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PATTERSON'S

ILLUSTRATED NAUTICAL DICTIONARY.

UNABRIDGED.

FROM KEEL TO TRUCK. FROM STEM TO STERNPOST.
FROM ZENITH TO NADIR. FROM BEDPLATE TO FUNNEL.
FROM TORPEDO BOAT TO BATTLE SHIP.

A Work of Reference for Naval, Revenue, and Merchant Marine Officers, Yachtsmen, Canoeists, U. S. Local Inspectors of Steam Vessels. Builders of Wooden and Iron Steam and Sailing Ships, Admiralty Lawyers, Underwriters, Naval Cadets and Young Men on board of State Training Vessels, Marine Draughtsmen, Builders of Engines and Boilers, and Adapted for the Use of the Rank and File of the United States Naval Reserve.

FIVE THOUSAND NAUTICAL SUBJECTS.
FIVE HUNDRED DESCRIPTIVE ENGRAVINGS.
FIVE PARTS BOUND IN ONE VOLUME.

BY

CAPTAIN HOWARD PATTERSON,

(FORMERLY PROFESSOR OF NAUTICAL ASTRONOMY AT BROWN'S COLLEGE, AND PRINCIPAL OF THE NEW YORK NAVIGATION ACADEMY,)

AUTHOR OF

The Common Sense Navigator; The Yachtsman's Guide; Hand Book to the U. S. Local Marine Board Examination for Masters and Mates; Yachting Under American Statute, Etc.

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NEW YORK CITY.

PREFACE.

TO Messrs. Harper Brothers, Outing, and especially to Captain H. Paasch, are due the thanks of the author for many of the engravings which so materially enhance the value of this volume. In none of its five departments does the Dictionary fail to come literally down to date. The text of Parts I., III., IV. and V. is original. In the compilation of Part II. the author found various standard authorities serviceable, and none more so than Meade's Naval Architecture.

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PART I.

DICTIONARY OF GENERAL SEA TERMS.

A.

A 1. The highest that a vessel is classed in reference to her construction. (See CLASS.)

A. B. Signifying *Able Seaman.*

Aback. When the wind presses the surface of the sails against the mast with a tendency to drive the vessel astern.

Abaft. In the direction of the stern.

Abaft the Beam. The bearing of any object contained between the ship's beam and the stern of the vessel.

Abeam. The bearing of any object at right angles to the keel.

Aboard. On board; upon the vessel; within the vessel.

About. To go about is to tack ship; to go off on the opposite tack.

About Ship. (See READY ABOUT.)

Abox. When the head-yards are braced aback and the after-sails are full.

To brace abox is to lay the head-yards abox.

To box off is to box the vessel's head away from the wind after she has missed stays in tacking. When the vessel is in the latter position she is said to be *in irons.*

Abreast. Side by side.

Absence Flag. The small, square, blue flag hoisted at the starboard-spreader on a yacht to signify that the owner is not on board.

Accommodation Ladder. (See GANGWAY LADDER.)

A-cock-bill. When the yards are topped up at an angle with the deck. Said of an anchor when it hangs up and down at the cat-head.

Adrift. Broken away from moorings.

Afloat. Resting on, or buoyed up by the water.

Afore. Forward.

Aft. In the direction of the stern.

After Peak. (See RUN.)

After Sails. The sails on the masts abaft the foremast.

After Yards. The yards on the masts abaft the foremast.

Against the Sun. A rope laid up from left to right is said to be laid up against the sun. When the wind shifts around the compass contrary to the way in which the hands of a watch revolve (from north to south by the way of west), it is said to *back against the sun.* A rope coiled down from left to right is *coiled against the sun.* The sun is supposed to move from right to left.

Aground. On the bottom.

Ahead. Before the vessel. When we say that the wind is *ahead* we mean that it is from the direction toward which we wish to sail the ship.

Ahoy. The term used in hailing a vessel.

A-hull. Said of a vessel when she lies with all her sails furled, and the helm lashed to leeward, or a-lee.

Albatross. A large, web-footed aquatic bird, belonging to the gull family, and peculiar to the southern ocean. Sailors entertain superstitious veneration for this bird, and will not harm it, believing that to do so would entail all kinds of calamities in the shape of gales, stagnant calms, and personal ill fortune.

A-lee. When the helm is put over to leeward it is said to be a-lee.

All-aback. When all the sails are pressed against the masts.

All Hands. The call by which all the ship's company are summoned. The crew collectively.

