly in the harbor, or partly across the tide, the current running out; you may *work* out by tacking from shore to shore; let her *drift* out broadside to the current; or, having her under the direction of the helm, by sufficient sail set to give her good way through the water, keep her head to the current, and drift down stern on; or you may *club* her down.

620. Bear in mind, in every evolution performed in a tide-way, that the after part of the keel being further immersed in the water, and presenting a broader surface to the action of the current than the forward, the stern of a vessel will always have a tendency to drift faster than the bows.

621. If the wind should be partly across the tide, she should be cast, in getting under way, with her head toward the weather shore.

622. After getting under way, which is sufficiently

explained in paragraphs from 540 to 573, keep her head to the current, by sufficient sail, until the anchor is cat-ted and fished.

623. And never weigh the anchor, until the sails are so arranged that the vessel will be immediately under the influence of the helm.

624. If you have room, you may then proceed to bring her by the wind, make sail, and work her down, as in the common evolution of working to windward; making an allowance for the strength of the current, in approaching any vessel, or either shore; and in giving yourself sufficient room for stays.

625. Should the wind be across the tide, you may approach the weather shore boldly; for should you miss stays, you may have recourse to wearing or box-hauling (611). But approach the lee shore cautiously, always leaving room to recover her and gather headway, to go in stays a second time.

626. Avoid standing into eddy currents on either shore, they may be plainly distinguished by the worried appearance of the water; for a vessel, when in their influence, is at their mercy, and quite out of the management of the helm or sails.

627. If you approach a narrow passage, or the anchorage of a number of vessels; bring her head to the current, bracing the yards full, and keeping only sufficient sail on to give her good steerage-way through the water, that you may sheer her to either side; and in this manner she will drift down, with the current, past, or between, any vessels or shoals. This is the best, being the safest method for a narrow channel.

628. And arriving again at an open space, you may

bring her broadside to the current, keep the topsail shaking and the helm alee, and presenting only the surface of the spanker to the wind, which will serve to counteract the force of the current upon the stern (620). In this manner she will drift more rapidly than by the former method (627). By filling the head yards, and taking in the spanker; or by filling the after yards, and brailing up the jib; or by bracing "*all aback*" using the helm as necessary; you can, at any time, have her under control, shoot her ahead, back her astern, or bring her head to the current.

629. You may also drift down broadside to the current, keeping the yards counter-braced, as in lying to, shooting ahead, or backing astern to avoid danger; then, as you approach either shore, you may fill away until she gathers sufficient headway for stays, or wear around putting her head toward the other shore; this is termed *Backing and Filling*.

630. Or, as is recommended for smaller vessels in a rapid river, you may heave in the cable until the anchor is under foot, when she will drift down by the force of the current; veering out or heaving in the cable as she deepens or shoals the water, or as you may wish to diminish or increase her drift. Vessels drifting in this manner, generally have a spring from the ring of the anchor, leading in at one of the quarters, so that by veering on the cable, and rousing in the hawser, you may present her broadside to the current. This is termed *clubbing* a vessel. Though, from the danger of fouling the anchor against rocks, or other matter, and the inconvenience of the operation, I should resort to one or other of the previous methods in preference to this.

CHAPTER XIX.

COMING TO AGAINST THE HELM.—TAKEN ABACK.—CHAPELING.—TO TRIM THE YARDS AND REGULATE THE SAILS FOR EVERY CHANGE OF WIND.—A CALM.—COUNTER-BRACING THE YARDS.

631. THE sails of a vessel should be always so arranged or trimmed, that she may carry her helm as nearly as possible amidships, or a very little weatherly helm, say a spoke, so that it may be felt by the helmsman, is preferable, as she is then more completely under its guidance. A vessel that carries a strong weather helm, when by the wind, is liable by the carelessness of the helmsman, to fly up and in some cases too far to be recovered without bracing the yards. Suppose, for instance, you are under all sail, by the wind, on the starboard tack—she comes to against the helm, proceed to recover her on the same tack.

632. The moment you find her coming to, *Put the helm up, and flatten in the head sheets!* In most cases this is sufficient if the vessel has headway on, and she will fall off—then you may right the helm, and draw the head sheets.

633. But if she comes to *against* the helm, *Man the main clewgarnets, buntlines, and spanker brails! Up mainsail and spanker! Man the weather head braces! Rise fore tack and sheet! Clear away the head bowlines! Brace aboæ the head yards!* If the wind is not already on the port bow this will effect your object, by boxing her off; and when the after sails fill, let go and haul, as in tacking.

634. But if the head yards were not braced abox in time, and the wind is now on the port bow, clear away all the bowlines, and square the yards fore and aft. She will soon gather sternboard and fall off to starboard, from the effect of the helm, which is right for sternboard (632). As the sails fill, brace in the after yards to keep them shaking, keeping the head yards square; as she gathers headway, shift the helm, and proceed as in box-hauling (609, etc.), which will have the desired effect.

635. But if, instead of coming to, you are taken aback with a light breeze; to recover her on the same tack, proceed as follows. Put the helm to port if she has headway on, haul up the mainsail and spanker, and square the after yards; the moment she gets sternboard, shift the helm (putting it to starboard), and she will fall off briskly to starboard. When the after sails fill and she gathers headway, put the helm again to port, and when the wind is astern, brace up the after yards by the port braces; when the spanker will take, haul it out, and bring her by the wind. This is termed "*chapelling*" a ship, by recovering her on the same tack without bracing the head yards.

636. **Sailing in Squadron.** It is proper, if your ship does not go off by putting up the helm and flattening in the head sheets as in 632, to proceed at once to the evolution of tacking, and then, by carrying sail and tacking again when she has gained sufficient headway, return and take your station in the line. By this you will gain your station sooner than if you proceeded as in 633, besides avoiding the probability of compelling other vessels astern or to leeward of you, to alter their course, or leave their stations.

637. But, having all the sails abaëk with the wind on the port bow, it amounts to the same thing whether she came to against the helm, or was taken aback by a shift of wind; and in the last question she may be recovered by proceeding as in the former. She will certainly go off more rapidly, by bracing the head yards full, when she has fallen off sufficiently to fill the after sails; and she will come to more rapidly on her original tack, by having them square and proceeding as in 609; which considerations give to the former evolution (631) the preference over the latter (635). See paragraphs 655, 656.

638. *Ques.* You have directions, as officer of the deck, to make the best of your way on a certain course, which is directly to windward. You are close-hauled under top-gallant sails, on the port tack. The ship comes up gradually to her course, and the wind continues to haul until it is directly aft.

639. *Ans.* Keep her "*full and by,*" that is, as near as she will lay to the wind with the sails all drawing, and she will come up as the wind hauls, until "*she is her course.*" Then give directions to the helmsman, to let her come "*no higher.*"

640. Finding that the wind draws aft (647), give the order, *Lay aft to the braces! Man the weather main, and lee cross-jack braces!* (646) *Clear away the bowlines!* Brace in a little the main and mizzen topsail and upper yards, and then brace in the fore topsail and upper yards, and ease off a little of the fore, main, and spanker sheets. *Stand by to set the royals, flying jib, and top-gallant stud-ding-sails!* (468, 480, 488). When ready, *Let fall, rig out, and hoist away!* If you carry staysails, you may also set them at this time (485).

641. The wind, still drawing aft, is now abeam. Brace in the after yards (trussing the yards to as they are braced), as much as the wind will allow, keeping the sails full. Then brace in the head yards, taking in the slack of the top-gallant studding-sail tacks. Ease off the fore, main, spanker, and head sheets, and stand by to set the top-mast studding-sails (491). When ready, *Rig out and hoist away!*—

641 a. A vessel is “*going large*,” when the direction of the wind makes a greater angle than six points ($67^{\circ} 30'$) with the course. And when the wind is abeam or a little abaft, forming more than a right angle with the course, when all the sails feel the full force of the wind, then the velocity of the vessel ought to have gained its maximum.

642. *The wind is now on the quarter*; brace the after yards in nearly square, and then the head yards, trussing them to and taking in the slack of the studding-sail tacks. *Man the weather main clewgarnets, and spanker brails!* Haul up the weather clew of the mainsail, brail up the spanker, and stand by to set the lower studding-sail (497, 499)—when ready, set it.

643. *The wind still draws aft*. Square the after yards and then the forward ones, bear abreast the starboard backstays and set them up, square the lower yards by the lifts, hauling them well taut (648), haul well taut the trusses, brail up the jib, and haul down the flying jib. Man the lee main clewgarnet, buntlines, and leechlines, and haul the mainsail up snug. Set the skysails and royal studding-sails (472, 490), and haul down the staysails.

644. *The wind is now directly aft*. *Stand by to set all the starboard studding-sails* (488 to 503). When

ready, hoist the topmast studding-sails up to the lower yard, and the royal studding-sails up to the topmast cross-trees. Man all the halyards, lower-boom topping-lift, forward guy, in-and-out jiggers, tacks, out-hauls—tend the sheets, downhauls, and clewlines; *Haul taut! Rig out! Hoist away!*

645. In sailing with the wind directly aft, many of the sails are becalmed by those abaft them; the sails on the mizzen-mast keeping the wind from those on the main, which again becalm those on the foremast. The main mast acting more directly upon the centre of the vessel, should feel the full force of the wind, for which reason you may furl the mizzen topgallant-sail, clew down the mizzen topsail, and haul up the reef-tackles and buntlines. Many sails on the foremast being becalmed by those on the main, take them in—as the royals, topgallant studding-sails, &c.

645 *a*. With the wind aft, if the sea is not perfectly smooth, a vessel will roll more than if the wind were on either side; care should be taken to keep the yards steady, by hauling well taut the trusses and rolling-tackles, and setting well taut the backstays on both sides.

646. It is a general rule, in trimming the yards for a shift of wind, when the wind draws aft, to brace *in* the after yards first; and when it draws ahead, the head-yards should be braced *up* first.

647. In light winds, the vessel being her course, you cannot tell by the vane the true direction of the wind. Luff her up until the sails shake, and the compass will show you how much you have the wind free, and you may trim the yards accordingly.

648. When the yards are square in port, the lifts should be marked by the captains of the masts and tops, so that they may, by these marks, always be squared at sea when before the wind, or in coming to anchor; for studding-sails will never set properly, on both sides, unless the lower yards are square by the lifts; and in coming to anchor, after the yards are clewed down and braced square, a ship presents a miserable appearance with the yards topped up in every direction.

649. *Ques.* Having the wind aft, under the same orders, as in the former question, and all sail set to the best advantage (645); the wind hauls forward on the starboard side, until she is close-hauled; proceed to shorten and regulate the sails, and trim the yards, as the wind hauls.

650. *Ans.* The wind is now on the starboard quarter, the port studding-sails, from the eddy wind out of the topsails, topgallant-sails, and royals, are lifting. "*Stand by to set the port studding-sails forward of the sails!*" having men on the lower, topsail, and topgallant yards, while you lower on the halyards, they haul down on the inner leeches of the studding-sails, and dip the yards forward, then *Hoist away!* and now, the studding-sail yards being forward of the sails, the eddy wind has no bad effect upon them. Hoist the mizzen topsail (528), set the mizzen topgallant-sail (465), fore and mizzen royals, flying-jib, and both fore topgallant studding-sails, skysails, staysails, and royal studding-sails.

651. *The wind still hauls forward!* it becomes necessary to brace up a little by the port braces. *Stand by to take in all the port studding-sails!* Having every thing manned (487 to 497 inclusive); *Haul taut! In port stud-*

ding-sails! Rig in! The booms being in, and alongside, studding-sails in, the men making them up to stow away (502), *Lay aft to the braces! Man the port braces, forward guy, and fore tack!* attend the starboard braces, studding-sail tacks, outhaul and after guy, trusses, and let go the lee lower lifts, *Brace up!* the head yards first, and then the after ones; *Haul forward the fore tack!* trim the upper yards and lower boom by the lower yards. *Man the main sheet, and spanker outhaul!* Let go the main buntlines and leechlines, and have them well overhauled. *Ease down the lee clewgarnet, take in the slack of the sheet! Haul out the spanker! Haul aft the jib sheet! Haul taut the weather braces, lifts, and trusses! Haul out the studding-sail tacks!*

652. *The wind hauls abeam. Stand by to take in the lower studding-sail, skysails, and royal studding-sails!* When ready, *In lower and royal studding-sails, and skysails!* Get the lower boom alongside, brace up a little the yards, attending the trusses, overhauling and bearing abaft the lee backstays, and setting up the weather ones, and overhauling the lee lower lifts. *Man the main tack! Ease down the weather clewgarnet, haul aboard!* Trim aft the jib sheets, fore, main, and spanker sheets.

653. *The wind still hauls,* being now forward of the beam; brace the lower yards sharp up, and trim the upper ones by them (592), attending the studding-sail tacks, and overhauling well the trusses and lee lifts; haul close down the fore and main tacks (593), and flat aft the sheets; haul aft the spanker sheet; then haul taut the weather braces, trusses, and weather lower lifts.

654. *The wind still hauling,* the studding-sails lift; *Stand by to take in the studding-sails, royals, and stay-*

sails! When ready (487 to 497), *Lower away, haul down, rig in!* Make up and stow away the studding-sails, trice up the studding-sail gear, and get the burtons off the yards. Trim the yards (592), and sails (631), and haul the bowlines fore and aft. You are now as you were at the commencement of question 638, but on a different tack.

655. *Ques.* The vessel, being on the port tack, is taken aback; or, having come to against the helm, has brought the wind on the starboard bow. When not sailing in squadron, and no other circumstance rendering it necessary to recover her on the same tack, brace around on the starboard tack, as is the most common practice: thus—

656. *Ans.* If she has headway, put the helm to starboard, brace around the after yards, and proceed in the remainder of the evolution as in tacking. If she has no headway (laying dead in the water when the wind strikes her) up mainsail and spanker, square the after yards and put the helm to port for sternboard. As she pays off brace up the after yards by the port braces, and when they fill *Let go and haul!* as in tacking (584). Set the mainsail and spanker, trim yards, haul taut the lifts and trusses, set up the backstays, and haul the bowlines.

657. *Ques.* The yards are braced up on either tack, and the wind has died away until it is perfectly calm;

658. *Ans.* Haul up the courses, brail up the spanker and jib. *Lay aft to the braces!* and counter-brace the yards, either by bracing around the head yards, or the after ones. In this position, which, with a breeze, would

keep the vessel stationary, or nearly so (665), she is ready for any wind that may spring up.

659. Suppose, for instance, the head yards are braced up by the starboard, and the after yards by the port braces, helm amidships; a breeze strikes her on the starboard bow: you have only to haul aft the jib-sheet, and put the helm to port; the sails on the foremast and jib will pay her off; and when the after sails fill, brace around the head yards.

660. If the wind strikes her on the starboard beam, haul aft the port jib sheet, and brace around the head yards at once.

661. If the wind strikes her on the port side, from any point that will fill the head yards; haul aft the starboard jib sheet, and brace around the after yards. If too far forward to fill the head yards, brace square the after yards, and put the helm to starboard for sternboard; and when the head yards fill, you may brace up the after yards, and right the helm.

662. If the wind strikes her ahead, and you wish to pay off to port, haul aft the starboard jib-sheet; the wind now acting upon the head yards abox, and jib, pays her off, while the after yards are becalmed. If she gathers sternboard put the helm to port, and when she has fallen off sufficiently, *Let go and haul!* as in tacking. If you wish to pay off to starboard, brace the head yards around briskly, haul aft the port jib-sheet, bearing it well out to port, brace square the after yards, and put the helm to starboard for sternboard. As she goes off, brace up the after-yards by the starboard braces, and at the proper time *Let go and haul*, as in tacking.

663. So you have your vessel, by either process, immediately under command. As soon as she gathers headway, bring her to her course, or by the wind; using the spanker to bring her to, and setting the courses to suit circumstances.

CHAPTER XX.

COUNTER-BRACING THE YARDS.

TWO OR MORE VESSELS COMMUNICATING AT SEA.—HEAVING TO.—FILLING AWAY.—STRUCK BY A SQUALL.—A MAN OVERBOARD.

664. IN a former question (658), we counter-braced the yards in a calm to prepare for a breeze; but yards are frequently braced in this manner, with a breeze, for the purpose of heaving to, to await the coming up of, or to speak another vessel; for the purpose of sounding; to lower a boat in case a person has fallen overboard; or in any case when you may wish to remain stationary.

665. The common practice in vessels sailing alone, is, after hauling up the mainsail, to brace square the main yard, that is, yards on the main mast; having the fore and cross-jack yards braced full, foresail, spanker, and jib, set. Though the sails on the main mast are aback, she will range ahead slowly.

666. To stop her way still more, brace the cross-jack yards square, haul up the foresail, and put the helm alee; she will rarely range ahead under this arrangement of the sails, but will fall off and come to, which you may regulate by easing off, or hauling aft, the spanker and jib-sheets.

667. Or you may brace aback the head yards, and keep the after ones full. The after sails will keep her by the wind, while the head sails will deaden her head-

way. It is the opinion of some seamen that vessels make less drift with the head yards aback than the after ones.

668. It must depend entirely upon circumstances which method is resorted to. A vessel alone will resort to the former (665). To save a man overboard to 666.

669. Two vessels communicating, the weather one braces aback her main yard, the lee one her head yards; then, on any sudden emergency, as a squall, the weather one throws all aback and drops astern, while the lee one shivers her after yards and falls off.

669 *a*. "Two vessels communicating by boat, it is recommended to the one sending the boat, to heave to a little on the weather bow of the other; when the boat has reached the second vessel, she fills away with the boat in tow, ranges ahead, heaves to, and casts her off."

—*Fordyce*.

670. If there are *three* vessels, the centre and weather ones back their main yards, and the lee one as before; then, in case of necessity, the weather one fills her after yards and shoots ahead, the centre one backs astern, and the lee one proceeds as before.

671. Sailing in squadron in "order of sailing," those vessels which have the advantage in speed over others, are obliged frequently, besides reducing sail, to back the mizzen topsail, for the purpose of keeping in their stations. This is frequently done in preference to furling royals and top-gallant sails, and with the head and main sails full, will only deaden her headway in some degree. A fast-sailing vessel will sometimes keep her station for hours, with her mizzen topsail aback.

672. **To heave to, having the Wind Aft, or on the Quarter.** After hauling up the courses, commence as in

bringing to the wind (649–654), brace the mizzen topsail sharp up, put the helm down, and when the spanker will take the right way, haul it out. Keep the main topsail square, and meet her, as she comes to, with the helm, and by bracing up the head yards, and hauling aft the head sheets. Some officers, however, advocate coming to, from having the wind aft or free, with the head yards aback, or square. But there is no arbitrary rule which applies to *all* vessels; they differ quite as much as we do, and they must be treated or handled according to their peculiar qualities.

672 *a.* **Under similar Circumstances to heave to, with the Fore Topsail to the Mast.** After hauling up the courses, brace up the main and mizzen topsails, when you put the helm down; keeping the head yards square, and hauling flat aft the jib-sheet. It may be necessary to meet her with the helm, and ease the spanker sheet, before she loses her headway, to prevent her coming around, or going about.

673. If a vessel has rapid headway when the necessity for heaving to occurs, it would be advisable to settle down the top-gallant sails and royals on the cap, or clew them up; for these sails, when thus thrown aback, receive the full impulse of the wind, increased by the headway of the vessel, and the mast thus pressed has not a sufficient support from its stay.

673 *a.* To fill away after lying to with the main topsail to the mast: *Right the helm, haul aft the head sheets!* and board the fore tack. As she falls off, brace up the after yards, set the mainsail, and trim to the course. If from lying to with the fore topsail to the mast, *Right the helm!* shiver the after sails, and haul aft the jib-sheet.

As she falls off, brace around the head yards. Meet her with the helm, and trim to the course.

673 *b*. In the foregoing cases, vessels are said to be "*Lying to with the main topsail to the mast*" (665). "*Fore topsail to the mast*" (667). "*After yards aback*" (666). Or "*Standing on with the mizzen topsail aback*" (671).

674. *Ques.* Sailing with the wind on the starboard quarter. You have royals, flying-jib, staysails, and all the starboard studding-sails, lower and aloft, set. A signal is made, to come to on the port tack, with the main topsail to the mast, under single reefed topsails.

675. In obeying this signal, it will be your object to reduce sail, and reef your topsails in wearing, or tacking; thus—

676. *Ans.* Call all hands to shorten sail. *Stand by to take in the studding-sails, staysails, royals, and flying-jib.* When every thing is well manned (468–499), order, *In studding-sails and royals, down staysails and flying-jib!* Rig in, and get along side, the booms; take the burtons off the topsail yards, and jiggers off the top-gallant lifts. Furl the royals, trice down and stow the staysails and flying-jib, make up and stow away the studding-sails (502). *Man the top-gallant clewlines, lee main clewgarnet, buntlines, leeclines* (643) *and spanker brails.* When manned, *In top-gallant sails! Up mainsail and spanker! Lay aloft and furl the top-gallant sails!* Haul the main-sail up snug. *Stations for wearing!* And proceed as is directed in (602), until the wind is astern; when, the after yards being square, square also the head yards, *Brail up the jib and cant the spritsail yard! Man the topsail clewlines, buntlines, and reef-tackles! Lay aloft topmen! Let*

go the topsail halyards, clew down! Haul up the buntlines, and out the reef-tackles! Steady the topsail yards by the braces and haul taut the halyards. *Trice up! Lay out! take one reef in the topsails!* (511). Shift over the spanker boom; overhaul the starboard backstays; bear abreast, and set up the port ones.

677. The vessel, going around, brings the wind on the port quarter; brace up the cross-jack yard, and as she comes to, bringing the wind abeam, meet her with the helm, haul aft the jib sheet, brace up the fore yard, and haul forward the port fore tack. *Lay in! Down booms! Lay down from aloft! Man the topsail halyards!* Clear away, and light up, all the rigging, *Attend the braces! Hoist away the topsails!* (513). Having mast-headed the topsails, brace up and trim the fore and mizzen topsail yards. Haul taut the braces, lifts, and trusses.

678. Use the spanker, if necessary, to keep the topsails lifting while you are reefing; and when reefed, to bring her by the wind, and keep her from falling off.

679. After taking in the studding-sails, being in a hurry to perform the remainder of the evolution, merely remove them from out the way of the rigging, and make them up while the topmen are reefing, or after the evolution is accomplished.

680. *Ques.* As in the previous question, wind on the quarter and all drawing sail set (674), you are struck with a heavy squall. The first and most important thing to be done, is to get your vessel before the wind, which destroys greatly its force, and becalms many of the sails; and the next is, to reduce sail as expeditiously as possible.

681. *Ans.* *Put the helm hard up! Let fly the main and spanker sheet, and outhaul!* Be careful that the

helmsman does not bring the wind on the other quarter. Clew up the royals and top-gallant sails, and haul down the top-gallant studding-sail and flying-jib, clew down the mizzen topsail, haul up the mainsail and spanker, then take in the lower and topmast studding-sails, and haul down the staysails, rig the booms in, and take the burtons off the yards. When before the wind, right the helm, clew down the topsails, haul out the reef tackles, and up the buntlines, haul down the jib, and hoist the fore topmast staysail. In the mean time furl the top-gallant sails and royals, and stow the light sails; and you may now run before the squall until it moderates, or bring by the wind and reef, before keeping on your course.

681 *a*. With the foresail on a ship, struck with a heavy squall, she may be so buried forward by the press of sail, that it will be necessary to ease off the fore sheet a little.

682. The lower and topmast studding-sails assist in paying her off, and should be kept on, if possible, until she is before the wind; for a vessel in a squall is apt to fly up into the wind, unless means are taken promptly to prevent it, by the helm and sails.

683. In this, as well as in every other evolution, where dispatch is necessary, an officer should be well prepared as to the first and most important orders to be given. He should accustom himself, while in charge of the deck, to imagine any exigency, and determine upon the proper orders; by this, he prepares himself for any that may occur, and is always ready and prompt in issuing those orders that lead to the most important results. In 680, his first object must be, to get the vessel before the wind; after which his judgment must direct him, in the next, of re-

ducing sail. The only rules that can be laid down, are those that regulate which sails are taken in together, to take in the lighter sails first, and then the heavier ones; to be as expeditious as possible, and to reduce sail (in extent) according to the strength or violence of the squall.

684. In every sudden call upon a crew for great exertion, unless they are in a good state of discipline, and well acquainted with all their different stations for every manœuvre, they are at once thrown into a state of great confusion, impeding rather than forwarding the intention or wish of the officer of the deck. They should be taught to preserve the strictest silence, for nothing adds more to the general confusion in such cases than the jabbering of many voices.

685. But more than all this, upon the manner and bearing of the officer of the deck, depends the success or failure of any measure. If he displays promptness, decision, coolness, and issues his orders distinctly and with confidence, he communicates at once to the whole machinery, an influence that regulates, commands obedience, and leads to success. If, on the other hand, he is agitated, commands and countermands in the same breath, and is rather led into measures, than directing them; confusion, noise and irregularity mark the whole proceeding, and delay the accomplishment of the intended manœuvre.

686. In most cases, an officer who keeps a vigilant watch, can see the approach of a squall, and anticipate it by reducing sail, and being ready to brace his yards to meet it; for rarely do they occur without something to mark their approach, either the appearance of the

clouds and horizon, or the commotion on the water; of the one, experience and careful observation from time to time, will prepare him to judge very accurately—the latter cannot be mistaken, and invariably marks the advance of a sudden and violent squall.

687. No part of the horizon should escape his observation during his watch, even in the finest weather, with a steady breeze. It will encourage a habit that must turn to good account and never be a useless one; he may, by this, see the approach of a squall, from a point directly opposite to the breeze which appears to be a steady one, and prepare himself by reducing sail in time.

688. Too much cannot be said in censure of an officer, in charge of the deck, intrusted with the safety of a public vessel, and the lives of hundreds of persons, who, performing his duty negligently, allows a squall to strike him, without seeing its approach, and consequently unprepared to meet and resist its effects; by allowing other matters to occupy his thoughts and attention during his watch, is thrown entirely off his balance at any unusual occurrence, creates, by his manner and conduct, confusion among the men, and, losing their confidence, at the same time loses their respect, and proper deference to his orders.

688. *a.* It is recommended, on the appearance of a squall, to put the vessel on that tack which will place her in a position to receive it abaft the beam, thus: if she is on the port tack, the squall rising from any point between the lee beam and ahead; go about, and when the squall reaches the ship it will strike her nearly astern, otherwise she would be taken aback by it; which it is

desirable to avoid, particularly if it threatens to be a severe one. If, on the other hand, the squall rises from to windward, you can, by the weather helm, keep the vessel off so that it shall strike her abaft the beam. In the region of tornados, or wherever you are liable to be visited by violent gusts of wind, this should be strictly attended to.

689. *Ques.* You are suddenly startled by the cry of "a man overboard!"

690. There is nothing, on board of a vessel, that creates, for the moment, a greater excitement, or spreads a more general panic over the whole crew. Their best feelings and energies are suddenly excited, and forgetful of every other consideration, than that of extending an arm to save a fellow being, they rush aft in a body, without a thought, or settled purpose of action. Here the influence of the officer must be exerted promptly, and on the instant, to turn their feelings and energies in the proper direction, to the only mode of rescue.

691. *Ans.* The moment the cry is heard, you should order the helm to be put down, let go the bowlines and lee main brace and jib sheet; whether sailing free, or on the wind, bring her up and shake the sails, which will deaden her headway; until you can reduce sail and heave her to, for while headway continues, though diminishing, you can, by the helm, keep her lifting, and prevent her being taken aback. In the mean time, issue the following orders distinctly, and in a manner that will command instant obedience. *Keep silence fore and aft! Every man to his station! Cut away the life buoys! Lay aft the cutter's crew, and clear away their*

boat! The men aloft should be directed to keep sight of the man overboard.

691 *a.* "The best authorities recommend" (says Captain Basil Hall), "that if possible, the ship should not only be hove aback when a man falls overboard, but that she ought to be brought completely round on the other tack," etc., etc. We are of the same opinion, if the vessel was on the wind, and with a stiff breeze, for the same reason that he advances, "that she will then, having her main yard aback, drift down directly toward the man." Therefore, if on the wind, the officer should order, *Ready about!* hauling up the mainsail in stays, and leaving the main yard square in bracing.

692. If on the wind, *Stand by to haul up the mainsail!* *Man the weather main and lee cross-jack braces!* *Let go the bowlines and lee braces!* *Up mainsail!* *brace aback!* The moment the lee braces and bowlines are let go, the yards (from being already in the wind), will fly around themselves (589); then keep the head yards full to steady her, while the after ones stop her headway. You are now as in 664.

693. If you are sailing free, with studding-sails set, man the lee head braces, clew up the lower studding-sail, brace up the head yards, haul forward the fore tack, and keep the head yards full, while you luff up to back the after ones; and you may, if the after yards are not square, brace them in; while doing which, haul down the topgallant and royal studding-sails, or if you have not time, and the wind is fresh, let go the studding-sail tacks, and haul them down after the vessel is hove to.

694. While this is being done, the boat is ready for

lowering, with the crew and an officer in her; *Lower away!* and direct them which way to pull.

694 *a.* Great care must be taken to lower the boat at the proper moment, as soon as the vessel's headway has sufficiently ceased, to insure the safety of the boat. An attempt to lower the boat too soon, may prevent your saving the man, and endanger the boat's crew.

695. If the manœuvre is performed readily and in the shortest time possible, the officer of the deck, though he may lose the man, can only feel, in common with all on board, a regret at the melancholy accident, without having upon his conscience the bitter feeling that he might have saved him.

696. It may be proper here to remark, that, in many cases the lives of some of the crew, particularly those stationed on the yards, are frequently endangered by the negligence of those who are attending the braces. The officer should be particular, when the men are on the yards, to keep the braces fast, and, if necessary to brace them, have the braces well attended, and give them timely notice of his intention, warning them to "*look out for themselves.*"

697. There are cases in which an officer may have reason to hesitate as to the propriety of lowering a boat to rescue a man, such as in a gale of wind with a heavy sea, or in a dark squally night. The struggle, in such a case, will be great, between his better feelings and his judgment. The former might induce him to risk his own life to save a fellow being, but he has no right to risk the lives of a whole boat's crew in a hopeless attempt to save one man; his responsibility will be great, but his judgment must direct him.

698. In these, as in most cases, a sailor will rush blindly into any danger, under the orders of an officer he respects. And an officer cannot be too careful, in subjecting these most willing instruments to unnecessary or too perilous situations.

CHAPTER XXI.

IN A GALE OF WIND.

SCUDDING.—BROUGHT BY THE LEE.—BROACHED TO—TO BRING BY THE WIND AND LIE TO.—RUDDER, WHEEL-ROPEs, AND RELIEVING-TACKLES.—LOSING THE RUDDER.—STEERING BY A CABLE.

699. **Scudding.** In 603 you have the proper arrangement of sail for lying to in a gale, but should the wind be favorable, and the sea not running too high, as it will not unless the gale has been of long continuance, a vessel may scud before it, under such sail as the force of the wind will allow. In sailing with the wind aft, it is greatly disarmed of its force (680, 681), and a vessel may carry safely some sail, when if on the wind she would be reduced to bare poles.

700. The best sails for scudding under, are, a close-reefed main topsail and single or double-reefed foresail; and a gale is rarely of such violence that this sail cannot be carried safely. The former by its height, will not be becalmed by the waves, while the latter may be necessary, in case of being brought by the lee, to pay her off to her course. The fore topmast staysail should always be set in scudding, or the fore storm staysail; sheets hauled flat aft.

700 *a.* Some vessels will scud better under a foretop-sail; the former (700) is the rule, this the exception.

701. Vessels sometimes steer wildly in scudding, in

consequence of being out of trim, of their bad qualities, or the force of the sea on either quarter; in which cases, or by the negligence of the helmsman, she may, in yawing bring her sails aback. She is then "*Brought by the lee,*" or "*has broached to.*" The proper manner of recovering her we will endeavor to explain, as follows.

702. *Ques.* Suppose, in scudding, with the wind a little on the port quarter, under the sail as above (700), you are *brought by the lee*, and have every thing aback.

703. *Ans.* The wind is now on the starboard beam, *Put the helm hard to starboard!* Man the port braces fore and aft. *Rise fore tack and sheet! clear away the head bowlines, and brace full the head yards!* and shiver the after ones. Attend the lifts, trusses, rolling-tackles, and breast-backstays, as in former evolutions. She will pay off under this arrangement, the helm itself partly effecting it before she loses headway.

704. When before the wind, right the helm, and trim the yards for the course. Haul taut the rolling-tackles, lifts, trusses, &c.

704 *a.* Or in case of having *broached to*, and brought the wind on, or forward of, the port beam; meet her with the helm and lee braces, by putting the helm hard aport, and hauling in the starboard head braces.

705. You may, by altering the trim of a vessel, shifting some heavy articles, as guns, shot, or chain cables, forward or aft, ease the helm greatly, and make her steer less wildly, which is certainly advisable; for the danger in being brought by the lee or broaching to, is, that of shipping a heavy sea, which will sweep the decks, losing some of the masts or yards; and should she gather rapid sternboard before being recovered, of being swamped.

706. To bring by the Wind and lie to in a Gale.

After scudding for any length of time, the increased violence of the gale and force of the sea, causing the vessel to labor greatly, straining her in every part: or having approached some land, which from the state of the weather you are unable to distinguish; it may be necessary to bring by the wind, and lie to, until the gale abates. We will, for example, bring to on the port tack.

707. Have the storm staysails ready, sheets hooked and moused, secure every thing about the decks, and below. Send every body on deck. Put on, and batten down, the hatches. Man the fore clewgarnets and buntlines, starboard fore and main, and port cross-jack braces, main and mizzen staysail halyards. Watch for a smooth time. Haul up the foresail, put the helm to starboard, brace up the after yards, and hoist the mizzen staysail. As she comes to, hoist the main staysail, and meet her by the helm, the head braces, and by hoisting the fore staysail. Then haul taut the rolling tackles, lifts, and trusses. Set the backstays well up in going around. It may be necessary to furl the main topsail, and she may lie to better without the fore staysail (you have directions for taking these sails in in 463, 481). After she has recovered from the first shock of the sea, and has lost her headway, she will, with the helm alee, and under a proper arrangement of the sails, lie to; coming up and falling off two or three points, and drifting bodily to leeward.

708. When a vessel labors much in a sea way, either lying to, or standing on her course, the sails should never be hoisted up, or the braces hauled, as taut as in a smooth sea. For the play of the masts will either

carry away the braces and sheets, or spring the yards. And if the pitching is hard and quick, you should see that the helm is eased, allowing it to go to leeward, so that she may obey freely the sea, the shock of which will be less violent against the rudder.

709. And after a gale abates, sail should not be made upon the vessel too rapidly, particularly if her course will bring the sea ahead or forward of the beam. The officer should be content with giving her headway until the sea also abates. For by forcing her through a head sea, you strain every mast and yard, and injure the rigging.

710. Preventer braces, shrouds, and backstays, are used in heavy weather, as a relief to the standing ones; these are of great importance to the mizzen topmast, the standing part of the main topsail brace, leading from its head nearly at right angles, while the angle formed by the backstay is too small to afford a sufficient support.

711. **Rudder, Wheel-ropes, Relieving-tackles, &c.** The rudder, wheel-ropes, and relieving-tackles should occupy the particular attention of the first lieutenant and master. The former with its tiller are permanent fixtures, so arranged, and of such durable materials, that they will withstand the severest shocks. Wheel-ropes are liable to chafes, and should be occasionally examined by the master. Those of raw-hide, now in common use, are found to be exceedingly serviceable and durable, they should be occasionally oiled, and protected from chafe.

712. Relieving-tackles should be kept fitted, and constantly at hand; and, in a gale of wind, with a heavy sea, when the parting of a wheel-rope might endanger

the vessel, should be kept hooked, and hands stationed by them, under the direction of an officer, having a compass to steer by.

713. Cases have occurred in which rudders have been unshipped or otherwise injured, so as to be of no further use, when it has been necessary to resort to some expedient to manage the vessel.

714. Vessels can always be better managed when by the wind, than in any other situation. They will sometimes steer themselves for hours, having their yards so trimmed and sails so regulated as to keep by the wind. Care must be taken that the vessel holds a good wind, and at the same time does not gripe. By slacking, on the one hand, a few feet of the head sheets, and on the other of the spanker and main sheet, an equilibrium will be established between the head and after sails.

715. The moment you lose your rudder, bring her up by the after sails, bracing the yards; and meet her as she comes to, with the head sails. Then by reducing the sails, forward or aft, and bracing the yards, you may steer her, until you can resort to better means, as follows:

716. Rouse up from below a hemp cable and hawser, middle and clove-hitch the hawser, and veer the end of the cable over the taffrail, through this hitch; after veering out about fifty fathoms of cable, jamb the hitch and rack it well, securing it so that it cannot slip. Then veer out the cable until the hitch takes the water. Lash the cable on the centre of the taffrail; and a spare spar under it and across the stern, with a block well secured at each end, through which reeve the ends of the hawser, one on each quarter. Reeve them again

through blocks at the ports abreast of the wheel. By which you may steer your ship, until you can construct a temporary rudder.

717. By rousing in the hawser on either quarter, the force of the sea on the cable, drawn over on that quarter, moves her stern the opposite way.

718. The most approved way of preparing a temporary rudder, in the absence of a spare one, is that of Sir Edward Packingham. This was formed by an inverted topmast, spare lower-caps, and other spars, or parts of spars, securely planked together.

CHAPTER XXII.

LOSING A FORE-MAST, BOWSPRIT, ETC.

719. IN case of losing a fore-mast, bowsprit, or any of the yards or masts, an officer must be guided entirely by the peculiar circumstances of the case. No rules can be laid down to govern him which may not be useless or superfluous in most cases that may occur. If he understands the principles of supporting masts, securing yards, and the effect of the sails upon different parts of the vessel, then his judgment will, on the occurrence of any accident of this nature, point out to him instantly the readiest and best manner of proceeding.

720. If you lose your bowsprit, then all the masts forward lose the support of their stays, which want of support is carried aft to the main topmast, topgallant-mast, and from thence to the mizzen; therefore it will naturally occur to you to put the vessel before the wind, and bring all the support upon the backstays. To do which it will be necessary to take in all the after sail.

721. But after having put her before the wind, in a heavy sea, and the vessel laboring, the masts are in danger from the want of support forward. Send down the topgallantmasts and house the fore-topmast. Secure the fore-mast with hawsers or a stream-cable, middled and clove-hitched around the mast head, and set up through the hawse-holes on the main deck. Clove-hitch, in like manner, a hawser around the top-

mast head, sway it up, and set up the hawser to the knight-heads. Then you may proceed to rig a jury bowsprit of the largest spar on board.

722. Or you may secure the fore-mast by pendant-tackles set up at the knight-heads; and the topmast by hawsers set up through the hawse-holes.

723. The head stays being secured by means of the bowsprit, I cannot well imagine of the latter being carried away by any violent exertion, without also carrying away the fore-topmast, and probably the fore-mast. In the latter case, the main-topmast, and all the topgallant masts must go with it. If the fore-mast holds, the main-topmast stays should immediately be brought down to the deck and set up, and a hawser taken up for an additional security. A vessel in this situation deprived of the force of all the head sails, will not be easily made to fall off before the wind, but on the contrary will have a great tendency to fly up. In which case you may secure her to the wreck by stout moorings, then, having taken in all sail, and with a good scope out, ride under its lee until you can rig jury masts and bowsprit.

724. Accidents of this nature are fortunately of rare occurrence in the navy, owing to the care with which our vessels of war are fitted out, and the very liberal allowance made for each in every thing necessary to their equipment.

725. But it appears probable that they would be still more effectually prepared to resist the severest trials, if they were, in all cases, fitted out under the immediate supervision of the officer who is to command during the cruise, the first lieutenant who is to be the executive officer, and all the officers and crew who are to serve in them.

726. The good state of the rigging will not be the only advantage attendant upon this, a thorough knowledge of her state, and intimate acquaintance with her resources, would enable each and every one to bring them to bear when necessary.

727. Besides this, every officer should have experience in this part of his profession. It is one thing to perform the duties of a watch officer at sea, and quite a different thing to superintend the rigging or fitting out of a vessel, and I speak with certainty when I say, that there are officers in the navy of fifteen or twenty years' standing, who have been the greatest part of their time actively employed, have never been attached to a vessel when fitting out for sea, and have nothing more than a theoretical knowledge of the process in all its bearings; and these gentlemen have passed examinations, arrived at the rank of lieutenant, have good standing as officers, intelligent, and efficient at sea. The reason is obvious; they have always been ordered to their vessels on the eve of sailing, and after having performed a cruise, have returned to enjoy a short respite from their duties; until another vessel, rigged and fitted out at some Navy Yard, is ready for sea, and receives one of these officers, probably as her first lieutenant, entirely unacquainted with the state of her equipments.

728. This digression may appear unnecessary, but it will not be so, if by it you may be prompted to make this part of the subject a study.

729. But to resume the subject. Yards and masts may be, and occasionally are, carried away or sprung in a fresh breeze but smooth sea, topgallant-masts by not having their backstays well set up, and yards by not

having their weather braces sufficiently taut when braced up. Topsail and topgallant yards are also sometimes carried away by not letting go the lee brace in tacking ship, in a good swing of the after yards (589); when, the lee brace not being properly attended to, neither the strength of the yard or brace can resist the force with which they are impelled; and if the brace holds, the yard must inevitably be carried away in the slings.

729 *a*. Sometimes, also, a topsail yard is carried away in being hoisted up too taut. And there is no doubt but that they are often *sprung* in this manner, impairing their strength; and subsequently carried away, under circumstances when a sound yard would have held. Swigging up a topsail to a taut leech, the strain is all brought directly upon the slings or centre of the yard, hence the great danger of injury to the yard, unless done with care and judgment.

730. An officer should accustom himself to glance his eye around at all important stations in tacking ship, and in all evolutions, to see that they are all properly attended to. It is not enough that he should give an order; that is easily done, and is nothing more than an intimation of his intention, or of the evolution to be performed. His duty is clearly to see that the order given is properly executed. If the lee topsail brace was not attended to in tacking, although he gave the order, *Ready about!* and the crew were all acquainted with their stations, he is not free from censure if the yard is carried away. On the occurrence of any such accident as the loss of a yard, he should immediately clew up the sail, and, if possible, unbend it aloft, send down the sail, and then the two parts of the yard, and supply its place immediately by another.

CHAPTER XXIII.

SOUNDING AT SEA.

731. **Soundings**, to ascertain the depth of water on entering or leaving a port, or in any case where there is supposed to be less than twenty fathoms of water, are taken by the *hand-lead*, a quartermaster or fore-castle-man being stationed in the main chains for the purpose; the lead weighing from seven to fourteen pounds, and the line being from twenty to thirty fathoms in length.

732. Soundings at sea, in a greater depth than twenty fathoms, are taken by the use of the *deep-sea lead*, which weighs from forty to one hundred pounds, the line being from eighty to one hundred fathoms in length.

733. Both the hand and deep-sea lines are marked as follows:

At 2 fathoms	from the lead,	with 2 strips of leather.
" 3	" " " "	" 3 " "
" 5	" " " "	" with a white rag.
" 7	" " " "	" red rag.
" 10	" " " "	" with leather, having a hole in it.
" 13	" " " "	" as at 3.
" 15	" " " "	" as at 5.
" 17	" " " "	" as at 7.
" 20	" " " "	" with 2 knots.
" 25	" " " "	" 1 "
" 30	" " " "	" 3 "
" 35	" " " "	" 1 "
" 40	" " " "	" 4 knots; and so on.

In marking the deep-sea line, the first marks before twenty fathoms may be omitted, with the exception of the ten-fathom mark, and, if you please, the fifteen, as directed above.

734. Soundings by the hand-lead are taken while the vessel has headway on, the leadsman throwing the lead forward, and getting the depth as the vessel passes, while the line is nearly perpendicular. He communicates to the officer the soundings obtained, in a song, thus: If the depth corresponds with either of the above marks, he says "*By the mark 5, or 7.*" If the mark is a little below the surface, he says "*Mark under water 5 or 7.*" If the depth is greater, or one half more than any of the marks, he says "*And a quarter,*" or "*And a half 5 or 7.*" If the depth is a quarter less, he says "*Quarter less 5 or 7.*" If he judges by the distance between any two of the marks that the depth of water is 4, 6, 8, 9, 11, 12, 14, 16, 18, 19, or 21 fathoms, he says "*By the deep,*" etc.

735. The *breast-band* or *rope*, generally the former, made of canvas, secured at both ends to the rigging, supports the body of the leadsman while heaving the hand lead.

736. **To Sound with the Deep-sea Lead.** The men are made to range themselves outside of the vessel, from the weather main chains to the cat-head. The end of the line is passed forward, outside and clear of every thing. The lead, armed with tallow at its base, is sent forward to the fore-castle, where it is the duty of the captain of the fore-castle to secure it to the end of the line. The line is then hauled forward, each man collecting a coil of several fathoms in his hand, commencing forward; until the officer thinks there is line enough out. *All*

ready forward! being communicated from the forecastle, the vessel is luffed up into the wind until her headway is sufficiently deadened. Or, as is advisable in a good breeze, the main or mizzen topsail is braced aback. The line is then snatched in a small snatch-block, secured to the after mizzen rigging, or to one of the vang's; the remaining part of it being coiled down in a tub or rack, clear for running. Every thing being in readiness, and the vessel's headway sufficiently deadened, the officer orders, *Stand by! Heave!* The captain of the forecastle, or whoever holds the lead, heaves it as far forward as he can, and at the same time cries, *Watch-ho! Watch!* And each man, as the line runs out from his hand, holds it clear of the side, and repeats the cry, *Watch-ho! Watch!* In the mean while the line runs out until it touches the bottom, or until a sufficient quantity has been run out to satisfy the officer that no bottom has been found. The men then *lay aft and man the line!* and walk forward with it; a petty officer being stationed by it, to note the depth of water by the first mark that comes in.

737. If bottom has been found it will instantly be known, by the line bringing up suddenly in running out, or by the arming on the lead after it is hauled up. By which the nature of the soundings are known.

738. To get sounding by the deep-sea lead while lying to in a gale, or in any case when the vessel drifts much to leeward, it is proper to pass the line from to windward around the stern, and then forward on the lee side, and to heave the lead from to leeward, which will bring the line nearly perpendicular by the time the lead touches the bottom.

739. While at single anchor, it is proper always to

have a lead somewhat heavier than the hand-lead, say from fourteen to twenty pounds, over the side, and resting on the bottom, with a man to attend it. Of course this is only necessary in a stiff breeze, or at night. But in a vessel of war, where you have many hands unoccupied, it is a prudent, and should be observed as a standing rule, without regard to the weather. By this you will have instant notice if the vessel parts her cable or drags her anchor.

739 *a*. In a moderate or light breeze, with the wind free and all sail set, soundings may be taken without reducing sail, thus: luff the ship up; if the lower studding-sail is set, haul up the clewline; and keep the sails lifting, without allowing them to be taken aback, which can readily be done by a proper management of the helm; she will lose her headway sufficiently for the purpose, and still be under the guidance of the helmsman. The soundings being taken, keep her off to her course, and haul out the lower studding-sail.

739 *b*. Whether the wind be aft, free, or the vessel close-hauled, to take proper sounding the headway must be stopped, or nearly so, particularly if in deep water, by heaving to, or deadening the way of the vessel by keeping the sails lifting.

CHAPTER XXIV.

COMING TO ANCHOR.

PREPARATIONS FOR ANCHORING.—ANCHORING.—SELECTING A BERTH.—ANCHORING IN A TIDE-WAY.—RIDING AT SINGLE ANCHOR.—ANCHORING WITH A SPRING.

740. ON approaching a port, or the place where you intend to anchor, some preparation is necessary, and you will naturally wish to come to in a seamanlike manner. In no evolution is it more necessary that every station should be well attended to.

741. But in the first place, there being every prospect of getting in in a few hours, rouse up from below and bend the cables and buoy-ropes (329 to 336), get the anchors off the bows and ready for letting go, range and bitt the cables, and have the deck and bitt stoppers in readiness (355 to 359); and, if it is the intention to moor ship immediately after anchoring, get up the messenger and nippers, pass the former for the cable bent to the anchor you will let go first, and have the capstan bars ready for shipping.

742. In biting the cable, and in the length of buoy-ropes, you will be governed by the depth of water in which you wish to drop anchor; this you can ascertain from the charts, or from the pilot, if you have one.

743. You may, if the weather will permit, single the topsail sheets; get the clew-jiggers, and clew-ropes on the courses and topsails (461). See that the sheets are

all close home, and sails hoisted up taut. Take off all the mats from the rigging and yards, and have the light masts properly stayed. See that there are no ropes towing overboard; that the half ports are all squared, and guns level; all the running gear clear about the different masts for shortening sail; the quarter and stern boats ready for lowering; kedges ready, and hawser tiers clear.

744. Have all the crew properly and uniformly dressed, particularly the topmen, boat's crews, and all those who will be at all exposed to view.

745. See that all important stations are properly attended—anchor, stopper, and shank-painter, helm, lead, etc.

746. If you approach the anchorage before the wind, with square yards, and all sail set, it will be necessary to take in the studding-sails in time; that you may get them stowed away, and not lumber the deck, and impede the operation of clewing up the other sails.

747. *Call all hands to bring ship to anchor!* See that all the officers and crew are on deck, and at their stations. *Stand by to take in all the studding-sails, and royals!* After the men are stationed (468, 469, 487 to 501), take them in, giving the order, *Haul taut! In studding-sails and royals!* Rig in and get along side, the studding-sail booms; make up and stow away the sails, trice up the gear, take the burtons off the topsail yards, and jiggers off the topgallant lifts.

748. *Man the topgallant clewlines! Fore clewgarnets, and buntlines!* and when ready (451, 466); *Haul taut! In top-gallant sails, up foresail!*

749. The moment the order *Haul taut* is given, the

top-gallant-yardmen should lay aloft from the top, and after furling the sail snugly, lay down on deck.

750. Square the lower yards by the lifts, and let the captains of the tops square the topgallant and royal yards.

751. *Man the topsail clewlines and buntlines; jib downhaul and spanker outhaul!* Have hands stationed by the topsail sheets and halyards, jib halyards, and spanker brails. Also some hands to take in the slack of the clew-ropes, and to attend the braces. Bear the spanker boom over on the quarter, and overhaul the lee topping lift. Have men on the lower yards to overhaul the topsail sheets.

752. When near the anchorage, put the helm to starboard or port, as the case may be, having allowed for head-reach in bringing her to the wind. Then give the order, *Haul taut! Let go the topsail sheets, clew up! Haul down the jib! Haul out the spanker!* As soon as the sails shake, having the wind abeam, *Let go the topsail halyards, clew down!* Take in the slack of the braces as the yards come down, keeping them square. The buntlines are hauled up above the yard, the clews hauled forward by the clew-ropes, and a few of the topmen pass in the leeches ready for furling.

753. She comes to the wind by the effect of the helm and spanker, and as soon as she loses entirely her headway, give the orders, *Stand clear of the cable! Stream the buoy! Let go the anchor! Man the spanker brails!* and as soon as she swings to the anchor, *Brail up the spanker!*

753 a. In coming to with a chain cable, you should let the vessel gather sternboard before letting go the anchor. See paragraph 343.

754. But if there is not room to take the necessary sweep, in coming to anchor with the wind aft, check-stoppers should be put on the cable to deaden the headway. Having clewed up the sails in time, furl them, that you may approach the anchorage with as little headway as possible. The anchor being let go; the checks, breaking one after the other, serve to stop her headway before the range is veered to, giving her a sheer with the helm.

755. Coming to anchor with the yards braced up, you must have the weather braces well manned, and have hands ready to square the lower lifts, before the topsails are clewed up; and the moment the order is given to *clew up*, let the braces be hauled in, and the lower lifts hauled taut to the square mark. Some officers square the yards by the braces before they clew up the sails. This hastens to stop her headway, and it is proper and even necessary in some cases, as, for instance, in coming to in a crowded harbor, or where you have little room. But it renders the operation of clewing up difficult, from the sails being aback and binding against the rigging. This latter mode is however approved of in light winds.

756. As soon as the cable is taut and the anchor ahead, veer to the cable, giving it to her as she will take it.

757. After the studding-sails are in, some officers take in all the remaining sails (courses, topsails, topgallant-sails, royals, and jib), together. This, when well done, has a good appearance. A crew must be well drilled, and all the running rigging must traverse easily through their blocks, to effect it in a manner that shall not present to a looker on the appearance of great confusion. We see it frequently attempted, principally by vessels

of war of other nations, and very rarely do we see it perfectly successful.

758. You will be governed by circumstances in the selection of your berth; which, in reference to the prevailing winds, vessels already at anchor, etc., will be peculiar to the port, and of course no rule can be laid down, except that of selecting one convenient to the landing, protected from the sea, and without the moorings of other vessels (771). And in coming to with the starboard or port anchor, you will consider the propriety of mooring with an open hawse, to that quarter from which you may expect the strongest or prevailing winds; for instance;

759. If you come to with the port anchor, wind blowing from the northward, which is the prevailing wind; it will be necessary to give the vessel a sheer, or, by some means which will be explained in mooring, rouse her over, so that you may drop the starboard anchor to the eastward of the port one.

760. If you come to with a northerly wind, the prevailing one being from the eastward, let go the port anchor first, to windward of your berth, and moor as in 769, 770. If, on the contrary, the prevailing wind is from the westward, you will come to with the starboard anchor. And after being moored, she will ride with an open hawse, in the former case to the eastward, or in the latter to the westward.

761. Anchoring in a narrow channel or harbor, with the intention of mooring, you will let go the first anchor on the weather shore, and moor with an open hawse either in or out of the harbor, to the prevailing wind.

762. The necessity of these precautions will appear

evident, if you should ever find yourself riding to a gale of wind with a cross or elbow in the hawse, cables chafing each other, and injuring the cutwater.

763. In paragraphs from 559 to 629 inclusive, so much is said of the effect of the tide in reference to the management of a vessel, that but few remarks will be necessary on the subject of *coming to anchor in a tide-way*. The directions therein contained for working or drifting *down* a river, the precautions necessary to avoid fouling other vessels, giving yourself room for drift, avoiding eddy currents, and keeping the vessel constantly under the influence of the helm; will also govern you in working *up* the river to the anchorage.

764. If, having a head wind, and tide favorable, you work *up*; you will, when near the anchorage, put the vessel before the wind; and, keeping her under the management of the helm, with sufficient sail set to stem the current, you may, by reducing or making sail, drop with the tide, shoot ahead, or sheer to either side with the helm, until you have arrived at the proper spot for anchoring.

765. Or, having the tide running out, with a fresh breeze in your favor; and having, by sufficient sail, forced your way through the water to the anchorage; reduce sail until she becomes stationary, when you may drop the anchor.

766. In a tide-way you will always moor with one anchor up and the other down the stream, for you will never, except at slack water or in a violent gale, ride to the wind.

767. When anchored with a chain cable, it is sometimes the practice to ride by a long range without moor-

ing. In ordinary weather and good holding ground, the vessel will swing without passing over her anchor, riding by the bight of the cable, without straightening it. When the harbor is not crowded with vessels, and you expect to remain but a short time in port, this will answer very well; but it would not be prudent to neglect mooring, if you are to remain more than a few days at most; for in case of bad weather you may overrun and trip the anchor, or be in danger of fouling other vessels. This, however, must depend greatly upon the nature of the bottom in which the anchor is let go. In any harbor where the anchor and chain buries itself deeply in the mud, a vessel may safely ride by the bight of a chain, even to a fresh breeze.

767 *a*. In coming to anchor in great depth of water, say from fifteen to thirty fathoms, as is sometimes the case in an open roadstead, on a bold coast; have your chain ranged with check stoppers at every five fathoms, and a good deck stopper abaft the bitts, at a range which will allow the anchor to reach the bottom. Otherwise, the weight of thirty or more fathoms of chain cable will be sure to drag after it, and over the bitts, all the cable you may have on deck, and which, falling on your anchor, will foul it. The check stoppers will check the cable as it goes out.

768. If you anchor with the expectation or probability of engaging in fight, springs should be attached to the rings of the anchor before letting them go. Hawsers or a stream cable may be used for the purpose. These serve to present the broadside of the vessel toward the point against which you will direct your fire. In using them, you veer on the cable, heaving in at the

same time on the spring, which may be previously brought to the capstan.

768 *a.* If you are about to anchor in an open roadstead, where it may become necessary to put to sea on the approach of bad weather ; it is proper to come to with that anchor which will insure casting the way you wish, *i. e.*, with reference to those winds, which would oblige you to put to sea ; thus : If it would be proper to cast to starboard, come to with the port anchor.

CHAPTER XXV.

MOORING.

WITH OR WITHOUT A TIDE.—MAKING A FLYING MOOR.—
BEARINGS.—SHEET CABLE.—GENERAL REMARKS ON THE
DUTIES OF A WATCH OFFICER, AT ANCHOR.

769. HAVING come to with the intention of mooring, as contained in the foregoing chapter, paragraph from 758 to 766; we will now proceed to moor ship. In 741 you have every thing in readiness for so doing immediately after anchoring. *Call all hands to moor ship!* And, having swung to the first anchor, continue to veer to the cable as she will take it, checking her occasionally in a fresh breeze or rapid current, or in a very light air assisting her with the mizzen topsail (which may be kept set for the purpose) until you have veered to twice the length of the scope by which you intend to ride; say one hundred and twenty fathoms. Then, having brought the cable taut, let go the other anchor and clew up the mizzen topsail if set. Bring to on the cable (352). Ship, swifter, and man the bars, and heave taut. Take off the stoppers, unbit the heaving cable, and have the other one ready for veering.

770. Now proceed to heave in on one cable while you veer out on the other, until you have brought the sixty fathom mark of the veering cable in the hawse. Then, having bitted and stoppered the veering, heave taut, bitt, and stopper, the heaving cable.

771. The vessel is now moored with a scope of sixty fathoms on each cable, and will swing to the wind or tide, forming a sweep within her moorings. No vessel should be moored with cables so slack, or with so little scope out, as to swing over her buoys, or beyond her own moorings.

772. The foregoing example shows the proper course to pursue, when the spot to place the second anchor is directly to leeward of the first; but should that not be the case, she must be, by the use of hawsers taken out to the shore, or to another vessel, or by the use of a kedge, roused over to the proper spot, veering on the first cable while doing so. Then place the second anchor and proceed as directed in 770.

773. **To moor in a tide-way**, you may veer to the full scope (120 fathoms) any time during the tide, and drop the second anchor before slack water; for with a good scope of cable, and the current still running, you may give her a considerable sheer with the helm. After the second anchor is down, bitt and stopper well the cable, and wait the change of tide; when, having swung to the anchor, you may proceed to moor as before directed (770).

774. **Making a flying moor**, which is one of those operations requiring great precision and promptness, where the failure in any one part must thwart the whole, and preclude the possibility of its proper performance—I call your attention to, because it may be, and sometimes is resorted to—observing, also, that an officer should never subject himself to the possibility or probability of failing in any manœuvre, out of the common practice, where the failure may be owing to any other cause than his inca-

capacity or want of judgment. It should never be attempted in a single-decked vessel, where there is not a separate deck to work the cables on.

775. This manœuvre is sometimes performed by officers, and with brilliant success, even in single-decked ships. I only take this opportunity of recommending to you, as a general rule, never to hazard your professional reputation on the chances of any event so doubtful as the satisfactory performance of this.

776. But to proceed: There are two methods of making a flying moor; in either case you have first to determine in what direction the two anchors should be placed.

776 *a*. By the first method—have every thing in readiness for anchoring and mooring, a range of one hundred and twenty fathoms of one cable, and sixty of the other, on deck; and, having made every preparation for shortening sail, approach the anchorage boldly. Clew up every thing, and let go the first anchor while she has headway on sufficient to run out the whole range of one hundred and twenty fathoms, sheering her with the helm. Then luff up into the wind, let go the other anchor, and proceed to heave in to an equal scope on each.

777. The second method is to approach the spot where you intend to place the weather anchor, lay every thing flat aback, and the moment the headway ceases, let go the first anchor, and veer to as she drops astern. Then clew up every thing, and having run out the full scope of 120 fathoms, stopper the cable and let go the other anchor. Bring to on the first, and equalize the ranges. This is only proper when the places to drop the anchors are directly in the range of the wind.

778. In a very light air, the first anchor (776 *a*) may

be let go under all sail, clewing up the moment it is gone; but in a fresh breeze, and having much headway on, you should always clew up first.

778 *a.* In mooring, a shackle should always be kept near the bitts, to facilitate the operation of clearing hawse.

779. As soon as the ship is moored the *bearings* should be taken and entered on the log, together with the depth of water in which the anchors were let go, and the scope of cable out, and the draught of the ship.

780. One of the first things to be attended to after mooring, is to bend the *sheet cable*, that the anchor may be in readiness for letting go if necessary (337); and, being bent, take in the slack of it, and stop it to small bolts or staples in the side, so as to form as nearly as possible a straight line against the side of the vessel; have it neatly covered with mats to preserve it from chafe, and have the covering painted white or black, to correspond with the side of the vessel against which it rests; have it also well protected inboard by mats, etc., and triced up neatly against the beams.

781. A neat arrangement for the sheet cable is, to have that part of it which leads from the anchor to within the hawse-hole, of chain. The remaining part, whether of hemp or chain, to be kept below until the weather may make it necessary to get up a range.

782. While at anchor, the officer of the watch has as much duty to attend to, and frequently more, than at sea. They are for the most part of a different nature, but require equally his close attention. He should at all times know the state of the hawse, the direction of the buoys, and the scope of cable out; what boats are absent

from the vessel, and for what purpose; what orders are to be executed during his watch, and what to be passed to his relief. He should see that the signal officer, or quarter-master, keeps an eye constantly upon the flagship, if in squadron; that all her motions and signals are immediately reported and attended to; that the answering pendant is bent and ready for immediate use; and, in fine, he should never allow himself to be taken by surprise, or be unprepared to act in concert with the rest of the squadron in the general exercises.

783. He should be particular that the boats moored at the booms and astern, have boat-keepers always in them, to drop or haul them to the gangway, or out of the way of other boats coming along side.

784. He should be particular that the yards and studding-sail booms are kept square, the rigging hauled taut and stopped in snugly aloft. That the ensign and pendant are up taut, and fly clear. He should never allow the men to go aloft unnecessarily, and should see that the sweepers, appointed to the different decks, are always at hand to answer the first call of the officers of the watch.

785. The crew should never be disturbed at their meals if it can possibly be avoided, or called upon for any duty during the term allotted to them, between piping to any meal and turning to; this is generally one hour, is a liberal allowance, and should be strictly observed; for while you rigidly demand of a crew a strict attention to their duties, and ready answer to your call at all times, you should never infringe upon their rights, or lay yourself liable to a charge of injustice.

786. Never allow a boat to leave the vessel, on any duty, unless the crew are properly and uniformly dressed,

and have a flag in the boat ; and see that the officer understands distinctly the orders given him—and on his return makes a satisfactory report.

787. Be prepared, at all times, to receive boats coming along side in the proper manner, with the usual form of salutation to the officers who come in them.

CHAPTER XXVI.

CLEARING HAWSE.—TENDING SHIP.

788. A vessel moored, and riding by either anchor, having the cables clear of each other, "*Rides with a clear hawse.*" If her head is in a line between the two anchors, so that the cables will each lead out from their respective sides, and clear of the stem; she then "*Rides to an open hawse.*"

789. If, by swinging, she brings the cables to bear upon each other, so as to be chafed by the motion of the vessel; she has "*a foul hawse.*"

790. If, from having a clear hawse, she has swung half round, or performed a half circle, she brings a "*cross in the hawse,*" and that cable will be uppermost by which she is not riding. If it is the starboard cable she must swing to starboard—if the port, to port, to clear the hawse.

791. But if she swings the wrong way, or the same way she swung before, performing another half-circle, then there is "*an elbow in the hawse,*" the same cable being uppermost. We will suppose that in both instances she has swung to port, then the starboard cable is of course over the port one, and she must swing to starboard to bring the hawse clear. Thus from a *clear hawse* she has performed a full circle to produce an *elbow*.

792. The next swing in the same direction brings "*a round turn*" in the hawse.

793. And the next swing "*a round turn and elbow,*" and so on.

794. An attentive officer will always endeavor to make his vessel, having a cross in the hawse, swing so as to clear it, by means of the helm or otherwise (see tending). But if she swings the wrong way, he should lose no time in resorting to the operation of clearing hawse by the cables, thus:

795. **To clear by the leeward Cable.** Lash a large block under the bowsprit, in which is snatched or rove the clear hawse pendant; this has a large hook turned into its lower end, which hooks under the cable below the turns, and by it the cable is triced up clear of the water. Lash the cables well together below the turns. If you are clearing by the port cable, send in the starboard fore top-bowline, passing it around the cable so as to take out the first turn, then in at the hawse-hole, bending it to the clearing cable three or four fathoms within; then send in the port bowline and bend it to the cable near the shackle or splice, and stop it along at different intervals toward the hawse-hole.

796. Unshackle if a chain; and draw the splice if a hemp cable; and bend a hawser, called a hawse-rope, to the end of the cable.

797. Rouse out the cable by the bowlines, veering by the hawser, cutting the stops on the port bowline as it comes out, and hanging the bights of the cable to the bowsprit by slip ropes; the starboard bowline rousing the cable over the riding one to take out the first turn. When the cable is out, cast off the hawser, dip it, pass it around the cable so as to take out the last turn, and bend it again to the end of the cable. Now man the

hawser inboard, and rouse in the cable, casting off the slip-ropes as it goes in. Turn in the splice if hemp, or shackle if chain; clap on a deck-tackle and rouse it in taut, bitt and stopper it, cast off the cable lashings, unhook and send in the clear-hawse pendant; and the hawse is now clear.

797 *a*. But one bowline is now used, and instead of a hawser, bent on the end of the chain, a long clear-hawse pendant is used, having two legs, in each of which is turned a sister hook, and this hawse-pendant is led through the hawse-hole for the sheet cable.

798. **To clear by the riding Cable.** Having triced up and lashed the cables together as before, point a stout hawser through the hawse-hole (799), and bend it to the riding cable below the lashing, with a rolling hitch; haul the hawser well taut and secure it to the bitts. Then proceed to clear hawse, as before, by means of the bowlines and hawse-rope.

799. The hawser (798) should not lead out of the same hawse-hole as the cable; by using another, but on the same side of the stem, you have a space between which will facilitate the operation. Your largest and best hawser should be used for this purpose.

800. If possible, there being little or no sea, it will be more convenient to have the launch under the bows while clearing hawse; not only for the men to stand in while lashing the cable, but also to pay the bights into, instead of hanging them to the bowsprit by slip-ropes.

801. **Tending Ship, at Single Anchor.** "If there be wind sufficient to keep the cable taut, the ship should never be allowed to approach her anchor. Should calm or little wind render insufficient the use of sails, the

cable should be 'shortened in' as soon as the tide begins to slacken."—*Glascock's Manual*.

802. This simple rule: to keep a taut cable, and to tend always on the same side of the anchor, using the helm, jib, spanker, and occasionally the mizzen topsail, is sufficient, without entering into a statement of the varieties of situations in which the vessel may be placed. If you have followed me attentively through the foregoing chapters, you are now, I trust, sufficiently acquainted with the effect of the wind and tide upon a vessel, and the manner in which the helm and sails should be used, to enable you, at a glance, to determine how to effect the object contained in the above rule. By keeping a taut cable, and tending always on the same side of the anchor, you avoid fouling the cable with the stock or upper fluke, which would have a tendency to trip it. And by the use of the sails recommended above, you shoot her on whichever side of the anchor you may wish to.

CHAPTER XXVII.

STATIONING A CREW.

IN WATCHES.—AT QUARTERS.—PARTNERS.—FOR ALL EVOLUTIONS.—THE STATIONING TABLES.—APPRENTICES.

803. UPON a judicious distribution of the physical force, and a proper arrangement of the men, depends greatly the facility with which evolutions may be performed. In filling important stations, such men are selected as by their long services and capacities are best suited to them. By ascertaining the length of time each man has been at sea, and in the service of the United States; the stations they held in the last vessel to which they belonged; being also governed in some measure by the general bearing, manner, and appearance of each; you will be enabled readily to appoint to them their proper stations.

804. Both in watching and quartering a crew, they should be so stationed that they will find their general duties to be in some particular part of the vessel—for instance—a forecastleman or foretopman should be stationed, in all the evolutions, on or near the forecastle, and around the foremast; and quartered at one of the forward guns. The maintopmen and waistlers amidships, afterguard and marines abaft, carpenters in the vicinity of the pumps, and so on.

805. A system of *partners* is also greatly conducive to

regularity in the performance of duty—that is—having the men divided off in pairs, so that each man may know his partner, and be responsible for his station when he is absent from the vessel or deck. The partners should be stationed at the same gun, but on different sides, should have the same station in different watches; there should be but one in the same boat, and, if possible, the other should not belong to any boat; their hammocks should hang as nearly as possible together, and they should mess together; thus would they be united in a common feeling of support.

806. The petty officers, viz., boatswain's-mates, quarter-masters, quarter-gunners, captains of the fore-castle and tops, coxswains, &c., are appointed from among those seamen whose characters and capacities have entitled them to advancement to these stations, where they are intrusted with much responsibility and authority, and are expected to set an example to the rest of the crew, in their general deportment and attention to their duties. There are other petty officers, as master-at-arms, ship's corporals, cockswain, ship's cook, stewards, &c.

807. On the fore-castle are stationed able seamen, men acquainted with all the duties of a sailor, together with a few ordinary seamen, and landsmen.

808. In the tops are stationed seamen; ordinary seamen, active, able-bodied men; and a few boys of the first class to handle the light sails.

809. **The mastmen** and captains of the after guard should be elderly seamen—if there are any on board who are not petty officers—who though incapable of performing the rough work of a fore-castle or top, may fill these

stations well. The after guard should be made up of a few seamen, ordinary seamen, and landsmen.

809 *a*. The **waisters** should be ordinary seamen and landsmen. Single-decked vessels have no waisters, their duties being, in frigates, principally on the gun deck. The mechanics, musicians, and servants, are generally watched in the after guard or waist.

810. **Idlers** are such as are not watched, having day duties to perform of a peculiar nature; such as master-at-arms; yeomen who have charge of the store-rooms, and keep the expenditure books; cooks, officers' servants, etc. These men, though not required to keep a regular watch, should have stations allotted to them in all the evolutions.

811. There are a number of officers in all vessels who are termed idlers; viz.: the captain or commander, first lieutenant or executive officer, master, paymaster, surgeon, marine officer, chaplain, clerks, and the midshipmen who are stationed on the lower decks. They are termed idlers because not watch officers, their duties being peculiar to their office.

812. The marines are always watched at sea, and perform duty on the quarter deck with the after guard.

813. A few of the smaller boys, who are not distributed among the tops to work the top-gallant and royal yards, and hand the light sails, are stationed on the quarter deck as *messengers*.

814. After the watch bill is made, having divided the men equally in two watches, starboard and port, the other station bills for tacking and wearing, reefing and hoisting, making and shortening sail, mooring and un-mooring, getting under way, and coming to anchor, are

formed from it; taking care to have at each station an equal number of each watch, so that with but one watch on deck, the vessel may be worked and all stations manned; this divides the force, and you have an equal number of men on each side of the deck.

814 *a*. In selecting men for captains of guns, take those petty officers who are not appointed to more important stations, men long accustomed to the gun exercise on shipboard, steady, trusty, and able-bodied, with good sights; after supplying the guns with first captains, proceed, upon the same principle, in selecting second captains from among the seamen; then the spongers and loaders, who should be light active men; shot and wad men, crow and handspike men, &c., in the order in which they are enumerated.

815. For the first division of boarders, you will want the most effective men; for sail-trimmers, men stationed on the spar deck; at the wheel, the best helmsman in the vessel; at the relieving-tackles, an officer or quarter-master with a few men to steer the vessel in case the wheel or tiller ropes are shot away. In the magazine are stationed the gunner and his mates, and the cooper. Select for the stations below, for passing powder, shot, etc., those men who would be the least effective on deck, or least capable of acting promptly in the heat of action. Have in the master's division, to attend the stoppers and to remain in the tops, active topmen.

816. The first lieutenant, under the direction of the commander, works the batteries, while the master, under the directions of both, and assisted by the boatswain on the forecastle, attends to the manœuvres. The other lieutenants are stationed, one to command each division.

The marines, under the command of their officer, are in the waist, or on the poop, and often some are stationed in each top, to annoy the men at the enemy's guns. The midshipmen are distributed about in the tops, and at the divisions, to the best advantage.

817. One thing to be particularly observed in watching the men is, to have a full crew for one of the quarter or stern boats in each watch, that in case a man falls overboard, these men shall understand that they, *and they only*, are to busy themselves in lowering the boat.

818. In a previous edition of this work, I introduced a set of stationing tables, by which to station the crews of different classes of vessels. I have since that attempted to place at the disposal of the officers of the Navy a more extended and perfect set of station bills for all classes of vessels; but as they would reach beyond the limits of this work, I am forced, at present, to omit them.

NAVAL DICTIONARY

OF

SEA TERMS AND PHRASES.

NAVAL DICTIONARY.

A.

ABACK. Applied to the sails of a vessel, when the wind acts upon them in a direction that has a tendency to force her astern.

The sails of a vessel are said to be "*taken aback*" when they are brought aback by a sudden change of wind, or by an alteration of the vessel's course, either intentional or through negligence.

They are *laid-aback*, or *bruced-aback*, by bracing around the yard, for some purpose. See Chapter XX.

ABAFT. Applied to a vessel, signifies that part of her which is the nearest to the stern. Thus, one thing is said to be *abaft* the other when nearer to the stern. An object is said to "*bear abaft the beam*," when it is between the line of the keel and another line drawn at right angles to it.

ABOARD. Within the vessel.

To fall-aboard—one vessel coming in collision with another, either by intention or accident.

To haul-aboard—the act of hauling down the weather clews of the fore or main courses, by the tacks, to the deck or bumpkin.

ABOUT. On the other tack. See *Working to Windward*, Chapter XVII.

To go-about, is to tack, or wear a vessel.

“*Ready-about*,” is the order given by the officer to the crew to take their stations for “*tacking ship*.”

ABOX. The situation of the head yards when braced sharp aback, on the wind—it is generally applied only to the head-yards, in performing any evolution. See 598 to 612.

ABREAST. Side by side—applied to the relative positions of two vessels, or of one vessel with any place, without regard to the distance.

ABREAST (in Naval Tactics). Two or more vessels, lying, or standing on with their keels on parallel lines, or their heads equally advanced, are *abreast* of each other; but if one of those vessels be not standing on a line parallel with the others, but is on a line abeam of them, she is abreast of the other vessels, though they are not abreast of her.

Line-abreast. The situation or disposition of a squadron, when advancing parallel to each other, and equally advanced.

ACCOMMODATION. See *Ladder*.

ACTION. A *naval action*—a battle or engagement between vessels.

ADRIFT. A vessel is adrift, when she has broken loose from her moorings, or from single anchor.

AFLOAT. The situation of a vessel, when she has a sufficient body of water under her bottom, to buoy her up from the ground.

AFORE. Forward—used in contradistinction to *abaft*.

AFOUL. See *Foul*.

AFT. Near the stern of the vessel.

Fore and aft, from one end of the vessel to the other.

Right aft, the bearing of an object when it is astern, and in a line with the keel of a vessel.

To haul aft, or *Trim aft the fore, main, spanker, or jib-sheets*, is to draw the after clews of the sails nearer toward the stern.

AFTER. Nearer toward the stern; used in distinguishing objects, the one being *abaft* the other; as the "*after-hatch-way*," the "*after-sails*," the "*after-coamings of a hatch*."

After-guard, that part of the crew which is stationed in the after part of a vessel.

A-GOOD-FULL. See *Full*.

AGROUND. Used in contradistinction to *a float*. The situation of a vessel when any part of her keel or bottom hangs or rests upon the ground.

AHEAD. Further advanced, or lying immediately in the direction of a vessel's course—in the latter case you would say *Right ahead*.

To run ahead of the reckoning, is to make a greater distance by your observations, than by your dead-reckoning.

AHULL. The situation of a vessel, having all her sails furled, and helm lashed alee. See *Trying*.

AIM. *To take aim*—to point a gun to the object.

LATERAL AIM (Ordnance). See *Point*.

ALEE. The helm is *alee*, when the tiller is pushed down toward the lee side of the vessel, in order to bring or keep the head of the vessel up to the wind.

ALL. *All hands*—the whole crew—used variously by the boatswain and his mates, in calling the men to their duties, either after the expiration of their meals, or to perform any evolution. In the latter case the object of the summons is added, as "*All hands to tack ship*," "*All hands to reef top-sails*."

All-in-the-wind, the situation of a vessel when her sails are shaking, by being too near the wind.

All-aback, *All-a float*, *All-aground*, etc., chiefly used in communicating intelligence.

All's well, an exclamation of a sentinel at stated periods, to proclaim the absence of danger, and show that he is awake and watchful.

ALOFT. At the mast-heads, on the yards, in the tops, or in any part of the rigging above the decks.

“*Lay aloft,*” “*Aloft topmen,*” etc., are orders to the men to go aloft.

ALONG. *Along-side* by the side of a vessel or wharf. “*To lay alongside,*” is to place one vessel by the side of another.

Along-shore. Along the coast—to cruise or sail along, nearly parallel to, and near the shore.

AMAIN. Suddenly, at once; as “*Lower amain,*” “*Let go amain,*” etc.

AMIDSHIPS. The centre between two extremes, either of length or breadth.

To put the helm amidships, is to place the tiller on a line with the keel.

AMMUNITION. In the common or general use of the term, applies to all those military stores which are used in charging and discharging a piece of ordnance; as powder, cartridges, shot of all kinds, wads, matches, and priming, etc.

ANCHOR. The anchors used in vessels are the *sheet*, the *bower*, the *stream*, and the *kedg*; and with reference to their positions, they are termed, the *flood*, the *ebb*, the *sea* or *shore* anchors, the *weather* or *lee* anchors.

An anchor *comes home*, when it loses its hold of the ground, by the violence of the sea or wind; in which case, as the vessel *drifts*, the anchor *drags*.

A *foul anchor*, is when the cable is entangled around the stock and shank; or when it has caught into some other anchor, cable, or wreck.

A-cock-bill. The state of an anchor when suspended at the cat-head ready for letting go.

The anchor is *apeak*, when the cable is hove in so as to bring the vessel nearly over her anchor.

The anchor is *atrip* or *aweigh*, the moment it is disengaged from the ground.

To *cast anchor*, is to release it from the cat-head, by letting run the cat-head stopper, that it may fall to the bottom and hold the vessel.

To *lie at anchor*, or *riding at anchor*; the situation of a vessel which is kept in a particular place by her anchor resting on the ground.

To *back-an-anchor*; to lay out or plant a smaller anchor, ahead of the larger one by which the vessel rides; the cable of the former being fastened to the crown of the latter, or secured with a running clinch around the cable of the latter, to fetch up at the ring.

To *cat and fish* an anchor; to raise the *ring* to the cat-head by the cat-purchase, and then raise the flocks to the gunwale by the fish-purchase, after which the cat-stopper and shank-painter are passed. See Chapter X.

To *sweep for an anchor*; to sweep with the bight of a rope over the bottom, to find a lost anchor.

To *shoe an anchor*; to place over the flocks broad, triangular pieces of plank, that the anchor may hold better in soft bottom.

To *weigh an anchor*; to heave it up to the bows by means of the cable, and the purchase applied thereto. See paragraph 360.

ANCHORAGE. A suitable place to drop an anchor, that is, neither too deep, shallow, or rocky—" *There is good anchorage at such a place,*" or " *good holding ground.*"

ANCHORING. Coming to anchor.

AN-END. See *On-end*.

ANSWER. To reply—" *The vessel has answered our signal.*"

To mind—" *She answers her helm.*"

APEAK. See *Anchor*.

APRON. A covering of lead or other material for the lock and vent of a cannon.

In ship building, it is a piece of timber fixed behind the lower part of the stem, just above the fore end of the keel.

Of a dock, is a platform raised at the entrance, a little higher than the bottom, against which the gates are shut.

ARM. The extremity of a bibb or bracket. See *Bibbs*.

Yard-arm. See *Yard*.

ARMING. A piece of tallow placed in a cavity at the lower end of the *hand* and *deep-sea leads*, by which the nature and quality of the soundings are made known.

ARMED SHIP. One armed and equipped like a vessel of war.

ARMORER. A petty officer, whose employment is to keep in repair the lighter implements of war, and to do all the iron work required for the vessel.

Armorer's mate, assistant to the armorer.

ARMS. All the implements of war used in public armed ships. *Small arms*, muskets, pistols, etc., used in contradistinction to *great guns*.

ARSENAL. Naval or military—a public magazine, in which are kept arms of all descriptions.

ARTICLES OF WAR. Rules and regulations for the better government of the Navy, established by act of Congress.

ASHORE. Used in contradistinction to *aboard*, when applied to a person or thing—“*He left the vessel and went ashore.*” Applied to a vessel, it means that she is resting with her keel or bottom on the ground or on rocks, whether caused by accident or design—“*She was driven ashore by the force of the swell.*” “*They ran her ashore on a sandy beach.*”

A-SHORT-STAY. In getting under way, when the cable is hove in so that it is nearly up and down.

ASTERN. Used in opposition to *ahead*.

A-TAUNT. A vessel is said to be *all-a-taunt*, when she has all her masts up and rigged.

A-TAUT-LEECH. The topsails or top-gallant sails are up *a-taut-leech*, when they are hoisted up sufficiently in setting them.

ATHWART. Across, or at right angles with the vessel's course, or the line of the keel.

Athwart-ships, the position of any thing when placed at right angles with the line of the vessel's keel.

Athwart-hawse, is applied to the situation of a vessel when she is brought, by accident or design, across the bow of another, whether the vessels come in contact, or are only very near to each other.

ATRIP. See *Anchor*.

ATTACK. To assault—"We attacked the enemy's van."

AVAST. To stop or desist—as "*Avast heaving!*" "*Avast hauling.*"

AVOID (in Naval Tactics). To avoid action is, by skilful manœuvring, to preserve or increase the distance from an enemy, so that an action is avoided.

A-WEATHER. The situation of the helm when its tiller is placed over toward the *weather* side of the vessel—in opposition to *alee*.

A-WEIGH. See *Anchor atrip*.

AWNING. A covering of canvas stretched over the deck of a vessel or boat, to protect the ship's company from the sun or rain.

AY! Yes—always used in reply on board of a vessel of war. *Ay-ay, sir!* in answer to an order, implies not only that the order is heard and understood, but also that it will be obeyed.

B.

BACK. To *back an anchor*. See *Anchor*.

To *back and fill*, an operation performed in a tide-way. See paragraph 629.

To *back astern*, to force a boat stern foremost by use of its oars.

To *back the sails*, see *Aback*.

Back-board, a board placed athwart the stern of a boat for the passengers to lean against.

Back-stays—standing, and breast—extending from the head of a mast to the chain-walls, to support the mast from aft.

Travelling back-stays, are so termed from having a traveller on the topmast, which slides up and down as the yard is hoisted up or lowered for one or more reefs, by which the principal support is kept at that part of the mast which is just above the yard (now not in use in United States vessels).

BAFFLING WINDS. Unsteady, shifting about from one point to another.

BAGPIPE. *To bagpipe the mizzen*, is to lay it aback by bringing the sheet to the mizzen rigging.

BALANCE. *To balance-reef a sail*, is to reduce it to its last reef, generally applied to fore-and-aft sails, as the fore and main sails of schooners.

BALLAST. A quantity of iron, stone, or gravel, placed in a vessel's hold, to counterbalance the effort of the wind upon the sails and masts. *Iron ballast* used in our public vessels is in *pigs*, and are stowed on each side of the keelson. *Shingle ballast* is, of course, gravel. See Chapter XII.

BANDS. *Reef-bands* are slips of canvas sewed across a sail, to strengthen it in the wake of the reef-points.

BANIAN DAYS. A term used among sailors, for those days upon which certain articles of their rations are served to them.

BANK. An elevation on the bottom of the sea—as the bank of Newfoundland.

Boats are said to be *double* or *single banked*, according as the oars are pulled by the men sitting two on each seat, or alternately one on each side.

BAR—of a port, is a bank or shoal of sand or gravel, thrown up by the sea at the entrance of a harbor, or mouth of a river.

BARE POLES. A vessel at sea is said to be under bare poles when she has no sail set—in which case she may be either lying to or scudding before a gale.

BARGE. See *Boats*.

BARK, or *Barque*, a three-masted vessel, having her fore and main masts, rigged as a ship, and her mizzen as a schooner.

BARNACLE. A shell-fish often found on the bottom of vessels.

BARs. *Hatch-bars* of iron, secured over the hatches to prevent their being opened.

Capstan bars, are strong bars of wood, made to fit into the *pigeon-holes* of the capstan, to heave it around for weighing the anchor, or other purpose.

BASE-RING (Ordnance). See *Reinforce*.

BASIN. A haven wherein vessels may lie securely for repairs.

BATTENS. For the hatches, are narrow laths of wood, or straightened hoops, nailed over the tarpaulins around the hatches, that no water may penetrate or pass under them.

Battens for the hammocks to hang to are nailed along the beams.

Battens for strengthening spars, or to prevent chafe, are pieces of oak, or other wood, nailed on the spars.

BATTERY. "A parapet wall of stone, etc., thrown up to cover the men employed about the guns from the enemy's shot." Hence, that part of a vessel's side, between the two decks, covering the men stationed at the guns, is properly the battery. The term is most commonly applied, on shipboard, to the guns on one deck, as, "*The main deck battery*," "*Spar deck battery*." It is also applied to those on one side, as, "*The starboard or port battery*."

BATTLE. *Naval*. An engagement between two squadrons, fleets, or single ships.

Order of Battle (in Naval Tactics). Is the most approved arrangement for a fleet or squadron, when preparing for battle with an enemy. The line-of-battle ships, being ranged in line-ahead, close-hauled, or nearly so, and under easy sail. On another line parallel with this, and further removed from the enemy, are the frigates, fire-ships, and steamers. And on another line, still further removed from the enemy, to windward or to leeward as

the case may be, are the sloops of war, store ships, transports, &c. This arrangement has been found the best for preserving order in battle.

Line of battle (in Naval Tactics). The arrangement of any number of vessels, line-ahead, and on nearly a close-hauled course. This applies to a single column of vessels.

BAY. An inlet between two capes of land, wherein vessels may ride at anchor.

The *sick bay*, in a vessel of war, is that part of her appropriated to the sick, and to the use of the surgeon in visiting and prescribing to them.

BEACH. The sea shore, or that part of it which is washed by the waves, "*a sandy or gravelly beach.*"

BEACON. A mark, whether a stake, buoy, or vessel, placed over a shoal or sand-bank, to warn vessels of the danger in approaching it.

BEAM. The beams of a vessel are strong pieces of timber, stretching across from side to side to support the decks. They are firmly connected with the sides of the vessel by strong knees.

On the weather or lee beam, in the bearing of any object, means any distance from the vessel on a line with her beam, to windward or to leeward, or at right angles with the line of her keel.

A vessel is *on her beam ends* when she inclines very much on either side, so that her beams approach toward a vertical position. Sailors often apply it to a person lying down.

BEAR. The direction of an object is expressed by its *bearing* from the vessel, or position of the observer; as, "The stranger bears N. by E.," or "*abaft the lee beam,*" or "*right ahead.*"

Bear away (in Naval Tactics). To change a vessel's course by turning her head from the wind, to any intermediate course from that to having the wind directly aft, whether she was sailing close-hauled or free. The term has reference to the

motion of the vessel's head from the wind. The same manœuvre is also expressed by another term, viz., to *bear up*. The latter has reference to the act of putting the tiller up, or to windward, for the purpose of causing the motion of the vessel's head from the wind.

To *bear down* upon a vessel, is to approach her from to windward.

To *bear in with*, or *bear off from* the land, is to steer the vessel toward, or from it.

To *bear off*, is to keep any weight, which is being hoisted up, clear of the side or hatch.

To *bear a hand*, is to make haste.

BEARINGS (in Naval Tactics). Lines of bearings, are lines upon which a number of vessels may be sailing, when, if hauled by the wind, they will be *Line ahead*, or in *Line of battle*; and they will be on the *starboard* or *port lines of bearing* according to the tack upon which they haul up. Vessels may be on one of these lines of bearing, and standing on any course. They may be on the starboard tack, and still be on the port line of bearing; for example, suppose the wind to be from N. N. W., the vessels standing E. N. E., and on a line east and west. They are thus sailing two points free, or with the wind on the port beam, while they are actually on the starboard line of bearing; for if they tack together they will be *Line ahead*, and close hauled on the starboard tack, or in *Line of battle*.

Bearings—of the land, of a vessel, or any object—taken at sea or at anchor, by the compass. See *Bear*.

BEATING. To progress to windward, or against the direction of the wind. See *Working to Windward*, Chapter XVII.

BECALM. To intercept the wind in its passage to an object. A vessel *becalmed* under the lee of land, or from there being no wind, remains stationary in the water, her sails hanging loose against the mast.

BECKETS. To confine ropes or spars. The fore and main tacks and sheets are confined by becketts to the rigging, to prevent

their hanging on the deck or overboard. See *Button and loop*.

BED. *Beds* for casks to rest on, to keep the bilge from resting on the deck, are thick pieces of timber made to fit under the quarters of the cask. See Chapter XII.

Bed of a river, is the bottom of the channel.

Beds for carronades or mortars, are the carriages on which they are mounted.

BEEES. Pieces of plank bolted to the outer end of the bowsprit, to reeve the fore topmast stays through.

BELAY. To *belay* a rope, is to fasten it by taking several turns with it around a belaying-pin, cleat, or kevel.

Belaying-pins, are iron or wooden pins, placed in the rail at the mast, or at the side, to belay ropes on.

BELLY. "The hollow part of compass timber, the round part of which is called the back;" also applied to the forward surface of square sails when filled with wind, or *bellying out*.

BEND. A bend is the knot by which one rope is made fast to another.

To *bend*, is to fasten one rope to another, or to any thing. To *bend a sail*, is to fasten it to its yard, gaff, or hanks. To *bend a cable*, is to clinch it to the ring of its anchor. There are different kinds of *bends* to suit different purposes, as the *fisherman's bend*, which is used in attaching a rope to a spar for the purpose of a halyard, the studding-sail halyards are thus bent to the yards. The *carrick bend* and *sheet bend*, used variously for connecting hawsers, or other ropes.

Bends are also seizings, to confine the clinch of a cable (see 332, 333).

Bends of a vessel, the strongest part of the side to which the beams, knees, and foot-hooks are bolted, or the space from the water's edge to the bulwarks.

BENTICK. See *Shrouds*.

BERTH. The place in which a vessel lies while at anchor; as,

“*she lies in a good berth,*” that is, she has good anchorage, or is conveniently situated.

It is also the place allotted to a person on board to sleep in; and often applied to his situation on board, as, “*he has a good, profitable, or easy berth.*”

“*To berth a ship's company,*” is to allot to the crew their places in which to sling their hammocks.

BETWEEN-DECKS. The space contained between any two decks of a vessel.

BIBBS, are bolted to the hounds of a mast, to support the trestle-trees.

BIGHT, of a rope or cable, is the double part of it when folded, in contradistinction to the ends.

Bight is also a small bay between two points of land.

BILGE, or **BILDGE,** or **BULGE,** of a cask, is its largest circumference, extending around by the bung-hole. It is also that part of the floor of a ship, which is nearer to a horizontal than a perpendicular direction, and on which a vessel would rest, if aground; hence, when a vessel is fractured by striking the ground, she is said to be *bilged*.

Bilge-water, is that which has remained in the *bilge* of a vessel, and becomes of a dirty color, and offensive.

BILL. See *Anchor*.

BILLS, *Watch, Quarter and Station Bills,* containing the names and stations of all the officers and crew of a vessel of war, by which they are mustered to any duty.

BILL-BOARDS, are pieces of thick plank, fixed on the forward part of the fore-channels, for the reception of the anchor; they are armed with iron plates, which enables the bill of the anchor to move freely over them.

BINNACLE. The box placed near the helm to contain the compass.

BITS or **BITTS.** Pieces of timber, placed perpendicularly in the forward part of a vessel, to secure the cables to. The whole

frame, formed of the upright and cross-pieces, is called the *bitts*.

To bitt the cable. See *Cables*, paragraph 344.

There are also other *bitts* to secure ropes to, as, the topsail sheet *bitts*.

BITTER. The *bitter* or *inner end* of a cable, is that which is abaft the *bitts*.

BLEED a Buoy. See paragraph 376.

BLADE of an oar, is the flat part of it, which holds the water in rowing.

BLANC. See *Point blanc*.

BLOCKS, are of various descriptions, and used for various purposes. They are either *made* or *mortised*; are used for purchases, leaders, or to confine ropes in certain directions, or to certain parts of the vessel.

Made blocks are composed of four parts, as follow :

1st. The shell, or outside.

2d. The sheave, or wheel on which the rope turns.

3d. The pin, or axle on which the sheave turns.

4th. The strap, either of rope or iron, which encircles the whole, and by which it is confined to any particular place.

Mortised blocks are made of a single block of wood, mortised out to receive a sheave. All blocks are either single, double, triple, or fourfold, according to the number of sheaves contained within the shell.

There are also other blocks without sheaves, used as leaders, or fixtures, to receive the ends of stays, shrouds, or other ropes; as *hearts*, *dead-eyes*, *bulls-eyes*, &c.

All blocks take their names from the purposes to which they are applied, or from their forms, as follow :

Bee-blocks. See *Bees*. In the outer end of the bees, on each side of the bowsprit; have sheaves over which the topmast stay on one side, and the spring stay on the other, are rove. See paragraph 124.

- Bulls-eye.* A wooden thimble, without a sheave, having a hole through the centre, and a groove around it.
- Cat-block.* A large double or threefold block, iron strapped with a large hook; to raise the anchor up to the bows, or rather, to the cat-head.
- Cheek-blocks,* or half-blocks, made of a half-shell, and bolted against a mast or spar. The chief bolt serving as a pin for the sheave to turn on, the mast or spar serving for the other half of the shell.
- Clewgarnet-blocks,* are single blocks strapped to the quarters of the lower yards, the strap around the yard being a continuation of the strap of the block. The block hangs under the yard, and receives the clewgarnet. See 147.
- Clewine-blocks.* Similar to the clewgarnet blocks, except in size, are strapped to the topsail, topgallant, and royal yards, to reeve the cewlines through.
- D-Block.* So named from its form, is sometimes bolted to the ship's side or channels, to receive lifts, &c.
- Dead-eyes.* Blocks of wood made in a circular form, having a groove around the outer edge, and three holes through them for the lanyards to reeve through. Paragraphs 75, 76, 77 a.
- Deep-sea-line-blocks.* Small wooden snatch blocks, used in sounding, as leaders, to haul in the line through, to keep it clear of the rail.
- Euphroe* (pro. *Euvro*). A long piece of wood, having a number of holes, through which the crowfoot for the awning is rove.
- Fiddle-blocks.* See *Long-Tackle Block*.
- Fish-block.* Iron-bound, and fitted like the cat-block, to haul up the flukes of the anchor to the gunwale.
- Fly-block.* The upper block of the topsail halyards. See 178.
- Gin-blocks.* For the topsail tye. See paragraph 110 a.
- Girtline-blocks.* Single blocks lashed to the mast-head, to receive girtlines in rigging ship.

Heart, for a collar, has a hole through it to receive the stay; the collar encircling the heart as a strap.

Heart, a block of wood, so named from its form. It has a large hole in the centre, with grooves or scores, through which are rove the lanyards, to set up the stay which is strapped around it. All stays of United States vessels of war, are now set up through large bulls-eyes to their own parts, and not with lanyards.

Iron-bound-blocks, with hooks; generally have their hooks to work in swivels, that they may turn and keep the parts of the purchase fair. The cat and fish blocks are exceptions.

Jack-blocks, large single blocks. See paragraph 252.

Jear-blocks. Large twofold or triple blocks, used to hoist or lower the fore or main yards.

Jewel-blocks. Single blocks at the extremity of the topsail, top-gallant, and royal-yards: through which the studding-sail halyards are rove. The head of the sail, when set, is hoisted up to them.

Leading-blocks or Leaders. Any block, usually a snatch-block, placed most conveniently for the purpose of leading a fall through. See *Snatch-block*.

Long-tackle or Fiddle-blocks. A long shell having one sheave over the other, the lower one being smaller than the upper. It is used, with a single block, to form a *long-tackle*, for hoisting in, etc., used often for yard-tackles.

Main-sheet-block. A double or triple block, through which the main-sheet of a schooner is rove.

Monkey-blocks, are small single blocks, strapped sometimes with a swivel, for the convenience of leading ropes freely in any direction.

Nine-pin-block. In form like a nine-pin, and fitted in belaying rails or fife rails. They serve as leaders for the running rigging. They taper, above and below the sheave, to the ends, which are fixed in the rail, serving as a vertical axis.

- Quarter-blocks.* Single blocks strapped under the quarters of the yards, to serve as leaders for the sheets of the sail above. See 143, 171.
- Rack-blocks.* A range of small blocks, made from one piece of wood, with the two ends in form of a dove-tail for the lashing by which they are secured. They serve as leaders for the running rigging (now out of use).
- Shoe-blocks.* Two single blocks, cut in a solid piece, transversely to each other, the sheaves leading in contrary directions. They are used for the legs and falls of buntlines.
- Shoulder-blocks.* Large single blocks, square at one end, and cut sloping in the direction of the sheave; used on the yard-arm to lead in the sheets of the sail above; are kept upright by means of the shoulder, and prevent the sheets from jamming between the block and yard.
- Sister blocks.* Formed of one solid piece, with two sheaves, one above the other; between the sheaves is a score for the middle seizing; along the sides through which the pins are driven, are scores or grooves to receive the topmast shrouds. They are seized between the two shrouds, and serve as leaders for the lifts and reef-tackles. See paragraphs 175, 456.
- Snatch-blocks,* having a single sheave, and a notch cut through one of its cheeks to receive the bight of a rope, without the trouble or delay in reeving it. They are iron-strapped; that part of the strap over the notch being made to lift up with a hinge, and is confined down, after the rope is snatched, by a hook. They are used for heavy purchases, or leading-blocks for halyards, and are strapped with a swivel-hook at one end. The snatch-block invented by Mr. Evans, boatswain; and a still better one by Lieut. J. S. Paine, are improvements on the one described above, and receive the rope at the end, instead of at the side.
- Strap-bound-blocks,* are single blocks with a shoulder on each side at the upper part, to receive the strap through, a little

above the pin ; which prevents the strap from chafing. They are used for clew-garnēts.

Telegraph-blocks. Small blocks with many sheaves, used in making telegraphic signals.

Thick-and-thin or *quarter-blocks.* Double blocks having one sheave thicker than the other, used for quarter-blocks.

Top-block. A large single block, iron-bound, and strapped with a hook. When used, is hooked to an eye-bolt in the lower cap, for the top-pendant to reeve through.

Tye-block or *bollock-block.* Secured on the topsail yards to reeve the tye through. See paragraph 168.

Voil or *voyal-blocks,* are large single blocks used in heaving up anchors.

Warping-blocks. Used for warping off yarns.

Block-and-block or *two-blocks,* is the situation of a tackle when the two blocks are drawn close together, so that the purchase ceases. The act of drawing the blocks asunder, is termed *flecting the purchase.*

BLOCKADE. To blockade a seaport, is to place a force at the entrance, sufficient to prevent vessels from entering or leaving it. *To raise a blockade,* is to force or drive the blockading squadron from its station.

BLUFF. A bluff of land is that which is high and projecting into the sea.

A vessel is said to be *bluff-bowed* or *bluff-headed* in contradistinction to those that are sharp forward.

BOARD. The space contained between the two points, where a vessel changes her course in tacking.

To make a good board, implies that you have lost little or none to leeward.

Half board. See paragraph 617 a.

To board, is to enter a vessel as an enemy or friend ; you *board* an enemy to capture her, and a stranger to receive news, or make a communication.

By the board. The main mast went *by the board*, that is, over the side.

Stern-board. The motion of a vessel going stern foremost.

Boarders. A force appointed to attack an enemy by boarding.

Boarding-pike. A defensive weapon, used in repelling an enemy, or in boarding.

BOATS. The boats of a vessel of war are distinguished by various appellations, as the *launch*, a double-banked and the largest boat, used for heavy work, such as weighing or carrying out kedges or anchors, &c., and transporting to and from the vessel provisions and water. The *barge* is a large *double-banked* boat, used by the commander of the vessel. The *cutters*, double-banked, generally used for carrying officers and other persons, and for other purposes. The *gig*, a long narrow single-banked boat, used by the captain in smooth water. The *jolly-boat*, or *dingy*, is a small boat used for light work.

To trim boat, is to dispose the weight in her, so that she shall float upright on the water.

To bale a boat, is to throw out the water that may be in her.

To moor a boat, is to secure her alongside, at a wharf or at a buoy, so that she may be steady, and safe from injury.

Boat's crew. The men appointed to a boat.

Boat-keeper. The man left in her alongside, or at a wharf, to keep her clear of other boats.

Boat-hook. An iron hook with a staff, by which the boat is held, head and stern, to the wharf or by the ship.

Boat-skids. Wooden frames on which the boats rest when in-board, between the fore and main masts.

BOATSWAIN. A warranted officer, whose duty, under the executive officer, is to superintend the rigging of the vessel, to keep it in good order. He also calls the crew to duty, or to any evolution.

Boatswain's-mate. A petty officer, assistant to the boatswain in all his duties.

BOB-STAYS. Used to confine the bowsprit down to the stem or cut-water. See *Rigging the Bowsprit*, 43.

BOLD-SHORE. A term applied to a sea coast that is abrupt, and admitting the near approach of vessels.

Bold-stretch. When, in working along the land, you run in near to it, or any danger, before tacking.

BOLSTERS. Pieces of soft wood made in the form of one-fourth of a cylinder, covered with tarred canvas, and placed on the trestle-trees and against the mast, for the collars of the shrouds to rest on; they form a smooth surface for the shroud, and prevent chafe. See paragraph 51.

On the shoulders of yards, or of the topgallant and royal masts, gromets of rope are placed for the same purposes.

BOLT. *Eye-bolts* or *ring-bolts*, driven into the side or deck of a vessel, through a beam, to hook tackles, stoppers, &c., to, or for other purposes.

Bolts, used in ship-building, long cylindrical bars of iron or copper; used to secure or unite the different parts of the vessel.

Bolt-rope. To which the head, leeches, and foot of sails are sewed, to strengthen them and prevent their rending. They are termed the *head-rope*, *leech-rope*, or *foot-rope*, as they are situated; to the bolt-rope around the sail are attached the cringles, blocks, bowline-bridles, and all the gear that is used in clewing it up or setting it.

BONNET. An additional piece of canvas attached to the foot of a sail by lutchings, used on the jib and foresail of schooners.

BOOM. Of a harbor, in marine fortification, is an iron chain fastened to a number of spars, and extending athwart the mouth of a harbor or river, to prevent an enemy from entering.

The main boom of a schooner, is that spar leading from the main mast over the taffrail, to stretch the foot of the main-sail in setting.

The booms; applied to that space on the upper deck, between the fore and main mast, where the boats, spare spars, &c. are stowed.

Studding-sail booms; light spars, rigged out through the irons on the yards, to set the studding-sails to.

Boom-irons; flat iron rings on the yards, through which the studding-sail booms traverse, in being rigged out or in.

Booming. Sailing with the wind free, generally applied to fore and aft vessels. "*She comes booming down before it.*"

BOOT-TOPPING. After cleaning off the bottom of a vessel, from the water line, or from the upper part of the copper, by scraping off the grass, or other matter which may have collected upon it (see *Hog*) to apply to it a composition, &c.

BORE (Ordnance), of a gun, is that cylindrical cavity along its centre, in which the charge is placed and from which the projectile is thrown. The bore of a chambered gun has three parts, viz.: the *Cylinder*, which is that part from the muzzle to the point where the bore decreases in diameter; the *Slope* is that part which reaches from the cylinder to the chamber; the *Chamber* is the reduced bore at its bottom.