All in the Wind. All the sails shaking from being too close to the wind.

Aloft. Above the vessel's deck.

Alongshore. Along the coast.

Alongside. Side by side.

Aloof. At a distance.

Amain. At once; suddenly.

American Shipmasters' Association. An incorporated American society for the survey and classification of American and foreign merchant vessels, and which is approved by the Underwriters of New York, Boston and San Francisco. This society also issues certificates of competency to masters and mates provided they pass the required professional examination. (See LICENSE.)

Amidships. A term applied to any place on or below decks that is in the centre of the vessel, whether in reference to the length or to the breadth. Strictly speaking it refers to the axis, or the fore-and-aft line of the vessel—a line drawn over the keel.

Anchor. The iron shape used to drop overboard, and, being connected with the vessel by a cable of iron or rope, it holds her riding near the place below which the anchor is resting on the bottom.

Anchor Away. The report made by the mate from the forecastle when the anchor leaves the bottom in getting under way.

Anchor Light. The globular lantern light hoisted after sundown by all vessels when at anchor.

Anchor Watch. A watch kept at night when the vessel is at anchor to guard the ship against dragging, fire, thieves, etc.

An-end. Said of a mast when it is perpendicular to the deck.

Angle of Safety. The angle, reckoned in degrees, which marks the safety limit in a vessel's rolling. Should she roll beyond the limit she would upset. This angle varies according to the vessel. An instrument called the *clinometer* records the angles made in the rolling of a ship.

Annunciator. An electric tell-tale or recorder. When an electric button is pressed in any part of the vessel its wire connection transmits a current from the battery to the *annunciator*, in which a bell is rung, and at the same time a hinged card drops on which is painted the station at which the button was pressed.

A-peak. When the cable is hove in so as to bring the vessel's head over, or nearly over, her anchor, the anchor is said to be *a-peak*. The yards are said to be *a-peak* when they are topped up by their lifts so as to incline toward the perpendicular.

Apple Bows. (See BLUFF BOWED.)

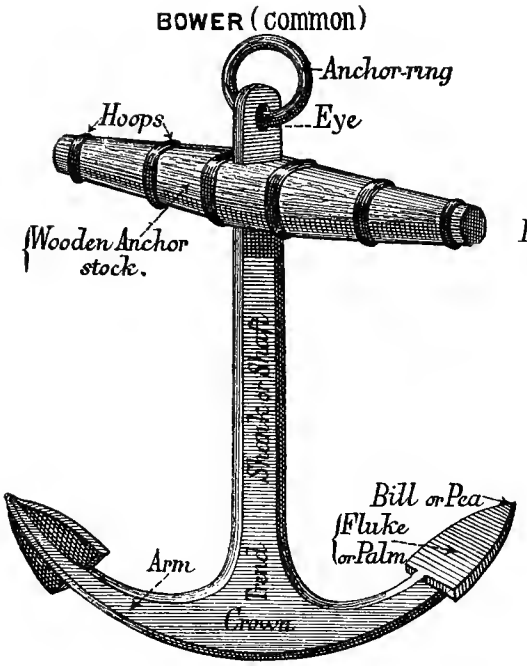
Apprentice. Young men shipped both on board naval and merchant vessels for a specified length of time to learn seamanship.

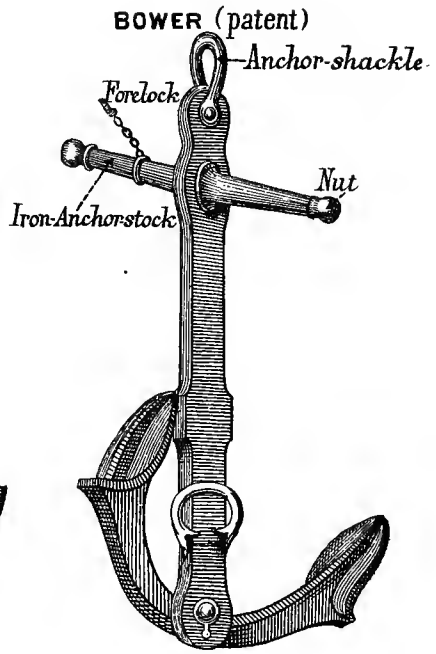
Apron. The timber bolted behind the stem.

Ardent. A vessel is said to be *ardent* when she has a tendency to come up into the wind, requiring the carrying of a weather helm.