"The diameter of the *cylinder* of a bore is regulated by that of the shot which it is intended to carry, windage being considered. The capacity of the *chamber* is regulated by the full service charge of powder required; consequently, if the chamber is of small diameter it must be of greater length."

—*Ward's Ordnance and Gunnery*.

BORING BITT (Ordnance). An implement resembling a priming wire, but tempered to a higher degree; used in removing obstructions from the vent of a gun, and differing from the priming-wire in having its end somewhat like an auger.

BOTTOM, either of a vessel or the water. "*She has a foul bot-*

tom." "The bottom is rocky, soft, or sandy." In sounding, you get "no bottom" when your lead does not reach it.

BOUND. A vessel is *wind bound* when she is prevented from leaving a place, by contrary wind. She is *bound* for a certain place when her destination is fixed upon; *on a cruise* when her destination may be varied by circumstances. "Where are you bound?" is the usual mode of inquiry when vessels meet at sea.

Bow. The rounded part of a vessel, forward.

Doubling of the bow; a thick planking secured on the bow to prevent the anchor-bill from injuring it.

On the bow; is the bearing of any object when within 45° on either side of the line-ahead.

BOW AND QUARTER LINE (in Naval Tactics). Vessels on any line other than *line-ahead*, or *line-abreast* are in *Bow and Quarter line*, i. e., the bow of one vessel bears on the quarter of another. Thus, vessels on one of the lines of bearing will be in *Line of Battle* on one tack, and in *Bow and Quarter line* on the other.

BOWER. See *Anchor*.

BOWGRACE. Frames of rope or junk, laid out around the bows and sides of a vessel, to prevent the ice from injuring her.

BOWLINE (pro. *Bolin*). A rope leading from the leech of a square sail, to keep it out to windward, and steady it when sailing by the wind.

Bowline-bridles; the span on the leech of a sail to which the bowline is toggled.

BOWMAN. The man who pulls the forward oar in a boat.

BOWSE. To pull with force upon a tackle.

BOWSPRIT. A large mast projecting over the stem of a vessel, and serves as a support to the foremast, by increasing the angles of the stays at the mast-heads. Beyond it are the jib and flying-jib booms, on which are set the head sails, and which support the forward masts.

BOX-HAULING. A method of going from one tack to another.

See *Working to Windward*, 608 to 612.

BOXING OFF. To turn the head of a vessel either way, by bracing the head yards abox.

Boxing the compass, to repeat in order the several points of the compass.

BRACE. A rope attached to, or rove through a block, at the extremity of yards, by which they are turned either way.

To brace the yards, to move them by means of their braces.

To brace about, to brace the yards in a contrary direction.

To brace in, to haul in the *weather* braces.

To brace up, to haul in the *lee* braces.

To brace to, to assist the vessel in tacking, by hauling in the weather head braces.

Braced up sharp (in Naval Tactics). The position of the yards when braced for a close-hauled course.

BRAILS. Used to haul up fore and aft sail, as the jib or spanker.

To brail up, to haul up a sail by means of the brails.

BRAKE. The handle or lever by which a ship's pump is worked.

BREADTH. The measure of a ship from side to side, *breadth of beam.*"

BREAK OR BREAST, of a block, is the opposite end to that which reeves the fall.

Of a deck, is that part where it terminates.

BREAKAGE. See paragraph 426 to 431.

BREAKERS. The breaking of waves over a bed of rocks. Also small casks to contain water.

To break ground, to release the anchor from the bottom.

To break bulk, to commence unloading.

To break sheer; when a vessel is in a proper position to sheer clear of her anchor, in tending, but is forced by the wind or current the wrong way.

Break-water, a wreck, reef, or wall of rocks, which breaks or diminishes the force of the waves.

BREAMING. Burning off the filth, grass, &c., from a vessel's bottom.

BREAST-FASTS. Hawsers or cables used to confine a vessel sideways to a wharf, or other vessel.

BREAST-HOOKS. Thick pieces of timber in the form of knees, to strengthen the fore-part of a vessel, where they are placed at different heights across the stem, to unite it with the bows on each side.

BREAST-BAND, or Breast-rope. See paragraph 735.

BREECH, of a gun. See *Cannon*—

In ship building, is the angle of knee-timber, the inside of which is termed the *throat*.

BREECHING. A strong rope, to secure a gun or carronade, and prevent its recoiling too much when discharged. It is rove through a ring at the cascabel, and the two ends secured, one on each side of the gun. They are of just sufficient length to allow the muzzle to come within the side.

BREEZE. Termed *land* or *sea-breeze* according as it blows from the land or sea. Termed *light*, *moderate*, or *fresh*, according to its force.

BREWING. “*A squall brewing*,” the appearance of the sky, near the horizon, when thick dark clouds collecting, indicate the approach of a squall.

BRIDLES. Legs or spans of rope attached to the leech-rope of a sail, to which the bowlines are toggled.

BRING. A square-rigged vessel with two masts.

Hermaphrodite brig, square-rigged forward, and schooner-rigged aft.

BRING—By the lee—To bring the lee side suddenly to windward, by the yawing of the vessel, or negligence of the helmsman.

Bring to, to stop a vessel's way by counter-bracing the yards, or dropping the anchor. Also applied to the act of causing another vessel to heave to, or anchor. Also to apply a rope to

a capstan, or to applying the messenger to the cable for heaving in.

Bring to. See *Lie to*.

Bring to action. You bring your own vessel into action, or bring your enemy to action by attacking him.

BROACH TO. In scudding, to yaw to windward until the sails are aback, being a motion exactly contrary to that which would *bring by the lee*.

BROADSIDE. A discharge of all the vessel's cannon on one side. It also means that part of the vessel, on either side, between the stem and stern, which is out of water.

BROKEN-BACKED. The state of a vessel so loosened in her frame, by age or strain, as to droop at both ends.

BUCKETS. *Fire,* and *wash-deck buckets.* The former are made of leather, and kept in different parts of the vessel. The latter are made of wood, and sometimes of canvas.

BUCKLERS. *Hawse-bucklers,* blocks of wood made to fit in the hawse-holes, to prevent the vessel from taking in much water in pitching.

Port-bucklers, made to fit in the hole in the upper and lower half-ports when closed—secured in with a lanyard when the guns are housed.

BUILT. The particular build of a vessel, as "*frigate-built,*" "*clinker-built.*"

BULGE. See *Bilge*.

Bulge-way, pieces of timber bolted together to form one solid mass, which is placed under the bilge of a vessel to support her in launching.

BULK, of a vessel, is the whole cargo when stowed.

Bulk-heads, partitions in different parts of a vessel, to separate various apartments.

To break bulk. See *Break*.

BULL'S-EYE. See *Blocks*.

BUM-BOAT. Boats allowed to lie alongside of a vessel in port, to sell provisions, fruit, &c., to the crew.

BUMKIN, or Boomkin, pieces of timber projecting from each bow of a vessel to haul the fore-tack to.

Also from each quarter, for the standing part of the main brace.

The former is a "*tack-bumkin*," the latter "*brace-bumkin*."

BUNT, of a sail, the middle part—when furled it is that part of it which is at the centre of the yard—sails are furled with a *high* or a *long bunt*, according to the taste of the officer.

BUNTING (pro. *buntin*). Thin woollen stuff, of which the ensign and colors are made.

BUNTLINES, are ropes fastened to cringles in the foot-rope of a sail, and leading up forward to haul up the body of the sail by when taking it in.

BUOYS. See *Buoy*, 371.

Life-buoys, are kept suspended over the stern of a vessel, to be dropped in case a person falls overboard—they should have a flag attached to them on a staff, that they may be easily seen.

Cable-buoys. Riding by a hemp cable, and above a rocky bottom, it is proper to have buoys at different intervals on the cable, to keep it clear of the bottom—these should be of *casks*, termed *cable-buoys*.

Nun-buoy. See *Nut-buoy*.

Buoy-rope. By which the buoy is attached to the anchor, 372 to 375 inc.

Buoy-slings. The rope by which it is strapped, having a thimble at each end, for the buoy-rope.

To stream the buoy. To let it fall from the vessel into the water, previously to dropping the anchor.

BURDEN, or Burthen. The capacity of a vessel either of war or of trade, as "*she is of so many tons burthen*."

BURTON. A small tackle used for various purposes. See Chapter VII.

BUTT. The end of a plank uniting with the end of another. It also means the lower end of any part of a made mast.

Butt-end, the largest end—speaking of a squall it is said to come out "*butt end foremost*" when it strikes you with its full force.

Butt and Butt. The ends of two planks coming together, but not to overlay each other.

Scuttle-butt. A cask or large tub, with a hole cut in the bulge of head, kept in some convenient part of the vessel, and filled with water for daily use.

To start, or spring a butt, is to loosen the end of a plank by the laboring of a vessel.

BUTTOCK. That part of the convexity of a vessel abaft, under the stern, contained between the counter above and the after part of the bilge below; between the quarter on the side and the stern post.

BUTTON AND LOOP. A short piece of rope, having a knot at one end and an eye at the other, used as a becket to confine ropes in.

BY THE WIND (in Naval Tactics). See *Close-Hauled*.

BY THE LEE. See paragraph 702.

C.

CABIN. The apartment in a vessel where the officers reside. In vessels of war, the apartment of the captain.

CABLE. A thick, large, strong rope of considerable length, to which the anchor is fastened, used to confine a vessel to any particular place. See *Cables*, Chapter IX.

Cable's-length, usually 120 fathoms—distances are measured frequently by this term among seamen, as "*we passed within a cable's length of the rock.*"

To serve a cable, is to bind it around with plaited ropes, to prevent it from chafe in the hawse.

To shoot the cable, to splice two parts of a cable together.

To slip the cable, to let it run out when there is no time to weigh the anchor—when this is done, a buoy should be attached to its end, that it may be easily found.

Cable-tier, that part of the vessel where the cables are stowed.

CALIBRE. The diameter of any round body, applied particularly to the diameter of the bore of a piece of ordnance; ordinarily, however, the weight of the shot thrown by a gun is used to express its calibre, as, a gun of the calibre of 42, 68, &c.

Calibre-plate, is a circular plate of the minimum diameter of the bore of a gun, with a movable plate attached; and so contrived that it shows the excess of the diameter of the bore at any part, from 0.01 to 0.04 inches, which is the greatest excess allowed. It is used in inspecting guns to test their diameter.—*Ward's Ordnance and Gunnery*.

Calibre-gauge, a trapezoidal plate of iron, made to measure the diameter at the muzzle.—*Ward*.

CALK, or Caulk. To drive a quantity of oakum into the seams between the planks, in the sides or decks of a vessel, to prevent the entrance of water.

Caulking-irons. Iron chisels used in caulking.

CALL. The whistle or pipe used by the boatswain and his mates.

CALM. The state of the air and sea, when there is no wind.

CAMBERED-DECK. The flooring of a vessel is said to be cambered, when it is higher in the middle than toward the stem and stern.

CAMEL. A machine used for lifting vessels, in order that they may pass over some shoal or bar.

CAMFERING. In ship-building, taking off any angle or edge of a piece of timber.

CAN. A vessel used by sailors to drink or eat out of.

CAN-HOOKS. Slings with flat hooks at each end, used to sling

casks by the ends of their staves, the purchase being hooked to the centre of the strap or slings.

CANNON. Pieces of artillery used in vessels of war, whether long guns, carronades, or mediums. They are long, hollow, cylindrical engines made of iron or brass, for throwing balls, by means of gunpowder.

CANNONADE. In marine affairs, is the application of artillery to the purposes of naval war.

CANT. Used to express the position of a piece of timber that does not stand square—"on the cant."

Cant-pieces, are pieces of timber, annexed to the angles of fishes and side-trees, to supply any part that may prove rotten.

Cant-timbers, are those which are situated at the two ends of a vessel, so named from being canted or raised obliquely from the keel.

CANVAS. Cloth of which the sails of a vessel are made. The degree of texture is indicated by the number. Thus No. 1 canvas is the coarsest and strongest, of which storm-sails are made.

CAP. A strong, thick block of wood, with two holes in it, perpendicular to its plane—one hole is square and made to fit snugly on the head of its mast, the other is round, to receive through it the mast next above. They are iron-strapped to prevent their splitting. Paragraph 99.

Cap of a block, a semicircular projection from the sides, and around the end of the block, above the pin.

Cap of a rope, is a covering of tarred canvas over its end. The ends of shrouds, stays, and other standing ropes, are capped to preserve them water tight. See paragraph 326.

CAPSIZE. To capsize, is to overturn a vessel or any body. To capsize a coil of rope, after it is coiled down on the deck, the whole is capsized to bring the leading part on top.

CAP-SQUARES. In gunnery, are strong plates of iron which close over the trunnions of a gun, to keep it in its carriage.

CAPSTAN. By which the cable is hove in. In the drum-head

are square holes, in which the capstan-bars are shipped—a rope called a *swifter* is secured around the end of each bar to steady them in their places. The capstan is then *riggèd* for heaving.

To man the capstan, to place the sailors at the bars ready for heaving around.

To heave around the capstan, the men turn it by the bars, which brings in the rope which is wound around it.

To walk back, or come up the capstan, the men turn the capstan the contrary way, thereby slacking the rope.

To pawl the capstan, is to drop the pawls to prevent it from recoiling during a *heavy heave*.

CAPTURE. A prize taken at sea.

CARD, of a compass, is that on which the points are marked.

CARDINAL POINTS. The four principal points, North, South, East, and West.

Cardinal-winds, those which blow from the cardinal points.

CAREENING. To heave a vessel down, on either side, by purchases applied to her masts, or otherwise. A vessel *careens* at sea, when she inclines on one side by a press of sail.

CARGO. The lading of a vessel, whatever it may be.

CARLINGS. Short pieces of timber, ranging fore and aft, from one beam to another.

CARPENTER. A warrant officer in the U. S. Navy.

CARRIAGE (Ordnance) of a gun, is a frame of wood, fixed on wheels or trucks, on which a gun is placed or mounted. For the different parts of a carriage, used in our public vessels, see *Ordnance Instructions*.

CARRICK-BEND. See *Bend*.

Carrick-bitts, are those which support the windlass.

CARRONADE. A short piece of ordnance, much lighter than a long gun or medium of the same calibre—they are very effective in close engagements, and may be worked with rapidity. They derive their name from Carron, a town in Scot-

land, where they were first made. Now not in use in the U. S. Navy.

CARRY AWAY. To break a mast. Sometimes also applied to a rope; but we say, more properly, *part* a rope.

CARTEL. A vessel commissioned in time of war to exchange prisoners, or carry proposals between two hostile powers.

CARTRIDGE (Ordnance). *For great guns*, is a case of flannel fitted to the bore of the gun, and to contain the proper charge. More properly the term applies to the charge as contained in the cylinder.

“In proportioning charges of powder for a gun, reference must be had to the gun’s weight, as compared with the weight of the shot.”—*Ward*.

For small arms, is made of paper, with the ball attached to it.

Passing-box, or *Cartridge-box*, a long leathern box, with a lid, to contain one or more cartridges, used for conveying the cartridge from the magazine to the gun.

CASCABEL (Ordnance). That part of a gun from the rear of the base-ring to the face of the knob; it comprises the base of the breech, the neck, the jaws, and the block and pin.

CASE, or *Canister Shot*, a tin case or box containing a number of small balls, prepared to be thrown from long guns or caronades.

CAST-AWAY. The situation of a vessel which is lost or wrecked.

Cast off, to untie or let go a rope. To cast off a vessel is to let go her *fasts*.

To cast loose the guns, to prepare them for being worked.

Cast of the lead, to ascertain the depth of water by dropping the lead to the bottom. See Chapter XXIII.

Castings, applied to a vessel, is the act of paying her head around from the wind, in getting under way.

CAT. The tackle used at the cat-head to purchase the anchor. The rope forming the tackle is the *cat-fall*.

Cat-harpin or *cat-harping*, used to brace in the rigging, to

tighten it, and to give a greater sweep to the yards. See paragraphs 90 to 94 inclusive, and 120.

Cat-heads, timbers projecting from the vessel's bow on each side, through which the tackle is rove to purchase the anchor by. See *Cat-block*.

Cat's-paw, a light air seen on the surface of the water during a calm. It is also applied to a certain turn, made in the bight of a rope, to receive the hook of a tackle.

CAULK. See *Calk*.

CEILING. The inside planking of a vessel.

CENTRE (in Naval Tactics). In the arrangement of a fleet or squadron *in order*, the centre division or column is that which is between the van and rear, or the weather and lee.

Centre-hung. A gun is said to be *centre-hung*, when its trunnions are so placed that their axis passes through the axis of bore.

CHAFE. To rub or fret the surface of a cable, mast, yard, or any rope, by the motion of the vessel, or otherwise.

CHAIN. *Chain-cables*. See Chapter IX.

Chain-plates, thick iron plates bolted to the side of a vessel, to which the chain and dead-eyes, that support the masts by the shrouds, are connected.

Chains, strong links or plates of iron, the lower ends of which are bolted, through the ship's side, to the timbers.

Rudder-chains, attached to rings on the upper outer part of the rudder, leading on each side toward the quarter, with sufficient scope to leave the rudder a free motion; and stopped up under the moulding of the stern, to the end of which a pendant is attached. See *Pendant*.

Top-chains, chain slings for the lower yards, so called from being always kept in the tops. They are used in time of action.

CHAMBER. A cavity at the extremity of the bore in a piece of ordnance, to receive the charge of powder in loading.

CHANGE (in Naval Tactics). To change from one order to

another, or to the same with less or more columns, either in consequence of a shift of wind, or for some purpose.

Where columns or divisions change positions, they are said to *interchange*.

CHANNEL. The deepest part of a river or harbor, affording the safest passage for vessels in or out.

CHANNELS, or CHAINWAILS. Broad pieces of plank, bolted edge-ways against the side of a vessel, abreast and abaft the masts; used to extend the shrouds from each other, to increase the angle formed by the shroud and the mast, and to keep the rigging clear of the gunwale. On the outer edge of the channels are notches, to receive the *chains* that are attached to the dead-eyes.

CHAPELLING, a vessel. See paragraph 635.

CHAPLAIN. A commissioned officer in the United States Navy.

CHARGE (in Gunnery). The quantity of powder, ball, etc., put in a piece of artillery, to be discharged at one time. The full charge of powder, or the full service-charge, is that quantity of powder, proportioned to the weight of the shot, which will give to the shot the greatest initial velocity, within the limits of a safe recoil.

“As experience proves the limit of safe recoil to be also the proper limit of the charge, and as the recoil to be controlled is chiefly that which arises from velocity; the proper charge of powder for a gun is proportioned by the initial velocity of recoil which the charge will produce.”—*Ward*.

CHART. A sea-map for uses of navigation, being a projection of the sea, showing the coasts, rocks, shoals, and islands, with their proper bearings, latitudes and longitudes, the depth of water in soundings, light-houses, land-marks, and whatever else may be of use to navigators.

CHASE—of a gun. Is that part which is measured, from the fore end of the second reinforce to the rear of the muzzle-ring.

Chase (in Naval Tactics). The vessel pursued by another.

Bow, or Stern-chasers, are guns placed in the forward or after part of a vessel, pointing *ahead*, or *astern*.

CHASER. Is the vessel pursuing another.

CHASING (in Naval Tactics). The act of pursuing a vessel or fleet, for the purpose of forcing action, or simply to communicate.

Both of the opposing vessels, or fleets, sailing with equal speed, and equally well managed; those in chase can never overtake the *chase* unless some accident intervene to aid them. But if the chaser has the advantage in speed, he should proceed to use it so as to reach the *chase* by the most direct course.

The relative speed of the vessels may be easily ascertained by either of them, by the use of the mariner's compass (except in sailing line-ahead, when the sextant will be most useful), for if both are steering the same course, and continue to preserve the same bearings from each other, then it is evident that they perform the same distance in the same time; or, are of equal speed. But if their bearings change, then their speed is unequal; and if the chase, by the bearings is brought more aft, the chaser has the advantage, and must eventually come up with the chase. If the two vessels are *line-ahead*, no such variation in the bearings can of course take place; then, by the use of a sextant, the altitude of some point of the mast will show if the distance between the chase and chaser increases or diminishes.

In *Chasing to Windward*, the vessel in chase should keep on the same tack with the chase, until she is brought to bear exactly perpendicular to the course; then they are at the nearest point, and then the chaser should tack, and thus continue to manœuvre until the chase is overtaken, which (supposing the chaser to have the advantage in speed), will be thus accomplished in the shortest possible time, under the circumstances.

The chase, on the other hand, should, if possible, keep on the same tack, after the chaser has gone about, for the time lost in stays will not be as much a loss to the chaser as to her; for the greater the speed of a vessel the more head-reach in stays, and the greater gain to windward.

If the chaser stands on past the point of the nearest distance, with the intention of tacking in the wake of the chase, the latter should immediately go about and pass to windward of her on the other tack.

By such oversight, or by any accident, or bad management on the part of the chaser, taken advantage of promptly, the chase may be much prolonged, and may possibly eventuate in an escape.

In *Chasing to Leeward*, the chase should, under ordinary circumstances, steer such a course as will take her directly away from the chaser. The known qualities of the vessel should not, however, be lost sight of, for if she possesses material advantages, on any particular point of sailing, her course should be such as to make it subservient to her escape.

CHECK. To ease off a little of a rope, without taking off the turns by which it is belayed. When applied to a cable it has a contrary meaning, thus—to *check the cable* in running out, is to stop it.

CHEEKS, of a *block*, are the two sides of the shell.

Of a *mast*, are those projections on each side on which the trestle-trees rest.

CHEER. To cheer, is to salute a person or vessel by huzzaing.

To *cheer ship*, is the summons given by the boatswain to bring the crew on deck, for the purpose of cheering.

Cheerly, cheerfully, quickly, with a will.

CHESS-TREES. Pieces of oak, fitted to the sides of vessels, abaft the fore chains, with a sheave in them to haul the main tack down to.

CHEST. *Arm-chests*—placed in various parts of a vessel, gener-

ally on the quarter-deck, and sometimes in the tops, to keep arms in, muskets, cutlasses, pistols, &c.

CHINSE. To chinse, is to thrust oakum into seams or chinks by a small iron, the point of a knife, or chisel.

CHOCK. A wedge to confine any weighty article in a certain place, to prevent it from fetching-way.

Chock-a-block, the situation of a tackle (see *Block and Block*), or of any article hoisted up as high as the whip or tackle will admit.

Chocks of a rudder, are to stop its motion while shipping another tiller.

CHOKING *the luff of a tackle*, is to place the hauling part close up to the block, under the other parts of the tackle, so as to jamb it and prevent its rendering.

CHOP. *Chop about*, applied to the wind when it changes about suddenly.

CISTERN. An apartment in the hold of a vessel, having a pipe leading out through the side, with a cock, by which water may be let into her.

CLAMPS. In ship-building, are thick planks on the inner sides of vessels, to sustain the ends of beams.

Are also crooked plates of iron fore-locked upon the trunnions of cannon. Clamps of this description are also used to secure masts and bowsprits of boats—also to inner studding-sail-boom irons.

CLAP-ON. *To apply, or take hold of*, as “*Clap on a stopper or tackle to a rope*,” or “*clap on*” a rope, means to take hold of it for the purpose of hauling.

CLASP-HOOPS. See *Hoop*.

CLAWING-OFF. The act of beating or working off from a lee shore, or other vessel.

CLEAN. Applied to the sharp part of a vessel under water, either forward or aft.

CLEAR. Applied to the weather, sea-coast, rigging, &c.

A clear coast, when the navigation is not dangerous.

To clear an anchor is to get it ready for use.

To clear hawse, is to untwist the cables from each other. See Chapter XXVI.

Clear up the decks, to clear up the rigging, and lay every rope in its proper place.

CLEARED. Merchant vessels are *cleared* when they have obtained leave to sail, from the Custom House officer.

To clear ship for action, to prepare for action.

CLEATS. Formed of wood, used in different parts of a vessel to belay ropes to or support becketts.

Arm or sling-cleats, are nailed on each side of the slings of a yard, having but one arm.

Belaying-cleats, have two arms or horns, are nailed through the middle to masts, or to the vessel, to belay ropes to.

Comb-cleats, are rounding on the back, having a hollow in the middle to lead a rope through.

Rangc-cleats, are the same as *belaying-cleats*, but much larger.

Shroud-cleats have two arms like *belaying-cleats*, the inside is hollowed to fit the shroud to which it is seized.

Stop-cleats, are nailed to yard-arms, masts, and bowsprit, to prevent ropes, collars of stays, and gammoning, from slipping.

Thumb-cleats, shaped like *sling-cleats*, but much smaller, made to hang ropes or any thing on.

CLEW. The lower corner of square sails, and the after corner of fore and aft sails.

Clew-garnets, to haul up the clews of the foresail or mainsail of square-rigged vessels.

Clew-lines, answer the same purpose to other square sails, that *clew-garnets* do to the courses.

Clew-jiggers, used to haul the clews of sails up forward of the yards, for furling.

Clews of hammocks, are a combination of nettles, gromet, and lanyard, to sling a hammock, to sleep in.

From clew to earing—throughout, “*from top to toe* ;” as, “*I am wet from clew to earing.*”

To clew up, is to haul up the clews of a sail to its yard.

The order to “*clew up*,” in shortening sail, means to haul it up snugly to the yard by all the rigging used for that purpose.

CLINCH. A method of fastening large ropes by a kind of knot, secured by seizings, instead of splicing. It is chiefly used in securing the end of a cable to the ring of the anchor (see *Bending*), or the breechings of a gun to the rings in the side of the vessel.

CLINCHING. Fastening the point of a bolt or nail on a ring of iron, by hammering it to make it spread.

CLOSE-HAULED. A vessel is close-hauled, when she is braced up sharp on either tack, and is by the wind, or as near to it as she can lie with her sails filled and drawing. See *Working to Windward*, paragraph 574.

Close-hauled line (in Naval Tactics). Any number of vessels in line, all being close-hauled or by the wind.

CLOTHED. The masts of a vessel are said to be clothed when her sails reach down to the deck, allowing little or no wind to escape under them.

CLOTHING, of the bolsters ; the several thicknesses of tarred canvas laid over them, to form a soft bed for the shrouds.

CLOTES, of a sail, are the breadths of canvas in its whole width.

CLOVE-HITCH. A certain hitch formed with a rope, having the two ends to reach out in contrary directions. It is formed by two half-hitches around a spar or other rope.

CLUB-HAUL. A method of going from one tack to another by the use of an anchor. See *Working to Windward*, 613.

CLUBBING. See paragraph 630.

COAKING. Is the operation of uniting two or more pieces of spar, by means of tabular projections, formed by cutting away the solid of one piece into a hollow, so as to make a projection in the other, in such a manner that they may

correctly fit, the butts preventing the pieces from drawing asunder.

Coaks, are these pieces, thus cut out, for uniting spars.

Coaks are also fitted between the beams and knees of vessels, cut half into one and half into the other, to prevent them from working.

Coaks are also the metal holes in a sheave, through which the pin goes.

Coaks are also certain oblong ridges left on the surfaces of masts, by cutting away the wood around them, the intermediate part being called the *plane*.

Coak and plane, means when a *coak* is formed, and a plane surface follows between that and the next.

Running-coaks, are those which are continued the whole length along the middle.

Chain-coaks, are formed, one on the end of the other, on the opposite sides of the centre line.

COAL-HOLE. An apartment in the hold of a vessel, appropriated to the stowage of coal.

COAMINGS, of the hatches, are borders raised about the edges of hatches, to prevent water from passing down from one deck to the next below.

COAST. The sea shore, or the country adjoining the edge of the sea.

COASTER. A vessel employed in going from one port to another, along the same coast.

COAT. Tarred canvas nailed around a mast or bowsprit, where it enters the deck, to render it water-tight. These are termed *mast-coats*.

Rudder-coats, are nailed around the hole where the rudder traverses in the counter.

Coat also is applied to a covering of tar, paint, varnish, or slush, laid over any wood, canvas, or rigging, to preserve them from the weather.

CONNOOSE, or more properly *Camboose* (*Kambuis*, Dutch). A box or house on the upper deck of merchant vessels, where provisions are cooked.

COCK-PIT. An apartment used by the surgeon in action, to attend to the wounded in.

COXSWAIN (pro. *Coxen*). The person who steers, or pulls the after oar in a boat, and in absence of an officer has charge of the boat. A petty officer in the naval service.

COIL. The manner in which ropes are placed conveniently for stowage, or clear for running.

Flemish-coil, is a rope coiled in a spiral form, having but one tier or sheave, the end being in the centre, and each succeeding fake being outside of the former. Ropes are coiled in this way, and laid upon the decks of vessels of war in port.

Coiling. See *Cables*, Chapter IX.

COLLAR. An eye formed in the bight of a shroud, to go over the mast-head. See *Rigging*, 80.

Collars, for hearts and dead-eyes, are straps formed of rope, in which the hearts or dead-eyes are seized, 44.

COLORS. Flags which distinguish the vessels of different nations.

COLUMN (in Naval Tactics). Any number of vessels ranged in a line, forming a division, or part of a division, in some particular order. A fleet may be divided into three or more columns. Each column may be a division, or each division may be divided into two or three columns.

COME. *Come home*—an anchor is said to *come home*, when it is loosened from the ground.

Come-no-near—an order given to the helmsman, not to let the vessel come so near to the wind.

To come up the capstan, or *tackle*, is to slacken the rope around the former, or to slacken the latter by letting run the fall or hauling part.

To come up with, is to overtake.

Coming-up, or *Coming-to*, luffing up to the wind. The latter often applied to coming to anchor.

COMMANDER. The rank in the navy next above lieutenant.

Commander, is also the name of a large wooden mallet.

Commander-in-chief, the chief in command of any naval station.

COMMODORE. A title given by courtesy to the commander or senior officer, when two or more vessels cruise in company.

COMPANION—*Hatch*, a wooden porch over the entrance or staircase of the cabin, in small vessels or merchantmen.

Companion-ladder, is that by which officers ascend to, or descend from, the quarter-deck.

COMPANY. The whole crew of any vessel is termed "*ship's company*."

COMPASS. *Mariner's Compass.* An instrument to direct the helmsman the way or course of the vessel. The common compass used for steering is termed "*binnacle-compass*."

The *azimuth-compass.* Nicely marked with the degrees and minutes of the circle, is used for taking bearings of the land, or heavenly bodies.

Boat-compass, similar to the common binnacle-compass, but smaller, for boat service.

Tell-tale or *Hanging-compasses*, are made to hang overhead to the beams of the officers' apartments, that the course of the vessel may be known from below.

Compass-timber, such pieces of timber as are incurvated or arched.

COMPLEMENT. The limited number of men allowed to a vessel, or gun.

CONCENTRICITY—of the bore of a gun, is "when the axis of the bore coincides exactly with the axis of the gun. But for which exact concentricity the *sight* on a gun would never indicate the direction of the axis of the bore."—*Ward's Ordnance and Gunnery.*

CONCLUDING-LINE. See *Line*.

CONDUCTOR. An iron chain, hooked to the spindle at the truck of the highest mast of a vessel, to carry off the electric fluid, and conduct it to the water. They should be always kept clear, and rigged out from the side of the vessel during a storm.

CONE (Ordnance). "The different sections of a gun, forming the first and second reinforce, and the chase, each being in itself a *cone*. The line formed by the outer surface of the metal along the first reinforce is broken where the second reinforce commences, and the line along the second reinforce is again abruptly broken at the commencement of the chase, each section forming a truncated cone of itself."

CONNING, is the act of directing the helmsman in steering the vessel.

CONSORT. A vessel keeping company with another.

CONVOY. One or more merchant vessels under the protection of a vessel of war, on a voyage.

Order of Convoy (in Naval Tactics). A mode of arranging the vessels of a fleet. See *Order of Sailing*.

COPPERED. A vessel having her bottom, from the water's edge down, covered with sheets of copper, to protect it from worms; it also prevents much filth from accumulating.

Copper-fastened. A vessel is said to be *copper-fastened*, when the bolts and other metal works in her bottom are of copper instead of iron, having this advantage, that the heads of the bolts do not corrode.

CORDAGE. A general term for the running rigging of a vessel.

CORNETTE. One of the flags of a vessel, used as a signal.

CORPORAL. *Ship's corporal*, under the master-at-arms, is a petty officer, on the police duty of a vessel of war.

CORPOSANT. A volatile meteor, caused by electricity, often seen in dark, tempestuous, rainy nights at the extremities of yards

and masts, sometimes on the rigging, often changing their positions. They are faint lights, like a flame.

COT. A bed-frame suspended from the beams of vessels, for officers or men to sleep in.

COVE. A small harbor formed by a creek or inlet.

COVER. To protect; as, "*They landed under cover of our guns.*"

COUNCIL OF WAR. An assembly of officers, called by the commander-in-chief, to concert measures.

COUNTER. Of a vessel, is that part between the bottom of the stern and the wing transom and buttock.

Counter-brace, to brace the yards in contrary directions, 657 to 673.

Counter-parbuckles, are those which act in a contrary direction to the main or principal parbuckles.

Counter-timbers, are short timbers in the stern of a vessel, put in for the purpose of strengthening the counter.

COUNTERSIGN. A name or word given out with the parole.

COURSE, is that point of the compass on which a vessel steers. Is also the angle which the vessel's track makes with the meridian.

Courses, a name by which the principal sails of a vessel are distinguished, as the main and fore sail.

COURT-MARTIAL (Naval). A court of public officers for the trial of officers, seamen, or marines in the navy.

CRADLE. A frame of timber, used in launching vessels, to conduct them steadily into the water.

CRAFT. A general term for all sorts of vessels. The smaller classes are termed "*small craft.*"

CRANE. A machine used on wharves for raising stones or other heavy articles.

Cranes, are also of iron, placed outside of a vessel, abreast of the mainmast and aft, to stow spare spars in. See paragraph 539. See *Crotches*.

CRANK, or CRANK-SIDED. The quality of a vessel, which from

some cause is incapable of bearing much sail, without the danger of upsetting.

Crank-wheel, in rope-making, for spinning lines, is a machine fixed on an iron spindle or axis, with a handle to turn it by.

CRAWL. A pen or enclosure formed by stakes or hurdles on the shore, to confine fish in.

CREEPER. An iron instrument resembling a grapnel, having a shank and four claws, used to drag along the bottom of a harbor or river, to recover any thing that may be lost.

CREW. The company of sailors belonging to a vessel, to one of the boats of a vessel, or to one of the guns; as, "*The crew of the vessel*," "*The boat's crew*," "*The gun's crew*."

CRINGLES, are iron rings or thimbles strapped to the bolt rope of sails for various purposes, that is, to attach the sheets, reef-earings, head-earings, &c., to. See *Struck*.

Cringles or *hanks*, flat and broader in the middle, and open at the lower part, the ends drawn fine and turned into rings for securing to the sail. Used in confining the head sails to their stays. See *Bending Sails*, Chapter XI.

CRIPPLE. To damage a vessel in her masts or yards.

CROSS-BARS. Round bars of iron, bent at each end, used as levers to turn the shank of the anchor.

CROSS-CHOCKS. Pieces of timber fayed across the dead-wood amidships, to make good the deficiency of the heels of the lower futtocks.

CROSS. See *Clearing hawse*, Chapter XXVI.

CROSS-JACK (pro. *Crojeck*). The lower yard on the mizzen mast, to the arms of which the clews of the mizzen topsail are hauled out.

CROSS-PAWLS. Pieces of timber which keep the vessel together while in her frames.

CROSS-PIECE. The rail in a merchant vessel, extending from the knight-heads to the belfry, to belay running rigging to.

Is also that piece of timber, forming a part of the bitts, which runs across, connecting the two bitt-heads.

CROSS SPALES. In ship-building, are pieces of timber placed across the vessel and nailed to the frames, to secure the sides of the vessel together until the knees are bolted.

CROSS-TREES. Pieces of oak timber, supported by the cheeks of the mast and trestle-trees, at the upper ends of the lower masts and topmasts, to sustain the tops on the former, and to spread the topgallant shrouds on the latter, 86.

CROTCHES. Pieces of wood or iron, formed with two arms like a half-moon, used to support booms, spare spars, &c. See *Cranes*.

CROW. An iron lever, made with two claws at the heaviest end; used for various purposes, to remove weighty articles, to draw spikes, &c. Used on ship board in the gun exercise, to raise the breech or train the piece.

CROW-FOOT. A number of small lines rove through the euphroe (see *Blocks*) to suspend an awning by.

CROWD. To carry an unusual quantity of sail upon a vessel, for the force of the wind; for the purpose of increasing her speed on any pressing occasion.

CROWN, of an anchor. See *Anchor*, Chapter VIII. Of a cable. See *Cables*, Chapter IX.

CROWNING, is finishing a knot made on the end of a rope, by which the ends or tails are secured.

CRUISE. A voyage or expedition performed by vessels of war.

CRUTCH. A support for the main or spanker boom of a vessel when the sail is in, to ease the topping-lift.

Crutches, in ship-building, are knees or pieces of knee-timber, placed within side of the vessel, for the security of the heels of the cant-timbers abaft.

CUCKOLD'S-NECK. A knot by which a rope is secured to a spar, the two parts of the rope crossing each other, and seized together.

CUDDY. A cabin in the fore part of a lighter or boat.

CURRENT. A progressive motion of the body of the sea, in certain places, by which all bodies floating thereon, within its influence, are carried along by it.

The set of the current, is that point toward which it sets.

The drift of the current, is the rate at which it runs.

CUT. *Cut a feather,* a term applied by sailors to a vessel, which, having a broad bow, they say "*will not cut a feather,*" that is, will not pass swiftly through the water.

To cut and run. To cut the cable and make sail, without waiting to weigh the anchor.

Cut-water. The foremost part of a vessel's prow, which projects forward of the bow, to open the column of water through which she passes; it also serves to keep her to windward when close-hauled.

CUTTER. A small vessel of one mast, rigged differently from a sloop of one mast.

Cutters, are also some of the boats of vessels of war.

Cutters. Small vessels employed in the revenue service, whether brigs, schooners, or sloops, are called "*revenue cutters.*"

CYLINDER. "A long circular form of uniform diameter, and its extremities forming equal parallel circles." Of the bore of a gun. See *Bore*.

Cylinder-gauge. "A perfectly turned cylinder of the exact prescribed diameter of the bore of the gun, and a calibre in length," used in the inspection of guns to test the diameter of the bore.

Cylinder. The flannel bag made to contain the charge of powder for a gun.

Wad-cylinder—"Of iron or wood, for forming wads of the requisite calibre."—*Wad*.

D.

D-BLOCK. See *Block*.

D-THIMBLE. See *Thimble*.

DAGGER. In ship-building, is a piece of timber that crosses all the puppets of the bulgeways, to keep them together.

Dagger-plank, is that which secures the heads of the puppets.

Dagger-knees, are certain pieces that are bolted by their arms, to the clamp. See *Knees*.

DAVIT. *Boat-davits*, over the quarter or stern of a vessel, are pieces of timber, having a tackle to them to hoist up boats by.

Fish-davits, are used over the bows, to hoist up the flukes of the anchor by, after it is catted.

DAY'S-WORK. The reckoning of a vessel's course or courses for the past day, from meridian to meridian.

DEAD-EYES. See *Blocks*. To turn in dead-eyes. See paragraphs 75, 76, 77.

Dead-flat, in ship-building, the name of a midship-bend.

Dead-lights. Strong ports made to fit closely into the cabin windows, and used in bad weather in place of the glass frames; they have usually a glass bull's eye in them.

Dead-reckoning. The estimation made of a vessel's position on the chart, by means of the courses and distance by log, corrected for drift, leeway, &c.

Dead-rising, or *Rising-line of the floor*. Those parts of the floor of a vessel throughout her whole length, where the floor timber is terminated upon the lower futtock.

Dead-ropes, are those which are not rove through blocks.

Dead-water. The eddy of water, closing in with the vessel's stern as she passes through it.

Dead. The wind is *dead ahead* when blowing from that point to which the vessel would go.

Dead-wood, are blocks of timber, laid upon the keel at both extremities where she narrows.

Dead-works. That part of a vessel which is above the water, when she is laden.

Deaden. To deaden a vessel's way, is to diminish her speed through the water.

DECKER. The rate of a vessel, estimated by the number of her decks on which are mounted guns, "*single-deckers*," "*two-deckers*," &c.

DECKS. The planked floors of a vessel, serving as platforms for artillery, &c. They have different titles according to their situations, as, the *spar-deck*, which is the upper deck of all, common to all vessels.

The main deck. The next below the spar-deck, in frigates and seventy-fours.

The middle deck. Next below the main deck in three-deckers.

The lower gun-deck. Next below the middle deck in three-deckers, and next below the main deck in two-deckers.

The orlop-deck. Next below the lowest gun-deck of three or two-deckers; generally applied to that deck, or that part of a deck on which the cables are stowed.

Berth-deck. That on which the crew hang their hammocks.

Quarter-deck. That part of the spar-deck from the main mast aft.

Half-deck. From the main mast to the cabin bulkhead, on the deck below the spar-deck.

Flush-deck. A continued floor unbroken from stem to stern.

DEEP-WAISTED, applied to a vessel, when the bulwarks of the quarter-deck and forecastle are higher than those of the waist.

DEEP-SEA lead, and line. See Chapter XXIII.

DEFLECTION (in Gunnery). Turning aside, or "deviation from the line of aim, in a shot, caused by its eccentricity, great windage, or inaccuracies in its surface."—*Ward*.

DEMURRAGE. An allowance made to masters of merchant vessels, for detaining them longer than agreed upon by contract.

DEPARTURE. The easting or westing made by a vessel on her course.

Also the bearing taken by a vessel on leaving a coast, from which her dead-reckoning commences.

DEPTH, of a sail, is its extent from the head to the foot-rope, commonly called the *drop of a sail*.

Depth of water. See *Soundings*. Chapter XXIII.

DERRICK. Used to load or unload merchant vessels, to which the purchase is attached, supported upright by stays from the fore and main-mast head.

DETACHMENT, of a fleet or squadron; any number of vessels chosen to perform any separate service.

DISABLED. The state of a vessel, when by the loss of masts, spars, or sails, she is unable to perform her voyage, or engage an enemy.

DISCHARGE, a crew; to dismiss them from the service.

Discharge a gun, to fire it off.

Discharge a vessel, to unload her.

DISEMBARK. To leave a vessel for the land.

DISCIPLINARIAN (Naval). An officer who maintains strict and rigorous discipline in a vessel.

DISMANTLE. To unrig, and prepare a vessel for being laid up in ordinary, or for repairs.

DISMASTED. The state of a vessel having lost her masts, by design or accident.

DISMOUNTED. The state of a cannon, taken from its carriage by intention, or by a shot from an enemy.

DISPART of a gun, is half the difference of the diameters, measured at the muzzle, and at the base-ring.—*Ward*.

Dispart. "If a line be drawn from the cascabel along the top of the gun, parallel with the axis of the bore, and a projection which will touch that line, be fixed on the gun anywhere in the direction of the muzzle, it will be as easy to direct the bore toward the object, as if the gun were of the same

thickness everywhere. This projection is the *Dispart*."—*Boyd*.

The *Angle of Dispart*, is "that number of degrees which the axis of the bore would point above the object aimed at when laid by the surface of the gun."—*Boyd*.

Dispart-sight. See *Sight*.

DISPUTING (in Naval Tactics). Fleets or vessels are said to *dispute the weather-gauge*, when both forces are manœuvring to get to windward of each other.

DISTANCE. In navigation, is the number of miles sailed by a vessel.

DIVISION. The whole battery of a vessel of war is divided into *Divisions*; each division being under the command of a lieutenant. There are also other divisions, not of guns, viz.: the division for passing powder, &c., and the division for trimming yards, &c.

Division (in Naval Tactics), is a part of a squadron or fleet, and under the immediate command of one of the admirals or senior officers.

According to the different Orders of Sailing, each division may be composed of one, two, or more columns, and are designated as the van, centre, or rear divisions, as they are situated in the fleet.

Grand Division, is a peculiar arrangement of the fleet. See *Orders of Sailing*.

DOCK. Dry dock, a basin for repairing vessels, having strong flood-gates, to prevent the tide from entering, while the repairs are going on.

To dock a vessel, is to place her securely in a dock for repairs.

Dock-yards, are those naval stations where are dry-docks, and all conveniences for repairing, building, and fitting out vessels.

DOG. An iron hook or bar with a fang at one end, used to attach to pieces of timber, for dragging them along by.

Dog-vane, a small vane, made of bunting, feathers, or any light material, to point out the direction of the wind.

Dog-watch. See *Watch*.

DOLPHIN. A rope or strap around the mast, to support the puddening, to sustain the weight of the fore and main yards in the slings.

Dolphin-striker, a name applied to a bumkin, which is fixed perpendicularly under the bowsprit cap, to spread the stays of the head booms.

DOUBLE (in Naval Tactics). To double an enemy, is to extend the line of the fleet beyond that of the enemy, and then by tacking in succession, to bring their leading ships between two fires; and thus create confusion in their line. An enemy's line may also be doubled at the rear, but the confusion created at that point is not necessarily communicated throughout the line.

DOUBLE. *Double-banked*. See *Boats*.

To double a cape, to sail around or past it.

Double-headed shot. See *Shot*.

Doubling-nails, among ship-builders, are those commonly used to fasten the linings of the gun-ports.

DOUSE. *To douse*. To lower, or slack suddenly. "*To douse a sail*."

Dousing chocks. In ship-building, are pieces fayed across the apron, and lapped on the night-heads.

DOWELLING is a method of coaking, by letting pieces into the solid, or uniting two pieces together by tenons.

DOWN. "*Down all hammocks*," "*down all chests*," are orders given to the men, to take or lower down the same.

Applied also to taking in sails, as "*Down jib, staysails*," &c., only applied to those which are taken in by a *down-hauler*.

Down-haul, the rope by which the headsails, staysails, and studding-sails are hauled down. See *Throat*.

Down-haul-tackles. Used to rouse down the topsail yards in large vessels.

DRABLER. An additional piece of canvas laced on to the bonnet of a sail, to give it more drop.

DRAG. A machine made of iron, with a bag net, used for the purpose of dragging on the bottom, to recover any thing lost, or to find shells. It is sometimes termed a *drudge* or *dredge*. *To drag the anchor*, is to trail it along the bottom, by the force of the wind or current.

DRAUGHT. The depth of water necessary to float a certain vessel, as, "*a vessel of a certain draught.*"

DRAW. "*Draw foresail*" in a schooner; "*draw the head sheets,*" that is, to shift them over in tacking.

Drawing. The state of a sail when inflated by the wind.

DRESS. *To dress ship.* To ornament her with colors, on days of rejoicing.

DRIFT. A vessel having parted her cables, or tripped her anchor, *drifts* by the force of the wind or current. In a storm or gale, she *drifts* to leeward.

Drifts, in the sheer-draught, are those pieces where the rails are cut off. They are ended with scores, and are termed *drift-pieces*.

DRIVE. To drive, is to scud before a gale or tempest, or to drift loose from moorings.

Driver, see *Spanker*.

DROP. See *Depth of a Sail*.

Drop-anchor, to let go the anchor.

Drop-astern, the retrograde motion of a vessel; one vessel *drops another*, when she leaves her astern and outsails her.

DRUM. The drum-head of a capstan is its circular top, in which are the pigeon-holes for the capstan-bars.

DUBBING. To reduce or diminish a piece of timber by means of an adz.

DUCK. The finest canvas.

DUNNAGE. A term applied by sailors to the contents of their clothes-bags.

Dunnage, is also a quantity of loose wood or other matters placed on the bottom of the hold, to stow the cargo on, to prevent its being injured by the water in the hold. See Chapter XII. 421.

E.

EARINGS, are ropes attached to the cringles of sails, by which they are bent, reefed, &c.

Head-earings, are attached to the cringles at the upper corners of a sail, and are used to fasten the sail to its yard.

Nock-earring, the inner earing of a fore and aft sail. See *Spanker*, 395.

Peak-earring, the outer earing of a spanker or trysail.

Reef-earings, are attached to the reef-cringles on the leeches of the sails, by which they are roused up, and securely confined to the yard for reefing.

EASE. *To ease the vessel.* The helmsman *eases* her by a lee movement of the helm to meet a sea. The officer *eases* her by regulating the sail so as to prevent her pitching violently.

To ease off or *ease away.* To slacken gradually any rope or tackle.

EAST. One of the cardinal points of the compass.

EBB. The return or reflux of the tide, after having been at its highest.

ECCENTRICITY—of shot. The “deviation of the centre of gravity from the centre of the ball,” caused by cavities within, giving a preponderance to one particular section of it over every other; if no such preponderance exists, the shot is then considered *concentric*.

EDDY-WATER. That which, by some interruption in its course, runs contrary to the direction of the tide or current.

EDGE-AWAY. To increase the distance gradually from a coast, vessel, or any object.

To edge-in-with, a coast or vessel; is to advance gradually and not directly toward it.

EIKING. In ship-building, a piece fitted to make good a deficiency in length.

ELBOW. In the hawse. See *Clearing Hawse*. Chapter XXVI.

ELEVATION (in Gunnery), that angle comprehended between the horizon and the line of direction of the cannon. See *Point*.

EMBARGO. An arrest laid on vessels by public authority, to prevent their departure.

EMBARKATION. Shipping or putting on board troops for public service.

EMBAYED. The situation of a vessel between two capes or promontories, the wind blowing in.

END-FOR-END. To turn any thing around so as to reverse its position. Running rigging is often shifted end-for-end, to equalize the wear of the ends.

End-on, a vessel approaching directly toward a rock, shore, or another vessel, goes *end on*.

ENGAGEMENT. A naval action.

ENSIGN (pro. *Ensen*). The national flag or banner, hoisted at the peak or the ensign-staff, over the stern of a vessel.

ENTER. To enroll or engage for service.

Entering-port, any of the ports appropriated for entering or leaving the vessel by.

Entrance, a name frequently given to the foremost part of a vessel, under the surface of the sea.

EQUIP. To fit a vessel for sea, or boats for an expedition; applying more properly to her armament.

ESCUTCHEON. A compartment on a vessel's stern, where her name is written.

EVEN-KEEL. The situation of a vessel, when she draws the

same water forward and aft; it is also applied to the upright position of the vessel.

EXERCISE. The practice of drilling a crew at the guns, or at the various operations of reefing, furling, shifting sails and yards in a port, that they may be familiar with the process. Fleets and squadrons are also exercised in evolutions, manœuvres, &c.

EYE, of a block-strap, is that part or loop by which it is suspended to any place.

Of a stay, is that part of it, formed into a collar, to go over the mast-head, 74.

Eye-bolt, is a long bar of iron, having an eye at one end; it is driven in the decks or sides of a vessel, through a beam or a timber, the eye being left out to hook tackles, or fasten ropes to.

Flemish-eye, is a peculiar eye formed in a rope, by dividing the yarns into two equal parts, forming the eye and pointing over the whole. See paragraph 325.

Eyelet-holes, are those made in sails.

Eye of a shroud. See *Eye of a stay.*

Eye-splice. See *Splice.*

Eyes of a vessel, sometimes applied to the forward part of a vessel below, as, "*down in the eyes of her,*" "*forward in the eyes of her.*"

In the wind's eye, toward the point from which the wind blows.

F.

FACE-PIECES, in ship-building, are pieces of wood wrought on the fore part of the knee of the head.

Facing, is letting one piece of timber into another, with a rabbet.

FAG. The *fag-end* of a rope, is that end which, from not hav-

ing been whipped or pointed, has become untwisted; hence you say "*the end is fagged*" or "*fagged out.*"

FAIR. Applied to the wind, is when it is favorable to the course you wish to steer, otherwise it is *foul*.

Fair, applied to the weather, means pleasant.

Fair, applied to the rigging, or any piece of running-rigging, when from the situation of the leading-blocks it is not exposed to chafe or friction; "*such a rope leads fair.*"

Fair-leaders, are blocks or thimbles, placed in any position or part of the vessel, to lead ropes through, without increasing the purchase, 45.

Fair-curve, in delineating vessels, is a winding-line, whose shape is varied, according to the part of the vessel it is intended to describe.

Fair-way, of a channel, is the path of a bay, river or harbor, through which vessels enter or depart.

FAKE. One of the circular forms made in coiling a cable, hawser, or other rope. Paragraph 317.

French fake, coiling a cable or hawser. See paragraph 324.

FALL. Of a tackle, is that part upon which the power is applied to its use.

To fall aboard. See *Aboard*.

To fall astern. A vessel *falls astern* of another when she is unable to keep up with her in sailing. Also, when she moves with her stern foremost.

To fall calm, the total cessation of the wind.

To fall in with, to meet a vessel at sea or in any port.

To fall off, the motion of a vessel's head, when it *falls* to leeward of the point she lately headed for.

Falling-home. In ship building, applied to the upper part of the top-side, when it is much within a perpendicular. This is also termed *tumbling-in*.

FALSE-FIRE. A combustible composition, used in vessels of war, in making night signals.

- FALSE-KEEL.** Pieces of timber secured under the main keel of vessels.
- FASHION PIECES.** In ship building, are the aftermost timbers of a vessel, which terminate the breadth, and form the shape of the stern.
- FASTS.** Are ropes used to secure a vessel to a wharf, as the *breast, bow, quarter, and stern fasts.*
- To fasten, or make fast,* to tie a rope, and make it secure, by any bend or knot.
- Keep fast,* an order often given, to imply that a previous order given is not to be executed; for instance, the officer orders *Ready about!* and while the men are taking their stations the wind hauls, rendering the evolution unnecessary; he then orders "*keep fast.*"
- FATHOM.** A measure of six feet, or 72 inches. The length of cables, ropes, &c., and the depth of water are estimated by fathoms; "*a cable of 120 fathoms,*" "*we anchored in 16 fathoms.*"
- FAY.** To fit together two pieces of wood, so as to join closely.
- FEATHER-EDGED.** Applied to planks which have one side thicker than the other.
- FEND.** *To fend off,* to prevent from coming in contact. See *Bear off.*
- Fenders,* pieces of cable, timber, or other material, hung over the side of a vessel, to prevent her rubbing against a wharf or other vessel.
- Boat-fenders,* made of canvas and stuffed, are slung with a lanyard inside of the boat, and thrown over the side when approaching a wharf or vessel.
- FETCH.** To attain; as, "*We will fetch to windward of that point.*"
- To slacken,* applied to a rope, or to a cask, when not sufficiently wedged; to a mast when loose in its partners. To any thing

which breaks loose from its fastenings. They are said to "*fetch away*," or "*fetch-way*."

FID. A block of wood or iron, to support the topmast and topgallant masts, being passed through the *fid-hole* at its heel, and resting on the tressle-trees.

Splicing-fid, a wooden pin tapered at one end, used for splicing ropes of the larger kind. When made of iron, they are termed *marling-spikes*.

FIELD. See *Vent*.

FIVE-RAILS. See *Rails*.

FIGURE. *Figure-head*, an ornamental piece of carved work at the head, over the cut-water of a vessel.

FILL. To brace the yards, so that the wind will act upon the after surface of the sails.

Fill away, the act of filling the sails, from being braced aback, or counter-braced.

FILLINGS. In ship-building, are pieces of timber used to make the curve fair for the mouldings, between the edges of the fish-front and the sides of the mast.

Filling-hole (in Gunnery), of a shell, is that through which the charge of powder is poured into it.

FILLERS. See *Made-mast*.

FINISHING. The lower and upper finishings, in ship-building are carved ornaments of the quarter gallery, below the second counter, and above the upper lights.

FIRE. An order to discharge the cannon.

Fire-men, are those appointed to proceed to the place of a fire and extinguish it.

Fire-works, artificial fires, made of combustible and inflammable materials, used in vessels of war for night signals.

FISH. A purchase, composed of the fish-davit, pendant and hook, and a tackle; used to rouse the flukes of the anchor up to the gunwale. See paragraph 366.

Fish-front, or *Paunch*, a long piece of timber, made to fit on a

- mast lengthwise, used to strengthen the mast when sprung or damaged. See *Made-masts*.
- Fishes-side*, two long pieces of timber, coaked on the opposite sides of made-masts, to give it the diameter required. See *Made-masts*.
- Fore and after fishes*. See *Made-masts*.
- FIT-OUT.** To *fit out* a vessel is to prepare her for sea service.
- FLAG.** See *Colors, Ensign, &c.*
- To *hang out* or *heave out* a flag, is to display it from any part of the vessel.
- To *lower* or *strike* a flag, to lower it down, or take it in, in token of respect as a salutation; or in an engagement as a token of submission, or yielding.
- Flag Officer.* The highest rank in the United States Navy; wearing the same flags, and having the same position, as admirals in other navies.
- FLARE.** *Flaring*, used in contradistinction to *falling home*. When a vessel's side *flares out* from a perpendicular.
- FLAT.** A level ground, lying at a small depth under the water.
- Flat-aft.* You haul the sheets of fore and aft sails *flat-aft*.
- Flat-aback*, the situation of the sails when aback; the after surface binding against the mast.
- To *flat-in*, or *flatten-in*, the head sheets, is to haul the clews of the sail in amid-ships, to pay off the head of the vessel.
- Flat-bottomed boats*, are those which are built to float in shallow water.
- Flats*, in ship-building, are the names of all the timbers in amid-ships.
- FLAW.** A sudden gust of wind.
- FLEET.** Applied to a tackle, is to change its situation by drawing asunder the blocks. See *Stopper and Fleet*.
- Fleet*, is also a number of vessels of war, or merchant ships, sailing together.
- FLEMISH-EYE.** See *Eye*.

Flemish-coil. See *Coil*.

FLOAT. A *float* is a raft formed of timbers, to float on the water, for various purposes.

To float, to be borne up, or be borne along, by the water.

FLOOD. The flux of the tide, when the water is rising. The commencement is called *young flood*.

FLOOKS. See *Flukes*.

FLOOR. The bottom of a vessel on each side of the keelson.

Floor-timbers, are those parts of the timbers of a vessel which are placed immediately across the keel.

FLOWING-SHEETS. The position of the lee clews of a sail when eased off. "*She is running down under flowing sheets.*"

FLUKES. The arms of an anchor. See Chapter VIII., paragraph 285.

FLURRY, of wind; a light breeze, variable, and causing a ruffle on the surface of the sea.

FLY, of a compass, is that part on which the points are marked.

Of a flag, is that part which extends from the union to the extreme end.

To let fly the sheets, tacks, &c.—to let them go suddenly and entirely.

Flying-sails, such as *royals*, *skysails*, &c., set as studding-sails.

FOOT, of a mast or sail, is its lower part or edge.

Foot-ropes, are used on yards, &c., for the men to stand on, in furling or reefing the sails, 151, 173. Also that part of the bolt-rope to which the foot of the sail is sewed.

Foot-waling, the inside planks or lining of a vessel, over the floor-timbers.

FORE. In opposition to *aft*; used to distinguish any thing in the forward part of a vessel; as, the *fore-mast*, the *fore-hatch*, *fore-sail*.

Fore and aft. See *Aft*.

Fore and afters. Schooners or other vessels, which are impelled wholly by fore and aft sails.

Fore-castle, that part of the upper or spar deck which is situated forward of the after part of the fore channels. When the fore-castle is covered by a short deck, reaching aft to the foremast, raised above the spar deck, it is termed *top-gallant fore-castle*.

Fore-castlemen, are those of the crew who are stationed in this part of the vessel.

Fore-foot, a piece of timber which terminates the keel at the fore end, connecting it with the lower end of the stem.

Fore-ganger, a short piece of rope grafted on a harpoon, to which a line is attached when used.

Fore-hooks. See *Breast-hooks*.

Forelock, a flat piece of iron, driven through an iron bolt to secure its end, and prevent its drawing.

Fore-mast, the forward mast in all vessels.

Fore-reach, to advance upon, or gain ground upon, any vessel.

Fore-runner, of a log-line, is a piece of bunting or white rag, terminating the stray line.

Fore-topmen, are those of the crew who are stationed aloft in the foretop, and on the yards above, in shortening and making sail.

FORGE. *To forge ahead*, applied variously; as, a vessel *forges ahead* in coming to anchor, after the sails are clewed up, or she *forges ahead* of another vessel in outsailing her.

FORM (in Naval Tactics). To form a squadron or fleet into any one of the prescribed *orders*. If, however, the fleet is already *in order*, and it is required to form another, it *changes* to that order.

FORMERS, made of wood, fitted to the bore of a gun, by which cartridges are formed to the proper size.

Also formers, for making wads by.

FORWARD. In contradistinction to *after*, or *abaft*; as, "*the forward part of the fore-top*."

FOTHER, or *Fodder*, the attempt to stop a leak in the bottom of a vessel, while she is afloat, at anchor, or under sail. By letting down a sail under her bottom, fastened at the four corners; then placing a quantity of chopped ropeyarn, oakum,

cotton, wool, &c., between it and the bottom, which by being sucked into the leak, may stop it.

FOUL. In opposition to clear; as, "*Such a vessel ran a-foul of us.*" *The anchor is foul*, when the cable is twined around its shank and fluke. The bottom of a vessel is *foul*, when covered with grass, &c.

Foul-hawse, is when the cables, without the hawse-holes, are twisted around each other. See *Clearing Hawse*, Chapter XXVI. *Foul wind*, and *foul weather*, is when the wind is unfavorable, or the weather unpleasant.

FOUNDER. A vessel founders, when, on account of a leak, or a sea breaking over her, she fills with water and sinks.

FOX. A small strand of rope, formed by twisting several rope-yarns together. *Foxes* are used as seizings, or to make mats with. *A Spanish-fox*, a single rope-yarn untwisted and then twisted up the contrary way and rubbed smooth; used for seizings.

FRAME. Several pieces of timber united.

FRAP. To cross or draw together. You *frap* a tackle by drawing the several parts of the fall together, and seizing them to prevent them from rendering.

You *frap a vessel*, by passing cables or hawsers around her, to support her in a storm, if she is old and weak.

FREE. To free a vessel, is to pump the water out of her.

To sail free, having the wind at any point, abaft that which would require the yards to be braced up sharp for the vessel's course.

FREIGHT. The price paid for the conveyance of goods from one place to another.

Freight also is applied to the burthen or lading of a vessel.

FRESH. *Fresh-way*, the increased velocity of a vessel.

Fresh-wind, a strong wind, not amounting to a gale.

FRESHEN. To relieve. *To freshen the hawse*, is to relieve that part of the cable which has been some time exposed to friction or chafe at the hawse-holes, by renewing the service around the cable.

To *freshen the nip*, of any rope, is to guard it against chafe, in that part where a nip is formed, by service.

The *wind freshens*, when it increases; and a vessel *freshens* her headway when she increases her speed.

FRIGATE. A vessel of war, having batteries on two decks, viz.: the spar deck, and the next below it, or main deck, on which is the principal force. The next deck below being the berth-deck.

Frigate-built. Some vessels of war of only the force of corvettes, are built with a spar deck over that on which the guns are mounted.

FULL AND BY. Sailing close-hauled, having the sails all *full*, and lying as near to the wind as possible, 639.

FURL. To wrap or roll a sail up to its yard, boom, or gaff, and secure it there by passing its gaskets or furling-lines around it.

Furling in-a-body, gathering the body of the sail, or as much of it as possible, in at the slings of the yard in furling, thereby giving the yard-arms a lighter appearance.

Furling-lines, are those which are wound spirally around a sail and its yard in furling, commencing at the yard-arm and winding in toward the slings.

FUTTOCKS. The middle division of a vessel's timbers, or those parts which are situated between the floor and the top-timbers. Those next the keel are called the *ground futtocks*.

Futtock-plates, made to contain the *dead-eyes* of the topmast rigging, and to hook the futtock rigging to.

Futtock-shrouds. See paragraph 95.

Futtock-staves, a piece of rope, wood, or iron, served over with spun-yarn, or leathered, to which the shrouds are secured at the cat-harpings. The cat-harping legs being seized around the staves and shroud.

FUZE (in Gunnery), for a shell, is composed of the fuze-stock, the composition with which it is filled, and the quick match.

“The fuze-stock, which is made of wood, and of sufficient length to reach to the bottom of the cavity opposite the fuse-

hole, is filled with the composition, of which the chief ingredient is mealed powder. A gimlet hole is then bored through the side of the stock, near its lower extremity, or distant from it, according as the shell is intended to accomplish a longer or shorter distance before exploding. The filling ignites (by means of the quick match) on the discharge of the gun, and the fire communicates (through the gimlet hole) with the charge in the shell, and causes it to explode."—*Ward's Ordnance and Gunnery.*

Fuze-plate, an iron plate, perforated with several holes, secured over the fuze after being driven into the shell.—*Ward.*

G.

GAFF. A boom or yard, to which the head of spankers, spencers, and the principal sails of schooners, are bent. The inner end being formed, by cheeks on each side of it, into a semi-circle, which encloses the after part of the mast. From this to its outer end, or *peak*, it decreases in size. The inner end is termed the *jaws*.

Gaff-topsail, a light sail set over a gaff, the head hoisting up to the topmast head, and the clew hauled out to the gaff end. Used chiefly over the mainsail of schooners, sloops, and cutters, and sometimes over the spanker of ships.

GAUGE (in Naval Tactics). A vessel or fleet has the *weather or lee gauge* of an enemy, as they are to windward or to leeward. As fleets generally engage in line of battle, close-hauled, or nearly so, one force must be to windward of the other, or have the *weather gauge*, the other force having the *lee gauge*.

Gauge, is also a measurement taken by a rule or compass.

GAIN. To *gain the wind* of a vessel, is to gain the *weather-gauge*.

GALE. A gale of wind, is a storm—the wind blowing violently. The most violent gales are termed *tempests*.

Equinoctial gales, are those which take place about the time the sun crosses the equinoctial line.

GALLED. The state of a mast, yard, or rope, when its surface is damaged by chafe or friction.

GALLERY. A balcony projecting from the stern or quarter of a vessel—hence termed *stern* or *quarter galleries*.

GALLEY. That place in vessels of war where the provisions of the officers and crew are cooked, applied to the machine in which they are cooked.

GALLOWS-BITS. A strong frame on deck between the fore and main hatches, to support the spare masts and spars in port.

GAMMONING. See *Rigging Bowsprit*, 37 to 41 inclusive.

GANG. A number of the crew selected for any purpose or service; termed a "*gang of hands*."

Gang-boards, planks placed within or without the bulwarks of the waist, for the sentinel to walk or stand on.

Gang-way, that part of a vessel where persons enter or depart from the vessel.

Also that part of the vessel on the spar deck, on either side of the booms, extending from the quarter deck to the forecastle. This is more properly termed the *waist*.

Also applied to any passage-way, in any part of a vessel.

To *bring to the gangway*. Punishments being generally inflicted in the waist or at the gangway, the men there punished are said to be "*brought to the gangway*."

GANT-LINE, or *Girt-Line*, a rope rove through blocks on the yard-arms, extending fore and aft the vessel, on each side, from the jib-boom end to the spanker-boom end, to stop the hammocks to, after being scrubbed, for drying. Sometimes the leading blocks are under the cat-harpings, instead of at the yard-arms. Termed *hammock-gantlines*.

GARBOARD-STREAK (in Ship-building). Is the first range or streak of planks laid upon a vessel's bottom next to the keel, throughout the whole length of the floor.

GARLAND. A sort of bag of net-work, the mouth extended by a hoop, in which sailors keep provisions in their mess, or elsewhere.

Shot-garland, or *shot-rack*, a piece of timber, having hemispherical cavities in it, to contain shot—they are nailed horizontally between the guns on the ship's side, or around the coamings of the hatches.

Garland—for getting in masts; a gromet of rope lashed on the mast, to hook the purchase to. See *Rigging*, 23.

GARNET. A purchase used on the mainstay of a merchant vessel, to hoist the cargo in or out.

Clew-garnet. See *Clew*.

GASKET. A plaited cord, flat, and tapering at one end—the largest end is secured to the yards, at equal distances from the bunt, out; they are used to secure the sail to the yard when furled.

Bunt-gasket, is that which supports the bunt of the sail, and is consequently the strongest. It is usually made of several parts, forming a kind of net-work to enclose the whole bunt.

Quarter-gaskets, are those which are bound around the sail at the quarter of the yard.

Yard-arm gaskets, are those which are used at the yard-arms.

GATES, of a dock, thick double doors hung at the entrance, to open and shut—to admit vessels—confine or exclude the water.

GATHER. *Gather aft the head sheets*, is to haul in the slack of them. Used also thus, "*gather in the slack*" of a rope.

To gather way—headway or stern-board—is to commence moving ahead or astern; applied to a vessel.

GAUB-ROPE. See *Rope*. See paragraph 131.

GEAR. A term applied to any number of ropes used in the management of any particular sail or sails; "*The studding-sail gear*," "*The top-gallant gear*," &c.

Of a gun—all the ropes used in the working and securing a gun.

Also applied to the arrangement of some material other than rope; as,

Pump-gear, which comprehends all the movable frame-work which is used in pumping out a vessel.

GEARS. More properly Jears. See *Jears*.

GINS. See paragraph 110, 110 *a*.

GIRT. The situation of a vessel moored with her cables too taut.

Girt-line, a rope rove through a single block at the head of lower masts, to hoist up the rigging by, in rigging ship. See paragraphs 15, 27, 55, 56.

GIVE-WAY. An order given to a boat's crew to increase their exertions at the oars, or to commence pulling.

To give way together, to keep time in rowing.

To give chase, to pursue. "*We gave chase to the enemy.*"

GLASS. *Hour, half-hour, and minute glasses*, used to measure time, in regulating the watches, and heaving the log on board of vessels.

Night-glasses, telescopes used at night.

To flog or sweat the glass, to turn it before the sand has run out, thus gaining some minutes on each half hour. A dishonorable expedient for shortening a watch.

GLUT. A piece of canvas about a foot square, with an eyelet hole worked in its centre; placed in the doublings in the middle of a square sail, through which a becket is passed to hook the bunt-jigger to. See paragraphs 382, 388.

GOONGEONS, or *Braces* (pro. *Gudgeons*). Clamps of iron or other metal secured to the stern posts of vessels, to receive the *pintles* of the rudder, forming the hinge on which the rudder turns.

GOOSE-NECK. An iron hook fitted on the extremity of the yards, or end of a boom or gaff, for various purposes.

GOOSE-WINGS. The clews, or lower corners, of a fore-sail or main-sail, when the centre or body of the sail is furled. See *Goose-wing of foresail*, 604 to 606.

GORES. In sail-making, the angles at one or both ends of such cloths as widen or increase the depth of the sail.

Goring-cloths, are those which are cut obliquely, and add to the breadth of a sail.

GRAFTING. A peculiar manner of weaving a matting, as a cover, with several yarns alternately missed, as the filling is passed across.

GRAPE-SHOT. A number of small shot enclosed in a canvas covering, and corded strongly together in the form of a cone, the base being of a diameter equal to the ball of a cannon.

GRAPLINE, or GRAPNEL (PRO. *Grappel*). A small anchor with several flukes or claws, used to secure boats.

Grappling-irons, are instruments somewhat resembling the former; but having different flukes; used to grapple with an adversary's vessel, and for other purposes.

Buoy-grapplings, are used to catch the buoy in getting under way.

GRATINGS. Open lattice-work coverings for hatches, to give air and light below, and strong enough to support a great weight.

GRENADE. A light shell or bomb charged with powder, and thrown, from the tops, on the decks of an enemy. They are termed *Hand-Grenades*.

GRIPE. See *Fore-foot*.

The *gripe of a vessel*, is the compass or sharpness of her stern under the water, having a tendency to make her keep a good wind.

A vessel is said to *gripe* when she is inclined to fly up into the wind, particularly when sailing free.

GRIPES. An assemblage of ropes, hooks, and dead-eyes, used to secure the boats with, to prevent them from fetching-way by the motion of the vessel.

GROMMET. A ring formed of a rope, used for various purposes. See *Cringles, Hanks, Bolsters*, etc.

GROMMET. See *Wad*.

GROUND. To *ground a vessel*, is to lay her so as to rest on the ground.

Aground, the situation of a vessel—used in contradistinction to *Afloat*.

Ground. See *Holding*.

Ground-tackle, a general term applied to all that which is necessary to securing a vessel at anchor, viz.—cables, stoppers, hawsers, bowlines, warps, buoy-ropes, &c.

Ground-tier, the first or lower tier of casks, or other articles in the vessel's hold.

Ground-tow, in rope-making, is the loose hemp that comes from the sides of the hatchelers and spinners.

Ground-ways, large pieces of timber laid across the slip or dock, for the blocks to rest upon.

GROWING. Leading—sometimes applied to the cable, as “*the cable grows (leads) out on the starboard bow.*”

GUARD. *Guard-boats*, are those employed in rowing around vessels, for various purposes.

Guard-irons, are bars of iron placed over any ornamental work, to protect it from injury.

GUDGEONS. See *Goodgeons*.

GUESS-ROPE, or *Guest-rope*. See *Rope*.

GUN. A comprehensive term, including most fire-arms. Used in the navy as synonymous with cannon.

Great-guns, those constituting the batteries of a vessel of war—used in contradistinction to *small-arms*.

GUN-BOAT. “A large boat fitted to carry a gun in the bow or amidships.” At the present time, however, a gunboat is a much more formidable vessel, mounting many guns and of heavy calibre, more formidable than the smaller corvettes were a few years since.

GUNNER. In the navy, a warrant officer, having charge of all the ordnance of the vessel.

GUNNERY. “The drill of the *personnel* attached to a gun, and its skillful and most effective use in all military service, where it can possibly be required.”—“*Ward.*”

Gunner's-mate, a petty officer to assist the gunner in his duties.

Gunner's-crew, the quarter-gunners (petty officers) of a vessel, who, under the directions of the gunner, attend to the guns of the different divisions.

GUN-ROOM, or *Ward-room*. The latter used in the United States vessels of war. The apartment occupied as a mess-room by the commissioned officers.

GUN-SHOT. The distance of the point-blank range of a cannon-shot. “*We anchored within gun-shot of a fort.*”

GUN-TACKLE. A gun-tackle purchase. See *Tackle*.

GUNWALE. (Pro. Gunnel.) Of a boat or vessel, is the upper works of the hull.

GUST. A sudden and violent squall of wind.

GUY. A rope attached to any article to steady it, or bear it clear, in hoisting or lowering.

Forward, and *after-guys*, are those by which the lower studding-sail booms are managed, in getting them out or in, and by which they are steadied when out.

Shear-head, and *belly-guys*. See paragraph 15.

GYBE. To shift over the boom of a fore and aft sail, from one quarter to the other, with the wind aft or quartering.

H.

HAG'S TEETH. Those parts of *matting*, *pointing* &c., which are interwoven with the rest in an irregular manner, spoiling the uniformity of the work.

HAIL. To *hail* a vessel, fort, &c., is to accost, to call their attention. To *hail* the men aloft, for the same purpose, gene-

rally done through a speaking trumpet, as "*Hoa! the ship ahoy! Fore-topsail yard there!*"

HALF-BOARD. See Paragraph 617 *a* in working to windward.

HALF-PORTS. Are shutters to close the ports, having a semi-circular hole in each, the upper and lower, which, when closed, fit around the gun.

HALYARDS, or HAULYARDS. Tackles or ropes used to hoist or lower sails by.

HAMMOCK. A piece of canvass, slung at both ends with clews, in which sailors sleep. They are stowed in the hammock-nettings during the day, being snugly lashed around the bedding. They thus form a good barricade against the musketry of the enemy—are useful also in choking a gun that has broken adrift from its fastenings in a gale.

HAND. Differently applied, as *to hand a sail*, is to furl it. A *hand*, means a person or man, as "*A hand in the chains,*" "*Clap on more hands.*"

Bear a hand, is to make haste.

Hand-grenade. See *Grenade*.

Hand lead, the smaller leads for soundings, used by a man in the chains. See *Sounding*, Chapter XXIII.

Hand over hand, to pull upon a rope by passing one hand over the other alternately, particularly in hoisting. A sailor goes *hand over hand* when he climbs up a rope by throwing one hand over the other, and raising his body thus by the strength of his arms. Applied also to *coming up* with another vessel, thus, "*We overhaul her hand over hand.*"

HAND-SPIKE. A wooden bar armed with iron claws, used at the guns in raising and depressing the breech.

Hand-spikes, made differently, are also used as levers at a windlass, in heaving up an anchor.

HANDSOMELY. Steadily, carefully, as "*Lower away handsomely.*"

HAND-TIGHT. Such a degree of tension as can be applied to a rope or tackle by hand.

HANG. A mast is said to hang when it inclines.

Hang-fire, applied to a gun when the flame does not immediately communicate with the charge.

To hang on, to hold fast.

HANKS. Wooden rings fixed upon stays, to confine the sails thereto, when hoisted; sometimes made of rope, (see *Grommets*,) or of iron, (see *Rings*.)

HARD. *Hard a-lee!* *Hard a-port!* *Hard a-starboard!* are orders given to the helmsman.

Hard a-wetaher! or *Hard-up!* in opposition to *hard a-lee!*

HARD WAD. See *Wad*.

HARPINGS. In ship-building, the fore part of the wales, which encompass the bow of a vessel, and are fastened to the stem.

Cat-harpings. See *Cat*.

HARPOON. A spear used in striking whales and other fish.

HATCH, or HATCHWAY. An opening in the deck, to afford a passage up and down.

The *after*, *forward*, or *main-hatchway*, used to distinguish the hatches from each other.

Hatches, are also coverings placed over the hatchways.

Hatch-bars, are bars of iron or wood, to confine the covering on the hatches.

HAUL. To pull on a rope, as, *Haul in!* *Haul aft!* *Haul together!* *Haul taut!*

Let go and haul! *Haul of all!* See orders in *Tacking*.

Main-sail haul! *Main-topsail haul!* See *Tacking*.

A haul of yarn, a number of rope-yarns hauled out together, and ready to be laid up into a strand.

Close-hauled. See paragraph 574.

Haul the wind! *Haul up!* To bring the vessel's head nearer to the wind. Thus:—If a vessel is standing with the wind directly aft, by altering her course either way you *haul up*, on either tack, as the case may be; and if you continue to

bring her head nearer to the wind, on the same tack, from any point having the wind free to a close hauled course, you then *haul the wind*, or *haul by the wind*.

HAWSE. The situation of the cables before a vessel's stem, when moored with two anchors. See *Clearing Hawse*, 788 to 802.

It also applies, in some cases, to a little distance ahead of the vessel, as "*Such a ship has anchored in our hawse*," or "*athwart our hawse*."

Hawse-rope, used in clearing hawse.

A bold-hawse, applied to a vessel having her hawse-holes high.

Fresh hawse. See *Fresh*.

To ride hawse-full, when a vessel, in violent pitching, takes much water in the hawse-holes.

Hawse-bags, made of canvass, and stuffed with oakum, used to stop the hawse-holes at sea.

Hawse-holes are cylindrical holes cut in the bows of a vessel, on each side of the stem, through which the cables are pointed.

Hawse-pieces, thin pieces of timber in the bow frame of a vessel, next to the knight-heads, through which the hawse-holes are cut.

Hawse plugs, made of wood, to fit into the hawse-holes at sea.

HAWSER. A large rope used for various purposes on ship-board; as, to warp with for mooring, to form springs on the cable, &c. See *Table of Allowances*, page 109.

HAZY. The state of the weather, the atmosphere being thick, though not as damp as in foggy weather.

HEAD. An ornamental *figure-head*, terminates the stem of a vessel, forming a continuation of it.

Head, or *a-head*, means forward—"one vessel ahead of another," *head-yards*, *head-sails*, *head-way*, *head-sea*, &c.

Head, also applies to that part of a vessel of war which is par-

tioned over the bows, on each side of the stem, for the convenience of the sailors.

By the head, the state of a vessel when she is trimmed deeper forward than aft.

Head of a mast, the upper part of it when stepped, or that part of it on which the cap is fitted.

Head-fast, the rope employed to secure the head of a vessel or boat, to a wharf or other vessel.

Head-land, a name frequently applied to high capes or promontories.

Head ledges, in ship-building, are the thwart-ship pieces that frame the hatchways, or ladder ways.

Head-lines. See *Line*.

Headmost, the situation of a vessel further advanced than another, as "*the headmost vessel of the fleet*."

Head-rails, in ship-building, are the elliptical rails at the head of the vessel.

Head-reach. The distance gained to windward in stays. See paragraphs 576, 595, 617 *a*. In tacking, as a vessel comes head to wind, by the action of the helm, when the after sails spill and are taken aback, having lost their propelling power, those on the foremast tend to force the head of the vessel past the course of the wind, and at the same time to deaden the head-way; at this point the vessel will, before losing her head-way, hang directly to windward, which *head-reach* will be in proportion to the speed of the vessel before the evolution commenced. Fore and aft vessels will head-reach more, in proportion, than square-rigged ones, for the reason that none of the sails are thrown aback until after she has passed the course of the wind. A fast, good-working vessel will, if well managed, never entirely lose its head-way in stays; but will continue to *head-reach* until, by the action of the helm, she is brought around to receive the impetus given to the sails braced for the other tack.

Head-rope, that part of the *bolt-rope* which is sewed to the upper edge or head of the principal sails.

Head-sails, the general name for all those sails set forward of the foremast.

Head-sea, those waves which meet the head of the vessel in her course.

Head-stick, a short round stick, having a hole at each end, through which the head-rope of some triangular sails are thrust, before it is sewed on. It prevents the head of the sail from twisting.

Head-to-wind, the situation of a vessel, having her head to that point from which the wind blows.

Head-way, the motion of a vessel advancing through the water head foremost.

HEART. See *Blocks*.

HEAVE. To *throw*—as, to *heave* any thing overboard. To *heave* the lead to get soundings.

To *force*, as, to *heave* around the capstan—*heave-up* the anchor.

To *heave-ahead*, is to force a vessel ahead by any means, when not under sail.

To *show*, as, to *heave* out a flag.

Heave and away, implies that the next effort will dislodge the anchor from its hold in the ground.

Heave and pawl, is to turn the capstan until the pawl, which is down, shall take, and prevent the capstan from receding.

Heave and rally! or *Heave cheerly!* a cheering order given to the men at the capstan to exert themselves.

To *heave down*. See *Careening*.

To *heave in stays*, to put a vessel *about* by tacking.

To *heave-out the stay sails*, to loose them and throw them out from the top, or wherever they may have been confined—to set or dry them.

To *heave short*, to heave in the cable, until the vessel is nearly over the anchor.

To *heave taut*, to heave in a cable or other rope, until there is a strain upon it.

Heave to. See Chapter XX. To lessen, or entirely stop, the head-way of a vessel, by counter-bracing the yards; arranging them in such a manner that some of the sails will be acted upon by the wind on their after surfaces, and others on their forward—the former tending to force the vessel ahead, and the latter to force her astern. In most cases a vessel will range ahead a little, which is desirable, as she is the more readily managed by the helm. See *Bring to*, *Lie to*.

HEAVER. A wooden or iron bar, used as a lever on many occasions.

HEAVY. *Heavy metal*; guns of a large calibre. “*She carries heavy metal.*”

Heavy sea, strong and high waves, as “*heavy head-sea.*”

HEEL. The after end of a vessel's keel, or the lower end of a mast, or of the *stern-post*.

To *heel*, applied to a vessel when she stoops or inclines on either side, as “*She heels to port, or starboard.*”

It is also applied to the advantage, in speed, of one vessel over another, as “*Such a vessel has the heels of another.*”

Heeling, in mast-making, is the square part in the lower end of topmasts and topgallant-masts, through which is the fid-hole.

HELM. All that machinery, as the rudder, the tiller, and wheel, with their appendages, by which the vessel is directed or governed in her course.

The several phrases used in giving orders to the helmsman, are, *down with the helm*, *ease the helm*, *bear up the helm*, *put the helm amidships*, *a-port*, *a-starboard*, *a-lee*, *a-weather*, or *right the helm*, *meet her with the helm*, all having reference to the motion of the tiller.

Helm-port, in ship-building, is the hole in the counter, through which the head of the rudder passes.

Helm-port-transom, is that piece of timber placed across the

lower counter, within side, at the height of the *helm-port*, and bolted through every timber for the security of that port.

Helmsman, is the person who, for the time, has the management of the helm. A *bad* or *good helmsman* are terms applied to those who are negligent or attentive, incapable or dexterous, in steering a vessel.

HIGH-AND-DRY. The situation of a vessel which is aground, and above the reach of the water at low tide.

HIGH-WATER. The state of the flood at its highest.

HITCH. A knot by which one rope is fastened to another, or to any mast or spar.

A *black-wall-hitch*, is formed by putting the bight of a rope over the hook of a tackle, so that the two parts may cross, and the standing part jamb the other. This is used with the lanyards of the rigging.

A *half-hitch*, is formed by taking one part of a rope around the other, and bringing the end through the bight—this may be secured by a seizing around the two parts, or by another half-hitch.

A *magnus hitch*, is formed by taking two turns with a rope around a spar, then passing the end around on the other side of the standing part, then around the spar, and passing the end through the last turn, by which it is jambed.

A *midshipman's hitch*, is formed by taking a half-hitch with the end of a rope around its standing part, then taking another turn around the same bight, and jamming it between the parts of the hitch; the end may then be taken around the standing part and stopped. Used in applying the tail of a purchase to a rope.

A *rolling hitch*, is formed by taking two round turns with a rope around a spar, and then taking two half-hitches with the end around the standing part, and the end stopped to it.

A *timber hitch*, is formed by taking the end of a rope around

a spar, then passing it over and under the standing part, and then twice around the bight, the end leading out in an opposite direction.

A clove-hitch, is formed by two half-hitches.

HOAY. An exclamation, to call attention; as, "*Ship-hoay!*"

HOG. A scrubbing-broom, flat and rough, for scrubbing the bottom of a vessel. A *hog* for this purpose may be made of an old grating, by firmly securing brush in its holes, so as to form a rough surface. Then, by having guys attached to it, leading through tail-blocks at the bowsprit and stern davits, and at the lower yard-arms, on each or either side, this hog may be so worked as to scrape off all the matter which may be adhering to the bottom of the vessel.

To hog a vessel, is to scrub her bottom with hogs.

Hogged, the state of a vessel when, by any strain, she is made to droop at both ends.

HOIST. The hoist of a sail or flag is its perpendicular height; applied to staysails or head-sails, it means the foremost leeches.

To hoist, is to draw up a body, or sail, by means of a purchase, as yard-tackles or halyards.

HOLD. The interior of a vessel, where are stowed the provisions, water, cargo, &c., &c.

The *fore*, *main*, or *after hold*, are terms to designate that part of the hold where certain articles are stowed.

To trim, or *stow the hold*, is to arrange or stow the articles therein in the most secure and advantageous manner. See Chapter XII.

Hold, is also variously applied; as, "*Such a vessel holds a good wind;*" "*keeps a good hold of the land;*" "*holds her own,*" &c.

To hold on, to keep a rope from running by confining it. Also often used for *avast*.

Hold-water, in rowing, is to stop the progress of a boat through

the water, by holding the blades of the oars in the water, and bearing back against the oars.

Holding-ground. Certain harbors are said to have good *holding-ground*, when the bottom is such that the anchor buries itself in a soft sticky mud, and would not be as readily moved, in heaving up, or by a heavy wind causing a great strain on the cable, as would be the case on a hard sandy bottom.

Holders, are those men stationed in the hold, to stow away the articles therein, or to break-out for any thing wanted.

HOLLOA! An exclamation used in answer to a hail.

HOLY-STONE. A stone used on ship-board to clean the decks, by rubbing it over them, after being sprinkled with water and sand. They have lanyards attached to each end, by which they are worked by several men on each.

Hand holy-stone, is a similar one used by one man, who kneels on the deck while using it, for those parts of the deck where the large holy-stone cannot be used.

To dry-holy-stone the decks, is to perform the operation without the use of water; only practised on the lower decks in damp weather.

HOME. The sheets of a sail are said to be *home*, when the clews are hauled, by them, close out to the sheave-holes.

An anchor *comes home*, when it is loosened from its hold in the ground.

A cartridge is *home*, when it is rammed close into the chamber, or extremity of the bore.

Home-ward bound, vessels returning from a voyage or cruise to their country, or the place from whence they last sailed.

HONEY-COMB. A flaw or cavity in the bore of a piece of ordnance.

HOOD. A covering for a companion hatch.

HOODING-ENDS. In ship-building, are those ends of the planks which fit into the rabbets of the stem and stern posts.

HOOK. A crooked piece of iron, of different sizes and for differ-

ent purposes; as, *boat-hooks* (see *Boat*), *can-hooks* (see *Can*), *cat-hooks* (see *Block*).

To hook-on, to apply the hook of a tackle to any object.

Hook and butt, the scarfing or laying the two ends of timbers over each other. See *Butt*.

Clasp-hooks have a hinge in the centre, and are keyed together.

HORIZON. The line which bounds our vision at sea, dividing the heavens and earth.

HORNS. The jaws or semicircular inner ends of booms or gaffs.

HORSE. A rope reaching from the slings of a yard to the yard-arm, and hanging under the yard, for the men to stand on; commonly called *foot-ropes*.

Flemish-horses, are those on the extremity of the yard, reaching in a few feet within the shoulder, 174.

Horse, also termed more properly *jack-stay*, is a rope extending perpendicularly forward or abaft a mast, for the purpose of hoisting some yard or sail on, used forward of the foremast in a schooner, to hoist the squaresail on.

HOUNDS. Of a mast, are those projections at the mast-head on both sides, serving as shoulders for the top or trestle-trees to rest on.

HOUSE. To house the guns, is to run them in clear of the port, drop the breech, lash the muzzle to the housing bolt over the port, and secure them snugly for a gale.

Housing or house line, (pro. *Houslin*.) A small line formed of three small strands (small rope-yarns); used for seizings.

HOY. A small vessel used in weighing anchors.

HUG. To keep close to, as "*to hug the land*," "*to hug the wind*."

HULK. An old vessel unfit for sea-service.

HULL. The body of a vessel exclusive of her masts, yards, sails and rigging.

To hull a vessel, is to strike her hull in cannonading.

Hull-down, is when a vessel is at such a distance, that only her masts and sails are visible above the horizon.

Hull-to. See *A-Hull*, and *Trying*.

HUMMOCK. A hillock or small eminence of land, on the sea coast of any country.

HUNG. See *Centre*. See *Quarter*.

HURRICANE. A violent tempest accompanied with lightning, most frequent between the tropics.

HUSBAND. *Ship's husband.* A term applied to a person who seldom leaves his vessel.

I.

ICE-BERGS. Large bodies of ice, floating about in the sea.

IDLERS. Those of the officers and crew, on board a vessel of war, who have constant day-duties, and keep no regular watch.

IMPRESS. To compel or force sea-faring men into the naval service.

IN. The sails of a vessel are *in* when not set, or when furled. *To take in* a sail, is to clew it up. In this sense it is used in opposition to *set*.

In. In reference to booms, is used in opposition to *out*, as *Rig in the studding-sail booms*, or *the flying-jib-boom*.

Also used in opposition to *out*; synonymously with *on*, as "Such a person or thing is *in-board* or *on-board*."

In-and-out. In ship-building, is a term sometimes used for the scantling of the timbers, the moulding way, and particularly for those bolts which are driven into the hanging and lodging knees, through the sides of the vessel, which are called *in-and-out bolts*.

In-and-out-jigger or tackle, is the distinguishing name of that small purchase, used to *rig-out* the studding-sail booms: and, by shifting the tackle, to *rig them in*. 492.

IN-HAULER, or more properly *heel-rope*, is that rope attached to

the heel or inner end of the jib-boom or flying-jib-boom, by which it is hauled in.

Any rope used for a similar purpose is termed an *in-hauler*.

INNER-POST. In ship-building, a piece brought on at the fore-side of the main-post, and generally continued as high as the wing-transom, to seat the other transoms upon.

INTERCHANGE (in Naval Tactics). See *Change*.

IRON-WORK. A general term given to all pieces of iron used in the construction or equipment of a vessel, as bolts, spikes, chain-plates, rudder-irons, &c.

J.

JACK. *Jack-block*, a block used in swaying up or striking top-gallant-masts.

Jack-cross-trees, iron cross-trees used instead of wooden ones, on pole top-gallant masts, 214.

Jack. A term often applied to sea-faring men.

Jack-of-the-dust. A term applied by sailors to the assistant of the purser's steward.

Jack-stays. Ropes set up taut along the yards, and secured thereto by staples, to which the sails are bent. See *Horse*, 149.

JACOB'S-LADDER. A neatly made ladder of rope, having cross-pieces of wood forming the steps, set up to the lower rigging above the hammock nettings, and to the deck, for the convenience of persons going aloft. See *Concluding Line*.

JAMB. A rope is *jamb*ed in its block, when it gets between the sheave and shell. Any rope is *jamb*ed, when its situation is such, from some accidental cause, that it is prevented from rendering freely.

JAWS. The inner ends of booms or gaffs (see *Horns*) made semicircular to traverse on a mast, as the spanker-boom or gaff of a ship.

Jaw-rope. See *Rope*.

JEARS. Purchases of tackles, by which the lower yards are hoisted up or lowered down. See *Gears*, 161, 162.

JETTY-HEAD. A name given to that part of a wharf which projects beyond the rest. But more properly to the front of a wharf whose side forms one of the cheeks of a dry-dock.

JEWEL-BLOCKS. See *Block*.

JIB. A triangular sail, set on a stay leading between the fore-top-mast-head and the end of the jib-boom.

Clear-away-the-jib! The order given to loose the jib, and get it ready for setting.

Flying-jib. The sail set next beyond the *jib*.

Jib-of-jib. The sail set next beyond the *flying-jib*.

Jib-boom. A boom rigged out, through the bowsprit cap, beyond the bowsprit.

Flying-jib-boom. Rigged out beyond the jib-boom, through a *withe* or boom-iron on the end of the jib-boom.

JIBE. See *Gybe*.

JIGGER. A small tackle consisting of a double and single block and the fall, used for various purposes, applied often on a top-sail-sheet to increase the purchase in hauling it home. See *In-and-out Jigger*.

To fleet-a-jigger. Having brought it *block-and-block*, to overhaul the fall, draw the blocks asunder, and attach the double block to the rope higher up.

JUNK. Condemned cable or rope, cut up, and used for the purpose of making mats, swabs, &c. &c.

Junk-wad. See *Wad*.

JURY-MAST. A temporary mast erected at sea to supply the place of a lost one, the most suitable spar at hand being used for the purpose.

Jury-Masts, are often erected in new vessels, to take them from one port to another on the same coast.

K.

KECKLING. Old ropes wound around cables, to preserve them from being chafed. See paragraph 338.

KEDGE. A small anchor, used to steady a vessel by; to warp ahead by, having hawsers attached to them; used as anchors for boats or smaller vessels. They have an iron stock. See *Table of complement*. Chapter VIII.

To kedge. The act of moving a vessel from one place to another, by means of warps and kedges.

KEEL. The principal timber in building a vessel. It is the first laid on the blocks, and supports and unites the whole fabric. It is composed of several pieces placed lengthwise, scarfed and bolted together.

The *false keel* is a strong piece of timber bolted below the keel. *Even-keel.* See *Even*.

To keel-haul. A barbarous punishment, formerly practised upon sailors in the naval service of England and Holland, by drawing the culprit under the bottom of the vessel, by ropes from the yard-arms on each side.

Keel-ropes, or more properly *limber-ropes.* See *Limber-ropes*.

KEELSON OR KELSON. The interior counterpart of the keel, a piece of timber laid immediately over the keel on the floor timbers.

KEEP. Used in many sea phrases; as, "*Keep a good full*" (see *Full-and-by*), "*Keep your luff*," "*Keep the land aboard*," &c. See *Fast*.

KEEPER. The *Boat-keeper*.

KENTLEDGE. Ballast in iron pigs, laid upon the floor on each side of the kelson. See Chapter XII.

KEVEL OR RANGE. A frame of wood having two arms, used for belaying large ropes to, as tacks and sheets.

Kevel-heads. The upper ends of *top-timbers*, used to belay ropes to.

KEY or QUAY. A wharf of stone, having posts and rings placed conveniently for securing vessels to, and having store-houses convenient for lading and discharging vessels.

Keys, are sunken rocks, lying near the surface of the water.

Keys. See *Fore-locks*.

KINK. A twist or turn in a cable or other rope, occasioned in laying up, or by being taken too hastily out of coil.

KNAVE-LINE. See *Line*.

KNEES. Crooked pieces of timber having two arms or branches; used, in ship-building, to connect the beams of a vessel with her sides or timbers.

Dagger knees, are those which are placed obliquely to avoid an adjacent port.

Knee of the head, placed forward of the stem, and supporting the ornamental *figure-head*.

Lodging-knees, are placed horizontally, having one arm bolted to a beam, and the other across two of the timbers.

Standard-knees, are vertical curves employed generally with the orlop-beams.

Transom-knees, are those which support the highest transom of a vessel's quarter, are bolted thereto and to the after timbers.

KNIGHT-HEADS or BOLLARD TIMBERS, are those timbers on each side of the vessel, nearest the stem, and continued high enough to form a support for the bowsprit.

KNITTLES or NITTLES (pro. *nettles*). A small line composed of two or three rope-yarns twisted together, used for seizings, or to form clews for hammocks.

KNOCK. *Knock off,* to cease, to desist; as, "*Knock off there.*"

KNOT. To tie ropes together; or a knob formed on the end of a rope. There are many kinds of knots; as, a *bowline knot*, formed by the end of a rope around another. A *diamond-knot*, a *buoy-rope-knot*, a *double-diamond*, an *over-hand* or

figure-of-eight, a *reef-knot*, a *sheep-shank-knot*, *stopper-knot*, *wall-knot*, *single-wall*, &c. Descriptions of the manner of forming the above would be useless without plates.

Knot, also means the divisions marked on the log-line, answering to sea miles. See *Marking Log-lines*, Chapter XXIII.

L.

LABOR. A vessel is said to *labor* violently, when she rolls or pitches heavily to the motion of the sea, thereby straining her masts and rigging.

LACING. A rope used to secure the head of a sail to its gaff, or the luff to its hanks or hoops. See 395.

Lacing, is also a piece of compass or knee timber, fayed to the back of the figure-head, and the knee of the head, and bolted to each.

LADDER. In various parts of a vessel, and differently termed, as *accommodation-ladder*, fitted to the side of a vessel, at the gangway, for the convenience of leaving or going on board.

Hatch-ladders, are those leading down the hatch-ways, from one deck to another; *fore*, *main*, *after*, &c.

Stern-ladders, are ladders of rope, suspended over the stern from each quarter.

Jacob's-ladder. See *Jacob*.

LADEN. The state of a vessel when loaded with cargo, or any weight, to the extent of her tonnage or capacity.

A vessel is *laden in bulk*, when her cargo is neither in bales, boxes, nor casks, but stowed loose.

LADLE. A copper instrument used to extract the shot from a gun, or to remove loose powder scattered from a torn cylinder.

Paying-ladle, a kind of iron spoon, used to pour melted pitch into the seams after being calked.

LAID-UP. A vessel is *laid-up* in ordinary when she is dismantled or unrigged, for the purpose of being placed securely out of employment.

The strands of a rope are *laid-up* together (or twisted), to form a larger rope.

LAND. *Land-fall*, the first land discovered after a voyage; a vessel is said to *make a good land-fall*, when the land made corresponds with the reckoning of the navigator.

Landlocked, surrounded by land; thus, a harbor is *land-locked* when the prospect of the sea is excluded from the anchorage.

Land-mark, any thing conspicuous on the land, by which vessels may be directed, or serving for bearings.

LANDING. See *Disembark*.

Landing-place, a place where boats may safely and conveniently land.

LANDSMAN. A grade of sailors, those who have not sufficient knowledge to perform the duties of seamen, or ordinary seamen.

LANTERNS, used in vessels of war, are of different kinds; as, *top-lanterns*, *signal-lanterns*, *store-room or lower-deck lanterns*, *magazine-lanterns*, *battle-lanterns*, &c.

LANYARDS. Pieces of rope attached to different articles on ship-board, by which they are secured; as, *port-lanyards*, *buoy-lanyards*, &c.

Lanyards, are also those ropes rove, as a purchase, through the dead-eye in the channels and shrouds, by which the rigging is set up. To reeve lanyards, see paragraph 78.

LARBOARD. See *Port*.

LARBOWLINES. A term used by sailors to designate the men who are of the larboard watch.

LARGE. Vessels are said to be *going large*, *sailing large*, or *running large*, when they are sailing with the wind free, and the sheets eased off. Paragraph 641 a.

LASH. To bind or secure with ropes.

To *pass a lashing*. To secure any thing, by passing several turns of rope around it, so as to secure it in its place.

LATCHINGS. Loops formed on the *head-ropes* of a bonnet, by which it is connected with the foot of the sail.

LATEEN-SAILS, are triangular sails, bent to yards and used in boats, feluccas, zebecs, &c.

LATERAL-AIM. See *Point*.

LAUNCH. See *Boats*.

To *launch*, to cause a vessel to leave the ways upon which she was built, and move into the water.

To *launch*, in fidding a mast, is to let go the mast-rope and let its weight rest upon the fid.

To *launch over-board*, applied to shooting a spar over the side, end foremost.

LAY. To *sail*; as, *to lay along the land*.

To *come*; as, "*Lay down from aloft*," "*Lay in off of the yard*."

To *go*; as, "*Lay aloft sail-loosers*," "*Lay out and furl*."

To *twist*; as, "*to lay up a rope*," "*a cable-laid rope*."

It has several other applications; such as *lay by* or *lay to*.

LEADER (in Naval Tactics). The leading vessel of a column or division.

Leaders. See *Leading-Blocks*.

LEADS (pro. *leds*). For sounding, are made in a pyramidal form, having a hole in the apex to attach the line to, and a cavity in the base for the arming. They are of different weights, from seven to one hundred pounds. See Chapter XXIII.

Hand-leads, are the lighter ones used by the leadsman in the chains, to get the soundings as a vessel enters or leaves a port.

The *deep-sea-lead*, is the heavier one, used in getting soundings when approaching the land in deep water.

To *heave the lead*, to seek for soundings by means of the lead.

See Chapter XXIII.

LEAD. To guide, or direct a rope, or to reeve it through a block.

Leading-wind, a free or fair wind.

LEAGUE. A measure of three miles.

LEAK. A breach in the side or bottom of a vessel, through which the water passes into her.

LEAKAGE. The quantity of water, or other liquid which escapes from a cask by a leak.

Leakage, is also an allowance of a certain per centage, allowed, by the customs, to importers of wine, etc., for probable waste or loss on the passage.

LEATHERING. Prepared or tanned leather fitted on the shrouds, stays, yards, &c. See *Fitting lower yards, &c.*

LEDGE, a ridge of rocks near the surface of the sea.

LEDGES. In ship-building, are small pieces of timber placed athwartship under the decks of a vessel, between the beams.

LEE. Used to distinguish that part of the horizon toward which the wind blows, in opposition to *weather*; used also to distinguish similar objects on different sides of a vessel, as, "*the lee hammocks*," in opposition to the *weather* ones; "*a lee shore*," "*lee side*."

Under-the-lee. One vessel is under the lee of another when she is further to leeward. A vessel is *under the lee of the land*, when her position is such that the land intercepts the wind, thereby diminishing its force, and affording her a comparatively smooth sea. A vessel lies more comfortably *under the lee of land* during a gale.

On a lee-shore, is the position of a vessel being near the land, the wind blowing directly upon it; a dangerous situation in heavy weather.

By-the-lee. See *Bring*.

Lee-board. A frame of plank made to fit to the sides of flat-bottomed vessels, which for the convenience of going up rivers, and into shoal water, are built of light draught; the *lee-board* being used only in deeper water, when *close-hauled*, that they may not drift to leeward.

Lee-gauge, in opposition to *weather-gauge*. See *Gauge*.

Lee-hatch, the motion of a vessel to leeward of her course; a term now not in use.

Lee-lurch, a sudden and violent roll, which a vessel often takes to leeward in a heavy sea; caused by being struck by a heavy sea on the weather side.

Lee-way, or *lee-ward-way*, is the lateral motion of a vessel to leeward of her course, or the angle which the line of her course or way makes with the direction of the keel.

LEECHES. The leeches of a sail are its borders or edges.

The *leeches of a square sail*, are those borders which terminate its width on each side.

The *leech of a fore-and-aft sail*, is its after border—the forward one being termed the *luff*.