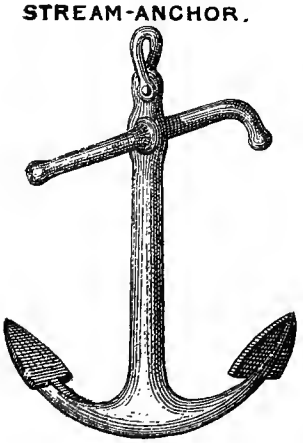
Arm. The elbow on the lower part of the anchor, which crosses the shank, and to the ends of which the flukes are welded.

ANCHORS.

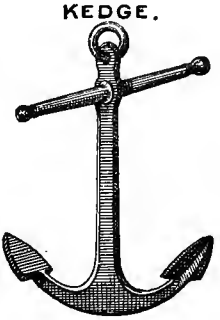




STREAM-ANCHOR.



KEDGE.



GRAPNEL.

Arming. A filling of tallow or soap in the cavity in the lower end of a heaving lead, placed there for the purpose of bringing up the quality of the bottom in the way of sand, shell, mud, coral, etc.

Arrival. A vessel is said to *arrive* when she is at a point where she can communicate officially with the port authorities; for instance, a vessel bound in to New York *arrives* when she passes Sandy Hook. Within twenty-four hours of the time of *arrival* she must enter at the custom-house.

Arctic Navigators. (See POLAR EXPLORATIONS.)

Ashore. On the shore; aground.

A-stern. Toward the after part of the vessel.

At Anchor. The situation of the vessel when riding at anchor.

A-taunt. Same as TAUNT—see latter.

Athwart. From side to side; opposed to fore-and-aft.

Athwart Hawse. Across a vessel's cable; across a vessel's head.

Athwart Ships. (See ATHWART.)

A-trip. When the anchor is raised clear of the ground. (See AWEIGH.)

Auxiliary Vessel. A full-powered sail vessel that carries a low power engine, which is used during calms, in a head wind, going into port, etc.

Avast. The order to cease.

Avast Heaving. An order to the crew to cease revolving the windlass or capstan.

Average. (See GENERAL AVERAGE.)

Awash. Level with the water. Rocks, shoals, etc., are said to be awash when they cover and uncover to the swell of the sea.

A-weather. When the helm is put toward the windward side of the ship; anything to windward.

A-weigh. (See A-TRIP.)

Awning. A canopy over a vessel's deck to shield the same from sun and rain.

Awning Stanchions. Iron or wooden uprights shipped in sockets in the sides of a vessel; in the upper end a ridge rope is rove for spreading the awnings to.

Aye, Aye, Sir. A reply made by seamen in answer to an officer's call.

B.

Baby Jib Topsail. Yachts generally carry three sizes of jib topsails—baby, working, and balloon—the baby jib topsail being, as its name implies, the smallest sail.

Back. The wind is said to *back* when it shifts around the compass contrary to the manner in which the hands of a watch revolve.

To back an anchor. To allow another anchor to slip down and along the cable on a large shackle, which will run until it fetches up against the ring of the anchor that is holding the ship, when it will also bury its fluke in the bottom and assist to hold the vessel.

Another way to *back* an anchor is to shackle an extra anchor to the cable a few fathoms from the other before letting go the bower.

To back a sail. To throw its after-surface against the mast.

To back and fill. To work to windward with a weather tide in a narrow channel by alternately backing and filling the sails.

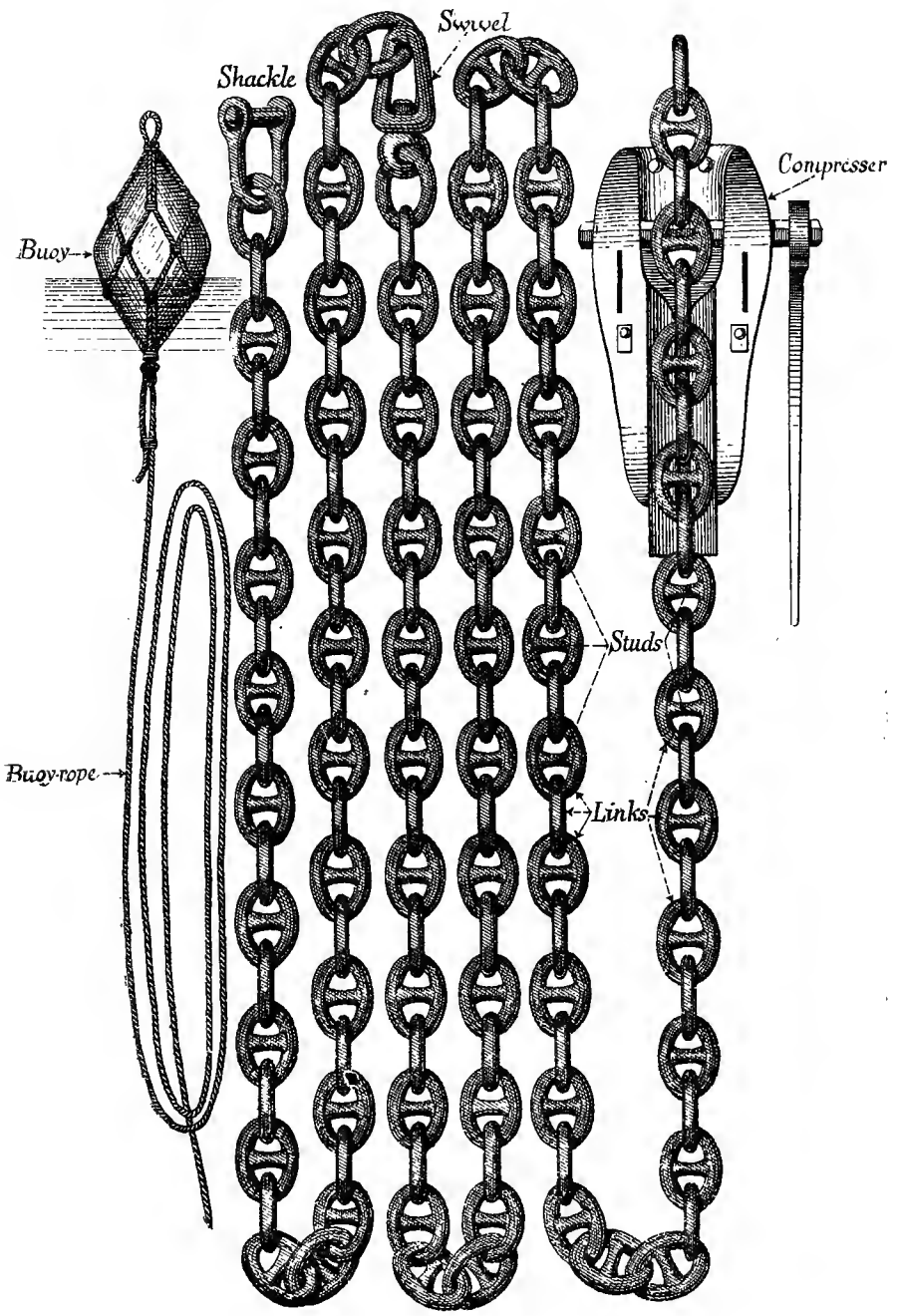
To back a ship at anchor. To keep the cable taut by setting some after-sail so as to *back* the ship down from her anchorage.

To back water. To reverse the order of rowing so as to give the boat sternway.

Backboard. A thwartships board in the stern sheets of rowing-boats, which affords a rest for the back of the one steering.

Back-bone. The rope stitched to the back of an awning, and running fore-and-aft. To this rope the crows-foot is spliced, by which the awning is triced up.

CHAIN-CABLE



Back-ropes. Ropes leading back from the dolphin striker on the lower end of the martingale to steady it, and which set up on the bows.

Backstay Stools. Small separate channels abaft the main channels used for setting up the standing backstays.

Backstays. Ropes extending from all mast heads above the lower mast heads, and leading to the vessel's side, for the purpose of steadying the masts. (See STAYS.)

Back-strapped. When a ship, having a fair wind, is unable to stem the current she is said to be *back-strapped.*

Back Wash. The disturbed water thrown aft by the action of the paddle-wheels or screw propeller.

Bagpipe. The mizzen is said to be *bag-piped* when its sheet is brought to the weather-mizzen rigging.

Bag-reef. A name sometimes applied to the lower reef in fore-and-aft sails, and the upper reef in square topsails.

Balance Dock. (See DOCK.)

Balance Reef-band. A reef-band on a gaff-sail which runs across it diagonally. It is used in bad weather, and makes the sail triangular.

Bale. The act of throwing water out of a boat.

Bale-band. A big shackle-shaped iron at the mast-head, supported by the cap-band, and to which the standing part of the flying jib-stay is bent on.