Leech-lines. See *Line*.

Leech-rope, that part of the *bolt-rope*, which is sewed to the leech of a sail.

LEEFANGE. A bar of iron, upon which the sheets of fore-and-aft sails traverse in tacking.

Leefanges, are ropes rove through the cringles of sails to haul them in for the purpose of lacing on a bonnet.

LEEWARD (pro. *Leward*). That part of the horizon which lies under the lee of a vessel. "*The enemy is to leeward.*"

A *leeward tide*, is a tide running in the direction of the wind.

LEGS. Ropes branching out into two or more parts, as the *buntline legs*, the *crow-foot legs*, etc.

A vessel is said to have the *legs* of another, when she out-sails her.

LET. *Let-fall!* an order given to the men, or sail-loosers, on the yard, to release the sail, and let it drop.

To *let-in*, in ship-building, to fix a part of plank or timber into a vacancy, formed in another for the purpose.

To *let out* a reef, to untie the reef-points and earings, by which the sail was reefed.

LEVEL. To level the guns.

LIE. To *lie* along the land, to sail on a line parallel with it, keeping it in sight, or near. See *Along*.

To *lie to*, to heave to by counter-bracing the yard (see Chapter XX.), or to *lie to* in a gale (see Chapter XXI.)

LIEUTENANT. A commissioned officer, next lower in rank to a commander.

LIFT. The lifts are ropes leading from the yard-arms in to the head of the mast, to support the yards, or to raise one yard-arm higher than the other when required. They are sometimes double, leading through a block at the yard-arm; or single, fitted over the yard-arm. 155, 175.

Topping-lifts, are those used to suspend the outer ends of booms, as the spanker-boom, or lower steering sail boom, and by which they are topped up.

LIFTING, or setting up a vessel on a dock, is the act of resting her keel, as the water is pumped, or otherwise let out, on a number of wooden blocks, placed athwart on the bottom of the dock.

Lifting, is also a term applied to the sails of a vessel, when the wind strikes upon their leeches, thus causing them to shake.

LIGHT. Used in contradistinction to *laden*—thus, a vessel is *light*, or sets *light* upon the water, having no cargo.

To *light-along* a rope or cable, is to help it or move it along.

To *lighten* a vessel, is to discharge some part of her cargo or armament.

LIGHTER. A large boat, used to carry goods or stores from or to a vessel.

LIGHT-HOUSE. A tower or building erected to guide or direct mariners on their way, or to warn them of some rock or dangerous reef.

LIGHT-ROOM. An apartment next to the magazine, having between them a sufficient thickness of glass to prevent accident,

and at the same time to afford light in the latter, for the gunner to fill cartridges, &c.

LIGHT-SAILS. A term applied to those light-sails made of fine canvas which are only set in moderate or light winds, royal studding-sails, skysails, jib-of-jib, &c., &c.

LIMBERS, or *Limber-holes.* Holes cut through the lower part of the floor-timbers, next to the keelson, forming a passage fore and aft for the water, and communicating with the pump well. See Chapter XII.

Limber-boards, are those placed immediately over the limbers in the flooring, and may be removed if necessary to clear the limbers.

Limber-rope, a rope kept always rove fore and aft, through the limbers, by which they may be cleared of any dirt that chokes them.

Limber-streak, the streak of foot-waling nearest to the keelson.

LINE. The arrangement or order in which a fleet of vessels of war are disposed to engage an enemy.

Line Abreast. See *Abreast.*

Line of Battle. See *Battle.*

Lines of Bearing. See *Bearing.*

Line, is also the general appellation of many small ropes in a vessel, as

Bow-line (pro. *Bolin*). A rope attached to the leech of a sail and leading forward, to steady it when sailing by the wind.

Bow and Quarter-line. See *Bow and Quarter.*

Bunt-line, is a rope secured to cringles in the foot of a sail, and leading up forward of it, by which the body of the sail is hauled up in taking it in.

Checking-line. See paragraph 261 a.

Clew-line, a rope attached to the clew of a sail, by which it is hauled up in taking in.

Close Hauled-line. See *Close Hauled.*

Cod-line, a line of 18 threads, having 3 strands, and 6 threads to a strand; used in taking cod on the Banks.

Concluding-line. (See *Jacob's Ladder*.) A small rope leading through the centre of the steps of a rope ladder.

Deep-sea-line, a long line, marked at every five fathoms, and used in taking soundings in deep water. See Chapter XXIII.

Fancy-line, a small rope, rove through a block at the jaws of a gaff, one on each side of the sail, used as a throat down-haul. Also, a line attached to the boom topping-lift, by which the lee one is over-hauled to prevent its chafing the sail.

Furling-line, a rope used to secure a sail to its yard in furling. It is passed spirally around the yard and sail, from the yard arm in. Not used on heavy sails.

Gaub-line or *Gaub-rope*, is that which leads from the lower extremity of the martingale or dolphin-striker in toward the vessel, for the purpose of steadying it. See paragraph 131.

Girt-line, a rope rove through a single block at the head of the mast, used to sway up the rigging by, in rigging ship. See *Masting and Rigging*.

Hand-line, that which is attached to the hand-lead, used in sounding. See Chapter XXIII.

Hauling-line, to haul up by; when any thing is sent up into the top, or on deck from below, a *hauling-line* is sent down for it.

Head-line. See *Head-rope*.

House-line (pro. *Houslin*). Is a small rope, less than a rope yarn, formed of three strands, and used for seizings to blocks, straps, &c.

Knave-line. See *Nave-line*.

Leech lines (pro. *Leechlines*), are those which are attached to the leech-ropes of sails (courses), and leading up through blocks on the yards, to haul the leeches up by.

Life-lines, are ropes extended securely in any part of the vessel for the men to hold on by; as above the yards, from the lifts

in, used in case of manning the yard; along the decks in a gale of wind, &c.

Log-line is that which is attached to the log-chip, and properly marked, for ascertaining the speed of the vessel.

Mar-line, (pro. *Marlin*), a small rope composed of two strands, used to *marl* with.

Nave-line, or *Naval-line*, a small rope leading out of the top to the trusses abaft the mast, to keep them up that they may work free.

Slab-line (pro. *Slablin*), a small rope attached to the centre of the foot of the fore and main sails, and leading up abaft, by which the foot of the sail may be hauled up, for the convenience of the helmsman.

Spilling-line, used occasionally in furling or reefing in heavy weather.

Spurling-line, a communicating line between the wheel and tell-tale.

Stray-line, that part of the log-line which is contained between the chip and rag—it is equal to the extreme length of the vessel, and is for the purpose of allowing the chip to get beyond the influence of the vessel's wake before the glass is turned.

Tow-line, that which is used in towing a vessel.

Tricing-line, attached to the heels of studding-sail booms, and by which they are triced up in loosing, reefing, &c.

Tripping-line, a small line used in sending down top-gallant and royal yards, to unrig the lower yard-arm by, and bear the yard clear in lowering. 258.

Twidling-line, a line attached to the binnacle compass, by which the helmsman keeps it lively.

LINE—not having reference to ropes, are

Ships of the line, vessels of force superior to frigates, either seventy-fours or three-deckers.

Cutting-down-line, a curved line used in the delineation of ves-

sels, determining the thickness of the floor-timbers, and the height of the dead-wood forward and aft.

Tarred-line, that which is tarred.

White-line, that which is not tarred.

Cuntline, the intervals between the strands of a rope, called sometimes the *lay*—"a worming is passed in the lay of the rope."

It is also the space between the bilges of casks, stowed together. Thus casks are said to be stowed *bilge and cuntline*, when the bilge of the riding cask rests in the cavity formed between four casks.

LIST. The inclination of a vessel on one side, as "*She has a list to port,*" or "*to starboard.*"

LIZARD. An iron thimble spliced into the main bowline, to hook a tackle to.

Also, an iron thimble with a tail, traversing on the lower boom topping-lift; it is used to carry out the bight of the lift—the tail is then secured to the lower lift or fore yard, that, in topping on the lift, the boom may be raised clear of the side.

LOADER. See *Gun Exercise, Ordnance Instructions.*

LOADING. The act of charging a gun.

The act of stowing the cargo in a vessel. See *Lading.*

LOB-LOLLY-BOY. A person who attends to the sick in a vessel of war, under the direction of the surgeons and steward.

LOCKER. A chest or box to stow any thing in.

Shot-lockers, are strongly-built compartments in the after part of the main hold, where the shot are kept.

Chain-lockers, are also in the after part of the main hold, in the wake of the hatch, where the chain cables are kept.

LOG. Used to ascertain the velocity of a vessel through the water; it is composed of the *reel* on which the line is wound; the line marked at the proper distances, and the *chip* at the extremity of the line. See *Marking Log-line.*

Log-line. See *Line.*

Log-slate, a slate kept in some convenient part of the vessel, on which is kept the journal for the day.

Log-book, a book kept by the master, being a correct copy from the log-slate, with daily expenditures of provisions and water, sick report, &c. The first copy is generally termed the *rough-log*, to which the officers of the watch attach their signatures, at the expiration of each watch. The *smooth-log* is a copy from the *rough-log*, which is forwarded to the navy department on the expiration of a cruise.

LOGGERHEAD OR **LOGGERHEAT**, a spherical mass of iron with a long handle, used to heat tar, or to ignite the priming of cannon, being previously heated in the galley.

LONGERS. The largest casks or tanks, which are stowed next to and along the keelson.

LONG-TACKLE. See *Blocks*.

LONG-TIMBERS, in ship-building, are those timbers in the cant-bodies, which reach from the dead-wood to the head of the second futtock.

LOOF. The after part of a vessel's bow, or that part where the planks begin to be incurvated to approach the stem.

LOOK-OUT. The person placed in any part of a vessel to watch for other vessels. In vessels of war at sea, they are placed in many parts forward and aft.

Look-out, is used as a caution to men aloft, in bracing the yard about, "*Look out for yourselves!*"

Keep a good look-out, a command frequently given at sea by the officer of the deck, to keep the *look-outs* awake; the order being always replied to by them thus, "*Ay, ay, sir!*" or by calling their stations, as "*Starboard cat-head,*" &c.

LOOM, of an oar. See *Oar*.

Of land, the indistinct appearance of land, the outline only being distinguishable.

Looming of the land, implies its being high above the water; or

of a vessel, appearing higher than she really is, from the effect of refraction.

LOOP. A noose formed in a rope.

Loop-holes, small apertures formed in bulk-heads.

LOOSE. To loose a sail is to unfurl it by casting off the gaskets or the lacing which confines it to the yard or gaff.

Sail-loosers, are those men who are stationed on the yards, gaffs, and head-booms, in loosing sails.

LOSE COMPANY (*looze*). To part company with a convoy, or other vessel, in a gale, or from some other cause.

LOST. A vessel is said to be lost, when she is foundered or cast away.

LOW-WATER. The lowest point of the ebb.

LOWER. To lower, is to ease down handsomely. To "*lower away roundly*," is to lower briskly.

Lower, is also a distinguishing title to the rigging, &c., of the principal masts; as, the "*lower rigging*," "*lower yards*," used in contradistinction to those higher up.

LUBBER. A term of contempt, applied to sailors who are unacquainted with their duties, or perform them negligently.

Lubber's-hole. That vacant space between the eyes of the lower rigging and the inner edge of the top, through which sailors may mount to the top, instead of going over the rim by means of the futtock-shrouds.

LUFF. An order to the helmsman, to bring the vessel up nearer to the wind, by putting the helm alee.

Spring-a-luff! Keep-your-luff! Luff-you-may! are different variations of the order, to suit circumstances.

The *luff*, of a vessel, is the roundest part of the bow.

The *luff*, of a sail, is the forward or weather leech, but more properly the forward leech of fore-and-aft sails, as the jib, spanker, &c.

To *luff round*, the operation of the helm in tacking.

A *luff tackle*, a purchase composed of a double and single block

and fall, used for various purposes, where a purchase may be required.

Luff-and-luff, or *luff-upon-luff*, is the application of a luff-tackle upon the fall or hauling part of another luff-tackle, to increase the purchase.

LUGGER. A small vessel carrying lug-sails.

A *lug-sail* is cut in a quadrilateral form, and bent to a yard, which hangs obliquely to the mast, only used in boats and luggers.

LURCH. The sudden rolling of a vessel to either side, caused by a heavy wave striking her. See *Lee-lurch*.

LYING-TO. Keeping a vessel stationary by counter-bracing the yards, to await the approach of another vessel. See *Lie-to*, Chapter XX.

M.

MADE. See *Blocks*. See *Masts*.

MAGAZINE. An apartment, close, and lined with tin, situated in the after part of the hold of a vessel, to contain powder and other combustible compositions, as, *blue-lights*, &c. This is called the *after-magazine*. Some vessels, particularly the larger ones, have another situated forward. The magazine is lighted by means of lights placed in the light-room, which is contiguous to it.

MAIN. Principal; as *main-mast*. The *main-land*, used in contradistinction to an island.

Main-breadth, in ship-building, is the broadest part of a ship at any particular frame.

Main-keel, the keel proper, so distinguished from the *false keel*.

Main-mast. See *Mast*.

Main-post. Stern-post.

MAKE. This word is variously applied, as

To make a good board. See *Board*.

To make the land, is to discover it, or to see it from the vessel.

To make sail is to increase the quantity of sail on the vessel by setting sail. *To make* sail in getting under way, is to set sail upon the vessel.

To make stern-way, or stern-board, or *to make* head-way, is to retreat stern foremost, or to move ahead.

To make water, applied to a vessel which leaks.

MALL. A heavy iron tool used in driving bolts, &c.

Top-mall. See *Maul*.

MALLET. A wooden hammer, of which there are several descriptions on ship-board, as

Calking-mallet, used in driving the oakum into the seams of a vessel. The head of this mallet is long, cylindrical, and secured from splitting, by iron hoops; it is used in connection with the *calking-iron*.

Heaving-mallet, is used in sail-making, to strain tight the cross stitches.

Serving-mallet, used in applying service on a rope; it is made with a cylindrical head, having a groove cut lengthwise in the surface opposite the handle. The groove fits on to the rope, and the service is passed around the rope and mallet-head; by turning the latter around the rope, it lays the service on tight.

MAN. A ship, or vessel, as, a "*man of war*," a "*merchantman*," an "*East India-man*," &c.

To man, to place a sufficient number of men on a rope, in a vessel, on a yard &c., to perform any desired service, as, *To man a ship of the line*—*To man the barge*—*Man the yards*—*Man the capstan or bars*.

MANGER. An enclosure made just within the hawse-holes, having a coaming high enough to keep the water which rushes in at the hawse-holes from running aft on the decks.

MANNING THE YARDS, is the act of placing the men to stand on the yards, and holding by the *life-lines*, equidistant from each other. Performed in honor of some distinguished individual visiting the vessel.

MANŒUVRE. The act of changing the position of a vessel by some evolution, or the act of regulating the movements of a fleet of vessels when sailing together.

Point of Manœuvre (in Naval Tactics). That point at which the vessels of a fleet, or squadron, manœuvre in succession. The leader having manœuvred, the remaining ones follow in succession, manœuvring at the same point, in the wake each of its next ahead.

MAN-ROPES. Ropes used to hold on by, in ascending or descending the side of a vessel.

MARINER. A person whose profession is that of a sailor.

MARL. To *marl*, is to wind or twist a small rope, as marline, spun-yarn, etc., around another rope, every turn being secured by a knot. Slips of canvas for parcelling are marled on.

Mar-line. See *Line*.

Marling-spike, an iron pin, sharp at one end, having a hole in the larger end through which is a lanyard; it is used in opening the strands of ropes for splicing, knotting, etc., and in *marling* and applying seizings is used as a lever. In taking them aloft, sailors should always hang them over their necks by the lanyard.

MARRY. To marry, is to join ropes together, for the purpose of reefing, by placing their ends together, and connecting them by a worming. In hoisting boats, to *Marry the falls*, the sailors join the forward and after falls, and with them both in their hands *hoist away*—the advantage in this is, that the boat comes up on an even keel.

MARTINGALE, or *Dolphin-striker*, is a kind of bumpkin reaching down from the end of the bowsprit, through which the stays of the head booms reeve. See *Stays*.

MAST. Either *made*, or of one solid piece, are for the purpose of exposing to some height above a vessel sails by which she is propelled.

The *lower-masts*, are those which are immediately above the vessel, and are stepped into the kelson.

The *top-masts*, are those which are next above the lower masts.

The *top-gallant-masts*, are the next above the top-masts, and the *royal-masts*, next above the top-gallant masts. Each mast being supported by its own shrouds and stays. See *Masting and Rigging*.

The *fore-mast* is that which is nearest to the stem.

The *main-mast*, is the next abaft the fore-mast, and is the largest and principal one.

The *mizzen-mast*, is the smallest, and nearest to the stern.

A *jigger-mast*, directly over the stern, is used in some of the smaller vessels, as feluccas and boats.

Jury-mast. See *Jury*.

Masting, is the act of placing, or stepping and securing the masts in a vessel.

Mast-cloths, in sail-making, is the lining on the after part of a sail, to prevent its being chafed by the mast.

Mast-coats, are coverings of canvas, nailed around the mast at the partners, and tarred or painted to keep out the water.

MADE-MASTS, are composed of the following parts :

The *spindle*, which is made of two pieces, and forms the diameter of the mast-head, fore and aft. It continues down and tongues in between the two side-trees.

The *two side-trees* form the diameter of the mast at the partners, athwart-ships, run up and tongue in between the cheeks and spindle, under the hounds.

The *fore-and-aft fishes* form the diameter of the mast, fore and aft, from the heel to the trestle-trees, and dowel in the flat surface formed by the side-trees and spindle.

The *cheeks* (starboard and port) form the diameter of the

mast athwartships, and run from the cap to the orlop deck, and dower on the surface formed by the side-trees and spindle.

The *front-fish* or *paunch*, is fitted on the outside of the fore fish, is rounded off with the cheeks, and extends from the trestle-trees to the orlop deck.

The *supporters*, or *bibbs*, form the hounds, which support the trestle-trees.

The *cant-pieces*, are used when the fishes are not wide enough.

Fillers, are fitted in the angle between the cheeks and paunch, to make a plain surface for the iron hoops.

MASTER, OR SAILING-MASTER, in the United States Navy, is a warrant officer, ranking next below a lieutenant, though not in the line of promotion. His duties are to navigate the vessel, and, under the direction of the executive officer, attends to the stowage of the hold and spirit-room, attends to the cables, hawsers, anchors, and has the general supervision of all the rigging, &c.

Master, of a merchant vessel, is the commander.

Master's-mate, of a man-of-war: a warrant officer, assistant to, and under the directions of the master.

Master-at-arms; a petty officer, having charge of the prisoners, and, under the direction of the executive officer, attends to the police of the vessel on the lower decks, and reports fires and lights out at the stated periods.

MAT. A thick web, or texture, formed of old rope, spun-yarn, or foxes. They are placed in different parts of a vessel, on the yards, rigging, &c., to prevent chafe or friction.

Paunch-mats, are those of the heaviest or thickest kind, placed on the yards in the wake of the rigging.

MATCH. A kind of rope prepared with inflammable ingredients, used for the purpose of discharging cannon.

Match-staff, a short staff to which a piece of match-rope is attached, used at the guns.

Match-tub, a tub with a double bottom and open at the head, in which the match-staff and match are kept, in action, near a gun.

Match—*quick match*. See *Fuze*.

MATE, of a merchant vessel, is an officer under the orders of the master or captain.

Mate, of a deck, is the officer who has charge of one of the lower decks in a vessel of war.

Of a watch, is the officer—passed midshipman or midshipman—who keeps watch on the fore-castle, under the officer of the deck, keeps the log of the watch, and enters the remarks on the slate.

MAUL. A large iron hammer used for driving bolts, &c.

Top-mauls, are those used in the tops for driving in or out the top-mast fid, &c. They are kept slung by lanyards, to prevent their falling from aloft.

Meet her. See *Helm*.

MERCHANTMAN. A vessel employed by private persons or companies, in trading from one country to another.

MESHES. The spaces between the lines of a netting or network.

MESS. Any number of officers, or of the crew, who eat together, and occupy the same apartment. Each one of which company being the *mess-mate* of the rest.

MESSENGER. A large rope, passed around the capstan with three or more turns, and around a roller forward between the hawse-holes, and the two ends lashed together. The cable is secured to it by nippers, for heaving in. 347.

To lash a messenger. See paragraph 349.

To light forward the messenger. To pass the slack, on the opposite side of the deck, forward to the hawse-holes.

To dip the messenger. See paragraph 350.

Pass the messenger. See paragraph 248.

MID. *Mid-channel*, implies in the middle of a channel or river.

Mid-ships, in ship-building, are several pieces of timber which

lie in the broadest part of a vessel. Thus, the *midship-beam* is that upon which the extreme breadth of beam is formed, and which is situated in the *midship frame*.

Midship-bend, or *deal-flat*, is the broadest frame in a vessel.

Midshipman, in the navy of the United States, is a young officer, having a warrant, whose duties are to acquire a knowledge of seamanship, navigation, naval tactics, and all other matters that may fit him to pass through the several grades of passed midshipman, lieutenant, commander, &c., to the highest rank in the service—and at all times to render himself useful in carrying on duty.

Passed-midshipmen, are those who have passed examination, and are candidates for promotion to the rank of lieutenant.

Midship (see *Amid-ship*), is the centre between the two extremes, either of length, or breadth; thus, any thing is said to be *amid-ships* when it is toward the centre of the vessel, yard, &c.

MIZZEN. See *Masts*.

MOLE, or MOLE-HEAD. A long pier or bulwark of stone-work, extending across the entrance of a harbor, to form a secure place within for vessels. The harbor or haven within this bulwark is also termed *the mole*.

MONSOON. A periodical or trade wind, which blows in certain latitudes in the Indian ocean.

MOON SAIL. A small sail sometimes set over a sky-sail.

MOOR. To secure a vessel in certain stations or positions, by means of cables, anchors, and hawsers. See Chapter XXV.

MOULDS. In ship-building, are the patterns by which the frames of a vessel are worked out.

MOUNT. To carry; as, "*a vessel that mounts 20 guns.*"

To mount a gun, is to place it on its carriage for service.

MOUSE. To mouse the hook of a tackle, is to pass a lashing around it and its end, to prevent its unhooking.

- A *mousing*, is a knot or puddening wrought on the outside of a rope, by means of spun-yarn, parcelling, &c.
- MUFFLE. To *muffle the oars*, is to put some covering, as mats, swabs, &c., around them in the row-locks, to prevent or diminish the noise in rowing.
- MUNIONS. The pieces, in ship-building, that part the lights in the stern and quarter galleries.
- MUSTER. To muster a ship's company, or any part of them, is to call over the roll, either by the names or stations.
- "*All hands to muster.*" The summons given by the boatswain and his mates.
- MUTINY. A naval or military revolt, or the act of rising against authority.
- Mutineers*, are those persons who are wilfully concerned in a mutiny.
- MUZZLE, of a gun, is that part from the muzzle-ring to the face of the muzzle, or extreme end of the gun, including the swell or tulip.
- Muzzle-lashings*, are used in housing guns, to secure the muzzle to the eye-bolt at the upper part of a port.

N.

- NARROWS. A term applicable to a narrow passage between two points or promontories of land.
- NAVAL. Belonging to vessels, or rather to the navy; as, *naval armament, naval stores, naval officers, &c.*
- Naval architecture*, is the science of constructing and building vessels of any class.
- Naval-hoods*, or *hawse-bolsters*, are large pieces of plank, above and below the hawse-holes.
- Naval Tactics*. The science of managing or manœuvring, accord-

ing to prescribed rules, vessels sailing in squadrons or fleets. See *Orders of Sailing, Orders of Battle, &c.*

NEAPED, or BENEAPED. The situation of a vessel, when grounded at the height of a spring-tide.

Neap-tides, are when the moon is in the middle of the second and fourth quarters. They are low; used in contradistinction to *spring-tides*.

NEAR. Close to the wind. See *Working to Windward*, Chapter XVII.

No-near, meaning *no-nearer*, is an order to the helmsman, to suffer the vessel to come no nearer to the wind than will allow the sails their full effect.

NEEDLE. The magnetic needle is touched with loadstone, which gives it the property of pointing to the north. They are applied to a card in the mariner's compass, on which are marked all the points of the compass, the north part being armed with the magnetic influence.

NETTING. A net-work formed of rope, having the bights seized together, leaving spaces or uniform *meshes* between them, often used over the stern, between the boat-davits.

Hammock-nettings, in vessels of war, are those places fitted over the rail, in which are stowed the hammocks and bedding of the crew. They are either formed of net-work (from which they derive their appellation) or of canvas. But the neater plan, and one adopted in peace, is to have them boarded in.

Boarding-nettings, are screens of net-work, made to hoist from the gunwale to a proper height on the rigging, to prevent an enemy from boarding; principally used in private armed vessels.

Bowsprit or staysail nettings. A net-work formed between the man-ropes, just abaft the fore topmast staysail-stay, over the bowsprit; in which the staysail is stowed when hauled down.

NINE-PIN. See *Block*.

NIP. A short turn in a rope or cable. See 392.

To lengthen the nip. See paragraph 51.

NIPPERS, are formed by *marling* together a number of good rope-yarns. They are used to secure the messenger to the cable for heaving. See paragraph 351 to 354 inclusive.

NITTLES. See *Knittles*.

NOCK, in sail-making, is the forward upper end or corner of boom sails.

Nock-earring, is that which secures the nock of the sail.

NORTH. One of the four cardinal points of the compass.

Northing, the difference of latitude made by a vessel, in sailing toward the north.

NOTHING-OFF. An order given to the helmsman, not to let the vessel fall off from the wind.

NUT, of the anchor, projections on each side of the shank, to secure the stock in its place.

O.

OAKUM. Rope-yarns pulled apart, forming a substance used for calking the seams of vessels.

Black-oakum, is that which is made of tarred rope.

White-oakum, is made of untarred rope.

OAR. A piece of light timber, made flat at one end (see *Blade*), and round or square at the other; used to propel boats by. The flat part of the oar is termed the *blade*, that part which is within the row-lock is termed the *loom*.

To boat the oars, is to lay them lengthwise in the boat.

To feather the oars, is to turn the blades in a horizontal position in rowing.

To lay on the oars, to cease pulling without beating the oars, the blades being raised out of the water.

To ship the oars, to place them in the row-locks ready for pulling.

To *toss the oars*, to throw the blades up and hold them perpendicular, the handle resting on the bottom of the boat.

To *muffle the oars*. See *Muffle*.

OFF. Near, or abreast of; as, "*off Cape Hatteras*."

Off, from; as, "*We stood off the shore until daylight*."

Off-and-on. In working to windward, near any land, to approach it on one tack and leave it on the other, in which case you are said to be "*standing off-and-on*."

Offing. Well off from the land; thus, "*a vessel has a good offing*," when she has made considerable distance from the land.

ON. See *Bearings*.

On-end. The position of a mast or boom when perpendicular to the deck. Masts are said to be *on-end* when swayed up and fidded.

OPEN. The situation of a place or harbor, when exposed to the sea; as, "*an open roadstead*."

Open-hawse, is when the cables lead out from the bows clear of each other. See Chapter XXVI.

To *open upon an enemy*, is to commence firing.

ORDERS (in Naval Tactics). Particular or prescribed arrangements of vessels in a fleet or squadron.

Orders of Sailing. There are five orders of sailing, used hitherto by naval tacticians, adapted to the use of fleets or squadrons, under particular circumstances—having reference to the course sailed, the wind, and the facility of forming the order of battle. These orders are as follows:

By the *First Order of Sailing*, the vessels of a fleet or squadron are arranged on one of the lines of bearing, and standing on any course. This rule will never be resorted to in a fleet of any size, as it separates the extremes of the line beyond the point of free communication.

By the *Second Order of Sailing*, the vessels are arranged in a line abreast, with the wind directly aft, or on any line perpendicu-

lar to the direction of the wind, and standing on any course. The same objection, viz., extent of line, obtains in this *order*; and also that it is an inconvenient arrangement for manœuvring freely if sailing close-hauled.

By the *Third Order of Sailing*, the vessels are arranged on the two lines of bearing, forming an obtuse angle, and standing on any course; the admiral, or the senior officer, being at the angle of the order. This, though it extends the line less than the foregoing, and is consequently less objectionable, still, for a fleet of great size, would never be resorted to.

By the *Fourth Order of Sailing*, the fleet is divided into six columns; the leaders or commanders of divisions being ranged, with respect to each other, on the two lines of bearing, the admiral at the angular point; the vessels of each division being ranged on two parallel lines, on each quarter of their respective leaders, these lines being parallel with the course of the wind. The great objection to this order, is the time that would be consumed in forming, from it, to the order of battle; and the difficulty of preserving the proper bearing of the vessels while in the order.

By the *Fifth Order of Sailing*, the vessels are arranged in three columns parallel with each other, and upon close-hauled lines, the leaders heading their respective columns, and abreast of each other. The main feature of this order is, that the distance between the columns is regulated by the length of the column, which distance is correct if the leading ship of one column and the last of the next, form an angle of $22^{\circ} 30'$ with the line, or course, on which they are sailing. Hence the greater the number of vessels in column, the greater the distance between the columns.

The objections to the previous orders are obviated in this, *the Fifth*; and from this the order of battle is readily formed and manœuvre easily executed.

The fifth order of sailing may also be formed in six columns, by observing the same rules in its arrangement.

Order of Sailing in three Divisions, or squadrons. This is a combination of the fifth order of sailing and the order of convoy. The principal feature of this order is, that the leaders and the other ships of the squadron bear from each other respectively in the direction of the wind.

Order of Sailing by Divisions. Each squadron of the fleet is divided into two divisions or columns, the whole fleet consisting of six columns or divisions. The principal feature of this order is, that, when by the wind, or two points free, the leaders are all in a range with the wind, and when on any other course free they are all abreast of each other.

Order of Sailing in two Squadrons or Grand Divisions. In this the whole fleet is divided into two columns or grand divisions, half of the centre forming with the van, and the remaining half with the rear; the distances and the bearings with regard to the wind, being as in the order of sailing by divisions.

Order of Battle. See *Battle*.

Order of Convoy—an *Order of Sailing* proposed by a French officer of distinction (M. Bourde de Villehuet). This order, in one line ahead, or in three columns, differs from the first and fifth orders of sailing, only in this, that the *line of bearing* is not an essential feature of the order.

Order of Retreat. An arrangement or distribution of the vessels of a fleet or squadron, when, after being beaten, or to avoid an action, it is forced to retreat from the enemy; the ships of the line covering the frigates and smaller vessels, and being prepared to re-form the order of battle, if necessary.

ORDINARY SEAMEN. A grade of sailors, next in rate to seamen. *Vessels in ordinary*, are those which are temporarily laid up.

ORDNANCE. "All that relates to the construction, equipment, and preservation of guns."—*Ward*.

ORLOP. The lower deck of a ship of the line; or that, in all vessels, on which the cables are stowed. 433.

OUT. To set; as, "*What saits have you out?*"

Out-board, used in contradistinction to *in-board*.

Out-fit, the expense incurred, or the articles employed, in preparing a vessel or seaman for a cruise.

Out-hauler, a rope used to extend the foot of a sail, by hauling out its clew.

Out-of-trim, applied to a vessel when not properly ballasted for sailing.

Out-rigger, a piece of timber or spar, used to rig out the back-stays, to increase the angle formed by them at the mast-head, and thus to magnify the support. Also used in the channels to keep the lightning-conductor clear of the vessel's side.

To out-sail, is to sail faster than; as, "*We out-sailed the enemy.*"

Out-ward, out of the port; as, "*Outward bound.*"

OVER-BOARD. Any thing thrown or fallen from a vessel into the water; as, "*a man overboard.*"

Over-cast, in speaking of the weather, means cloudy.

To overhaul, to examine a ship, person, or thing.

To overhaul a tackle or rope, is to extend the blocks from each other, and slacken the fall that it may render through the blocks. You *overhaul down* the end of the halyards to bend it to its yard.

To overtake; as, "*We overhaul the strange sail.*"

Over-masted, a vessel having her masts too long or large.

Over-launching, in ship-building, is to splice or scarf one piece of timber to another.

Over-set, to upset.

P.

- PACKET.** A vessel employed in carrying letters, &c.
- PADDLE.** A short oar, used in light boats without being shipped in the row-locks.
- PAINTER.** A rope attached to the bows of a boat, to secure her by, or by which she may be drawn ahead.
Shank-painter, a rope by which the shank of an anchor is secured to the gunwale—it is made partly of chain; paragraph 368.
- PALL, or PAWL.** *To pall the capstan*, in a heavy heave, or after the anchor is aweigh; to drop the palls.
- PALM.** An instrument used by sail-makers in sewing; it goes over the hand, and is used to force the needle through the canvas.
Palm. See *Anchor*.
- PANCH.** See *Paunch*.
- PARBUCKLE.** A purchase, formed of a single rope around any weighty body, as a mast or cask, by which it is lowered or hoisted up. See *Masting*, paragraph 3.
- PARCEL.** *To parcel* a rope, is to wind tightly around it strips of tarred canvas, which is termed *the parcelling*—used also in “*raising-a-mousing*.” 73.
Parliament-heel, the situation of a vessel when she is made to careen over on one side for any purpose, as to clean her bottom.
- PARRAL.** The rope by which a yard is confined to its mast at the slings, allowing it to be lowered or hoisted at pleasure. See paragraph 170.
- PART.** To break a rope or cable. See *Carry-away*.
To part company, to separate.
- PARTNERS**, of a mast, bowsprit, pumps, capstan, &c., is the frame-

work of stout timber, fitted at the aperture of the deck, to receive the heel in shipping.

PASS. To give any thing, or to take certain turns in a rope; as, "*Pass along that line,*" "*pass a seizing,*" "*pass a gasket around a yard and sail,*" &c.

PASSAGE. A voyage at sea, from one place to another.

PASSAREE. A rope or tackle used to haul out or spread the clews of the foresail, when sailing large or before the wind; it is fitted by attaching a single block to the lower studding-sail boom, through which the rope is rove which is attached to the clew of the sail.

PATCH. See *Vent*.

PAUNCH. A thickly thrummed mat. See *Mats*.

PAWL. Short pieces of iron fitted on capstans, to prevent their recoiling.

PAY. *To pay off*, is to allow a vessel's head to *fall-off* from the wind.

To pay a mast or yard, is to give it a coat of tar.

To pay a seam, is to fill the seams of a vessel with melted pitch, after calking, by which they are rendered impervious to water.

To pay out, a cable, hawser, or other rope, is to stick it out.

Pay-master, a commissioned officer in the United States Navy. See *Purser*.

PEAK. The upper outer corner of those sails which are bent to gaffs.

To peak a yard or gaff, is to top it up more obliquely.

Peak-halyards, that purchase by which the outer end of a gaff is raised.

PENDANT, OR PENNANT. A long narrow piece of bunting, worn at the mast-heads of vessels of war, usually termed *coach-whip*, in contradistinction to *broad-pendant*.

Pendant, is also a strap over the mast-head, under the eyes of the rigging, hanging down on each side, with large iron thim-

bles turned into their ends, to receive the hooks of the pendant-tackles. See paragraphs 63, 79, 106 *a*.

There are also the *fish-pendants*, *reef-pendant*, *yard-tackle-pendant*, *rudder-pendant*, and *brace-pendant*. They are ropes to which purchases are hooked for various purposes.

PIER. A mound or dock projecting out in a harbor, for the convenience of vessels in loading, refitting, &c.

PIGS, are blocks of iron used for ballast. See *Ballast*, 422.

PIKE. *Boarding-pikes*, are staffs armed with sharp iron ends, used in vessels of war in repelling an enemy.

PILLARS. In ship-building, stanchions of wood or iron, fitted under the beams to support them.

PILLOW. A block of timber, supporting the inner end of the bowsprit.

PIN, of a block, is the axis on which the sheave revolves.

PINK-STERNED. A term sometimes applied to vessels which have very narrow sterns.

PINNACE. A small vessel managed by oars or sails. Some boats are often so called in vessels of war.

Pin. See *Belaying*.

PINTLES. Metal bolts used in hanging a rudder. See *Rudder*.

PITCH. A resinous substance, with which the chinks or seams between the planks of a vessel are filled, after being calked. See *Pay*.

PITCHING. The depression of the bows of a vessel after a wave has passed her centre of gravity. (See *Sending*.) "*She pitches deeply.*"

PLANKS. Strong boards of various thicknesses, used to cover or line the sides and decks of vessels. This is termed *planking a vessel*, and completes the process of building.

To plank the deck. A phrase applied to the act of walking the deck during a watch.

PLAT. A braid of *foxes*, used as service for a cable in the hawse. See *Freshen the hawse*.

PLATE. A flat piece of iron, used for the purpose of strengthening various parts of a vessel, as

Chain-plates. See *Chains, &c., Futtock-plates, &c.*

PLUG. A piece of timber formed into a cone.

Boat-plugs, used in the bottom of a boat, to stop or open the plug-hole, to let in or out water.

Hawse-plugs, are for the purpose of stopping the hawse-hole when the cables are unbent.

Shot-plugs, are used to stop the holes made by the shot of an enemy.

PLY. To make progress against the wind, or to windward.

POINT. An arm of land projecting into the sea.

To *point a gun,* is to give a desired direction to the axis of its bore; to do this two motions are required, one in a vertical plane, on the trunnions as a centre, giving *elevation*; the other on a horizontal plane, by means of crows and side tackles, giving direction in *lateral aim*.

Point-blanc. The horizontal level position of a gun. "The true definition of this term, as used by the Americans and English, is, that point at which a shot fired from a level gun, loaded with its full service charge, crosses in its flight the horizontal plane on which the trucks of the gun stand. The distance of that point from the gun is the *point-blanc range* of that gun."

Point-blanc range, as understood by the French, is that point where a shot in its flight intersects, a second time, the line of the metal prolonged.—*Ward's Ordnance and Gunnery.*

To *point a rope,* is to prepare the end so that it may be easily rove through a block, and not unlay; it is done by taking out a few of the yarns, and working a mat over it by its own yarns. The ends of the running rigging are thus *pointed*.

Point of manœuvre. See *Manœuvre.*

Reef-points, are flat pieces of braided cordage, made tapering from the centre to the ends. They are rove through the holes

in the reef-band of a sail, and secured by the centre with a few stitches. They are used, in reefing the sails, to rouse the reef-band up taut along the yard, around which they are secured by a square knot, commonly called a *reef-knot*.

Points. See *Compass*.

To point the yards. To brace them so that the wind shall strike them *end-on*, or obliquely. Performed at sea in a fresh breeze, or at anchor in a gale.

POLE. Pole-mast. See *Topgallant-mast*, 208.

Bare-poles. A vessel is *under bare-poles*, when her sails are furled in a tempest, particularly applicable at sea.

POMELION, of a gun. A name sometimes used for the cascabel. See *Cannon*.

POOP. A deck raised above the after part of the spar-deck, reaching forward to the mizzen mast.

Poop-cabin. The apartment formed by the poop.

Pooped. A vessel is said to be *pooped*, when the sea breaks over her taffrail.

A *pooping sea*, is that which *poops* a vessel, which generally happens in scudding before a gale.

POPPETS. The perpendicular pieces of timber which are fixed on the fore and after parts of the bulgeways, to support the vessel in launching.

PORT. A harbor where vessels may ride at anchor.

Port. The left side of a vessel when looking from aft forward; any thing on that side being thus distinguished, "*the port side*," "*the port gun*," "*the port gangway*," &c. By an order of the Navy Department, the word *larboard* is now never used, *port* being substituted instead on all occasions; as, "*Port the helm*," "*Hard aport*," "*She heels to port*," &c. The reason of this substitution is to avoid mistakes owing to the similarity of the words *Starboard* and *Larboard*.

Port-fires, are paper tubes, filled with a certain composition of

powder, sulphur and nitre, used instead of matches in firing salutes.

Port-lids. See *Half-ports*.

Port-riggles. Pieces of wood nailed over the ports, to carry off the water between the ports.

Port-pendant and tackle, used to trice up the lids of the lower deck ports. The pendant reeves through a hole over the port, and is secured to the outer side of the lid. The *tackle* is applied to the pendant in-board.

Port-last or portoise, a term used synonymously with *gunwale*, as, "Lower the yards down a-portoise."

A vessel is said to *ride a-portoise*, having her lower yards and top-masts struck or lowered down, in a gale, at anchor.

Ports or port-holes, are embrasures in the sides of a vessel, through which the cannon are pointed.

Half-ports. See *Half*.

Air-ports, small ports cut through the sides of a vessel into the lower deck, to admit the light and air.

PRATIQUE. A release from quarantine.

PREPONDERANCE of a gun, is "that weight which, hung at the muzzle, will balance the breech, when the trunnions rest on a suspension of knife-edges." The regulated preponderance of trunnion guns is usually one-twentieth the weight of the gun.

— *Ward.*

Preponderance of Shot. See *Eccentricity*.

PRESS. A press of sail, is as much as a vessel can possibly carry, according to the force of the wind.

To *press a vessel*, is to carry a greater press of sail than is prudent or safe.

To *press or impress seamen*, is to force them to serve in a vessel of war.

PREVENTER. An additional support to any mast or yard, as *preventer-braces* or *preventer-breast-backstays*.

PRICK. To prick the cartridge, is to perforate the bag that

holds the charge, in the wake of the vent, that the priming may have a clear passage to the powder.

A *pricker*, is an instrument used by sail-makers, resembling a marline-spike, but smaller and with a wooden handle.

PRIME. To prime a gun, is to charge the vent with powder, tube, or percussion wafer or cap, so as to ignite the cartridge by their means.

Priming-wire. An iron needle, made to penetrate the vent of a gun, in pricking the cartridge: they should be hardened so as not to bend too easily, and yet not so much as to become brittle, and readily break. See *Boring Bit*.

PRIZE. A vessel captured at sea from an enemy.

To *prize*. To raise any weighty body by means of a lever.

PROJECTILE. Any body put in motion by external means, as, a shot thrown by the force of gunpowder, a stone thrown from a sling, or an arrow from a bow.

PROMONTORY. A high rock or point of land projecting into the sea.

PUDDENING. A quantity of rope-yarn pointed, and placed firmly on the stem of a boat, to serve as a fender.

A *puddening* is also put around the ring of an anchor, when a hemp cable is used or bent to it.

Puddening, is also a thick grommet of rope, larger in the centre than at the lashing-ends, grafted or lashed around a mast or yard, to prevent chafe, or to serve as a support to the yard.

PULL. To row a boat, "*Pull together!*" "*Pull the port or star-board oars!*" are orders given to the oarsmen.

Pull. To haul on a rope, as, "*Get a pull of the backstay falls.*"

PUMP. A machine, by which the water in a vessel's hold is raised and discharged into the sea.

Hand-pumps are used by the holders, to pump water out of the casks or tanks.

The *pump-gear*, is all the apparatus used in pumping.

Pump-break, is the handle or lever by which a pump is worked.

To *pump-ship*, is to pump the water out of a vessel's hold.

PURCHASE. A *purchase* is any mechanical power formed by tackles, capstan, &c., employed in raising or removing heavy bodies. See Chapter VII.

To *purchase*, is to apply any of these powers.

PURSER. The title now abolished—instead of which that of Paymaster is substituted. He is a commissioned officer ranking with a lieutenant, and after twelve years' service with a commander. He has charge of the provisions, clothing, and all the public moneys on shipboard. The new grade of *Assistant Paymasters* is just established, from which grade the paymasters will be hereafter appointed.

Q.

QUARANTINE. A period of time that vessels are required to remain, after arriving at a port, without communicating with the shore, except through the pratique officers.

QUARTER. *On the quarter*, is any point of the compass between the line of the keel and abaft the beam.

The *quarter of a vessel*, is that part of her side which lies between her main channels and the stern.

Quarter-bill; a list of the stations, and arrangement of the officers and crew of a vessel, for engaging an enemy. When so stationed they are *at their quarters*.

Quarter-deck. See *Deck*.

Quarter-gallery, a small balcony on the quarter of a vessel.

Quarter-gunner. A petty-officer, assistant to the gunner.

Quarter hung (Ordnance). A gun is said to be *quarter hung* when its trunnions are placed with their axis below the centre

of the gun. The object is to give a clear unobstructed side sight. This is now discontinued.

Quarter-masters. Petty officers, who attend to the helm, binnacles, signals, &c., under the direction of the master.

Quarter-pieces, are pieces of timber at the after part of the quarter gallery, near the taffrail.

Quarter-tackle, a purchase used occasionally on the quarter of a lower yard, for hoisting in boats, &c.

Quartering. Sailing large, but not before the wind.

Quarter of a yard. A certain division of a yard, measured from the slings out.

QUAY. See *Key*.

QUICK-MATCH. See *Fuze*.

QUICK-WORK. In ship-building, is that part of a vessel's sides which is above the chainwales and decks.

QUILTING, forming a coating, by weaving strands of rope about the outside of any vessel, as a jug or bottle.

QUOIN. A wedge of wood, for the breech of a gun to rest on in its carriage.

Quoins, are also employed to wedge off, from each other, casks of wine, &c., that their bilges may be free.

R.

RACE. A strong rippling tide or current.

RACK. A strong frame of wood, having several sheaves in it, through which are rove the running rigging.

To *rack a tackle,* is to seize two of its parts together, to prevent it from rendering.

Shot-rack, a wooden frame, made to contain a certain number of round shot.

Halyard-rack, a framework of wood, like a round box, made to coil away the running part of halyards in, so that they

may be always clear for running, used principally for the top-sail halyards.

RAFT. A float, formed of timbers and planks, secured together.

Raft-port, a square hole cut in the buttock, bow, or counter of merchant vessels, for loading or discharging cargo through.

RAISE. To elevate or bring to view, as, "*We raise the land.*"

Raise. To construct, as, "*To raise a purchase,*" "*To raise the shears.*"

RAKE. The rake of a vessel's stern, is its projection out beyond the perpendicular of the after part of the keel.

The rake of the mast, is its inclination forward or aft from a perpendicular.

Rake. See *Rudder*.

To rake a vessel, is to fire into her stem or stern, so that the shot may traverse her whole length. This is termed *Raking a vessel fore-and-aft*.

RAM. To *ram home* a cartridge, is to force it in to the extremity of the bore of a gun, by means of a rammer.

Ram-line, in mast-making, is a line used to gain a straight middle line on a spar; it is secured at one end and then hauled straight and taut to the other, where it is also secured.

RAMMER. Composed of the rammer-head and staff, used to drive the charge home into the gun. "The rammer-head is made of ash, beech, maple, or other tough wood; in diameter it is 0.25 inch less than the bore of the gun, to admit of easy entrance and to allow for swelling when wet. In length it is equal to the diameter of the bore. For chambered guns it is tapered at the extremity, adapting it to the chamber. The face of it is hollowed, so as to embrace the ball and press the selvagee wad to its place. The staff is made of tough ash, and is one foot longer than the bore of the gun."

Ramrod, for a musket or pistol, is used for the same purpose as the rammer to a cannon; it is generally made of iron or steel.

RANGE. A *range* of cable, is any quantity of it, or as much as is required for anchoring : it is roused up out of the tier, and placed or *ranged* along the decks clear for running. See *Ranging cables*, paragraph 343.

Range, is also the name of a large cleat, with two arms or branches, bolted to the waist of a vessel, to belay the tacks and sheets to.

Range (in Gunnery). The path of a shot, or the distance to which it may be thrown : thus, the gun being level with the horizon is at *right* or *level range* ; elevated at 45° is at its *utmost range*, &c. See *Point-blanc*.

Random range (in Gunnery). Any range beyond the *point-blanc*, the gun being elevated for the purpose.

RANK. The situations which officers hold, relatively with each other.

RATE. The situations held by sailors relatively with each other, as petty officers, seamen, ordinary seamen, landsmen, boys, &c.

Rate, is also the order or class of vessel, regulated by the number of guns mounted.

Rate of sailing. The distance a vessel has accomplished in a given time, estimated by the log.

Rating, is the advancement or promotion of sailors to a higher rate.

RATION. A daily allowance of provisions to each person on board of a vessel of war.

RATLINES (pro. *Ratlins*). Are lines connecting the shrouds horizontally, at equal distances apart, and forming a ladder for the sailors to run up and down by.

To *rattle down the rigging*, is to seize on these lines. They are secured to the forward and after shrouds, and clove-hitched around the intermediate ones. See paragraph 139.

RAZEE. A vessel having her upper deck cut down, and thus reduced to the next rate ; a seventy-four is razeed, and is then

of the same number of decks as a frigate, or a frigate razeed to a sloop.

REACH. One vessel head-*reaches* another, when she is passing her.

READY-ABOUT. See *About*.

REAMING (Ordnance). To *ream up* a gun is to increase the diameter of its bore, after placing it in the lathe upon the same centres it was originally bored on; so that the gun, the cylinder of the bore, and the chamber, shall be all concentric.
—*Ward*.

REAR. The last division of a squadron, or of a fleet.

RECOIL. The repulsive motion of fire-arms when discharged, caused by the reaction of the shot upon the charge, conveyed through that fluid to the gun. "If high velocity be produced from a light gun, by a high proportional charge, the velocity of recoil will be proportionably great; hence the weight of the gun, as well as that of the shot, will regulate the proper charge of powder to produce the greatest initial velocity, within the limits of a safe recoil."

RECRUIT. *To recruit*—to ship or enlist seamen or sailors for the Naval Service. One enlisted is termed a *Recruit*.

REDUCE (Ordnance). Reduced charges of powder, something less than the full service charge, are kept filled in the magazines of vessels of war. "The full charge is adapted to the gun when cool: after several discharges the gun becomes heated, and heats the powder it contains, which, expelling its moisture, greatly increases its strength, and renders a reduction of charge necessary."—*Ward*.

The proportions of powder for each charge, as well as the relative number of each, are established by regulations, as shown in the "Ordnance Instructions," there being but three, viz.: for *distant*, for *ordinary*, and for *near* firing—the latter being used for saluting.

REEF. A chain of rocks lying near the surface of the water.

Reef, is also that portion of a sail comprehended between the

head and reef-band ; thus, to the first reef-band is termed the first reef, from this to the next is the second reef, and so on. But in fore and aft sails, which reef on the foot, the first reef is the lowest portion. See *Reef-band*.

To reef, is to reduce a sail by reefing.

“*All hands to reef topsails!*” a summons to the crew by the boatswain for the purpose of reefing.

Reef-lines, small ropes formerly used in reefing, by passing them spirally around the yard and through the holes in the *reefband*.

Reef-tackle. See *Tackle*.

Close-reefed. The situation of a sail, when all its reefs are taken in.

To reduce it further, the sail must be clewed up and furled.

REEL, a machine turning upon an axis, and used to wind ropes on, as the *log-reel*.

REEVE. To pass the end of a rope through a sheave-hole in a block, rack, or through a ring-bolt, thimble, &c.

REFIT, is to overhaul and repair all damages in the rigging, sails, &c., of a vessel.

RE-FORM (in Naval Tactics). Upon a shift of wind, destroying the *order* in which a fleet or squadron was sailing, to *re-form* them upon the same, or upon another *order*, by a prescribed method.

REIGNING WINDS, are those which usually prevail on any particular coast.

REINFORCE (Ordnance). That part of a gun where the metal is of greater thickness. “The *first reinforce* is that part measured from the rear of the base-ring to the small diameter of the first cone. In this part of the gun is the *vent-patch* and the *vent-field*. The thickness of the metal at the breech and first reinforce, must be sufficient to resist the explosive effort of the powder, which is greatest where the body of the charge ignites. Usually the thickness at this part is equal to about one calibre. In the heaviest guns it exceeds it from a tenth to a fifth. In lighter guns it is below a calibre, and in car-

ronades is about four-fifths of a calibre. But the thickness, whatever it be at that part, is, when fixed upon, the unit from which the decrease toward the muzzle is estimated."

— *Ward*.

The Second Reinforce "is measured from the fore end of the first reinforce to the small diameter of the second cone; in this part are placed the trunnions and their rimbases."— *Ward*.

Reinforce rings. Flat mouldings at the breech ends of the reinforce, projecting beyond the rest of the metal. That which forms the after part of the first reinforce is termed the *base-ring*.

RELIEVING-TACKLES, are strong tackles hooked to the tiller of a vessel, in gales of wind and in action, to be ready for use in case of damage to the wheel or tiller-ropes.