Bale-sling. A simple strap passed round a bale or bag, the two ends meeting on top, one dipping under the other. The hook of the hoisting block is hooked into the loop, and the strap jams around the bale or bag when it is hoisted. (See engraving.)

Ballast. Iron, lead, stone, gravel, or earth placed in the bottom of vessels to give them stability, and to prevent some crank merchant vessels from upsetting when they have no cargo in.

The ballast shoots when it shifts from one side of the hold to the other.

To freshen ballast is to shift it about.

Shingle ballast is coarse gravel.

Ballast Tanks. Iron tanks placed in the holds of vessels which can be pumped full or free from water, and which are used for trimming the vessel and giving her necessary draught when little or no cargo is on board.

Balloon Foresail. A sail made of light canvas and carried in place of the regular fore staysail.

Balloon Jib. A very large jib of light material used in moderate winds on board racing yachts.

Balloon Jib Topsail. A yacht sail made of light canvas, set upon the jib topsail stay, and sheeting to the quarter of the vessel. When this sail is set, it generally takes the place of all other head sails.

Balloon Maintopmast Staysail. A large sail of light material which sets between the fore and mainmasts, and is used in moderate winds on board racing yachts.

Balsa. (See LIFE RAFT.)

Banding. The band of canvas sewed over the tabling on the head, luff, and foot, and on the leach, from the clew up above the reef cringles.

Banked. A *boat* is said to be *double-banked* when two men sitting on the same thwart pull separate oars, one a port and the other a starboard oar; *single-banked* when the thwarts are occupied by one man. *Oars* are *double* or *single-banked* according to the number of men pulling the same oar.

Bar. A shoal of sand or mud.

Bare-poles. When a ship has no sail set whatever.

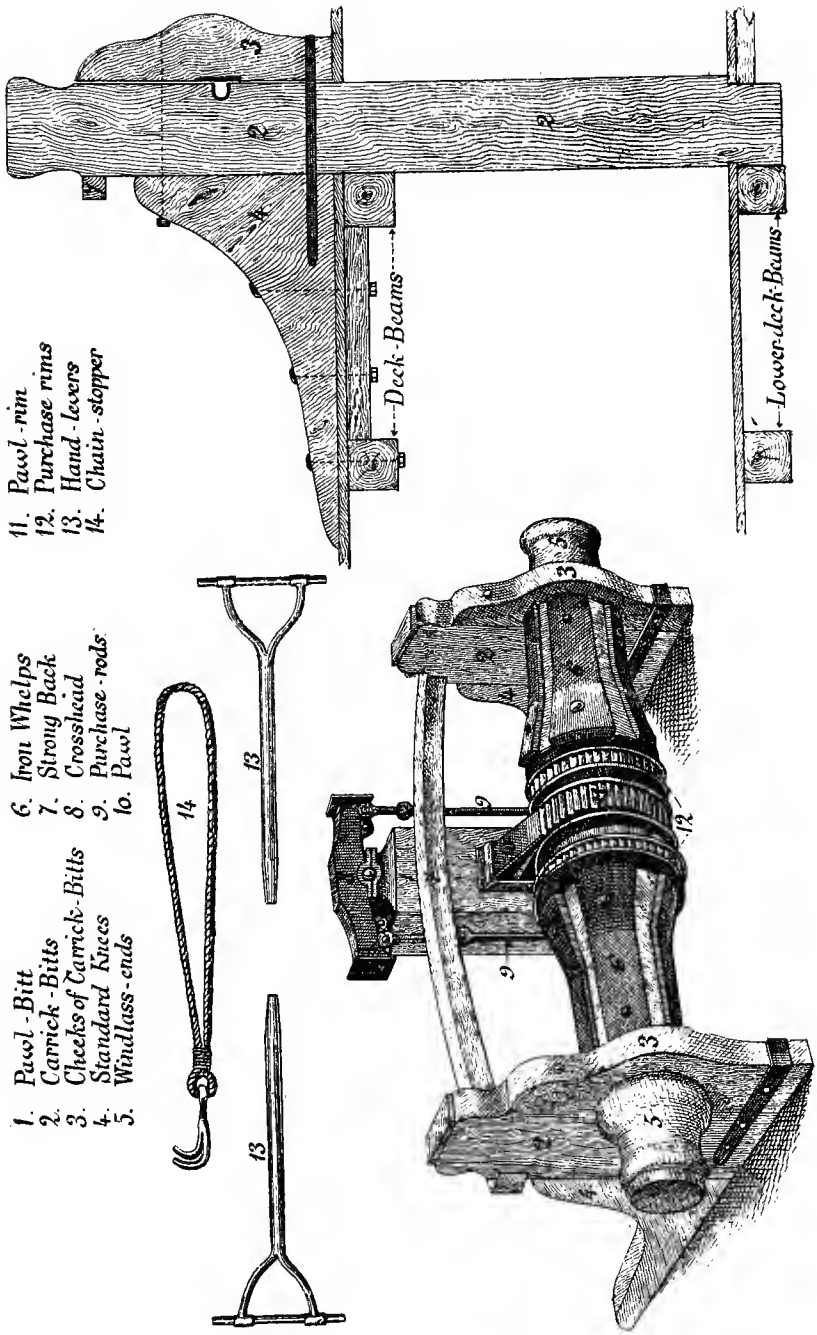
Barge. A large boat in which the thwarts are double-banked, such as the commodore's or admiral's barge in the navy.