Relieving-tackles, are also large purchases used in careening vessels, to prevent their overturning, and to assist in restoring them to their upright position again.

RENDER. To yield or give way; as, "*Such a rope renders freely through a block.*" The lanyards of the lower rigging *render* from not being well racked.

RENDEZVOUS. A place or house where seamen resort, to enter into the naval service, officers being stationed there to attend to shipping them.

Rendezvous, is also a place or port, appointed for vessels to meet after a cruise, or on being separated at sea. Thus, the commander-in-chief signalizes, "*In case of separation you will rendezvous at ———.*"

RESTORE (in Naval Tactics). The order of sailing being destroyed by a shift of wind, to form again upon the same order, by a prescribed method.

RETREAT. The order or disposition in which a vessel or squadron declines an engagement or flies from an enemy.

Retreat. See *Order of Retreat*.

Retreat, is also a particular beat of the drum, for the men to leave their quarters after an exercise or action.

RIB-BANDS or **RIBANDS**, in naval architecture, are long, narrow and flexible pieces of timber, nailed upon the outside of the ribs, so as to encompass the vessel lengthwise.

RIDS of a vessel, a figurative term for the timbers.

RICOCHET. A bound or leap made by a shot, on striking the ground or water obliquely.

Ricochet-firing, is the method of discharging guns at a low elevation, which occasions the shot to go bounding along, and destroying every thing in its way until quite spent. The nearer that the gun is to the level of the water, the greater will be the effective range of the shot. "Ricochet shot will not retain penetrating velocity at such great distances as shot fired with an elevation." But when penetrating power is not of as much importance as range—as in operating against boats and small craft—this mode of firing is usually resorted to.

RIDE. Applied variously to a vessel at anchor or at sea; thus, "*She rides at single anchor*," "*She rides head to wind*," "*She rides athwart the tide*," "*She rides hard or easy*," as she strains her cables or otherwise.

At sea, "*She rides out a gale*," when she does not *drive*.

To *ride down* the head of a sail. See *Bending Sails*, paragraph 382.

A rope *rides*, when one of its turns is over another; thus, *riding turns* are passed over the previous ones, for the purpose of jaming.

RIDERS. In ship-building, are interior ribs, placed occasionally opposite to the principal ones, to which they are bolted, reaching from the keelson to the beams of the lower deck.

Riders, are also those casks which form the second tier in a vessel's hold. See Chapter XII.

RIDGE. See *Reef of Rocks*.

Ridge-ropes, are those above the top-rim, or along the bulwarks, to prevent persons from falling, or to haul out the awning to.

RIG. To fit the rigging to the masts and yards of vessels.

To *rig* a purchase, is to prepare it for use.

To *rig-in* or *rig-out* a boom, is to thrust it in or out to its place.

Riggers, are those persons employed in fitting and cutting the rigging for vessels.

Rigging, all those ropes used in supporting masts and yards, and in setting and taking in sails. The former is termed the *standing-rigging*, and the latter the *running-rigging*. 436.

Rigging-loft, a room in navy-yards or dock-yards, where the rigging is cut and fitted for vessels.

RIGHT. To *right* a vessel, is to restore her to an upright position, either from being hove out, or from being thrown on her beam-ends at sea.

To *right* the helm, is to put it amidships from either side.

Right, directly; as, "*Right ahead*," "*Right astern*," "*Right abeam*."

RIM. The rim of a top, is its after part or extreme edge.

Rimbases. A rim or moulding on the trunnions of guns, which, when the gun is mounted, keeps it clear of the carriage for elevating or depressing.

RING, of an anchor, is an iron circle at the upper end of the shank, to which the cable is bent.

Ring-bolt, an iron bolt, having a ring in one end of it, used for various purposes, as to hook tackles and stoppers to, the bolt being driven into one of the timbers or beams of the vessel.

Ring-ropes, are ropes secured to the *ring-bolts* in the decks, to secure the cable by, or to check the cable in veering.

Ring-ropes, used also in bending cables. See *Bending Cables*.

Ring-tail. A light sail, set abaft and beyond the spanker.

A *ring-tail boom*, rigs out on the spanker-boom, as a studding-sail boom on a topsail yard.

Ring. See *Reinforce*.

RIPPLING, a broken irregular noise occasioned by the current.

RISEING-LINE, in ship-building, an incurvated line drawn on the

plane of elevations or sheer-draughts, to determine the height of the ends of the floor-timbers.

ROACHING, a term applied by sail-makers to the act of curving the foot of square sails, or the forward leech of fore and aft sails.

ROAD OR ROADSTEAD. An anchorage at some distance from the shore.

An open *roadstead*, is that which is not guarded from the sea or wind.

A good *roadstead*, is that which affords good and safe anchorage for vessels.

ROBINS. See *Rope-bands*.

ROLL. The motion of a vessel from side to side ; this motion is greater when sailing free or before the wind.

Roller, a cylindrical piece of timber, fixed horizontally or perpendicularly, so as to revolve on its axis, for cables and hawsers to traverse over without friction.

Rolling-tackle. See *Tackles*, paragraph 284.

ROPE. An assemblage of several yarns, twisted or laid-up together in a variety of ways, used for various purposes, and distinguished by various appellations.

Several yarns twisted together form a *strand*, and three or more strands form a *rope*.

Hawser-laid ropes, are composed of three strands, each one being composed of a certain number of yarns, according to the required thickness.

Cable-laid ropes, are composed of nine strands, that is, three hawser-laid, twisted together, form one *cable-laid*.

Rope-bands (see *Robins*), small pieces of braided rope, by which the sails are secured, at the head, to the jackstay on the yard.

Rope-making, the act of uniting the strength of any number of yarns, so that each yarn shall bear an equal tension, and forming the whole into a cord.

Rope-yarn, the smallest or simplest part of a rope, being one of

the threads of which a *strand* is composed; so that the size of a *strand* and of the rope it forms, is determined by the number of *rope-yarns* in it.

All the ropes of a vessel composing the standing-rigging, running-rigging, ground-tackle, &c., are distinguished by names suited to their uses, without reference to the make or size of the rope; thus, the cable of a vessel may be *hawser-laid*, or the hawser *cable-laid*. The following will show the different ones which are called *ropes*, as

Bell-rope, attached to the bell, by which the time is marked on shipboard.

Bolt-rope. See *Bolt*.

Breast-rope. See *Sounding*, Chapter XXIII.

Bucket-rope, a lanyard attached to a bucket, by which it is used to dip water from alongside.

Buoy-rope. See Chapter X.

Clew-rope, a rope attached to the clew of a sail, and leading up forward; used in clewing up the sails for furling, and rousing the clew forward of the bunt.

Crown-rope. See paragraph 323.

Entering or *man-ropes*. Ropes secured at the upper end, and hanging down the ship's side, by the ladder, for the convenience of persons going up or down, to hold on by. Also at the ladders at the hatches. The former may be styled *entering-ropes*, the latter are *man-ropes*.

Foot-rope. See *Foot*.

Gaub-rope. See paragraph 131. See *Gaub-line*.

Guest or *guess-ropes*. A rope used to tow a boat or vessel by. The end being carried out and secured to a wharf, buoy, or other vessel, the other end is brought back to the vessel, and thus she is towed along.

Grab-rope. Used to confine the bunt of a sail for furling.

Guy-rope. See *Guy*.

Head-rope. The upper bolt-rope of a square sail.

Heel-rope. A rope secured to the heel of a mast or boom, to rouse it down, out, or in by, or to lash it with. 47, 240.

Jaw-rope. A rope or parral secured to the jaws of a gaff, and passed around the mast; on this are often trucks or rollers, that it may traverse easily up and down the mast. 205.

Man-rope. See *Entering-rope*.

Mast-rope. See *Swaying up topmast*, Chapter III., paragraph 210. Used to hoist and lower masts by.

Parral-rope, a single rope secured at the slings or centre of yards, and passed around the mast; used only on the light yards.

Ring-rope. See *Ring*, and paragraphs 330, 331. .

Slip-ropes, are used to suspend the bights of cables or hawsers by. See *Clearing Hawse*, Chapter XXVI.

Tiller-ropes, are those which communicate between the end of the tiller and the barrel of the wheel, by means of which the vessel is steered.

Top-rope, is that which is used in swaying up a topmast; it is rove through the *top-block* hooked at the cap, and through the heel of the mast. See paragraph 101.

Yoke-ropes, are those which are attached to the arms of a yoke, by which a boat is directed in its course.

ROUGH-TREE. A spar which is in the rough, or in an unfinished state.

ROUND-IN. To haul upon a rope; generally used in hauling in the weather braces. "*Round in the weather braces.*"

ROUND-UP. To haul up; generally applied to the act of hauling up the slack of a rope, through its leading-block, or to rounding up a tackle which hangs loose, by its fall.

ROUNDING. A term sometimes applied to *service*.

ROUND-TURN. One turn of a rope around a timber.

Also, a turn with one cable around another. See paragraph 792.

ROUSE. To haul, or pull together on a rope; thus, "*Rouse in the cable or hawser,*" "*Rouse together.*"

To rouse ahead, in towing a vessel by hawsers.

- Row** (pro. *Roe*). To pull or impel a boat by use of the oars.
- Row dry!* an order given to the oarsmen, in a boat, to row in such a manner as not to splash the water.
- Row-locks*, are those places in the gunwale of a boat in which the oars rest in pulling.
- Rowed of all!* an order to the oarsmen to cease pulling and lay their oars in the boat.
- Rowers* or *oarsmen*. Those who manage the oars in pulling.
- ROYAL**. The sail set next above a top-gallant sail.
- RUBBER**. A small instrument used by sail-makers, to rub down or flatten the seams of sails.
- RUDDER**. A long flat piece of timber, hung by pintles to the braces or gudgeons on the stern-post of a vessel; by turning which a vessel's stern is moved either way, as the resistance of the water on its surface may be.
- Rudder-coat*. (See *Coat*.) Used to prevent the water from coming in at the *rudder-hole*.
- Rudder-chain*. See *Chains*.
- Rudder-pendants* (see *Chains*), are a continuation of the rudder chains, secured by staples around the quarter, under the moulding, in the end of which is a thimble spliced, to which may be hooked a tackle, in case the tiller or head of the rudder is carried away.
- The *rake of the rudder*, is its forward part, which depends entirely on the rake of the stern-post.
- RUMMAGE**. To clear out, or examine the contents of any thing.
- RUN** of a vessel, is the after part of her bottom, which rises and narrows in approaching the stern-post.
- Run*. The course or distance sailed by a vessel; as, "*To run down a coast*," that is, to sail along the coast; "*We made a good run the last day*," that is, sailed a good distance.
- To *run down* a vessel, to run afoul of her, or over her.
- To *run out* a warp, hawser, or cable, is to carry out its end to any object, for mooring, warping, &c.

To *run out* the guns ; to force the muzzles out of the ports by means of the side tackles.

To *let run* a rope, to let it loose.

To *run*, to desert. "The deserter is marked *run* after three musters."

To *under-run* a hawser, cable, or warp, with a boat, to see that it is clear. See *Under*.

RUNG-HEADS. In ship-building, is a term applied to the upper ends of the floor-timbers.

RUNNER. A rope used to increase the power of a tackle ; it is rove through a single block, and the tackle hooked to its end. This is termed a *runner and tackle* purchase.

Running-part of a tackle, is the hauling or fall part.

Running-rigging. See *Rigging, Ropes, &c.*

S.

JABOT. "A block of wood, turned in a lathe to a diameter a little less than that of the shot to which it is to be attached." It is securely strapped to the shell, and serves to keep it in its proper position, while being forced home on the charge.

SADDLES. Pieces of wood, hollowed out to fit on the yards to which they are nailed, and having a hollow or saddle on the upper part, for the studding-sail booms to ride in.

A *saddle* is also fitted on the bowsprit, for the jib-boom to rest in.

SAG. To *sag to leeward*, applied to a vessel which makes much lee-way, by reason of the sea or current.

SAIL. Formed of different breadths of canvas sewed together in any form, and terminated on all sides by the *bolt-rope*. It is spread or set to receive the wind and propel a vessel.

Fore-and-aft sails, are those which are bent to gaffs, or set on

stays, as the spanker, fore and main spencers or trysails, the staysails, and head sails.

Square sails, are those which are bent to yards, as the fore and mainsail, the topsail, topgallant sails, royals, staysails, and studding-sails, &c.

The *courses*, are the principal or heaviest sails of a vessel, as the mainsail, foresail, and spanker.

The staysails, are those which are set on stays, as the fore topmast staysail, jib, flying-jib, jib-of-jib. The lower, middle, topgallant and royal staysails.

Studding-sails, are those which are set beyond the outer leeches of the square sails, in fair winds and light weather.

Storm stay-sails, are heavy sails set on stays between the head of the lower masts and the deck, used in gales of wind while lying to.

The *after sails* are those which are set on the main and mizzen masts, and the masts above them.

The *head sails*, are those which are set between the foremast and the head booms.

Water sail. See *Save-all*.

Sail, is also used frequently in speaking of a vessel, as, "We saw one hundred sail in the offing."

To *set sail*, to expand the sails upon their respective yards or stays that the wind may act upon them.

To *shorten sail*. To reduce the quantity of sail set, by clewing up and furling some of them.

To *make sail*, is to increase the quantity of sail set, by setting others.

To *loose sails*. See *Loose*.

To *strike a sail*. To lower it suddenly, by letting run the hal-yards.

To *settle down* a sail, is to lower it down to the cap handsomely.

SAIL-LOFT. In a dock-yard is a room appropriated to the use of the sail-makers for cutting out and making sails.

SAIL-MAKER. A warrant officer in the navy, whose duties are to make and repair sails for U. S. vessels.

SAIL-ROOM. An apartment in some part of a vessel, where the sails, which are not bent, are stowed.

SAILER. *A brisk, a fast, a dull, a heavy sailer*, are terms applied to vessels according to their speed.

SAILING. The movement of a vessel through the water, when propelled by means of sails.

Also, applied to the management of a vessel, as, "*He sails his own ship.*"

Sailing. See *Orders of*.

Sailing trim, applied to a vessel, when so ballasted that she goes at her greatest speed, or is in "*the best sailing trim.*"

SAILOR. A term applied indiscriminately to all persons trained to the management of a vessel. To tell such a one that he is "*no sailor*" is to offer him an indignity.

SALUTE. A testimony of respect to the rank of a person, or on the anniversary of some festival; rendered also by the vessels of one nation to those of another, or to foreign ports; performed by the firing of a certain number of guns.

Also, *salutes* between persons or officers, by touching the hat.

SAVE-ALL. A small sail, sometimes set under the foot of another sail to catch the wind that would pass under it—used sometimes under a lower studding-sail boom, the lower end kept down by weights—called sometimes *water-sail*. See 597.

SCALE. To *scale* the guns, is to clean out the bore by the explosion of a small quantity of gunpowder.

SCANDALIZE. A mizzen topsail is said to be *scandalized* when it is clewed down, before the wind, the buntlines hauled up, and the reef-tackles hauled out.

SCANT. Applied to the wind, when it edges a vessel off from

her course, or barely allows her to lie her course when braced up sharp. Also applied to a light wind.

SOANTLING. In ship-building, a term applied to any piece of timber with regard to its breadth and thickness, when reduced to the standard size.

SCARF. To unite two pieces of timber together by the extremities, the end of one overlapping that of the other, and then reduced so as to become even.

SCHOONER. A small vessel with long lower masts, generally two, though sometimes with three masts. The principal sails being fore-and-aft sails, like the spanker or trysail of a ship.

SCORE. The hollow or groove cut in a heart or dead-eye.

SCOUR (pro. *Scower*). To *scour* a coast, is to search it by sailing back and forth, in search of an enemy or any vessel.

SCRAPER. A triangular instrument, having a handle fitted in the centre, for scraping masts, and seams after being caulked, &c.

Sky-scraper. A sail. See *Sky*.

SCREEN. A partition made of canvas, used in lieu of wooden bulk-heads, in situations where they require to be frequently removed.

Fire-screens. Made of fear-naught, baize, or flannel, are placed forward of the after magazine passage, in action, or whenever the magazine is opened.

SCROWL. In ship-building, a piece or pieces of timber, bolted to the knees of the head in lieu of a figure-head.

SCRUB. To scrub the decks, to clean them by scrubbing with stiff-brooms and brushes, and using sometimes sand.

To *scrub* the hammocks, laying them flat on the decks and cleaning them by the use of scrubbing-brush, soap, and water.

“*All hands to scrub hammocks and wash clothes!*” Boat-swain’s call.

SCUD. Low thin clouds, which fly swiftly with the wind.

To scud, to be carried along by the force of a gale—it is performed with just sufficient sail to keep the vessel ahead of the sea. See *Scudding under bare poles*.

SCULK, or *Sculker*, a person who avoids duty.

SCULL. A short oar, having a short loom, so that two may be used by the same person in rowing.

To scull a boat, to impel her by using the oar over the stern.

SCUPPERS. Holes cut through the water-ways in certain positions, forming channels for the water to pass off into the sea.

Scupper-hose, a leather or thick canvas hose, nailed around the scuppers on the outside of a vessel, which prevents the water from entering through the scuppers.

Scupper-plugs, wooden plugs used to stop the scuppers with.

SCURVY. A disease to which sailors are exposed from the constant use of salt provisions on a long voyage.

SCUTTLE. A hole or small hatchway, cut in a deck or bottom of a vessel, for any purpose.

To scuttle a vessel, to cut a hole in her bottom or decks.

Scuttle-butt. See *Butt*.

SEA. Either applied to the whole body of water, as, the *Mediterranean Sea*, the *Black Sea*, &c., or to a single wave, as “*We were pooped by a heavy sea.*”

A long sea, a uniform regular motion of long and extensive waves.

A short, or *chop sea*, is when they run irregularly, broken, and interrupted, in which case they frequently break over a vessel.

A good sea-boat, is a vessel that rides easily on a sea, without straining her masts and rigging.

Sea-coast, the shore of any country which is washed by the sea.

Sea-day, twenty-four hours, commencing from meridian.

Sea-fight, a battle at sea between vessels.

Sea-legs, the capability of walking about a vessel's decks, when she is laboring. “*He has his sea-legs aboard.*”

Seaman, a grade or rate among sailors, next below the *petty officers*. Sailors are rated *seamen* after having served a certain number of years at sea, and being competent to perform the duties in any part of a vessel.

Seaport, a haven near the sea—in contradistinction to one in a river.

Sea-room, a sufficient distance from land, rocks, or other vessels, to encounter and ride out a gale safely.

Sea-sickness, a peculiar disorder to which persons are liable at sea, occasioned by the motion of the vessel, and smell of the bilge-water. It is rarely fatal, and if but slight is often beneficial to health.

Sea-weed, herbs or tangles floating on the sea—seen in great abundance on the borders of the Gulf-stream, and is called there *Gulf-weed*.

Sea-worthy, the state or quality of a vessel, when fit for a sea voyage or cruise.

SEAMS. The intervals between the edges of planks, in the sides or decks of a vessel. See *Calking*, *Oakum*, &c.

Seams, in mast-making, the intervals between the pieces that compose made masts.

Seams, in sail-making, are those parts where the edges of the canvas are sewed together.

SEARCHER. An instrument used by gunners to examine the bore of a gun, to see if it is defective or not, having steel points pressing outwards by springs, which, when pushed in or drawn out, or turned in the bore, will, if there are any cavities, catch in and detect them. “Any cavity whatever in a gun causes its rejection.”—*Ward*.

SECURE the guns. See *Ordnance Instructions*.

SEIZE. To bind or fasten ropes together.

Seizings, cords passed around ropes to secure them together.
76, 77 a.

SELVAGEE. A kind of skein of rope-yarns, marled together

with yarns, marline, or spun-yarn—used for stoppers, straps to hook tackles to, &c.

SEND. To pitch, as, “*The ship sends so violently as to endanger her masts.*”

Sending. “The return motion of a vessel after pitching. When a ship has passed a wave, her stern falls into the hollow of the waves, by the mean vertical direction of the water acting on the fore side of the centre of gravity. “*She sends aft.*”

SENNIT. A flat braided cord, formed by plaiting rope-yarns together, used for various purposes.

SERVE. To serve a rope, is to wind a smaller rope, as spun-yarn, &c., taut around it, by means of a serving mallet.
70.

To *serve a gun* (Gunnery). Under this head must be classed all that relates to the operation of sponging, loading, shooting, and priming a gun; the other operations performed at a gun, such as running in or out, pointing and firing, are more properly termed *Working a Gun*.

Service, is a rope wound around another, to preserve it from chafe, &c.

SET. To set sail, to make sail. See *Making and Shortening Sail*, Chapter XIII.

To *set up the rigging*, to extend or increase the tension on the rigging, to support the masts.

To *set taut*, to tighten a rope.

SETTLE. To lower or sink, as, “*Settle down the topsails.*”
“*The decks have settled.*” “*She has settled down into the mud.*”

SHACKLES. Certain links in a chain cable, secured by a bolt, for the convenience of taking it apart in clearing hawse.

Shackles, termed hand or feet irons, to place on the ankles or wrists of prisoners.

SHAKES, planks or timber full of clefts, that will not bear calking.

Shakes, are also the staves of hogsheads or barrels taken apart.

To shake a barrel, is to take it apart.

SHALLOW. Shoal water, not deep.

SHANK. See *Anchor*.

Shank-painter. See *Painter*.

SHAPE. To shape a course, is to direct or appoint the track of a vessel.

SHARP. *Sharp-bottomed*, used in opposition to flat-bottomed, in speaking of a vessel.

Sharp-up. See *Bracing Yards*.

SHEATHING. A casing or covering on the bottom of a vessel, to protect it from worms, &c.

SHEARS. For erecting masts. See *Masting and Rigging*, paragraphs 3 to 20.

Shear-hulk, an old vessel, having shears and all the necessary apparatus for heaving out or in the masts of other vessels.

SHEAVE (see *Blocks*), is a wheel in a block, rail, mast, yard, &c., on which a rope works; it is made of lignum-vitæ, or composition. The latter are used generally in *snatch-blocks gin-blocks*, &c.

Sheave-hole, is the channel cut in the mast or yard, for ropes to reeve through.

Sheave. Formed in coiling a cable. See paragraph 317.

SHEEP-SHANK. A particular kind of knot or bend, made in the bight of a rope, to shorten it temporarily. It is formed by doubling up the bight into three parts, then taking a half-hitch with the upper and lower ends or parts, over the adjoining bights; used on the back-stays when the masts are housed.

SHEER. The position in which a vessel is kept at single anchor. *To break the sheer*, is to deviate from that position.

To give a sheer to a vessel, in a tideway, at anchor, or with head-way on at sea, is done by means of the helm or otherwise, by turning her head either way.

To sheer up to, is to approach a vessel obliquely.

To sheer off, to increase the distance obliquely.

Sheer-strake, in ship-building, is the strake under the gunwale, in the topside.

SHEET. The rope used to haul aft the clews of fore-and-aft sails and courses, and to haul out or extend the foot of square sails to the yard-arms below them, and to haul down the inner clews of studding-sails and gaff-top sails, and to haul amidships the boom of a spanker, or of the mainsail of a schooner.

SHEET ANCHOR. The largest in a vessel. See *Anchors*, Chapter VIII.

SHELL. The outer frame or case of a block.

Shell (Ordnance). A hollow shot charged with powder, and fitted with a fuze, to be projected from a gun, and intended to burst after reaching a certain point, or burying itself in the object. "They may be fired from guns of any calibre or weight, their diameter and windage being precisely those of solid shot of corresponding calibre." "A shell prepared for service is strapped to its *sabot*, the fuze-stock is driven into its fuze hole, and the charge of powder is poured in through its filling hole, which is immediately plugged up."—*Ward*.

SHELVES. Dangerous shallows of sand-bars or rocks, just below the surface of the sea.

SHELVING. The gradual inclination of the land toward the sea.

SHIFT. Change, as, "*a shift of wind*," "*shift the helm*," "*to shift a tackle*." See *Fleet*. "*Shift end-for-end*," "*shift over the ballast*."

To shift the messenger, or dip the messenger, is to change its position around the capstan, for heaving in the opposite cable.

SHINGLE. See *Ballast*.

SHIP. A term, though often applied to vessels of any rig, is more properly applied to one of three masts, having square sails on each.

To ship, is to enter into a contract to serve on board of a certain vessel, or for the general service.

To ship, also applied to embarking any article, as ammunition, stores, &c.

To ship a sea. (See *Pooped*.) To have a wave break over a vessel.

To ship, also means to fix any thing in its place, as, "*to ship the awning-stanchions*," "*ship the tiller*."

Ship-shape, properly, or according to usage, as, "*such a piece of work is performed ship-shape*."

Ship-of-the-line, usually applied to a vessel of the rate of seventy-four guns and upward.

Receiving-ship, one appropriated to the reception of recruits, previous to their being drafted to any vessel.

Store-ships, those employed to carry stores, provisions, &c., to squadrons on foreign service.

Ship-building, the art of constructing vessels of any class.

SHIPPING. A term applied to an assemblage of vessels in a port or harbor, as, "*the harbor is full of shipping*."

SHIPWRECK. The destruction or loss of a vessel, by running on rocks, shoals, or being driven on a lee-shore.

SHIPWRIGHT. One who is skilled in the art of building vessels.

SHIVER. Applied to a sail, is to shake or flutter in the wind, as, "*shiver the mizzen topsail*."

SHOAL. A shallow, being nearly at the surface of the water.

Shoal-water, water of little depth.

SHOE. *To shoe* an anchor. See *Anchor*.

Shoe of an anchor, is a block of wood, having a hole in it to contain the point of the bill while fishing the anchor, to prevent it from tearing or injuring the planks of the vessel.

Shoe for shear-legs. See *Raising Shears*, paragraph 17.

SHOOT. *To shoot a bridge*, is to pass through it with the current.

To shoot ahead of another vessel, is to pass ahead of her by superior sailing.

SHORE. A general term applied to the sea-coast. "*A bold shore.*" See *Bold*.

Shores, are also props or stanchions placed under the beams so as to support the decks. See *Raising Shears*, paragraph 2.

Also, to support the masts in heaving down a vessel. Also placed under a vessel to support her in dock or in building.

Cap-shore, placed forward of the cap to support it.

SHORTEN. To shorten sail, is to reduce sail by taking it in.

To shorten-in a rope, is to take in the slack of it.

SHORT-STAY. See *Stay*.

SHOT. A general term for all descriptions of solid projectiles thrown from cannon, as *round-shot*, *double-headed-shot*, *chain-shot*, *grape-shot*, &c.

To shot the guns, to load them with shot over a cartridge.

Shot-boxes, are wooden boxes in which grape and canister-shot are kept at the guns.

Shot-gauge, an instrument for measuring the diameter of round shot.

Shot-rack, a frame of wood, in which are kept a certain number of shot at the guns, or around the hatches.

Shot. See *Cables*, paragraph 318.

SHOVE. To push, as "*Shove off that boat.*"

SHOULDER. In block-making, is a projection on the shell.

Shoulder-of-mutton, a sail of a peculiar form.

SHROUDS. A set of ropes reaching from the mast-heads to the sides of the vessel, to support the masts. See *Masting and Rigging*.

Bentick-shrouds, are ropes of the size of the topmast rigging, seized on to the *futtock-staves*, and leading to the opposite channels, where they are set up to support the masts in heavy rolling.

Bumpkin-shrouds, or braces, are strong ropes fixed to the bump-

kin-ends, to support them in opposition to the purchase which acts upon them in a contrary direction, to prevent them from rising and being sprung.

For the *shrouds* to the different masts, see *Masting and Rigging*.

SHUT-IN. To *shut-in* vessels, points of land, or harbors, is to intercept the view of them, by bringing some object to intervene.

SICK-BAY. See *Bay*.

SIDE. That part of a vessel which is presented to view from a position directly abeam.

Side-Tackle. A purchase used in working a gun. One block being hooked to the bolts in the side of the gun-carriage, or the lid of a carronade; the other block to a bolt in the bulwarks between the ports: the fall leading from the latter. There being a side-tackle on each side of the gun "they perform the office both of running out and training." They govern the fore-and-aft motion, and one of the thwartship motions; the other thwartship motion being governed by the train-tackle.

Side-trees, in mast-making, are the principal or lower main-pieces of a made-mast. See *Made-mast*.

Sided. A term used in contradistinction to *moulded*, in expressing the dimensions of a piece of timber.

Wall-sided. The figure of a vessel, whose sides are nearly perpendicular from the water's edge up. Used in opposition to *tumbling-home*.

SIGHT. "*Land in sight.*" "*Ship in sight.*"

Sight. To sight a gun, is to attach to it some means by which the direction of the axis of the bore may be known.

"The *line of metal sight*, is a line on the external surface of the metal, from the breech to the muzzle produced—this is termed the *line of metal top-sight*, or the *line of metal side-sight*, as it is used on the upper or side surface of the gun. Both of these are highly deceptive in obtaining the direction or ele-

vation necessary; which deception will be greatest in guns having greatest dispart.

“*Dispart sight*, is a sight placed along the top of a gun; this, when adjusted so as to bring it into a plane perpendicular to the axis of the trunnions, and passing through the axis of the gun, and also having its upper surface parallel with the axis of the bore, will give the direction of the axis both in aim and elevation.

“*Tangent slide sight*, is placed at the breech, and on top of the gun, the slide piece moving vertically; the notch on the top of which, is always on a line with the axis of the bore of the gun. This *sight* is for the purpose of obtaining the proper vertical direction, when the elevation of the gun is such as to throw the object below the level of the dispart.”—*Ward*.

SIGNALS. Signs made by flags, or at night by lanterns and fireworks, to communicate intelligence to other vessels.

SILENCE. An order frequently necessary to a crew not well disciplined. “*Keep silence fore and aft.*”

To silence a vessel or a battery, is, by a vigorous cannonading, to dismount their guns, or otherwise cause them to cease firing.

SILLS. *Port-sills*, in ship-building, are pieces of oak timber, let in horizontally between the frames, to form the upper and lower sides of ports.

SINK. *To sink a vessel*, is to force her to settle down into the water, by scuttling or by a heavy cannonading.

SKINS, or SKEEDS. Pieces of timber placed up and down the side of a vessel, to prevent it from injury in parbuckling on board spars, as shear-legs, masts, &c. See Chapter I.

SKIN. That part of a sail, when furled, which remains outside and covers the whole; thus, “*to furl with a smooth skin,*” or “*to skin the sail up smooth,*” is to turn it well up, and so as to cover the sail neatly and smoothly.

SKIPPER. A familiar term sometimes applied to the master of a merchant vessel.

SKY. *Sky-larking*, frolicking, or running about the rigging in sport.

Sky-sail. The sail set next above a royal.

Sky-scraper. A term applied to a sky-sail, when its form is triangular.

SLABLINE. A small line attached to the centre of the foot of a mainsail or foresail, and leading up, abaft the sail, through a small block under the slings of the yard—used to haul up the foot of the sail to keep it clear. See paragraphs 143, 449.

SLACK. A decrease in speed or tension, as, "*the tide slackens*," "*she slackens her way through the water*," "*slack off that rope*," "*slacken the lanyards of the rigging*."

The slack of a rope, is that part of it which hangs loose, or bears no strain.

"*Slack in stays*," implies a slow or dull movement of a vessel in tacking; also applied to a person who moves slowly or lazily.

Slack-water, is the interval between the ebb and flood of the tide.

SLANT. *Slant of wind*, a transitory breeze of wind, or the period of its duration. See paragraph 578.

SLEEPERS. A term applied to the knees which connect the transoms to the after timbers on the ship's quarter.

SLIDE SIGHT. See *Sight*.

SLING. To sling a cask, gun, or any article, is to fix about it the strap or rope to which the purchase is to be hooked.

To sling the yards for action, is to secure them at the slings by iron chains fitted for the purpose.

The slings of a yard, are those ropes or chains by which they are suspended, by the centre, to the mast. In speaking of the centre of a yard, between the two extremes, it is called *the slings*, 142, 160.

Boat-Slings, are fitted with hooks and thimbles, to hook the purchase to for hoisting.

But-slings, for purchasing casks, are fitted with two eyes to go over the chimes.

Buoy-slings, are the straps that are fitted around a buoy.

SLIP. A place having a gradual descent, convenient for ship-building.

To *slip* a cable. See *Cable*.

A *slip-knot*, is one which will not bear a strain, but slips along the rope around which it is made.

Slip-ropes. See *Rope*.

SLOOP. A small vessel with one mast, carrying only a jib and mainsail.

Sloop of war, a vessel, of any rig, mounting between eighteen and thirty-two guns.

SLOPS. Clothing, bedding, &c., furnished to seamen by the government, at fixed prices.

SLUE. To slue, is to turn around a mast, yard, or boom, without altering its position, "*Slue the studding-sail boom*, so that the tacks may lead fair."

SMALL. *Small-arms*, a general name given to muskets, pistols, &c., to distinguish them from the great guns, "*Exercise the division at small arms*," "*Exercise the small-arm men*."

Small-round. See *Anchor*.

SMOKE-SAIL. A small sail set forward of the galley funnel, to allow the smoke to rise before it is blown aft by the wind.

SNAKING. Winding a small rope spirally around a larger one, along the lay of the rope. See *Worming*.

Snaking. Fastenings to confine the outer turns of seizings.

Snaking, also, stoppers passed alternately from one stay or rope to another, through the whole length, in a parallel direction. Its use is, that if one should be shot away, its office is performed by the other.

SNOTTER. A rope attached to topgallant and royal yards with an eye, to bend the tripping line to.

Snotter, a short rope spliced together at the ends, and served

with spun-yarn, or covered with hide or leather. It is seized around a mast, leaving an eye or bight to step the lower end of a sprit in; used in boats.

SNUB. To *snub* a cable or rope, is to check it suddenly in running out.

SNYING. In ship-building, a term used for a circular plank, edgeways, to work in the bow of a vessel.

SOFT-WAD. See *Wad*.

SOLE, of a rudder, is a piece of timber attached to the lower part of it, to render it level with the false keel.

SOUND. A strait or inlet between two pieces of land.

To *sound*. To try the depth of water, and the quality of the bottom, by means of the *sounding-lead*. See Chapter XXIII.

To *sound the well*. To ascertain the depth of water in the hold of a vessel, by means of the *sounding-rod*.

A *sounding-rod*, is an iron rule marked with inches, having a rope attached to it, for sounding in the well.

Soundings. The quality of the ground brought up by the lead, and the depth of water.

In Soundings. A vessel is said to be "*in soundings*" when the deep-sea lead reaches the bottom.

SOUTH. One of the cardinal points of the compass.

Southern. To the southward. "*Southern latitudes*."

Southing. The difference of latitude made by a vessel to the southward.

SPAN. A rope secured at both ends to any object, the purchase being hooked to the bight.

Spans, for hoisting in boats, are fitted with a hook in each end; on the bight is either a travelling thimble, or a thimble strapped in at the centre, to hook the purchase to.

Spans, are also used as leaders for running rigging, having legs and thimbles turned into the ends, through which the rigging leads, the span being secured by a lanyard at its bight. The

main braces are thus spanned to the mizzen rigging, to keep them clear of the boat-davits.

To span the booms, is to confine them by lashings.

To span-in the rigging. See *Swifter*.

SPANKER. The after sail in a ship or barque, being a fore-and-aft sail; attached to a gaff, formerly called *driver*.

SPARE. Held in reserve, to supply the place of any that may be rendered useless, as, "*Spare anchors*," "*Spare sails*," "*Spare spars*," &c.

SPARS. *Rough Spars*, are pieces of timber suitable for forming masts, yards, booms, &c.

Spare spars, are spars or masts, yards, booms, &c., made and ready to supply the places of others.

Spars, also, a general term for all the masts, yards, booms, and gaffs of a vessel when rigged; thus, a vessel is said to be *over-sparred*, when her masts are unusually taunt, and yards square.

SPELL. The duration or period of a watch or trick, as, "*A spell at the helm*," "*A spell at the mast-head*," "*A spell at the pumps*."

Spell of weather, the continuance of any kind of weather, "*A heavy spell of weather*," "*A spell of fine weather*," "*A long spell of weather*, &c."

To spell. To relieve, as, "*Spell the helmsman*."

SPENCER OR TRYSAIL. A fore-and-aft sail set abaft the fore and main masts, being rigged like a spanker; they have generally supplied the places of storm staysail.

SPEND. To lose, break, or carry away, as "*We spent one mast*."

SPENT BALL, one which reaches the object, but has lost much of its impetus.

SPIKE. See *Hand-spike*.

To spike a gun. To drive a nail or file into the vent, to render it useless.

SPILL. To *spill* a sail, is to dislodge the wind from out its belly, in order to reef or furl it.

Spilling lines, are ropes used for this purpose. See *Line*.

Spilling a sail, may also be accomplished by bracing the yards.

See *Shiver*.

SPINDLE. (In mast-making.) See *Made-mast*.

Spindle of a capstan, is the iron pin on which it revolves. It is also an iron pin reaching above the truck at the skysail-mast-head, which serves for the vane to turn upon in showing the direction of the wind, and also to lead the electric fluid to the conductor, which is hooked to its lower end and leads down into the sea.

SPINNING. In rope-making, is the act of combining the fibres of hemp, in forming rope-yarns.

SPIRIT-ROOM, an apartment in the after part of a vessel's hold, where are stowed spirits, &c.

SPIRKETING. In ship-building, the planks from the waterways up to the port-sills.

SPLICE. To join together the two ends of a rope, or of different ropes; or the end of a rope into itself; there are different kinds of splices, named according to their forms or uses, as

A *short splice*, is formed by splicing together the two ends of the same or of different rope, by unlaying the strands to a certain distance, and interweaving them between the strands of the other end or rope. See paragraph 328.

A *long splice*, a splice by which two ropes are joined together, more convenient for reeving than the short-splice, but occupying more space; the ropes are unlayed some distance, and the strands of one worked into the other, then secured at the centre and at the terminations of the splice.

An *eye-splice*, is formed by splicing the end of a rope into itself, thus forming an eye. Used to confine thimbles, bulls-eyes, &c.

A *cut-splice*, is formed by joining the ends of two ropes, or

splicing the end of each into the bight of the other, at equal distances from the ends, so that the line becomes double in the extent of the splice, forming a long-eye; used in lead and log lines, &c.

A *drawing-splice*. To join two ropes together by, principally used in splicing cables, is formed by unlaying several fathoms of each end, then placing them together and forming a *short splice*; then leaving about one fathom of each strand, and reducing the remainder of each by cutting away some of the yarns, to taper them; then *point* the end of each strand neatly, and lay them along taut in the *cuntlines* of the cable, and secure them by quarter, middle and end seizings; this is termed a *drawing-splice*, because it may be easily taken apart.

A *tapered-splice*, is made by forming a short splice, then tapering the strands, as above, and passing them again each through the strands of the other rope, reducing or tapering again, and passing the strands again, until expended; this may be served over with spun-yarn.

To splice the main brace. To distribute to the crew an extra allowance of grog, in stormy weather, or on certain anniversaries, at the discretion of the commanding officer.

SPLINTERS. Pieces of the hull, masts, &c., which are knocked off by a shot, and flying among the crew, do great injury in an action.

SPLIT. *To split* a sail, is to have it torn by the violence of the wind.

Split, applied to a vessel, is, when she is bilged on a rock.

SPONGE (Ordnance). "Composed of the sponge-head and staff, the former a cylindrical piece of wood (elm or ash), one inch smaller than the calibre, and commonly eight inches long. For a chambered gun, however, the sponge-head must be made of an additional length, of a shape adapted to the slope and chamber, as well as to the cylinder of the bore. The wooden sponge-heads were formerly covered with lamb-skin, dressed

in alum, with the wool on; now, by regulation they are covered with canvas, with woollen yarn thrumbs, wove in full and thick, which trimmed down to the proper size, makes a sponge more durable and less liable to injury from moth or dampness. There is, also, a worm in the extremity of the sponge-head, to take out fragments of the burned cylinder, which may remain in the bottom of the bore."—*Ward*.

"*Sponge the guns.*" See Gun Exercise in "Ordnance Instructions."

SPOON-DRIFT, a showery sprinkling of sea-water, swept from the surface of a wave by the wind.

SPRAY. A sprinkling of water from the waves, occasionally thrown off, differing from *spoon-drift* in this, that the latter is a constant flow from the waves in a tempest, covering the whole sea, while the former is only an occasional shower as the wave breaks.

SPRING. A rent, split, or crack in a mast or yard; yards are generally sprung in the slings.

Springs, are also ropes passed out from a vessel's stern, and attached to the cable or buoy, by which she may be *winded*. See *Working to Windward*, *Clubhauling*.

To spring a butt. See *Butt*.

To spring a leak, is when, by any accident, the water passes through a breach in the sides or bottom of a vessel. See *Leak*.

To spring the luff. To force the vessel up into, or close to, the wind, when she has good headway on.

Spring-tide. The periodical excess of the elevation and depression of the tide. See *Tide* and *Neap*.

SPRIT. A small boom which crosses the sail of a boat diagonally, the lower end stepped into the *snotter*, and the upper end attached to the after and upper corner of the sail; by which the sail is extended and elevated.

Sprit-sail yard, in vessels, is extended athwart the bowsprit or

knightheads, used to extend the rigging of the head booms. Formerly sails were set on it, called *sprit-sails*, these are now entirely out of use.

SPUN-YARN, a cord formed by twisting together two or three rope-yarns, used for seizings, service, &c.

SPURLING-LINE. See *Line*.

SPURS. Are pieces of timber fixed on the bulge-ways, their upper ends bolted to the vessel's side above the water.

Spurs of the beams, are curved pieces of timber, serving as half beams to support the decks where a whole beam cannot be placed.

Spurs of the bits. See *Standards*.

SQUADRON. A detachment of vessels employed on any particular service or station, under the command of the senior officer.

SQUALL. A sudden and violent gust of wind,

A *black squall*, is one attended with dark heavy clouds.

A *white squall*, comes unexpectedly, without being marked in its approach by the clouds.

A *thick squall*, is a black squall accompanied by rain, hail, or sleet, &c.

SQUARE, at right angles with the vessel's keel, and parallel with the horizon; the yards are "*square by the braces*," when at right angles with the keel; and square by the lifts, when at right angles with the mast or parallel with the horizon.

Square, also applied to yards which are of unusual length, as, "*Such a vessel has very square yards.*"

To *square-away*, is to square the yards by the braces, and run before the wind.

Square Sails, are those which are bent to yards, and are four-sided. See *Sail*.

Square-sail. The name of a sail set on the foremast of schooners, sloops, and cutters, when sailing before the wind in light weather.

Square-sail boom, used to extend the outer lower corners of square sails in schooners, cutters and sloops.

Square-sterned. The form of a vessel's stern, in opposition to *round-sterned*.

STABBER. In sail-making, an instrument similar to a *pricker*.

STAFF. A pole or mast, used to hoist flags on, as

Ensign Staff, is reared over the stern of a vessel, to the head of which is hoisted the flag or ensign of the country to which she belongs.

Flagstaff. Is one erected on shore, in dock-yards or navy stations, and used for the same purpose.

Jack Staff, a short staff, erected or shipped at the bowsprit cap, to hoist the jack on in port.

STAGE. A platform over a vessel's side, supported by ropes, whereon persons may stand to caulk, paint, or for any purpose.

Floating-stage. See *Raft*.

STANCHEONS. Pillars of wood or iron placed to support the beams of a vessel; also around the upper works, to haul out the awnings to in port.

STAND. To sail, thus, "*She stands on, or off the shore*," "*Standing to the northward*:"

To *stand-by*. To be prepared, or ready. See *Gun Exercise*.

To *stand by* a rope. To attend to it, to remain by it, for the purpose of letting it go when ordered.

To *stand-on*. To continue on the same tack or course.

Stand-from-under, a caution given to those who are in danger of any thing falling on them from aloft.

To *stand off-and-on*. To remain near a coast by standing toward and from it alternately.

STANDARD. In ship-building, an inverted knee placed above the deck instead of beneath it. See *Bitt-standard*, &c.

Standard-knees are fastened on one side against the vertical side of the beam, and on the other against the vessel's side.

STANDING. The *standing-part* of a rope, is that which is made fast, or the opposite end to that on which the force is applied in hauling on it. Of a tackle, is that end of the fall which is secured to the strap of one of its blocks.

Standing-rigging. See *Rigging*.

STARBOARD. The right side of a vessel when looking from aft forward.

START. To empty, as, "*Start the water-cask.*"

To weigh, or move, as, "*Start the anchor,*" "*Start ahead.*"

To hasten, as, "*Start the men up from below.*"

STATION. *Station bills*, lists containing the appointed stations of all the officers and crew of a vessel.

STAVE. To break in, to make a hole in a vessel, boat, or cask.

STAY. A rope to support masts, deriving its specific name from the mast to which it belongs.

Fore-and-aft stays, lead from the head of the mast, forward. 65, 66, 128, 236.

Breast and standing backstays, are those which lead from the mast-heads down to the gunwale on each side. 229, 230, 235.

Spring-stays, are preventer stays, to assist the principal ones.

Staysail. See *Sails*.

Staysail-stays, are those on which the staysails are set.

Stay-tackle. See *Tackle*.

To stay a vessel. To tack her.

To heave in stays. See *Heave*.

A short stay. A cable is said to be a *short stay* when it is hove in until the anchor is nearly *under foot*, or the cable nearly *up and down*. See Chapter XVI.

To miss stays, to fail in the attempt to tack a vessel.

Triatic stay. See paragraph 271.

STEADY. An order to the helmsman to keep her head as it is.

Steady out the bowlines, haul them out to steady the sail on the wind.

STEER. To direct a vessel by the movement of the rudder.

- Steerage*, used to express the movement or effort of the helm.
- Steerage*, the apartment appropriated to the midshipmen on ship-board.
- Steerage-way*, a degree of motion in a vessel, through the water, sufficient to make her feel the effect of the rudder.
- STEEERSMAN. More properly *Helmsman*.
- STEEVE. The angle which the bowsprit makes with the horizon, or line of the vessel's keel; the bowsprit is said to *steeve* more or less, as the outer end is raised or drooped.
- STEM. A circular piece of timber, into which the two sides of a ship or vessel are united at the fore end. The lower end scarp'd to the keel, the upper end reaching to the bowsprit. *To stem the tide*, is to acquire a velocity sufficient, or equal to, the strength of the tide, in sailing against it.
- "*From stem to stern*," from forward to aft.
- STEMSON. See *Timber*.
- STEP of a mast, is a block of wood, placed securely over the kelson, to receive the heel or tenon of the mast.
- To step the mast*, to erect it, and place it in its step.
- STERN, of a vessel, is its after part, or that which is seen from abaft the vessel. See *Round* and *Square*.
- By-the-stern*, more deeply laden abaft than forward.
- To make stern-board*. See *Board*.
- Stern-chasers*, guns pointed through the stern ports, or astern, to annoy or disable a vessel in chase.
- Stern-fast*. See *Fast*.
- Stern-frame*, in ship-building, is that frame of timber which is composed of the stern-post transom and fashion-pieces.
- Sternmost*, furthest astern — opposed to headmost. "*The sternmost vessel of a squadron*."
- Stern-post*, in ship-building, see *Timber*.
- Stern-sheets*, that part in a boat contained between the stern and the after row-lock, or after seat of the oarsmen. It is furnished with seats to accommodate passengers.

Stern-way. See *Stern-board.*

STICK. To *stick-out* a cable or other rope, is to push it out. You stick out the cable in catting the anchor.

To *stick a cringle*, in sail-making, is the act of placing an iron cringle in at the head, leech, or clew of a sail. The hole is forced sufficiently open by means of a fid, and before it has time to close the cringle is *stuck* in, when it is instantly secure and not easily removed.

STIFF. When applied to a vessel, expresses a quality by which she is enabled to bear a press of canvas without careening much.

A *stiff breeze*, is a wind which is more than moderate.

STIRRUPS, are ropes secured to the yards, having thimbles in their lower ends, through which the foot-ropes are rove. 152.

STIVING. See *Steeving.*

STOCK, of an anchor. See *Anchor.*

Stock-tackle, is a tackle applied to the upper stock of an anchor, when fished, to rouse it perpendicular.

Stocks, a frame erected on the shore of a river or harbor, whereon to build vessels.

Fuze Stock. See *Fuze.*

STOOLS (see *Chainwales*), are small channels on the sides of the vessel, for the dead-eyes of the backstays.

STOPPERS. *Cat-head stoppers*, attached to the cat-head to secure the ring of the anchor by. See paragraph 365.

Stoppers, are also short pieces of rope, having a knot at one or both ends, with a lanyard under the knot; used to apply to shrouds, cables, &c., for various purposes.

Stopper-bolts, are large ring-bolts driven into the decks, through a beam, to which the *deck-stoppers* are hooked.

Deck-stoppers, or *stoppers to the cable*, are large stoppers, having a hook and thimble at one end, and a knot and lanyard at the other; by means of which the cable is retained or prevented from running out. See paragraph 356.

Rigging-stoppers, have a knot and lanyard at each end, and are applied to shrouds and other rigging when injured, for only a temporary security.

For the different varieties of stoppers, see paragraphs from 355 to 359 inclusive.

Stopper and Fleet!—an order given when a tackle is brought *two-blocks*, or *block-and-block*, to stopper the rope or cable, and fleet the purchase.

STOPS, in mast-making, are square projections or shoulders left on the outsides of the cheeks, at the upper parts of the hounds of the lower masts. Also on topmast, topgallant-mast, and jib-boom.

STORE-ROOM. An apartment in the lower part of a vessel of war, in which are kept the stores, rigging, &c., of the different departments, as boatswain's, gunner's, sail-maker's, carpenter's, and master's *store-rooms*.

STORM. A violent agitation of the wind, accompanied by thunder, lightning, and rain.

Storm-sails. See *Staysails*.

STOW. *To stow the hold.* See *Hold*.

Stowage, the disposition of the cargo, provisions, casks, &c., in the hold of a vessel.

STRAIT. A narrow channel of water, between two opposite shores.

STRAND. One of the parts or divisions of a rope.

A rope is stranded, when one of its *strands* is broken or chafed through.

Strand, is also applied to the shore of the sea, or bank of a river.

A vessel is stranded, when she is driven on the shore by a tempest or by ill management.

STRANGE SAIL. An unknown vessel.

STRAP. A piece of rope formed into a circle, used to surround a block, to retain it in any position. See *Block*.

Selvage-straps, are applied to ropes for the purpose of hooking a tackle to.

STREAKS. Uniform ranges of plank, on the bottom or sides of a vessel, reaching from the stem to the stern.

STREAM. Running water.

To stream the buoy. See *Buoy*.

Stream-cable. See *Cable*.

Stream-anchor. See *Anchor*.

STRESS. *Stress of weather*, heavy and tempestuous.

STRETCH. The progress of a vessel, as, "*We made a long stretch off shore.*"

To stretch along, to lead along a rope, in readiness for the men to haul upon it.

Stretch out! an order to the oarsmen, to pull with all their force.

Stretchers, pieces of wood reaching athwart-ships, between the sides of a boat, to keep them apart when hoisted up. Also across the bottom of a boat, for the oarsmen to rest their feet against while rowing.

STRIKE. (See *Douse*.) To lower, as, "*To strike the colors,*" "*To strike the topsails.*"

To strike soundings, to arrive at a point where soundings may be obtained.

To strike to an enemy, to surrender, by hauling down the colors.

To strike, to run ashore, or touch the bottom, in passing over a shoal or reef of rocks.

Striking velocity. See *Velocity*.

STRIP. To unrig a vessel. "*Stripped to a girt-line.*"

STROKE. A sweep of an oar in rowing.

Strokesman, the after oarsman, who gives the *stroke* to the rest.

A long stroke, or a *short stroke*—the former used in single-banked, and the latter in double-banked boats.

STUCK. See *Stick a cringle*.

STUDDING-SAILS, or Steering-sails. Light sails, set outside of the principal or square sails of a vessel, in free winds, to increase her speed.

Studding-sail yard, a small yard, to which the head of the studding-sail is bent.

SUBORDINATION, in the naval service, is a perfect submission to the orders of superior officers.

SUCCESSION (in Naval Tactics). A squadron, or column of a fleet, manœuvring *in line*, at any point—each vessel following in the wake of its next ahead, is said to *manœuvre in succession*.

SUIT OF SAILS. A complete set of all the sails that may be set on a vessel together, including the heavier and lighter ones.

SUPERANNUATED. An officer or seaman unfit for active service, on account of his age.

SUPERCARGO. An officer of a merchant vessel, intrusted with the cargo, and the commercial affairs of the vessel.

SUPPLY. A fresh recruit of stores and provisions.

SUPPORTERS. In ship-building, a name given to knee-timbers under the cat-head.

Supporters, or Bibbs. See *Made-masts*.

SURF. The sea as it breaks upon a shore, or reef of rocks.

SURGE. A swelling sea, or a great wave.

To surge, to let go a rope suddenly, or render it around the pin or kevel, as, "*surge the hawser*," "*surge the messenger*."

SURGEON. A commissioned officer in the navy.

Assistant surgeons, also commissioned officers.

SURRENDER. To deliver up a vessel to an enemy.

SURVEY. A strict and impartial examination, made by a board of officers, over public stores or property, reported as defective or unfit for use.

SWAB. A mop formed of old rope, used to dry the decks with.

SWAY. To hoist, applied generally to hoisting up the yards, or hoisting on the mast-ropes. "*Sway aloft.*"

SWEEP. To *sweep* for an anchor; to drag bights of rope along the bottom, to search for a lost anchor.

Sweeps, are large oars, used in small vessels, to force them ahead in a calm.

SWELL. The agitation of the water, rising and falling.

SWIFTER. Ropes used to confine the capstan-bars in their places, when shipped. It is passed around, and secured to the extremity of the bars.

Swifter, is also a rope encircling a boat length ways, to strengthen and defend her sides from external injury.

Swifters, are also the forward shrouds to a mast, which are not among those confined to the cat-harpings.

To *swifter-in* the rigging. See *Cat-harping*. See *Masting and Rigging*.

SWIG. To pull heavily on a rope.

Swigging-off. To pull up on the bight of a rope, the lower end being secured, or around a pin; and taking in the slack around the pin as it is gained in swigging.

SWING. The motion of a vessel around her anchors, or of yards in being braced, as, "*she swings to port,*" "*swing around the after yards.*"

SWIVEL. A strong link of iron, used in mooring-chains or chain-cables.

Swivel-hook, a hook on an *iron-strapped* block.

SYIPHERING, in ship-building, is the act of lapping one edge of a plank over the edge of another, for bulk-heads.

T.

TABLE. *Table-shore*, a low level shore.

Table-land. The appearance of any land, whose outline presents a *long level* appearance.

Tabling. In mast-making, is uniting pieces of timber together, in a manner similar to the *chain-coak*.

Tabling, of the beams, in ship-building, is letting one beam-piece into another. See *Scarving*.

Tabling. In sail-making, is the broad hem on the borders of sails, to which the bolt-rope is sewed.

TACK. Is a rope used to confine the weather clews of the courses, the forward and lower corners of fore-and-aft sails, and the outer lower corners of topmast, topgallant, and royal steering sails, down to their proper places, when set: this to a lower steering sail is called an *out-hauler*.

Tack of a flag, is a line spliced to the bottom of the *tabling*, to which the halyards are bent.

Tack, is also that part of the sail to which the tack is bent.

To Tack. Is a method of putting a vessel about. See Chapter XVII.

A vessel is said to be on the starboard or port *tack*, as she is standing close-hauled, with the wind forward of the starboard or port bow.

TACKLE (pro. *Taicle*), is formed by the combination of a rope with an assemblage of blocks, used variously to raise, support, or remove weighty articles, and derive their specific name from their construction or the uses to which they are applied.

If they communicate with a *runner* they are *movable*; or otherwise *fixed*.

If they are composed of two single blocks and fall, the *standing part* of the fall is secured to the block from which the *hauling part* leads.

If of a single and double block and fall, the standing part is secured to the single block, the hauling part leading from the double block.

If of two double blocks and fall, the standing part is secured to the block from which the hauling part leads.

Of a double and threefold block and fall, and so on; the power of the purchase increasing on each increase of sheaves in the blocks.

Boom-tackles, are those used for rigging in or out the studding sail booms, composed of a double and a single block and fall.

Bowline-tackle, is that which is used to bowse out the main bow line by.

Burton, a small tackle, used for various purposes; to assist in the support of a yard. See Chapter VII.

Fish-tackle, is that which is used in fishing the anchor, to get it in its place on the gunwale.

Garnet-tackle, used in merchant vessels in hoisting out cargo.

Gun-tackle. A gun-tackle purchase is composed of two single blocks and fall.

Tiggers, are tackles used variously, being fitted with tails, for the convenience of applying them to any rope, to increase the purchase, as, on the topsail sheets, lower lifts, &c.

Luff. A luff-tackle purchase is composed of a double and single block and fall.

Port-tackles, are those used in tricing up the ports of the lower deck, in ships of the line.

Pendant-tackles. See paragraph 272.

Quarter-tackles, are large tackles composed of double and single blocks, and used in hoisting on board water, provisions, &c. See 270.

Reef-tackles, are those by which the reef cringles of a sail are roused up to the yard for reefing.

Relieving tackles, are those which are kept fitted, in readiness to be applied to the rudder, in case the wheel or wheel rope should be shot away or injured, in action or heavy weather.

Rolling-tackles, are those which are used to steady the yards in a heavy sea. See paragraph 284.

Rudder-tackle. That which is hooked to the rudder pendant,

in case any accident happens to the rudder. See *Rudder Pendant*.

Runner-tackles, composed of a double and single block and fall, having a pendant fitted to the double block, and a hook and thimble to the lower, used for setting up rigging.

Side-tackles. See *Side*.

Stay-tackles, are those which are hooked to the triatic stay, in hoisting in or out of the vessel any article, or in hoisting up out of the hold to the deck. 271.

Stock-tackle, a small tackle applied to the upper part of the stock, in securing the anchor, to rouse it in to the bows.

Tack-tackle, used to bouse down the tack of any sail to its proper place, particularly applied to those which are used on the tacks of spankers, spencers, and the sails of schooners.

Top-tackle. That which is used in swaying up a topmast. See paragraph 267.

Train-tackle, a tackle used in training or running in a gun, or to prevent its running out while being loaded.

Truss-tackle. That by which the truss of a lower yard is boused taut.

Winding-tackle, a purchase used in hoisting heavy articles in or out of a vessel. See 268.

Yard-tackles, stout tackles used on the lower yards, to hoist in or out heavy articles. See 266.

Tackle-fall. The whole rope which is rove alternately through the sheaves in the two blocks of a tackle; that end of it which is secured to one of the blocks is called the *standing-part*, and the other end, from the last sheave to the termination of the rope, is called the *hauling-part*.

TACTICS. *Naval tactics*, is the art of arranging and manœuvring fleets or squadrons.

TAFFRAIL. The upper part of the stern of a vessel.

TAIL, of a block, is a rope connected with the block, by which it is applied to a rope or spar, for any purpose.

Tail-block, is a single block strapped with a tail, by which it may be applied to any thing, as a leader for a rope.

Tail-boards, in ship-building, the carved work between the cheeks, that is fastened to the knee of the head.

Tail of a gale, the latter part of it, when the wind has greatly abated.

Tail on, to clap on, or take hold of a rope, for the purpose of hauling on it, as, "*tail on to that rope!*" Also, to attach one rope to another, for a temporary purpose.

To tail the ends of a cable. See paragraph 327.

TAKE, is applied variously, as "*take a reef in a sail,*" "*take in a sail.*" See *Reefing and Shortening Sail.*

Taken aback, the situation of a vessel, when by a sudden shift of wind, the sails are acted upon on their forward surface, pressing them against the masts. Differing from *laid aback* in this, that in the latter case it is the result of design or intention, in the former of accident or negligence.

TANGENT SIGHT. See *Sight.*

TANKS. Iron vessels, made to fit to the form of a vessel's hold, for the stowage of water.

TAR. A liquid gum, produced from pines and fir-trees, and used for various purposes on ship-board; such as, paying the seams of the vessel, in making rope, covering the standing rigging to preserve them from the weather, &c., &c.

Jack-Tar or a *Tar*, used figuratively in speaking of a sailor or a seafaring man.

Tarpauling, a piece of canvas, covered with tar, or a composition, to render it water-proof; used for the purposes of covering the hatches, hammocks, boats, &c.

Tarpauling is also a name given to the hats worn by the sailors, which are covered with painted or tarred cloth.

TAUGHT, or *Taut*. Meaning tight—the state of a rope when extended or stretched out; often used in opposition to *slack*.

TAUNT. High or tall, as, "*her masts are very taunt,*" applied to the masts of a vessel, as *square* is to the yards.

Taunt. A vessel is said to be *all a-taunt* when completely rigged and all the running gear rove.

TELEGRAPH. A peculiar mode of signaling between vessels, by which any communication may be made that is not contained in the common signal-book.

TELL-TALE. See *Compass*.

Also an instrument communicating with the barrel of the wheel, by which the officer may see, at any time, the situation of the helm.

TEMPEST. The utmost violence of the wind. See *Storm, Gale, Hurricane*.

TEND. To *tend* a vessel, is to cause her to swing, at single anchor, so as to keep from fouling her cable around the stock or flukes of the anchor.

TENDER. A small vessel employed to tend on a larger one, to supply her with water, and to carry dispatches, &c.

TENON. The lower end of masts, bowsprit, &c., made to fit into the *mortice* or *step*.

THICK AND THIN. See *Blocks*.

THIMBLE. An iron ring, its outer surface being concave, to contain the strap or rope seized around it. Its use is to defend the eye of a rope from chafe, that may be occasioned by another rope rove through it, or by the hook of a tackle.

D-Thimble. A thimble in the form of the letter D.

Thimbles are also termed *cringles*, when stuck in the corners, or in any part of the borders, of a sail. See *Cringles, Stuck*.

THOLES, or Thole-pins. Small pins driven into the gunwales of boats, to form row-locks for the oars. Sometimes the oars are confined to one pin alone by a grommet.

TROAT. The end of a gaff which is next to a mast, the other end being the *peak*. See *Jaws*.

Throat-halyards, a tackle (the lower block hooked to the upper

part of the throat of a gaff, the upper block being hooked under the top), by which the gaff is hoisted or lowered.

Throat. See *Anchor*, paragraph 285.

Throat Brails, the brails which lead through blocks under the jaws of a gaff.

Throat of a knee, in ship-building, the hollow part of a piece of knee-timber.

Throat down-hauls, ropes rove through single blocks, on each side, under the throat of a gaff, both parts leading down on deck; by which the throat of a gaff is roused down, in taking in a foresail or mainsail of a schooner.

Throat lashing. See paragraph 8.

THRUM. To work a mat or piece of canvas over, with short pieces of rope-yarn, making a rough surface.

THUMB-STALL. A covering of thick leather, worn on the thumb of the left hand, by the captain of a gun, to protect his thumb in stopping the vent. See *Gun Exercise*.

THUS. An order to the helmsman. See *Steady*.

THWARPS. The seats placed athwartships in a boat, on which the oarsmen sit.

THWARTSHIPS. See *Athwartships*.

TIDE. A regular periodical current. See *Ebb and Flood*.

Tide-road, a vessel at anchor, riding to the tide in opposition to the wind.

Tide-way, a channel, or that part of it in which the tide ebbs and flows strongest.

See *Leeward*, *Neap*, *Slack*, *Spring*, and *Weather Tides*.

To tide it, is to work in or out of a harbor, river, &c., with the tide and against the wind, anchoring during the intervals of the tide.

Tide-gate, or *Flood-gate*, a place in which the tide runs with great velocity.

TIER. A range of casks, tanks, &c. See *Ground-tier*, *Riding tier*.

Tier, is also a range of guns mounted on one side of a vessel's decks.

Tier. The range of the fakes of a cable, hawser, or other rope. See *Ranging cables*, paragraphs 342, 343.

Cable-tier, is that space in a vessel appropriated to the stowage of the cables. It is also the space within the fakes of the cable, when stowed.

TIGHT. The state of a vessel—used in contradistinction to *leaky*.

Tight. See *Taught*, or *Taut*.

TILLER. A piece of timber or iron, shipped into the rudder-head, by which the rudder is turned in steering a vessel.

Tiller-ropes. See *Rope*.

TIMBER. A general term for all descriptions of felled and seasoned wood, used in the construction of vessels.

Timber-heads. See *Keel-heads*.

The *timbers* of a vessel are the ribs, or incurvated pieces of wood which branch outward and upward from the keel, giving strength, form and solidity to the fabric.

The following are the principal timbers composing the frame of a vessel, viz. :

The *keel*. The principal lower timber, lengthwise from stem to stern-post. It is formed of several pieces scarfed together, and to which the frames of the vessel are bolted.

The *kelson*. The inner counterpart of the keel, being laid directly over it and the floor timbers, through which and the keel it is bolted. It is formed of different pieces scarfed together.

The *dead-wood*. Solid pieces of timber, forward and aft, scarfed together lengthwise of the keel, and on which the heels of the timbers are stepped.

Floor-timbers. Those which are placed across the keel, and upon which the bottom of the vessel is framed.

Lower-half-cants. Those parts of frames situated forward and

abaft the square frames, or the floor-timbers which cross the keel.

Futtocks. Those which join with the floor and top-timbers. The first or ground futtocks stept on the keel—the second starts from the floor-timbers, and pass above the first futtock-heads—the third starts from the first futtock-head.

Top-timbers. Those which form the upper part of the vessel, or the first general tier of timbers that reach the top of the side.

Half top-timbers. Those timbers continued from the last futtock-head up.

Counter-timbers. Short timbers in the stern, put in for the purpose of strengthening the counter.

Knight-heads. See *Knight*. Timbers which run up next to the stem, on each side, and sufficiently high to support the bowsprit between them.

Hawse-pieces. Timbers which form the bows of the vessel next to the knight-heads, and through which the hawse-holes are cut.

Fashion-pieces. The aftermost timbers, which terminate the breadth, and form the shape of the stern. They are joined to the ends of the transoms.

Transoms. Those timbers which cross the stern-post, to which they are bolted, and forming the stern frame.

Stern-post. The principal piece of timber in the stern frame, to which the rudder is hung; its lower end reaching to the keel.

Inner stern-post. The inner counterpart of the stern-post.

Stern-post knee. The great knee which secures the stern-post to the keel.

Stemson. A piece of compass timber, fixed on the after part of the apron inside; the lower end is scarfed into the kelson, and receives the scarf of the stem through which it is bolted.

Stem. The main timber forward, formed of several pieces

scarfed together in a circular form, into which the two sides of the vessel are united at the fore end. Its lower end is scarfed to the keel.

Apron. An inner stem, from the head down to the forward dead-wood, and fayed into the after side of the stem, to strengthen it and connect the whole strongly to the keel.

Breast-hooks. Large pieces of circular timber, which cross athwart the bow frames on the inside, and through which they are bolted.

Transom-knees. Those which are bolted to the transoms and to the after timbers.

TIMENOGUY. A rope fastened taut between the upper end of the anchor stock and the fore rigging, to prevent the fore sheet from fouling or catching, in working ship. Also ropes used for a similar purpose in any part of the vessel.

TOGETHER. A word often used in an order to the men to act in concert, thus, "*pull together*," "*haul together*."

TOGGEL. A wooden pin tapering at both ends, with a groove around its centre. It is fixed transversely in the bight of a rope, to secure any other bight of a rope to, for the convenience of applying or removing them expeditiously—for instance, the bowlines to the lighter sails (topgallant-sails and royals), and the sheets of flying sails, as royals and skysails, are fitted with toggels.

TOMPION (pro. sometimes *Tompkin*). A bung or plug used to stop the mouth of a cannon.

TONGUE. In mast-making, the taper end of the lower part of a spindle or scarf.

TONNAGE. The capacity of a vessel for carrying cargo. See *Burden*.

TOP. A platform placed over the mast-head, and resting on the trestle-trees, for the convenience of the men aloft, and to form a sufficient angle or spread for the topmast shrouds.

Top-block. See *Block*. See paragraph 96.

Top-light, a lantern carried in the mizzen-top of the flag-ship, in a squadron.

Top-lining, a lining on the after part of sails, to prevent them from chafing against the *top-rim*.

Topmast, the mast next above a lower mast.

Topgallant-mast, the mast next above a topmast.

Top-men, the men who are stationed aloft, in and above the top, as the fore, main, or mizzen top-men.

Top-rope. See *Rope*.

Topsails. See paragraph 485.

Topgallant sails, are set next above the topsails.

Top-side. See *Top-timbers*.

Top-tackle. See *Tackle*.

To top a yard or boom, to raise one of its extremities higher than the other, by means of the *lift* or *topping-lift*.

Topping-lifts, those ropes used in *topping-up* and supporting the outer ends of the lower booms, spanker-booms, and main-booms of schooners. 198, 199.

TORNADO. A violent gust of wind, peculiar to certain latitudes and locations, attended with heavy rain, thunder, and lightning. Differing from a hurricane in being of short continuance.

TORRENT. A stream of water caused by heavy rains, &c.

Toss. *To toss the oars* in a boat, to throw them with the blades up in a perpendicular position—a mode of saluting practised in boats of men-of-war.

TOUCH. Applied variously to a vessel, to her sails, &c.

Touch, applied to the sails, when braced so sharp, or so near the wind, that they begin to shake.

Touch and go, when under sail, or under way, a vessel touches the bottom without being stopp'd.

To touch. A vessel *touches* at a port, when she stops there on her passage to another.

Touch-hole. The vent through which the fire is made to communicate with the charge in a cannon.

- Tow.** To draw a boat or vessel along, by means of a rope.
Tow-ropes, or *tow-lines*, are the ropes used for the purpose.
 See *Rope*.
- TRACK**, of a vessel, is her course on the water, as marked upon the chart. See *Wake*.
- To track.* To draw or tow along a vessel, by means of a line reaching from her to the shore.
- TRADE.** *Trade winds*, are regular winds which blow within certain latitudes and in certain directions, either periodically or perpetually. So called from their great utility in commerce to trading vessels.
- TRAIN.** A line of gunpowder communicating with any body or charge of powder. Also the after part of a gun carriage.
Train-tackle, a tackle hooked to the train of a gun carriage, by which it is kept from running out, or by which it is run in.
Train-ropes, are hooked to the slide of a carronade, on each side, by which the gun is trained forward or aft.
To train a gun, to point it forward or abaft the beam.
- TRANSOMS.** In ship-building, are beams of timber fixed across the stern-post of a vessel, and bolted thereto, to fortify her abaft, and give the proper form to her stern.
The deck-transom, is the aftmost or hindmost beam of the lower deck, whereon all the deck planks are rabbeted.
The helm-port transom, is that which is at the head of the stern post, and forms the upper part of the gun-room ports.
The wing-transom, the next below, which forms the lower part.
Transom-knees. See *Knees*.
- TRANSPORT.** To convey over the seas, to other countries or ports.
Transport, is also a vessel, employed to carry troops, by water.
To transport anchors. See paragraphs from 301 to 309, inclusive.
- TRAVELLER.** An iron ring made to travel on a rope or boom.
 To the fly-block, through which is rove the topsail halyards,

is attached a *traveller* which is around the topmast backstay, and which steadies the block in hoisting or lowering.

Travelling-backstays. Rigged with a traveller around the topmast, which slides up and down as the sail is reefed (now out of use).

TRAVERSE (in Naval Tactics). To *traverse* an enemy's line is to force a passage through it—thereby breaking the line.

TREND. See *Anchor*, paragraph 285.

TRESTLE. *Trestle-trees*, in mast-making, are two strong bars of oak timber fitted horizontally on the opposite sides of the mast-head, to support the frame of the top. 48, 49, 50.

TRIATIC. *Triatic-stay* (formerly called sciatic or skyatic), is a stout rope, secured at each end around the fore and main lower mast-heads, having two thimbles seized in the bight to hook the stay-tackles to, for hoisting in or out boats. It is generally made of three parts (hence the name). The parts which are secured to the mast-head, have a stout thimble spliced into their other ends. The centre part being a kind of span or connecting guy, spanning them together and guying them clear of the top.

TRICE. To *trice up*, to haul up by means of a rope, as, "*trice up the ports*," "*trice up the booms*." See *Loosing and Furling*.

Tricing-lines. Ropes to *trice up* any article, as the heels of booms, &c.

TRICK. That portion of time passed by a sailor at the helm, or at any station, particularly applicable to the former. See *Spell*.

TRIM. The state of a vessel, in reference to the stowage of her ballast and cargo.

A vessel is said to *trim by the head*, or *stern*, if either arrangement conduces most to her sailing or speed, depending entirely upon her peculiar construction.

To *trim the hold*, is to stow it.

Trim, has also reference to the disposition of the sails, with regard to the wind and course of the vessel.

To trim boat. So to dispose of the persons in a boat, that she shall ride on an even keel.

TRIP. See *Atrip*.

A trip, is also a voyage from one port to another.

Tripping-lines. See *Lines*.

TROUGH, of the sea, the hollow or interval between two waves.

TRUCKS. Round pieces of wood, used for wheels to the gun carriages.

Trucks, are also placed or fitted on the heads of the skysail masts, having small sheaves in them, through which are rove halyards for flags or signals. See paragraph 216.

Shroud-trucks, are cylindrical pieces of wood, having a hole through them lengthways, and seized on to shrouds, to lead ropes through.

TRUNNIONS. The arms on each side of a cannon, by which it is supported on its carriage, and which forms the axis on which it is elevated or depressed. "They are generally, in length and diameter, equal to a calibre; and are so placed, on the fore part of the second reinforce, that their axis shall be precisely at right angles with, and passing through, that of the bore, and also so placed in relation to the centre of gravity of the gun, that the required preponderance of the breech shall be obtained." See *Centre Hung. Quarter Hung.—Ward's Ordnance and Gunnery*.

TRUSS. The rope used to keep the centre of a yard to the mast. See 144, 145, 146. Properly called *truss-pendant*.

TRY. *Trying*, lying to in a gale.

Trysail, called sometimes *spencers*, are sails set on the fore and main masts, like the spanker on the mizzen; useful in lying to in a gale, or in working off a lee-shore in a fresh breeze.

Trysail-mast, a spar or mast just abaft the lower masts of square-rigged vessels, reaching from the top to the deck, on

which are the hoops to which the luff of the trysail is seized and on which the gaff traverses.

TUB. *Grog-tub*, a tub in which the ration of grog is mixed, to be served out to the crew.

Match-tub. See *Match*.

TUMBLING HOME. Applied to the sides of a vessel, when they incline inward above the bends or extreme breadth. See *Sided*, *Wall-sided*.

TURN. To *turn* to windward, to work to windward by tacking. To *turn-in*, in sea language, is to retire to one's hammock, or sleeping berth.

To *turn-out*, to get up from the sleeping berth.

To *turn-in* a block, is to strap it.

To *take a turn* in a rope, or with a rope, is to secure it around a belaying pin, or kevel.

TWIDLING. See *Line*.

TWINE. Strong, twisted, white thread, used by sail-makers in sewing.

TWO-BLOCKS. See *Block-and-Block*.

TYE. A runner, used to transmit the effort of a tackle to any rope or yard.

Tye-Block. See *Block*.

The *topsail-tye*, is rove through the gin block at the mast-head, and through the block on the yard, the end secured at the mast-head—at the lower end of the tye is the purchase or halyards. See paragraph 178.

U.

UNBALLAST. To discharge ballast from a vessel.

UNBEND. To cast off, or untie, as, to *unbend* the sails from the yards. To *unbend* the cable from the ring of the anchor. To *unbend* one rope from another, or from any yard or mast.

- UNBIT.** To take the turns of the cable from around the *bitts*.
- UNDER-CURRENT, or Under-Set.** A stream running under the surface of the water, not unfrequently in a contrary direction from that which is running at the surface.
- Under foot,* directly under the bows or fore-foot, thus, the anchor is *under foot* when first let go, before the vessel has dropped so as to bring a strain upon her cable.
- Under the lee.* To leeward of, as, *under the lee* of the land, or of a vessel.
- Under-masted, or under-sparred or low-masted,* applied to vessels which have masts under the usual dimensions, in opposition to *taunt*.
- Under-run.* To pass under, as, to under-run a cable is to pass along and under it, in a boat (the cable passing over the bows and stern while the men haul the boat along by the cable) to examine if it is clear, and whether it is chafed or damaged, or for the purpose of weighing the kedge or anchor by the boat.
- Under sail.* The state of a vessel having her anchors weighed, and being under the influence of her sails set. A vessel may be rightly said to be *under sail* when her sails are set, even though she may be still at anchor.
- Under way.* Having motion through the water, whether *head-way* or *stern-board*. Whether impelled by sails or otherwise.
- To get under way.* To release the vessel from its moorings or anchorage, and give her such way through the water, as will place her under the management of the helm.
- UNION.** That part of the flag of the United States, which, with its blue field and white stars, expresses the union of the States. This when alone and without the red and white stripes, forms the *union-jack*, which is hoisted usually at the bowsprit end in port.
- UNLACE.** To loosen the bonnet of a sail, or cast off any lacing in any part of the rigging of a vessel.

UNLOAD. To draw the charge from a cannon, or to discharge the cargo from a vessel.

UNMOOR. To heave up all but one anchor, so that the vessel may be in readiness to be gotten under way "from single anchor."

All hands to unmoor ship! is the summons passed by the boatswain to the crew, to call them to their stations. See *Mooring and Unmooring*.

UNREEVE. To withdraw a rope from any block or sheave through which it has been rove. See *Reeve*.

UNRIG. To strip a vessel, that is, to remove from her all her standing and running rigging, and to send down all her masts and yards, except the lower masts. See *Strip*.

UNSHIP. To remove any thing from the place or position it has been occupying, as, "*To unship the stancheons,*" "*To unship the tiller,*" &c.

UNSLING. To release any thing, a cask, a boat, a butt, a yard, &c., from its *slings*.

UP. *Up courses!* An order given by the officer in taking in the fore and mainsail, having all the rigging manned, to haul it up.

Brail up! clew up! are orders given in taking in those sails, which are managed by *brails* or *clew-lines*.

Up helm! an order to the helmsman to put the tiller to windward.

Up and down. The situation of the cable when the anchor is under, or nearly under the hawsehole, and the cable taut.

UPHROE. See *Block*.

UPPER DECK. The *spar deck*.

UPPER-WORKS, of a vessel, all that part of a vessel which is above the water line, when she is laden, or all that part of her hull which is above the *main-wale*.

UPRIGHT, when applied to a vessel, is, *on an even keel*.

V.

VAN (in Naval Tactics), the foremost division of a fleet, also the leading vessel of a column.

VANE. The fly at the mast-head which traverses on the *spindle*, and points out the direction of the wind.

Dog-vanes, are those which are made of feathers or other light material, fixed on the end of a staff, and placed on the weather side of the quarter-deck, for the direction of the helmsman and officers. This never shows the direction of the wind as correctly as that at the mast-head, owing to the current of wind being turned or influenced by the sails near it.

VANGS. Braces to support or steady the peak of a gaff, and leading down to the deck, on each side. 200.

VEER. To change, as, "*The wind veers-and-hauls.*" See *Bafting*, paragraph 578.

To *veer ship*, to *wear ship*, that is, to put her from one tack to the other, by turning her around from the wind.

To *veer-away*, applied to a cable or other rope, is to slack it and let the vessel take it as she drops.

"*Veer-away roundly!*" "*Veer away handsomely!*" are orders given in *veering-cable*.

Veer-and-haul, is also applied to the peculiar manner of hauling taut a rope, thus; by hauling and slacking alternately, until the body acquires sufficient impetus; as in warping ahead a vessel by tow-ropes.

Used also in *hauling the bowlines* and *setting-up* the backstays, to *veer and-haul*, until at a certain signal (which is generally regulated by a *song*) when the men apply their whole force, in one drag, to bring the rope taut.

VELOCITY, of a shot, is the rapidity of its flight, and is

measured by the rate, per second, at which it moves. "The velocity of a ball depends upon the quantity and strength of powder by which it is projected, and has no direct relation to the weight of the gun. A high proportional charge of powder will produce high velocity and range, whether from a light or heavy gun."

Initial velocity, "is the rate, per second, at which the ball moves at the beginning of its flight, immediately on leaving the muzzle of the gun, or as near the muzzle as the velocity can be ascertained, usually about forty feet."

Remaining velocity, "is the rate with which the ball moves at any specified point of its flight, after having been subjected to the retarding force of atmospheric resistance."

Striking velocity. Is "that with which the ball strikes the object."—*Ward's Ordnance and Gunnery*.

VENT, or VENT-HOLE. "The opening, or hole in the breech of a gun or cannon, forming a passage through which fire is communicated to the charge of powder in the chamber of the gun."

"*Vent-patch* of a gun, is that rising on the top, and after-part, of the first reinforce, for the purpose of securing the lock to, in the centre line of which is the vent-hole, drilled at an angle of 70° with the axis of the bore."

Vent-field. "A zone about the gun, equal in width to the length of the vent-patch."—*Ward*.

VESSEL. A general term applied to all descriptions of bodies made to float upon the seas, for purposes of war or commerce, whether impelled by wind, steam, or oars.

VOYAGE. A trip performed by a vessel, particularly merchant vessels, when the destination is known. The duration of a voyage may be considered to be from port to port, or from leaving a port to the return of the vessel to the same.

VOYOL or VIOL. A large rope used in purchasing an anchor, when the common method, by the messenger, is found to be

insufficient. The power is increased, by having the voyol to lead through one or more blocks before it is brought to the capstan. See *Voyal Block*.

W.

WAD. Formed of rope-yarns; used in loading guns, to keep the charge in its place and prevent the shot from rolling out.

Grommet-wad. "Made of $3\frac{1}{2}$ or 4 inch rope, of the requisite calibre. It is intended only to use over shot, and is said to promote accuracy, by preventing deflections of the shot in the bore. When rammed home, it almost invariably takes its proper position around the shot, transversely with the bore."—*Ward's Ordnance and Gunnery*.

Hard or Junk-wad. "Made of yarns, or junk, and driven hard, by blows with a maul, in a wooden cylinder of the proper diameter, or compressed by a scren in an iron cylinder, to the proper size and shape for the required calibre."

A soft-wad. "Is merely formed by hand, of rope-yarns or junk. It is simply used to put over a shot, to keep it in its place, or in firing a salute."—*Ward's Ordnance and Gunnery*.

Wad-former. Wooden or iron cylinders are used in the formation of hard wad—while for the common wad, a wooden ring is used, to arrive at the required size.

Wad-net, a net-bag made to contain a number of wads, and hung in some convenient place, near the gun, in action.

WAIST. That part of a vessel contained between the quarter-deck and forecastle, particularly applicable to the upper or spar-deck.

Waisters, are those of the crew who are stationed in the *waist*, in working ship. Their duties requiring little or no experience, they are generally made up of landsmen, with a few seamen to direct them.

WAKE. The track made by the course of a vessel through the water.

One vessel is said to be *in the wake* of another, when she is in a line with her keel and astern.

Also, one object is said to be *in the wake* of another, when it is intercepted by the nearest from the view of the observer.

WALES. An assemblage of strong planks, extending along the sides of a vessel, throughout her whole length, at different heights, and serving as a reinforcement to the decks, as the *main and channel wales*.

WALL-KNOT. A knot formed on the end of a rope, by untwisting the ends, and interweaving the strands among each other in a particular manner.

WALL-SIDED. Applied to the sides of a vessel, when they are nearly perpendicular, without *tumbling-in* or *flaring-out*. See *Side*.

WARD-ROOM. See *Gun-room*.

WARE, OR WEAR, OR VEER. To put a vessel on another tack, by turning her around from the wind, and bringing her again close to the wind on the other bow, generally called *wearing-ship*. See 600.

WARP. A rope or hawser, used to remove a vessel from one place to another.

To warp a vessel, is to remove her by means of warps (see *Tow*), the end of the warp being secured ashore, or to some other vessel, or to kedges, or buoys.

WASH-BOARDS, are thin light boards, fixed above the sides or gunwales of boats, to increase their height and improve their appearance. They are made to ship and unship at pleasure.

WATCH. A portion of the officers and crew of a vessel, who together attend to working her for any allotted time. The crew are generally divided into two watches, which are distinguished as the *starboard* and *port* watches. The midshipmen are generally divided into three and sometimes four

watches. Thus in every watch, at sea, in a vessel of war, there is always one lieutenant who has charge of the deck, a portion of passed midshipmen and midshipmen, and one half of the ship's company.

Watch-and-watch, when there are but two watches, as in the case of the crew—officers are often placed in *watch-and-watch*, in trying weather.

Watch, is also that space or portion of time, that certain officers and divisions of the crew remain on deck. Thus, the sea-day commencing at meridian, the four hours immediately following are termed the *afternoon-watch*. From 4 P. M. to 6 P. M. is the 1st *dog-watch*. From 6 to 8 P. M. is the 2d *dog-watch*. From 8 P. M. to midnight is the *first-watch*. From midnight to 4 A. M. is the *mid-watch*. From 4 to 8 A. M. is the *morning watch*, and from 8 A. M. to meridian is the *forenoon-watch*, which terminates the *sea-day*.

Anchor-watch, a watch of three or four men, kept constantly on deck and stationed at one of the anchors, while riding at single anchor, to see the stoppers, painters, cable, and buoy-ropes ready for immediate use.

Quarter-watch, each of the two watches of the crew are divided into two parts, 1st and 2d, called *quarter-watches*.

To relieve the watch; at the expiration of a watch, the watch below is called to take the place of that which has been on deck.

Watch, is also used for a caution in some cases, as in heaving the deep-sea lead, when each man, in letting go his turns, calls to the next abaft him, "*Watch!*" to caution him to be on the watch for the soundings. See Chapter XXIII.

A buoy is said to *watch*, when it floats upon the surface of the water. See paragraph 376.

WATER. See *High, Low, Bilge, Dead, Lines, Mark*.

Water-tight, the state of a vessel which is not leaky.

Water-ways, are long pieces of timber, serving to connect the

sides of the vessel to her decks, through which are the scuppers to carry off the water.

Watering-place, a place where water may be obtained for a vessel.

WAVE. A volume of water, elevated by the action of the wind, &c.

WAY. The course of a vessel over the surface of the water. See *Head-way*, *stern-board*, *Lee-way*.

WEAR. See *Veer*, *Ware*.

WEATHER. The state or disposition of the atmosphere.

Also used to designate any thing to windward of another, used in opposition to lee, the "*weather bow*," "*weather braces*," &c.

To *weather*, is to pass to windward of any object, as a vessel, a point of land, or a rock.

A vessel is said to "*make good weather*," when she rides out a storm easily; and "*weather out a storm, or gale*," when she encounters it without damage or loss.

Weather-beaten, applied to any vessel or person, being much worn or damaged, by having experienced heavy weather.

To *weather-bitt* a cable; after a cable is bitted, to take another turn around the bits.

Weather (in Naval Tactics).—The *weather* column of a fleet or squadron, is that which is to windward of the *centre* or *lee*.

Weather-gauge. See *Gauge*.

Weather-helm. A vessel is said to "*carry a weather-helm*," when she is inclined to come up into the wind, and requires the helm to be kept *a-weather*.

Weather-roll. The roll which a vessel makes to windward in a *sea-way*.

Weather-shore, one which lies to windward of a vessel.

The *weather-side* of a vessel, is that upon which the wind blows.

WEIGH. To purchase, as, to weigh the anchor, or heave it up from the bottom.

Weight, movable and fixed. See *Storage*, Chapter XII.

WELL, or *pump-well*. An enclosure formed around the pumps, from the bottom to the lower deck, to preserve them from damage.

WEST. One of the four cardinal points of the compass.

Westing. The distance made by a vessel to the westward.

WHARF. A building of stone or wood, for the convenience of vessels in discharging and loading, &c.

WHEEL. By which a vessel is steered, the tiller-ropes leading up to it, and secured around its barrel.

WHIP. A purchase, formed by a rope rove through a single block.

To *whip-up*. To hoist or purchase any article, by means of a whip. See 273.

Whip-upon-whip, a purchase formed by applying one whip to the fall of another, that is the fall of the upper whip applied to the block of the lower.

To *whip a rope*. To secure the end of a rope from untwisting, by passing around it a seizing of yarn or twine. See paragraph 325.

WINCH. A machine used, in rope-making, to wind the yarns on.

Winchmen. Those men who are stationed at the pumps.

WIND. *By the wind*. See *Working to Windward*, Chapter XVII.

The wind's-eye. The point from which the wind blows.

Between wind and water. That part of a vessel, seen from to windward, which would be below the *water-line* if she were on an even keel, or on the other tack.

To *wind-ship*. To turn her end-for-end.

Windage (Ordnance), of shot is "the difference between its diameter and that of the bore of the gun. Formerly the prescribed windage of shot was the proportional windage of $\frac{1}{20}$ the diameter of the bore; now and since 1840, new shot for the navy have a *fixed windage* of from $\frac{1}{10}$ to $\frac{2}{10}$ of an inch, for all calibres."—*Ward*.

Windage-ring. That space in the gun between the two circles;

one formed by the bore of the gun, and the other by the circumference of the shot.

Wind-bound. See *Bound*.

Winding tackle. See *Tackle*.

Windlass. A machine used in merchant vessels, instead of a capstan, to weigh the anchor by.

Wind-ride, applied to a vessel, when she rides to the wind in opposition to the tide.

Wind-sail. A tube or funnel of canvas, used to convey the wind below, through the hatchways, to purify the air in the lower parts of the vessel.

To *windward.* Toward that point of the compass from which the wind is blowing; thus, *working to windward* is the act of making progress against the wind, by tacking or wearing.

WINGERS. Are those casks which are stowed out in the wings of a vessel's hold, being smaller than those stowed more amidships. See *Stowing a hold*, Chapter XII.

WINGS. That part of the hold or orlop of a vessel, which is nearest to the sides.

Wings of a fleet. The skirts or extremities on either side.

WITHE. See paragraphs 237, 239.

WITHIN-BOARD. See *In-board*, or *On-board*, or *A-board*.

WITHOUT-BOARD. Out of the vessel, used in opposition to *within-board*.

WOOF. The twine or thread wove across the knittles in pointing.

WOULD. To wind a piece of rope around a mast or yard, where it has been fished or scarfed.

Woolding, is the rope applied for this purpose to a spar, as service is to a rope.

To would the ring of an anchor. See paragraph 338.

WORK. "To work ship," is to direct the movements of a vessel in performing evolutions, "The lieutenant of the watch works ship."

WORKING SHIP. Performing any evolution, such as tacking, Veering, &c., &c.

To *work to windward*. See Chapter XVII.

A *good working ship*, is one which works readily, promptly answering her helm, and seldom failing in any evolution if managed skilfully.

To *work-up*. To draw the yarns from old cable (junk), and work them up into *foxes, gaskets, sennet, spun-yarn, &c.*

To *work-up*, is also applied to harassing a crew, by keeping them constantly hauling and pulling at the running rigging, without any absolute necessity. A practice resorted to by officers, in some cases, to keep the watch awake at night.

WORM, in gunnery, is an instrument used to draw out the charge of a gun.

To *worm a cable*, is to twist ropes spirally around it, in the intervals between the strands. Ropes of all sizes are generally *wormed* before they are served, which not only strengthens the rope, but makes a more regular surface for the service to lay on.

Worm-eaten. The state of a plank or bottom of a vessel, when a number of cavities are made in it by worms.

Worming. The spiral turns which are taken around a rope.

WRECK. The ruins of a vessel, lost at sea, or on rocks, or shoals. Also applied to the masts and yards of a vessel when carried away, as, "*We cut away the wreck of the masts and, having secured hawsers to it, rode under its lee until the gale abated.*"

WRING. To *wring* a mast, is to bend or strain it out of its natural position, by setting up the shrouds too taut.

Wring-bolts. In ship-building, are bolts used to bend and secure the planks to the timbers.

Wring-staves, are strong pieces of plank used with the *wring-bolts*.

Y.

YACHT. (Pro. Yott.) Vessels of pleasure or state.

YARDS. Long pieces of timber, suspended by the centre or slings to the masts, to spread the heads of the square-sails upon.

Yard-arms, are the extremities of the yards, from the shoulders out.

“Yard-arm and yard-arm.” The situation of two vessels, which are so near, as to nearly, or quite touch or interlock their yards.

Yard-tackle. See *Tackle*.

The following is a list of the different yards used in vessels :

The lower-yards, are the *fore*, *main* and *cross-jack-yards*, which are the yards suspended to the lower masts of ships, and (with the exception of the last) of brigs and barques. . .

Spritsail-yard, is that which is rigged across the bowsprit or knight-heads.

The topsail-yards, *fore main* and *mizzen*, are the next above the lower yards, and traverse up and down to the topmast, to to which they are confined by a *parral*.

The topgallant-yards, *fore*, *main* and *mizzen*, are next above the topsail-yards, and traverse up and down the topgallant-masts, to which they are confined, at the slings, by a *parral*.

Royal-yards, *fore*, *main* and *mizzen*, are those which are the next above the topgallant-yards, and traverse up and down the royal masts.

Skysail-yards, are next above the royal-yards.

Studding-sail-yards, are those to which the studding-sails are bent.

Gaff-topsail-yard, a small yard to which the head of a gaff-top-sail is sometimes bent.

Driver-yard, to which the *driver* is bent.

Smoke-sail-yard. To which the *smoke-sail* is bent.

YARDS, are also stations belonging to the government, where vessels of war are fitted out and commissioned for service; where are all the conveniences and materials for building and repairing, arming and equipping.

Dock-yards, are those *navy-yards* where are located dry or wet docks.

YARN, or *rope-yarn*. One of the *threads* of which a rope is composed.

YAW. A movement of a vessel by which she alters her course, hence a vessel which steers wildly is said to *yaw*.

YEOMAN, formerly a petty officer, now an officer by appointment, not shipped. They have charge of the ship-stores, and keep an account of receipts and expenditures.

YOKE. A kind of tiller, which crosses the head of a boat's rudder at right angles, to the ends of which are attached the lines by which the boat is steered.

Yoke-ropes. See *rope*.

YOUNGSTER. A name often applied to the younger midshipmen, on their first entering the naval service.

AUTHORIZED U. S. INFANTRY TACTICS.

For the Instruction, Exercise, and Manœuvres of the Soldier, a Company, Line of Skirmishers, Battalion, Brigade, or Corps d'Armée. By Brig.-Gen. SILAS CASEY, U. S. A. 3 vols., 24mo. Cloth, lithographed plates. \$2.50.

VOL. I.—School of the Soldier; School of the Company; Instruction for Skirmishers.

VOL. II.—School of the Battalion.

VOL. III.—Evolutions of a Brigade; Evolutions of a Corps d'Armée.

The manuscript of this new system of Infantry Tactics was carefully examined by General McCLELLAN, and met with his unqualified approval, which he has since manifested by authorizing General CASEY to adopt it for his entire division. The author has retained much that is valuable contained in the systems of SCOTT and HARDEE, but has made many important changes and additions which experience and the exigencies of the service require. General CASEY's reputation as an accomplished soldier and skilful tactician is a guarantee that the work he has undertaken has been thoroughly performed.

"These volumes are based on the French *ordonnances* of 1831 and 1845 for the manœuvres of heavy infantry and *chasseurs à pied*: both of these systems have been in use in our service for some years, the former having been translated by Gen. Scott, and the latter by Col. Hardees. After the introduction of the latter drill in our service, in connection with Gen. Scott's Tactics, there arose the necessity of a uniform system for the manœuvres of all the infantry arm of the service. These volumes are the result of the author's endeavor to communicate the instruction, now used and adopted in the army, to achieve this result."—*Boston Journal*.

"Based on the best precedents, adapted to the novel requirements of the art of war, and very full in its instructions, Casey's Tactics will be received as the most useful and most comprehensive work of its kind in our language. From the drill and discipline of the individual soldier, or through all the various combinations, to the manœuvres of a brigade and the evolutions of a Corps D'Armée, the student is advanced by a clear method and steady progress. Numerous cuts, plans, and diagrams illustrate positions and movements, and demonstrate to the eye the exact working out of the individual position, brigading, order of battle, &c., &c. The work is a model of publishing success, being in three neat pocket volumes."—*New Yorker*.

WAR DEPARTMENT, WASHINGTON, August 11, 1862.

The System of Infantry Tactics prepared by Brig.-Gen. Silas Casey, U. S. A., having been approved by the President, is adopted for the instruction of the Infantry of the Armies of the United States, whether Regular, Volunteer, or Militia, with the following modifications, viz.:

First, That portion which requires that two companies shall be permanently detached from the battalion as skirmishers, will be suspended.

Second, In Title First, Article First, the following will be substituted for Paragraph 6, viz.:

"A regiment is composed of ten companies, which will be habitually posted from right to left in the following order; first, sixth, fourth, ninth, third, eighth, fifth, tenth, seventh, second, according to the rank of Captain."

EDWIN M. STANTON,

Secretary of War.

SCOTT'S MILITARY DICTIONARY.

Comprising Technical Definitions; Information on Raising and Keeping Troops; Actual service, including makeshifts and improved *materiel*, and Law, Government, Regulation, and Administration relating to Land Forces. By Colonel H. L. SCOTT, Inspector-General U. S. A. 1 vol., large octavo, fully illustrated, half morocco, \$6; Half russia, \$7.50; Full morocco, \$9.

"It is a complete Encyclopædia of Military Science, and fully explains every thing discovered in the art of war up to the present time."—*Philadelphia Evening Bulletin*.

"We cannot speak too much in legitimate praise of this work."—*National Intelligencer*.

"It should be made a text-book for the study of every volunteer."—*Harper's Magazine*.

"We cordially commend it to public favor."—*Washington Globe*.

"This comprehensive and skilfully prepared work supplies a want that has long been felt, and will be peculiarly valuable at this time as a book of reference."—*Boston Commercial Bulletin*.

"The Military Dictionary is splendidly got up in every way, and reflects credit on the publisher. The officers of every company in the service should possess it."—*N. Y. Tablet*.

"The work is more properly a Military Encyclopædia, and is profusely illustrated with engravings. It appears to contain every thing that can be wanted in the shape of information by officers of all grades."—*Philadelphia North American*.

"This book is really an Encyclopædia, both elementary and technical, and as such occupies a gap in military literature which has long been most inconveniently vacant. This book meets a present popular want, and will be secured not only by those embarking in the profession but by a great number of civilians, who are determined to follow the descriptions and to understand the philosophy of the various movements of the campaign. Indeed, no tolerably good library would be complete without the work."—*New York Times*.

"The work has evidently been compiled from a careful consultation of the best authorities, enriched with the results of the experience and personal knowledge of the author."—*N. Y. Daily Tribune*.

"Works like the present are invaluable. The officers of our Volunteer service would all do well to possess themselves of the volume."—*N. Y. Herald*.

"It is a book to be referred to on the spur of the moment, to be consulted at leisure, and to be read with deliberation. It reflects honor on the military service of the United States, and gives new glory to one of the noblest of the names connected with that service."—*Boston Traveller*.

CAVALRY; ITS HISTORY, MANAGEMENT, AND USES IN WAR.

By J. ROEMER, LL. D., late an Officer of Cavalry in the Service of the Netherlands. Elegantly illustrated, with one hundred and twenty-seven fine Wood Engravings. In one large octavo volume, beautifully printed on tinted paper. Cloth, \$5; hf. cf., \$6.50.

SUMMARY OF CONTENTS.—Cavalry in European Armies; Proportion of Cavalry to Infantry; What kind of Cavalry desirable; Cavalry Indispensable in War; Strategy and Tactics; Organization of an Army; Route Marches; Rifled Fire-Arms; The Charge; The Attack; Cavalry versus Cavalry; Cavalry versus Infantry; Cavalry versus Artillery; Field Service; Different Objects of Cavalry; Historical Sketches of Cavalry among the early Greeks, the Romans, the Middle Ages; Different kinds of Modern Cavalry; Soldiers and Officers; Various systems of Training of Cavalry Horses; Remounting; Shoeing; Veterinary Surgeons, Saddlery, etc., etc.

WHAT GENERAL M'CLELLAN SAYS OF IT.

"I am exceedingly pleased with it, and regard it as a very valuable addition to our military literature. It will certainly be regarded as a standard work, and I know of none so valuable to our cavalry officers. Its usefulness, however, is not confined to officers of cavalry alone, but it contains a great deal of general information valuable to officers of the other arms of service, especially those of the Staff.

"With the hope that it may find a large circulation in our armies, I am, very truly yours
"GEO. B. McCLELLAN, Maj-Gen. U. S. A."

"We can truly say that, from no single volume have we obtained so much information on the art of war as from this."—*Phila. Press.*

"Reading, culture, and practical experience united, give this work a value and importance that will cause it to be regarded as a standard authority."—*Saturday Eve. Gazette.*

"By far the best treatise upon Cavalry and its uses in the field, which has yet been published in this country, for the general use of officers of all ranks, is this elaborate and interesting work. Eschewing the elementary principles and tactics of cavalry, which may be learned from any hand-book, the author treats of the uses of cavalry in the field, of strategy and tactics, and of its general discipline and management. The range of the work includes an admirable treatise upon rifled fire-arms, a historical sketch of cavalry, embodying many interesting facts, an account of the cavalry service in Europe and this country, and a treatise on horses, their equipment, management, &c. The work is copiously illustrated and elegantly printed. It is interesting not alone to military men but to the general reader, who will gain from its pages valuable historical facts and very clear ideas of some branches of the art of war, such as the employment of spies, gaining information in an enemy's country, advance movements and other strategical manœuvres."—*Boston Journal.*"

BENÉT'S MILITARY LAW.

A Treatise on Military Law and the Practice of Courts-Martial, by Capt. S. V. BENÉT, Ordnance Department, U. S. A., late Assistant Professor of Ethics, Law, &c., Military Academy, West Point. 1 vol., 8vo, law sheep. \$3.50.

"This book is manifestly well timed just at this particular period, and it is, without doubt, quite as happily adapted to the purpose for which it was written. It is arranged with admirable method, and written with such perspicuity and in a style so easy and graceful, as to engage the attention of every reader who may be so fortunate as to open its pages. This treatise will make a valuable addition to the library of the lawyer or the civilian; while to the military man it seems to be indispensable."—*Philadelphia Evening Journal*.

"Captain Benét presents the army with a complete compilation of the precedents and decisions of rare value which have accumulated since the creation of the office of Judge-Advocate, thoroughly digested and judiciously arranged, with an index of the most minute accuracy. Military Law and Courts-Martial are treated from the composition of the letter to the Finding and Sentence, with the Revision and Execution of the same, all set forth in a clear, exhaustive style that is a cardinal excellence in every work of legal reference. That portion of the work devoted to Evidence is especially good. In fact, the whole performance entitles the author to the thanks of the entire army, not a leading officer of which should fail to supply himself at once with so serviceable a guide to the intricacies of legal military government."—*N. Y. Times*.

"This volume has been carefully prepared by the author in order to present in a collected form, the able decisions issued from the War Department since the establishment of the office of Judge-Advocate of the Army, and the opinions given by the Attorneys-General on points requiring legal interpretation. It is full of information for military men, founded on the authority of these decisions and opinions, and is a valuable contribution to the science of military law."—*Providence Journal*.

JUDGE-ADVOCATE GENERAL'S OFFICE, }
October 13, 1862.

* * * So far as I have been enabled to examine this volume, it seems to me carefully and accurately prepared, and I am satisfied that you have rendered an acceptable service to the army and the country by its publication at this moment. In consequence of the gigantic proportions so suddenly assumed by the military operations of the Government, there have been necessarily called into the field, from civil life, a vast number of officers, unacquainted from their previous studies and pursuits, both with the principles of military law and with the course of judicial proceedings under it. To all such, this treatise will prove an easily accessible storehouse of knowledge, which it is equally the duty of the soldier in command to acquire, as it is to learn to draw his sword against the common enemy. The military spirit of our people now being thoroughly aroused, added to a growing conviction that in future we may have to depend quite as much upon the ballot as upon the ballot-box for the preservation of our institutions, cannot fail to secure to this work an extended and earnest appreciation. In bringing the results of legislation and of decisions upon the questions down to so recent a period, the author has added greatly to the interest and usefulness of the volume. Very respectfully,

Your obedient servant, J. HOLT.

ELEMENTS OF MILITARY ART AND HISTORY.

By EDWARD DE LA BARRE DUPARCQ, Chef de Bataillon of Engineers in the Army of France; and Professor of the Military Art in the Imperial School of St. Cyr. Translated by Brig-Gen. Geo. W. CULLUM, U. S. A., Chief of the Staff of Major-Gen. H. W. HALLECK, General-in-Chief U. S. Army. 1 vol., octavo, cloth. \$4.

"I read the original a few years since, and considered it the very best work I had seen upon the subject. Gen. Cullum's ability and familiarity with the technical language of French military writers, are a sufficient guarantee of the correctness of his translation."

H. W. HALLECK, Major-Gen. U. S. A.

"I have read the book with great interest, and trust that it will have a large circulation. It cannot fail to do good by spreading that very knowledge, the want of which among our new, inexperienced, and untaught soldiers, has cost us so many lives, and so much toil and treasure."

M. C. MEIGS, Quartermaster-General, U. S. A.

"I have carefully read most of General Cullum's translation of M. Barre Duparcq's 'Elements of Military Art and History.' It is a plain, concise work, well suited to our service. Our volunteers should read and study it. I wish it could be widely circulated among our officers. It would give them a comprehensive knowledge of the different arms of the service, and invite further investigation into the profession of arms which they have adopted. A careful study of such works will make our officers learned and skilful, as well as wise and successful; and they have ample time, while they are campaigning, to improve themselves in this regard."

S. R. CURTIS, Major-Gen. U. S. A.

"Barre Duparcq is one of the most favorably known among recent military writers in France. If not the very best, this is certainly among the best of the numerous volumes devoted to this topic. Could this book be put into the hands and heads of our numerous intelligent, but untrained officers, it would work a transformation supremely needed. We can say, that no officer can read this work without positive advantage, and real progress as a soldier. Gen. Cullum is well known as one of the most proficient students of military science and art in our service, and is amply qualified to prepare an original textbook on this subject."—*Atlantic Monthly*.

"That Gen. Cullum, Chief of Staff to the Commanding General, should have chosen to translate and edit his work, rather than to prepare an original one himself, gives the highest professional testimony to its value. The work contains a History of the Art of War, as it has grown up from the earliest ages; describes the various formations which have from time to time been adopted; and treats in detail of the several arms of the service, and the most effective manner of employing them for offensive and defensive purposes. It is fully illustrated with diagrams, displaying to the eye the formations and evolutions which find place in ancient and modern armies. Though the book is especially designed for the instruction of officers and soldiers, the non-professional reader cannot fail to perceive the clearness of its statements and the precision of its definitions."—*Harpers' Monthly*.

BENTON'S ORDNANCE AND GUNNERY.

A Course of Instruction in Ordnance and Gunnery; compiled for the use of the Cadets of the United States Military Academy, by Capt. J. G. BENTON, Ordnance Department, late Instructor of Ordnance and Gunnery, Military Academy, West Point. Principal Assistant to Chief of Ordnance, U. S. A. Second Edition, revised and enlarged. 1 vol., 8vo, half morocco, cuts. \$5 00.

"We cannot commend this work too highly, both for the substance it contains, and the happy finished manner in which it has been issued by the publisher. There is no one book within the range of our military reading and study, that contains more to recommend it upon the subject of which it treats. It is as full and complete as the narrow compass of a single volume would admit, and the reputation of the author as a scientific and practical artilleryist is a sufficient guarantee for the correctness of his statements and deductions, and the thoroughness of his labors."—*N. Y. Observer*.

"The present edition is the second one, and is revised and enlarged, being rendered altogether invaluable, not only to the student, but as a standard book of reference on the subject of which it treats. Apart from its great merits as a treatise, it is as respects binding and printing, a truly splendid work."—*Louisville Journal*.

"A GREAT MILITARY WORK.—We have before us a bound volume of nearly six hundred pages, which is a complete and exhaustive 'Course of Instruction in Ordnance and Gunnery,' as its title states, and goes into every department of the science, including gunpowder, projectiles, cannon, carriages, machines, and implements, small arms, pyrotechny, science of gunnery, loading, pointing, and discharging fire-arms, different kinds of fires, effects of projectiles and employment of artillery. These severally form chapter heads and give thorough information on the subjects on which they treat. The most valuable and interesting information on all the above topics, including the history, manufacture, and use of small arms is here concentrated in compact and convenient form, making a work of rare merit and standard excellence. The work is abundantly and clearly illustrated."—*Boston Traveller*.

"This work is designed for a standard work, not only for the soldier and the sailor, or as a *vade mecum* for reference on the quarter-deck and in the officer's tent, but from its plain and forcible diction and familiar illustrations, must interest the general reader in the nature and effects of 15-inch Columbiads, and all kinds of artillery, down to a signal rocket. All who desire a work of reference upon the subject at large, will find this book a useful and interesting informant."—*Chicago Journal*.

HALLECK'S INTERNATIONAL LAW.

International Law; or, Rules Regulating the Intercourse of States in Peace and War. By Major-Gen. H. W. HALLECK, Commanding the Army. 1 vol., 8vo, law sheep. \$6.

"In preparing this work on the laws of war, Gen. Halleck appears to have made a very extended research among the authorities. His citations range through most of the writers and decisions touching upon such subjects, including the leading European publicists, for centuries back. His use of authorities is valuable, also, as being not only legal, but historical. Upon points of military usage he cites examples from history freely and with effect referring not only to the modern military historians, but even going back to the military days of Rome and Greece.

"General Halleck appears to have thoroughly digested the whole range of topics which he has to consider, and forms his opinions with judgment, and expresses them clearly and briefly."—*Boston Journal*.

"Gen. Halleck has been engaged many years on the compilation of this work; in fact he began collecting the materials for it during the Mexican War, and has since been diligently adding to them, and the result of his labors is embodied in the volume before us. The attentive perusal of a work of this description would demand far more time than we could give it; and, after all, the true value of it can only be ascertained with certainty by the test of constant consultation, as cases of international law arise. We do not, on a hasty glance, perceive that General Halleck advances any new opinions of his own on any of the many vexed questions in this most difficult department of jurisprudence, but we notice evidence of indefatigable labor and of pains-taking reference to the best authorities, which must give his work, at all events, the value of a faithful compendium. He gives a host of authorities for every doctrine that is laid down, and cites not merely from the most eminent jurists, such as Wheaton, Kent, Story, Stowell, Bynkerschoeck, Vattel, Grotius, Puffendorff, Laurent, Ompeda, Kamptz, Phillimore, Pando, Heffter, Martens, Wildman, and others, but from the best authorities on military and naval warfare, such as Jomini, Schwartz, Merlio, Dolloz, Lampredi, Hautefeuille, De Cussy, Riquelane, Ortolan, Pistoye, Duverdy, &c., &c.; on Commercial law, as Chitty, Duer, Manning, Rutherford, Masse, Leiber, &c., &c.; on diplomacy and history, as Horne, Marcy, Gardner, Mackintosh, Hallam, Alison, Burlamaqui, &c., &c. The work is very systematically and clearly laid out, and embraces every department of international law. Such a book of reference as this ought to be in the hands of every commanding officer by land and by sea, and it is not too large and unwieldy to be easy of carriage. This edition is well printed and strongly bound."—*Philadelphia Inquirer*.

"The work will be found to be of great use to army and navy officers, to professional lawyers, and to all interested in the topics of which it treats—topics to which present events give a greatly enhanced importance—such as "Declaration of War and its Effects;" "Sieges and Blockades;" "Visitation and Search;" "Right of Search;" "Prize Courts;" "Military Occupation;" "Treaties of Peace;" "Sovereignty of States," &c., and valuable information for consuls and ambassadors."—*N. Y. Evening Post*.

SYSTEMS OF MILITARY BRIDGES,

In Use by the United States Army; those adopted by the Great European Powers; and such as are employed in British India. With Directions for the Preservation, Destruction, and Re-establishment of Bridges. By Brig.-General GEORGE W. CULLUM, Lieut.-Col. Corps of Engineers, United States Army. 1 vol., octavo. With numerous Illustrations. \$3.50.

"It is a trite remark that of all the operations of war none is more difficult and hazardous than the passage of a large river in the presence of a bold and active enemy. The importance to this country of such a work as the present, when our armies have to pass so many great rivers, cannot be over-estimated. We have no man more competent to prepare such a work than Brigadier-General Cullum, who had the almost exclusive supervision, devising, building, and preparing for service of the various bridge-trains sent to our armies in Mexico during our war with that country. The treatise before us is very complete, and has evidently been prepared with scrupulous care. The descriptions of the various systems of military bridges adopted by nearly all civilized nations are very interesting even to the non-professional reader, and to those specially interested in such subjects must be very instructive, for they are evidently the work of a master of the art of military bridge-building."—*Washington Chronicle*.

MILITARY AND POLITICAL LIFE OF THE EMPEROR NAPOLEON.

By BARON JOMINI, General-in-Chief and Aide-de-camp to the Emperor of Russia. Translated from the French, with notes, by H. W. HALLECK, LL. D., Major-General U. S. Army. 4 vols., Royal octavo, cloth, with an Atlas of 60 Maps and Plans. \$25.

DELAFIELD'S REPORT.

Report on the Art of War in Europe in 1854, 1855, and 1856. By Col. R. DELAFIELD, Corps of Engineers U. S. A. 1 vol. folio, cloth. With maps and views. \$5.

THE ARTILLERIST'S MANUAL:

Compiled from various Sources, and adapted to the Service of the United States. Profusely illustrated with woodcuts and engravings on stone. Second edition, revised and corrected, with valuable additions. By Gen. JOHN GIBBON, U. S. Army. 1 vol., 8vo, half roan. \$5.

This book is now considered the standard authority for that particular branch of the Service in the United States Army. The War Department, at Washington, has exhibited its thorough appreciation of the merits of this volume, the want of which has been hitherto much felt in the service, by subscribing for 700 copies.

"It is with great pleasure that we welcome the appearance of a new work on this subject, entitled 'The Artillerist's Manual,' by Capt. John Gibbon, a highly scientific and meritorious officer of artillery in our regular service. The work, an octavo volume of 500 pages, in large, clear type, appears to be well adapted to supply just what has been heretofore needed to fill the gap between the simple Manual and the more abstruse demonstrations of the science of gunnery. The whole work is profusely illustrated with woodcuts and engravings on stone, tending to give a more complete and exact idea of the various matters described in the text. The book may well be considered as a valuable and important addition to the military science of the country."—*New York Herald*.

HAND-BOOK OF ARTILLERY,

For the Service of the United States Army and Militia. Eighth edition, revised and greatly enlarged. By Col. JOSEPH ROBERTS, U. S. A. 1 vol., 18mo, cloth. \$1.

"A complete catechism of gun practice, covering the whole ground of this branch of military science, and adapted to militia and volunteer drill, as well as to the regular army. It has the merit of precise detail, even to the technical names of all parts of a gun, and how the smallest operations connected with its use can be best performed. It has evidently been prepared with great care, and with strict scientific accuracy. By the recommendation of a committee appointed by the commanding officer of the Artillery School at Fort Monroe, Va., it has been substituted for 'Burns' Question and Answers,' an English work which has heretofore been the text-book of instruction in this country."—*New York Century*.

The following is an extract from a Report made by the committee appointed at a meeting of the staff of the Artillery School at Fort Monroe, Va., to whom the commanding officer of the School had referred this work:

* * * "In the opinion of your Committee, the arrangement of the subjects and the selection of the several questions and answers have been judicious. The work is one which may be advantageously used for reference by the officers, and is admirably adapted to the instruction of non-commissioned officers and privates of Artillery.

"Your Committee do, therefore, recommend that it be substituted as a text-book in place of 'Burns' Questions and Answers on Artillery.'"

(Signed,) I. VOGDES, *Capt. 1st Artillery.*

(Signed,) E. O. C. ORD, *Capt. 3d Artillery.*

(Signed,) J. A. HASKIN, *Bvt. Maj. and Capt. 1st Artillery.*

HEAVY ARTILLERY TACTICS.--1863.

Instruction for Heavy Artillery; prepared by a Board of Officers, for the use of the Army of the United States. With service of a gun mounted on an iron carriage. In one volume, 12mo, with numerous illustrations. Price \$2.

“WAR DEPARTMENT,
WASHINGTON, D. C., Oct. 20, 1862. } .

“This system of Heavy Artillery Tactics, prepared under direction of the War Department, having been approved by the President, is adopted for the instruction of troops when acting as heavy artillery.”

EDWIN M. STANTON,
Secretary of War.

“We presume that this is the most complete treatise on Heavy Artillery that has ever been published in this or any other country. It seems to take in every thing bearing on the subject, and its instructions are ample and exceedingly clear. Some forty illustrative plates are given, and the text is clearly and legibly printed.”—*N. Y. Commercial Advertiser*.

“This volume, prepared under the direction of the War Department and officially adopted as the code of artillery instruction for the public service, like all Van Nstrand's military publications, is got up in the most substantial and elegant style both of printing and binding. Its contents are evidently the work of thorough practical and scientific military engineers, and embrace all the important as well as minute details of heavy artillery practice.

“The First Part consists of sixteen lessons relating to the service of the single piece, including the gun, howitzer, mortar, and columbiad; also the formation of batteries, the art of aiming pieces and firing hot-shot. Part Second relates entirely to mechanical manœuvres and appliances, for handling, mounting, dismounting, and transporting heavy pieces. Part Third is of a miscellaneous character, containing directions for embarking and disembarking artillery and ordnance stores; also, tables of dimensions and weights of guns, carriages, shot, shell, machines, and implements, with charges for and ranges of heavy artillery. These instructions are not only copious in detail, but aptly illustrated with thirty-nine elegant steel-plate engravings.”—*Bulletin*.

U. S. TACTICS FOR COLORED TROOPS.

U. S. Infantry Tactics, for the Instruction, Exercise, and Manœuvres of the Soldier, a Company, Line of Skirmishers, and Battalion, for the use of the COLORED TROOPS of the United States Infantry. Prepared under the direction of the War Department. 1 volume, plates, \$1.50.

“WAR DEPARTMENT, WASHINGTON, March 9, 1863.

“This system of United States Infantry Tactics, prepared under the direction of the War Department, for the use of the Colored Troops of the United States Infantry, having been approved by the President, is adopted for the instruction of such troops.”

EDWIN M. STANTON, Secretary of War.

A TREATISE ON MILITARY SURVEYING.

Theoretical and Practical, including a description of Surveying Instruments. By G. H. MENDELL, Captain of Engineers. 1 vol. 8vo, with numerous Illustrations. \$2.00.

"The author is a Captain of Engineers, and has for his chief authorities Salmeuve, Lalobre, and Simms. He has presented the subject in a simple form, and has liberally illustrated it with diagrams, that it may be readily comprehended by every one who is liable to be called upon to furnish a military sketch of a portion of country."—*New York Evening Post.*

LIEBER ON GUERRILLA PARTIES.

Guerrilla Parties considered with reference to the Laws and Usages of War. Written at the request of Major-Gen. HENRY W. HALLECK, General-in-Chief of the Army of the United States. By FRANCIS LIEBER. 12mo, paper. 25 cents.

INSTRUCTIONS FOR THE GOVERNMENT OF ARMIES OF THE U. S. IN THE FIELD.

Prepared by FRANCIS LIEBER, LL. D., and revised by a Board of Officers, and approved by the War Department, in General Order, No. 100. 12mo. Price 25 cents paper covers. Red cloth, 50 cents.

MANUAL OF INSTRUCTIONS FOR MILITARY SURGEONS,

In the Examination of Recruits and Discharge of Soldiers. With an Appendix containing the Official Regulations of the Provost Marshal General's Bureau, and those for the formation of the Invalid Corps, &c., &c. Prepared at the request of the United States Sanitary Commission. By JOHN ORDRONAU, M. D., Professor of Medical Jurisprudence in Columbia College, New York. 12mo. Half morocco. \$1.50.

"The author has drawn his materials from the best accredited sources of information and the highest authorities in both hemispheres. He selects France and Prussia, as the representative military nations of Europe, and he has adopted as closely as possible their order of instruction on the subjects of the enlistments and discharges of soldiers; and, in the form of an Appendix, he has embodied the Code of Instructions relating to the U. S. Army, adopted by the Board of Medical Officers, convened at Washington for that purpose, on the 15th of April, 1863, to which are also added the Regulations governing the formation of our Invalid Corps. Nothing of importance to army surgeons has been omitted."—*Army and Navy Gazette.*

"In a condensed form it is an admirable treatise on the important subjects of which it treats. The author has aimed to be brief without being obscure, to omit nothing of real importance, and to draw his materials from the best sources. He treats of the physical disabilities which have relation to the military service, and of these alone. Medical Examiners are instructed in their duties, and the method of discovering feigned, artificially produced, and concealed diseases is pointed out. The book will prove valuable to all who are concerned in the manipulation of recruits or conscripts. An Appendix contains official regulations and instructions relative to the Provost-Marshal's office, the Invalid Corps, &c."—*Commercial Advertiser.*

HINTS ON THE PRESERVATION OF HEALTH IN ARMIES.

For the use of Volunteer Officers and Soldiers. By JOHN ORDRONAU, M. D. New edition, 18mo, cloth. 50 cents.

MODELS OF FORTIFICATIONS.

VAUBAN'S FIRST SYSTEM. One Front and two Bastions—
Scale, 20 Yards to an Inch.

THE MODERN SYSTEM. One Front—Scale, 20 Yards to an
Inch.

FIELD-WORKS. The Square Redoubt—Scale, 5 Yards to an Inch.
The above models are moulded from those made by Mr. KIMBER, of
London, and are intended as illustrations of his works upon For-
tifications. They are beautifully modelled in papier maché,
colored in oil, and mounted in strong covered cases. They are
admirably adapted for teaching the first principles of fortification,
and should be in every College, Military, and High School.

Mr. KIMBER's three volumes, viz., Vauban's First System, the Modern
System, and Field-Works, will accompany the models.

Price for the set of three, with books, \$75.

RIFLED ORDNANCE:

A Practical Treatise on the Application of the Principle of the Rifle
to Guns and Mortars of every calibre. To which is added, a
new theory of the initial action and force of Fired Gunpowder.
By LYNALL THOMAS, F. R. S. L. Fifth edition, revised. One
volume, octavo, illustrated. \$2.00.

FIELD TACTICS FOR INFANTRY,

Comprising the Battalion movements, and Brigade evolutions, useful
in the Field, on the March, and in the presence of the Enemy.
The tabular form is used to distinguish the commands of the
General, and the commands of the Colonel. By Brig.-Gen.
WM. H. MORRIS, U. S. Vols., late 2d U. S. Infantry. 18mo,
Illustrated. 75 cents.

THE AUTOMATON REGIMENT; OR, INFANTRY SOLDIERS' PRACTICAL INSTRUCTOR.

For all Regimental Movements in the Field. By G. DOUGLAS BREWERTON, U. S. Army. Nearly put up in boxes, price \$1; when sent by mail, \$1. 40.

The "Automaton Regiment" is a simple combination of blocks and counters, so arranged and designated by a carefully considered contrast of colors, that it supplies the student with a perfect miniature regiment, in which the position in the battalion of each company, and of every officer and man in each division, company, platoon, and section, is clearly indicated. It supplies the studious soldier with the means whereby he can consult his "tactics," and at the same time join practice to theory by manœuvring a mimic regiment.

HEAD-QUARTERS, MILITARY GOVERNOR, }
Department of the South, }
Beaufort, South Carolina, Oct. 21st, 1862. }

I hereby certify that I have examined the "Automaton Regiment," invented by G. Douglass Brewerton, late of the U. S. Regular Army, and now serving as a Volunteer Aide upon my military staff, and believe that his invention will prove a useful and valuable assistant to every student of military tactics. I take pleasure in recommending it accordingly.

R. SAXTON,

Brig.-General Volunteers.

THE AUTOMATON COMPANY; OR, INFANTRY SOLDIERS' PRACTICAL INSTRUCTOR.

For all Company Movements in the Field. By G. DOUGLAS BREWERTON, U. S. A. Price in boxes, \$1.25; when sent by mail, \$1.95.

THE AUTOMATON BATTERY; OR, ARTILLERISTS' PRACTICAL INSTRUCTOR.

For all Mounted Artillery Manœuvres in the Field. By G. DOUGLAS BREWERTON, U. S. A. Price in boxes, \$1; when sent by mail, \$1. 40.

A TREATISE ON ORDNANCE AND NAVAL GUNNERY.

Compiled and arranged as a Text-Book for the U. S. Naval Academy, by Lieutenant EDWARD SIMPSON, U. S. N. Third edition, revised and enlarged. 1 vol., 8vo, plates and cuts, half morocco. \$5.00.

"As the compiler has charge of the instruction in Naval Gunnery at the Naval Academy, his work, in the compilation of which he has consulted a large number of eminent authorities, is probably well suited for the purpose designed by it—namely, the circulation of information which many officers, owing to constant service afloat, may not have been able to collect. In simple and plain language it gives instruction as to cannon, gun-carriages, gunpowder, projectiles, fuzes, locks, and primers; the theory of pointing guns, rifles, the practice of gunnery, and a great variety of other similar matters, interesting to fighting men on sea and land."—*Washington Daily Globe*.

"A vast amount of information is conveyed in a readable and familiar form. The illustrations are excellent, and many of them unique, being colored or bronzed so as to represent various military arms, &c., with more than photographic literalness."—*Washington Star*.

"It is scarcely necessary for us to say, that a work prepared by a writer so practically conversant with all the subjects of which he treats, and who has such a reputation for scientific ability, cannot fail to take at once a high place among the text-books of our naval service. It has been approved by the Secretary of the Navy, and will henceforth be one of the standard authorities on all matters connected with Naval Gunnery."—*New York Herald*.

GUNNERY CATECHISM,

As Applied to the Service of Naval Ordnance. Adapted to the latest Official Regulations, and approved by the Bureau of Ordnance, Navy Department. By J. D. BRANDT, formerly of the U. S. Navy. 1 vol., 18mo, cloth. *In press*.

LUCE'S SEAMANSHIP:

Compiled from various authorities, and Illustrated with numerous Original and Selected Designs. For the use of the United States Naval Academy. By S. B. LUCE, Lieut.-Commander U. S. N. In two parts. Second Edition. One royal octavo volume, cloth, \$10.00

ELEMENTARY INSTRUCTION IN NAVAL ORD. NANCE AND GUNNERY.

By JAMES H. WARD, Commander U. S. Navy, Author of "Naval Tactics," and "Steam for the Million." New Edition, revised and enlarged. 8vo, cloth. \$2.

"It conveys an amount of information in the same space to be found nowhere else, and given with a clearness which renders it useful as well to the general as the professional inquirer."—*N. Y. Evening Post.*

NAUTICAL ROUTINE AND STOWAGE.

With Short Rules in Navigation. By JOHN McLEOD MURPHY and WM. N. JEFFERS, Jr., U. S. N. 1 vol., 8vo, blue cloth. \$2 50.

TOTTEN'S NAVAL TEXT-BOOK.

Naval Text-Book and Dictionary, compiled for the use of the Midshipmen of the U. S. Navy. By Commander B. J. TOTTEN, U. S. N. Second and revised edition. 1 vol., 12mo. \$2 50.

"This work is prepared for the Midshipmen of the United States Navy. It is a complete manual of instructions as to the duties which pertain to their office, and appears to have been prepared with great care, avoiding errors and inaccuracies which had crept into a former edition of the work, and embracing valuable additional matter. It is a book which should be in the hands of every midshipman, and officers of high rank in the navy would often find it a useful companion."—*Boston Journal.*

GUNNERY INSTRUCTIONS.

Simplified for the Volunteer Officers of the U. S. Navy, with hints to Executive and other Officers. By Lieut. EDWARD BARRETT, U. S. N., Instructor of Gunnery, Navy Yard, Brooklyn. 1 vol., 12mo, cloth. \$1 25.

"It is a thorough work, treating plainly on its subject, and contains also some valuable hints to executive officers. No officer in the volunteer navy should be without a copy."—*Boston Evening Traveller.*

HISTORY OF THE UNITED STATES NAVAL ACADEMY.

With Biographical Sketches, and the names of all the Superintendents, Professors and Graduates; to which is added a Record of some of the earliest votes by Congress, of Thanks, Medals and Swords to Naval Officers. By EDWARD CHAUNCEY MARSHALL, A. M. 1 vol., 12mo, cloth, plates. \$1.

"Every naval man will find it not only a pleasant companion, but an invaluable book of reference. It is seldom that so much information is made accessible in so agreeable a manner in so small a space."—*New York Times*.

MANUAL OF INTERNAL RULES AND REGULATIONS FOR MEN-OF-WAR.

By Commodore U. P. LEVY, U. S. N., late Flag Officer commanding U. S. Naval Force in the Mediterranean, &c. Flexible blue cloth. Third edition, revised and enlarged. 50 cents.

"Among the professional publications for which we are indebted to the war, we willingly give a prominent place to this useful little Manual of Rules and Regulations to be observed on board of ships of war. Its authorship is a sufficient guarantee for its accuracy and practical value; and as a guide to young officers in providing for the discipline, police, and sanitary government of the vessels under their command, we know of nothing superior."—*N. Y. Herald*.

NAVAL LIGHT ARTILLERY:

Instructions for Naval Light Artillery, afloat and ashore, prepared and arranged for the U. S. Naval Academy, by Lieutenant W. H. PARKER, U. S. N. Second edition, revised by Lieut. S. B. LUCE, U. S. N., Assistant Instructor of Gunnery and Tactics at the United States Naval Academy. 1 vol., 8vo, cloth, with 22 plates. \$2.00.

"The service for which this is the text-book of instruction is of special importance in the present war. The use of light boat-pieces is constant and important, and young officers are frequently obliged to leave their boats, take their pieces ashore, and manœuvre them as field artillery. Not unfrequently, also, they are incorporated, when ashore, with troops, and must handle their guns like the artillery soldiers of a battery. 'The Exercise of the Howitzer Afloat' was prepared and arranged by Captain Dahlgren, whose name gives additional sanction and value to the book. A manual for the Sword and Pistol is also given. The plates are numerous and exceedingly clear, and the whole typography excellent."—*Philadelphia Inquirer*.

SQUADRON TACTICS UNDER STEAM.

By FOXHALL A. PARKER, Commander U. S. Navy. Published by authority of the Navy Department. 1 vol., 8vo, with numerous Plates. \$5.00.

"In this useful work to Navy officers, the author demonstrates—by the aid of profuse diagrams and explanatory text—a new principle for manœuvring naval vessels in action. The author contends that the winds, waves, and currents of the ocean oppose no more serious obstacles to the movements of a steam fleet, than do the inequalities on the surface of the earth to the manœuvres of an army. It is in this light, therefore, that he views a vast fleet—simply as an army; the regiments, brigades, and divisions of which are represented by a certain ship or ships."—*Scientific American*.

"Commander Foxhall A. Parker, United States Navy, has furnished our Navy with a new work on 'Squadron Tactics under Steam,' which now fills a vacancy in our list of Naval Text-Books, and is of the highest merit and importance. Heretofore our Navy has had no complete and reliable work on this important subject, and this volume is full, clear, and explicit in all its details, and at once places its author high on the list of naval writers. It is doubly valuable for its illustrations, which are numerous, and will greatly aid the naval officer in properly manœuvring his vessel in action and squadron sailing. The aim of the author has been to combine simplicity of formation with celerity of execution, and in this particular he has without any doubt accomplished his intent. Naval officers who have seen the work heartily indorse it, and are proud to know that hereafter our vessels in their movements will be guided by a text-book prepared by one of their number. The appendix contains an index of signals used in manœuvring by Parker's method, which will be found very useful and instructive, and its simplicity is so apparent that no one can fail to readily understand it. It should be in the possession of every naval officer."—*New York Herald*.

OSBON'S HAND-BOOK OF THE UNITED STATES NAVY.

Being a compilation of all of the principal events in the history of every vessel of the United States Navy, from April, 1861, to May, 1864. Compiled and arranged by B. S. OSBON. 1 vol., 12mo, blue cloth. *In press*.

LESSONS AND PRACTICAL NOTES ON STEAM,

The Steam-Engine, Propellers, &c., &c., for Young Marine Engineers, Students, and others. By the late W. R. KING, U. S. N. Revised by Chief-Engineer J. W. KING, U. S. Navy. Ninth edition, enlarged. 8vo, cloth. \$2 00.

"This is the second edition of a valuable work of the late W. R. KING, U. S. N. It contains lessons and practical notes on Steam and the Steam-Engine, Propellers, &c. It is calculated to be of great use to young marine engineers, students, and others. The text is illustrated and explained by numerous diagrams and representations of machinery. This new edition has been revised and enlarged by Chief Engineer J. W. KING, U. S. N., brother to the deceased author of the work."—*Boston Daily Advertiser*.

"This is one of the best, because eminently plain and practical, treatises on the Steam-Engine ever published."—*Philadelphia Press*.

"Its republication at this time, when so many young men are entering the service as naval engineers, is most opportune. Each of them ought to have a copy."—*Philadelphia Evening Bulletin*.

STEAM FOR THE MILLION.

A Popular Treatise on Steam and its Application to the Useful Arts, especially to Navigation. By J. H. WARD, Commander U. S. Navy. New and revised edition. 1 vol., 8vo, cloth. \$1.

"A most excellent work for the young engineer and general reader. Many facts relating to the management of the boiler and engine are set forth with a simplicity of language, and perfection of detail, that brings the subject home to the reader. Mr. Ward is also peculiarly happy in his illustrations."—*American Engineer*.

SCREW PROPULSION.

Notes on Screw Propulsion, its Rise and History. By Capt. W. H. WALKER, U. S. Navy. 1 vol., 8vo, cloth. 75 cents.

"Some interesting notes on screw propulsion, its rise and progress, have just been issued by Commander W. H. WALKER, U. S. N., from which all that is likely to be desired on the subject may be readily acquired. * * * * After thoroughly demonstrating the efficiency of the screw, Mr. Walker proceeds to point out the various other points to be attended to in order to secure an efficient man-of-war, and enlogizes throughout the readiness of the British Admiralty to test every novelty calculated to give satisfactory results. * * * * Commander Walker's book contains an immense amount of concise practical data, and every item of information recorded fully proves that the various points bearing upon it have been well considered previously to expressing an opinion."—*London Mining Journal*.

"Every engineer should have it in his library."—*American Engineer*.

HOLLEY'S RAILWAY PRACTICE.

American and European Railway Practice, in the Economical Generation of Steam, including the materials and construction of Coal-burning Boilers, Combustion, the Variable Blast, Vaporization, Circulation, Superheating, Supplying and Heating Feed-water, &c., and the adaptation of Wood and Coke-burning Engines to Coal-burning; and in Permanent Way, including Road-bed, Sleepers, Rails, Joint Fastenings, Street Railways, &c., &c. By ALEXANDER L. HOLLEY, B. P. With 77 lithographed plates. 1 vol., folio, cloth, \$10.

"This is an elaborate treatise by one of our ablest civil engineers, on the construction and use of locomotives, with a few chapters on the building of Railroads * * * All these subjects are treated by the Author who is a first class railroad engineer, in both an intelligent and intelligible manner. The facts and ideas are well arranged, and presented in a clear and simple style, accompanied by beautiful engravings, and we presume the work will be regarded as indispensable by all who are interested in a knowledge of the construction of railroads, and rolling stock, or the working of locomotives."—*Scientific American*.

ORDNANCE AND ARMOR.

The Principles, Particulars, Structure, Fabrication, and Results of standard European and American Guns, Rifling, and Projectiles; Metals and Combinations of Materials for Cannon; Detailed Official Accounts of English and American Experiments against Armor; Notes on Gun-Cotton, &c. By ALEXANDER L. HOLLEY, B. P., Author of "American and European Railway Practice," &c. 1 vol., 8vo, 600 pages, with 300 Illustrations, and copious tables. *In press*.

MANUAL OF GUNNERY INSTRUCTIONS,

For the Navy of the United States. Compiled from the Ordnance Instructions for the United States Navy, for the use of the United States Naval Academy. 1 vol., square 32mo, flexible morocco, with clasp. \$1.50.

PRACTICAL TREATISE ON LIMES, HYDRAULIC CEMENTS, AND MORTARS.

Papers on Practical Engineering, U. S. Engineer Department, No. 9, containing Reports of numerous experiments conducted in New York City, during the years 1858 to 1861 inclusive. By Q. A. GILLMORE, Brig.-General U. S. Volunteers, and Major U. S. Corps of Engineers. With numerous illustrations. One volume octavo. \$3.50.

THE CONTRACTORS' MANUAL AND BUILDERS' PRICE-BOOK.

By A. B. CLOUGH, Architect. 1 vol., 18mo. 50 cents.

PRINCIPLES AND PRACTICE OF EMBANKING LANDS FROM RIVER FLOODS,

As applied to the Levees of the Mississippi. By WILLIAM HEWSON, Civil Engineer. 1 vol., 8vo, cloth. \$2.00.

WOODBURY ON THE ARCH.

Treatise on the various Elements of Stability in the well-proportioned Arch. With numerous Tables of the Ultimate and Actual Thrust. By Captain D. P. WOODBURY, U. S. Corps of Engineers. 1 vol., 8vo. Engravings. Cloth, \$2.50.

THE STEAM-ENGINE INDICATOR,

And the Improved Manometer Steam and Vacuum Gauges: Their Utility and Application. By PAUL STILLMAN. New Edition. 1 vol., 12mo, flexible cloth, \$1.00; flexible morocco, \$1.25.

SWORD-PLAY.

The Militiaman's Manual and Sword-Play without a Master. — Rapier and Broad-Sword Exercises copiously Explained and Illustrated; Small-Arm Light Infantry Drill of the United States Army; Infantry Manual of Percussion Muskets; Company Drill of the United States Cavalry. By Major M. W. BERRIMAN, engaged for the last thirty years in the practical instruction of Military Students. Second edition. 1 vol., 12mo, red cloth. \$1.

"Captain Berriman has had thirty years' experience in teaching military students, and his work is written in a simple, clear, and soldierly style. It is illustrated with twelve plates, and is one of the cheapest and most complete works of the kind published in this country."—*New York World*.

"This work will be found very valuable to all persons seeking military instruction; but it recommends itself most especially to officers, and those who have to use the sword or sabre. We believe it is the only work on the use of the sword published in this country."—*New York Tablet*.

"It is a work of obvious merit and value."—*Boston Traveller*.

A SYSTEM OF TARGET PRACTICE.

For the use of Troops when armed with the Musket, Rifle-Musket, Rifle, or Carbine. Prepared, principally from the French, by Captain HENRY HETH, 10th Infantry, U. S. A. 18mo, cloth. 50 cents.

"WAR DEPARTMENT,
WASHINGTON, March 1st, 1858. }

"The System of Target Practice, prepared under direction of the War Department by Captain Henry Heth, 10th Infantry, having been approved, is adopted for the instruction of troops when armed with the musket, rifle-musket, rifle, or carbine."

JOHN B. FLOYD, *Secretary of War*.

SCHOOL OF THE GUIDES.

Designed for the use of the Militia of the United States. Flexible cloth. 50 cents.

"This excellent compilation condenses into a compass of less than sixty pages all the instruction necessary for the guides, and the information being disconnected with other matters, is more readily referred to and more easily acquired."—*Louisville Journal*.

"It has received high praise, and will prove of great service in perfecting the drill of our Militia."—*N. American and U. S. Gazette, Phil.*

NOLAN'S SYSTEM FOR TRAINING CAVALRY HORSES.

By KENNER GARRARD, Captain Fifth Cavalry, U. S. A. 1 vol., 12mo, cloth. 24 Lithographed plates. \$1.50.

*** "We are glad when competent men bring forward works that are intended to facilitate the formation of an effective cavalry force. Of this class is *Nolan's System for Training Cavalry Horses*, prepared for use in this country, by Captain Kenner Garrard, U. S. A. Captain Nolan was distinguished in the British service for his knowledge of the cavalry arm, and for his general talents. As the work had become out of print, Captain Garrard has done well in reproducing it: he has added to it a chapter on Rarey's Method of Training Horses, and another on Horse Shoeing. The volume is well illustrated. It cannot be too warmly commended to general use."—*Boston Daily Evening Traveller*.

AUSTRIAN INFANTRY TACTICS.

Evolutions of the Line as practised by the Austrian Infantry, and adopted in 1853. Translated by Capt. C. M. WILCOX, Seventh Regiment, U. S. Infantry. 1 vol., 12mo. Three large plates, cloth. \$1.

"The movements of armies engaged in battle have often been compared to those of the chess-board, and we cannot doubt that there are certain principles of tactics in actual war as in that game, which may determine the result independently, in a great measure, of the personal strength and courage of the men engaged. The difference between these principles as applied in the American Army and in the Austrian, is so wide as to have suggested the translation of the work before us, which contains the whole result of the famous Field-Marshal RANETZKY's experience for twenty-five years, while in supreme command in Italy."—*New York Century*.

RHYMED TACTICS, BY "GOV."

1 vol., 18mo, paper. With portraits. 25 cents.

"It will strike the military man, familiar with the tedious routine of drill, by theory, practice, and memory, as a most unique and valuable method of strengthening the latter, with the least mental exertion. The author is a thorough soldier, and his ability as a rhymester will be conceded by any intelligent reader."—*New York Leader*.

"Our author deserves great credit for the ingenuity he has displayed in putting into verse a Manual which would at first glance seem to defy the most persistent efforts of the rhymester. The book contains a number of illustrations representing some of the more difficult positions, in the figures of which portraits of several prominent officers of the New York Volunteers may be recognized."—*New York Times*.

ARMY OFFICERS' POCKET COMPANION.

Principally designed for Staff Officers in the Field. Partly translated from the French of M. DE ROUVRE, Lieutenant-Colonel of the French Staff Corps, with Additions from standard American, French, and English Authorities. By WM. P. CRAIGHILL, First Lieutenant U. S. Corps of Engineers, Assist. Prof. of Engineering at the U. S. Military Academy, West Point. 1 vol., 18mo, full roan. \$1 50.

"I have carefully examined Capt. CRAIGHILL'S Pocket Companion. I find it one of the very best works of the kind I have ever seen. Any Army or Volunteer officer who will make himself acquainted with the contents of this little book, will seldom be ignorant of his duties in camp or field."

H. W. HALLECK, Major-General U. S. A.

"I have carefully examined the 'Manual for Staff Officers in the Field.' It is a most invaluable work, admirable in arrangement, perspicuously written, abounding in most useful matters, and such a book as should be the constant pocket companion of every army officer, Regular and Volunteer."

G. W. CULLUM, Brigadier-General U. S. A.

Chief of General Halleck's Staff, Chief Engineer Department Mississippi.

MANUAL FOR ENGINEER TROOPS.

Consisting of

- Part I. Ponton Drill.
- II. Practical Operations of a Siege.
- III. School of the Sap.
- IV. Military Mining.
- V. Construction of Batteries.

By Major J. C. DUANE, Corps of Engineers, U. S. Army. 1 vol., 12mo, half morocco, with plates. \$2.

"I have carefully examined Capt. J. C. Duane's 'Manual for Engineer Troops,' and do not hesitate to pronounce it the very best work on the subject of which it treats."

H. W. HALLECK, Major-General, U. S. A.

"A work of this kind has been much needed in our military literature. For the army's sake, I hope the book will have a wide circulation among its officers."

G. B. MCCLELLAN, Major-General, U. S. A.

VIELE'S HAND-BOOK.

Hand-Book for Active Service, containing Practical Instructions in Campaign Duties. For the use of Volunteers. By Brig.-Gen. EGBERT L. VIELE, U. S. A. 12mo, cloth. \$1.

EVOLUTIONS OF FIELD BATTERIES OF ARTILLERY.

Translated from the French, and arranged for the Army and Militia of the United States. By Gen. ROBERT ANDERSON, U. S. A. Published by order of the War Department. 1 vol., cloth, 32 plates. \$1.

WAR DEPARTMENT, Nov. 2d, 1859.

The System of "Evolutions of Field Batteries," translated from the French, and arranged for the service of the United States, by Major Robert Anderson, of the 1st Regiment of Artillery, having been approved by the President, is published for the information and government of the army.

All Evolutions of Field Batteries not embraced in this system are prohibited, and those herein prescribed will be strictly observed.

J. B. FLOYD, *Secretary of War.*

"This system having been adopted by the War Department, is to the artillerist what Hardee's Tactics is to the infantry soldier; the want of a work like this has been seriously felt, and will be eagerly welcomed."—*Louisville Journal.*

STANDING ORDERS OF THE SEVENTH REGIMENT, NATIONAL GUARD.

For the Regulation and Government of the Regiment in the Field or in Quarters. By A. DURYEE, Colonel. New Edition, flexible cloth. 40 cents.

"This, which is a new edition of a popular work, cannot fail to be eagerly sought after as presenting clearly and succinctly the principles of organization and discipline of a most favorite corps. An appropriate index facilitates reference to the matter of the volume."—*New Yorker.*

LIGHT INFANTRY COMPANY AND SKIRMISH DRILL.

The Company Drill of the Infantry of the Line, together with the Skirmish Drill of the Company and Battalion, after the method of General LE LOUTEREL. Bayonet Fencing; with a Supplement on the Handling and Service of Light Infantry. By J. MONROE, Colonel 22d Regiment, N. G., N. Y. S. M., formerly Captain U. S. Infantry. 1 vol., 32mo. 60 cents.

TREATISE ON GRAND MILITARY OPERATIONS.

Illustrated by a Critical and Military History of the Wars of Frederick the Great. With a summary of the most important principles of the Art of War. By BARON DE JOMINI. Illustrated by Maps and Plans. Translated from the French, by Col. S. B. HOLABIRD, A. D. C., U. S. Army. In two vols., octavo. *In press.*

HISTORY OF WEST POINT.

And its Military Importance during the American Revolution; and the Origin and Progress of the United States Military Academy. By Captain EDWARD C. BOYNTON, A. M., Adjutant of the Military Academy. With numerous Maps and Engravings. 1 vol., octavo. Blue cloth, \$5.00; half mor., \$6.50; full mor., \$8.00.

MILITARY BRIDGES,

For the Passage of Infantry, Artillery, and Baggage-Trains; with suggestions of many new expedients and constructions for crossing streams and chasms; designed to utilize the resources ordinarily at command and reduce the amount and cost of army transportation. Including also designs for Trestle and Truss Bridges for Military Railroads, adapted especially to the wants of the Service of the United States. By HERMAN HAUPT, Brig.-Gen. in charge of the construction and operation of the U. S. Military Railways, Author of "General Theory of Bridge Construction, &c." Illustrated by Sixty-nine Lithographic Engravings. Octavo, cloth, \$6.00.

REPORT OF THE ENGINEER AND ARTILLERY OPERATIONS OF THE ARMY OF THE POTOMAC,

From its Organization to the close of the Peninsular Campaign. By Brig.-Gen. J. G. BARNARD, and other Engineer Officers, and Brig.-Gen. W. F. BARRY, Chief of Artillery. Illustrated by numerous Maps, Plans, &c. Octavo. \$3.50.

SIEGE OF BOMARSUND (1854).

Journals of Operations of the Artillery and Engineers. Published by permission of the Minister of War. Illustrated by Maps and plans. Translated from the French by an Army Officer. 1 vol., 12mo, cloth. 75 cents.

"To military men this little volume is of special interest. It contains a translation by an officer of the United States Army, of the Journal of operations by the artillery and engineers at the siege of Bomarsund in 1854, published by permission of the French Minister of War in the *Journal des Armées spéciales et de l'Etat Major*. The account of the same successful attack, given by Sir Howard Douglas in the new edition of his work on Gunnery, is appended; and the narrative is illustrated by elaborate maps and plans."—*New York Paper*.

MAXIMS AND INSTRUCTIONS ON THE ART OF WAR.

Maxims, Advice, and Instruction on the Art of War; or, A Practical Military Guide for the use of Soldiers of all Arms and of all Countries. Translated from the French by Captain LENDY, Director of the Practical Military College, late of the French Staff, etc., etc. 1 vol., 18mo, cloth. 75 cents.

"We do not pretend to much military science, but we have found this small volume easy to understand and interesting to read. It is compiled from old works, but is adapted to new notions and improvements, and it gives in a nut-shell a general idea of the whole business of war. Some men who have always maintained 'Quaker' principles, and who have never studied the trade and mystery of fighting, find it difficult to comprehend the various strategic movements that are chronicled from day to day in the newspapers. These men should look into the subject of war, and we advise them, as a beginning, to read this book. It will probably help their cloudy perceptions, and enable them to see clearly the meaning of military operations, which now they cannot understand."—*Providence Journal*.

NOTES ON SEA-COAST DEFENCE:

Consisting of Sea-Coast Fortification; the Fifteen-Inch Gun; and Casemate Embrasure. By Gen. J. G. BARNARD, Corps of Engineers, U. S. A. 1 vol., 8vo, cloth, plates. \$1 50.

"This small volume by one of the most accomplished officers in the United States service is especially valuable at this time. Concisely and thoroughly Major Barnard discusses the subjects included in this volume, and gives information that will be read with great profit by military men, and by all interested in the art of war as a defensive force."—*New York Commercial*.

MANUAL FOR QUARTERMASTERS AND COMMISSARIES.

Containing Instructions in the Preparation of Vouchers, Abstracts, Returns, &c., embracing all the recent changes in the Army Regulations, together with instructions respecting Taxation of Salaries, etc. By Captain R. F. HUNTER, late of the U. S. Army. 12mo, cloth. \$1. Flexible morocco, \$1.25.

"This is a compendious volume of 119 pages, containing a large amount of useful information in a small compass. The directions for making up the abstracts and returns of the Quartermaster's and Commissary's departments will afford great facilities to persons charged with those duties; and as this is the only work in existence which is devoted to these particular objects, and as the accounts of Quartermasters and Commissaries are subjected to the most rigid scrutiny, this Manual supplies a want which has long been experienced and sensibly felt by those for whose use and particular benefit the book is intended. The arrangement of the matter is extremely perspicuous, and the explanations are complete and easily understood."—*Army and Navy Gazette*.

"This is the only work of the kind extant. It is based on the latest regulations of the War Department, and will be regarded as authority by those officers for whose use it is designed."—*Saturday Evening Gazette*.

ARMY PAY DIGEST, AND READY CALCULATOR; OR, REGIMENTAL PAY TABLE.

Compiled by Major EZRA WEBB. Octavo, cloth. \$2.

"A complete condensation of the military laws and general army orders, as relates to pay, emoluments, &c., in the United States Army, from the commencement of the Rebellion to the present time—an invaluable companion to paymasters as well as to all officers and soldiers in our armies. It is desirable to every one interested in the pay of the army or seeking information on the subject (including pensions, claims against the United States and mode of procedure), saving, as it will, a great amount of research, putting very desirable information within the reach of every one. All may see at a glance the pay of officers (including subsistence, forage, servants and their clothing, transportation, fuel, and quarters) and men of all arms and grades per day or days, month or months; the organization of the army, from 'the company' to the 'corps d'armée.' Indeed, it is emphatically the book for the times; and a copy should be in the hands of every man in the army, as also bankers, contractors, claim agents, &c."—*New York Herald*.

RIFLES AND RIFLE PRACTICE.

An Elementary Treatise on the Theory of Rifle Firing; explaining the causes of Inaccuracy of Fire and the manner of correcting it; with descriptions of the Infantry Rifles of Europe and the United States, their Balls and Cartridges. By Capt. C. M. WILCOX, U. S. A. New edition, with engravings and cuts. Green cloth. \$1.75.

"Although eminently a scientific work, special care seems to have been taken to avoid the use of technical terms, and to make the whole subject readily comprehensible to the practical enquirer. It was designed chiefly for the use of Volunteers and the Militia: but the War Department has evinced its approval of its merits by ordering from the publisher one thousand copies for the use of the United States Army."—*Louisville Journal*.

"The book will be found intensely interesting to all who are watching the changes in the art of war arising from the introduction of the new rifled arms. We recommend to our readers to buy the book."—*Military Gazette*.

"A most valuable treatise."—*New York Herald*.

"This book is quite original in its character. That character is completeness. It renders a study of most of the works on the rifle that have been published quite unnecessary. We cordially recommend the book."—*United Service Gazette, London*.

"The work being in all its parts derived from the best sources, is of the highest authority, and will be accepted as the standard on the subject of which it treats."—*New Yorker*.

NEW BAYONET EXERCISE.

A New Manual of the Bayonet, for the Army and Militia of the United States. By Colonel J. C. KELTON, U. S. A. With Forty beautifully-engraved plates. Red cloth. \$1.75.

This Manual was prepared for the use of the Corps of Cadets, and has been introduced at the Military Academy with satisfactory results. It is simply the theory of the attack and defence of the sword applied to the bayonet, on the authority of men skilled in the use of arms.

The Manual contains practical lessons in Fencing, and prescribes the defence against Cavalry, and the manner of conducting a contest with a Swordsman.

"This work merits a favorable reception at the hands of all military men. It contains all the instruction necessary to enable an officer to drill his men in the use of this weapon. The introduction of the Sabre Bayonet in our army renders a knowledge of the exercise more imperative."—*New York Times*.

NEW MANUAL OF SWORD AND SABRE EXERCISE.

By Colonel J. C. KELTON, U. S. A. Thirty plates. *In press*.

A TREATISE ON THE CAMP AND MARCH.

With which is connected the Construction of Field Works and Military Bridges; with an Appendix of Artillery Ranges, &c. For the use of Volunteers and Militia in the United States. By Captain HENRY D. GRAFTON, U. S. A. 1 vol., 12mo, cloth. 75 cents.

GUNNERY IN 1858.

A Treatise on Rifles, Cannon, and Sporting Arms. By WM. GREENER, C. E. 1 vol., 8vo, cloth. \$3. Full calf, \$4 50.

THE PRINCIPLES OF STRATEGY AND GRAND TACTICS.

Translated from the French of General G. H. DUFOUR. By WILLIAM P. CRAIGHILL, Capt. of Engineers U. S. Army, and Assistant Professor of Engineering, U. S. Military Academy, West Point. From the last French Edition. Illustrated. In one volume, 12mo. \$2.50.

HINTS TO COMPANY OFFICERS ON THEIR MILITARY DUTIES.

By Capt. C. C. ANDREWS, 3d Regt. Minnesota Vols. 1 vol., 18mo, cloth. 50 cents.

"This is a hand-book of good practical advice, which officers of all ranks may study with advantage."—*Philadelphia Press*.

"This little volume contains many valuable suggestions, and conveys not a little important practical information to military men. It should be read and its precepts remembered by every young officer."—*Cincinnati Daily Gazette*.

"We wish it could be read and studied by all having men under their command."—*N. Y. Commercial Advertiser*.

SIEGE AND REDUCTION OF FORT PULASKI, GEORGIA.

Papers on Practical Engineering. No. 8. Official Report to the U. S. Engineer Department of the Siege and Reduction of Fort Pulaski, Ga., February, March, and April, 1862. By Brig-General Q. A. GILLMORE, U. S. A. Illustrated by Maps and Views. 1 vol., 8vo, cloth. \$2 50.

"This is an official history of the siege of Fort Pulaski, from the commencement, with all the details in full, made up from a daily record, forming a most valuable paper for future reference. The situation and construction of the Fort, the position of the guns both of the rebels and the Federals, and their operation, are made plain by maps and engraved views of different sections. Additional reports from other officers are furnished in the appendix, and every thing has been done to render the work full and reliable."—*Boston Journal*.

D ICTIONARY OF ALL OFFICERS IN THE UNITED STATES ARMY,

From 1789 to January 1st, 1853, and of the Navy and Marine Corps. Second edition, with a Supplement, bringing it down to January 1, 1860. By Col. CHAS. K. GARDNER. 1 vol., 12mo, cloth. \$3.

U NION FOUNDATIONS.

A Study of American Nationality, as a Fact of Science. By Capt. E. B. HUNT, Corps of Engineers, U. S. A. 1 vol., 8vo. 30 cents.

T EXAS, AND ITS LATE MILITARY OCCUPA- TION AND EVACUATION.

By Capt. EDWIN D. PHILLIPS, 1st Infantry, U. S. A. 8vo, paper 25 cents.

M ORDECAI'S REPORT.

Military Commission to Europe in 1855 and 1856. Report of Major ALFRED MORDECAI, U. S. Ordnance Department. 1 vol., folio. With Views and Maps. \$1 50.