Bark. A vessel having three masts, the fore and main square-rigged, and the mizzen schooner-rigged. This name is sometimes written *Barque.*

Barkentine. A vessel with three masts, the foremast square-rigged, and the main and mizzen schooner-rigged.

Barnacle. Shell-fish which adhere to a vessel's bottom, to logs of driftwood, etc.

WINDLASS


1. Pawl-Bitt
2. Carrick-Bitts
3. Cheeks of Carrick-Bitts
4. Standard Knees
5. Windlass-ends
6. Iron Whelps
7. Strong Back
8. Crosshead
9. Purchase-rods
10. Pawl
11. Pawl-rim
12. Purchase rims
13. Hand-levers
14. Chain-stopper
Deck-Beams
Lower-deck-Beams

Barrator. A term applied to a dishonest shipmaster.

Barratry. Breaches of trust and dishonest actions on the part of a shipmaster.

Barrel. The horizontal revolving part of a windlass, the main piece of a capstan, or the horizontal piece around which the tiller-ropes go, and which is turned by the steering-wheel of a vessel.

Barrel-sling. A simple sling made for hoisting a headless barrel. This is much employed on board ship for sending hold-sweepings up on deck in a barrel, etc. (See engraving.) It differs from a *cask-sling*, which see.

Basin Dock. (See DOCK.)

Bass Rope. A rope made from a certain kind of soft rush. There is no difference between *bass rope* and *coir rope*. (See COIR ROPE.)

Bateau. A flat-bottomed boat, sharp at both ends, and employed on lakes and rivers.

Battens. Strips of wood or iron placed around the outside of hatch comings after the hatches have been shipped and the tarpaulin spread over them. These battens are employed to jam the tarpaulin against the comings and make the hatches watertight. Battens are also placed upon rigging to prevent chafing. (See SCOTCHMAN.)

Beach Comber. A loafer about a sea port.

Beacon. A stake placed over a shoal as a warning to mariners. *Beacons* are sometimes placed on prominent places on shore as a particular bearing or signal mark for vessels. There are perch, ball, and cage *beacons*, so named from the forms they take.

Beam. One of the timbers extending across the vessel for supporting the deck, and for keeping the sides of the vessel in shape. (See ABEAM.)

Beam Ends. When a vessel is heeled over to such an extent that her beams approach the vertical she is said to be *on her beam ends*.

Beam Sea. A sea that breaks against the vessel's beam.

Beam Wind. A wind blowing at right angles to the vessel's course.

Bear. The direction of an object in relation to a point of the compass.

Bear a-Hand. To lend assistance; to hasten.

Bear Away. Meaning the same as *bear up*.

Bear Down. To approach a vessel from windward is to *bear down upon her*.

Bear In. When a ship sails toward the shore she is said to *bear in with the land*.

Bear Off. To keep a boat clear of a vessel's side, or from a dock.

Bear Up. To approach a vessel by putting the helm up and running off to leeward, is to *bear up to her*.

Bearing. The direction of an object in relation to a point of the compass.

The bearings of a vessel refer to the widest part of her below the covering board; also her line of flotation when she is in proper trim.

Beat to Quarters. (See QUARTERS.)

Beating. When sailing close hauled, a vessel is said to be *beating to windward*. (See EATING TO WINDWARD.)

Beating to Windward. Making progress against the direction of the wind when sailing close hauled.

Beating Wind. A head wind, necessitating a vessel to tack.

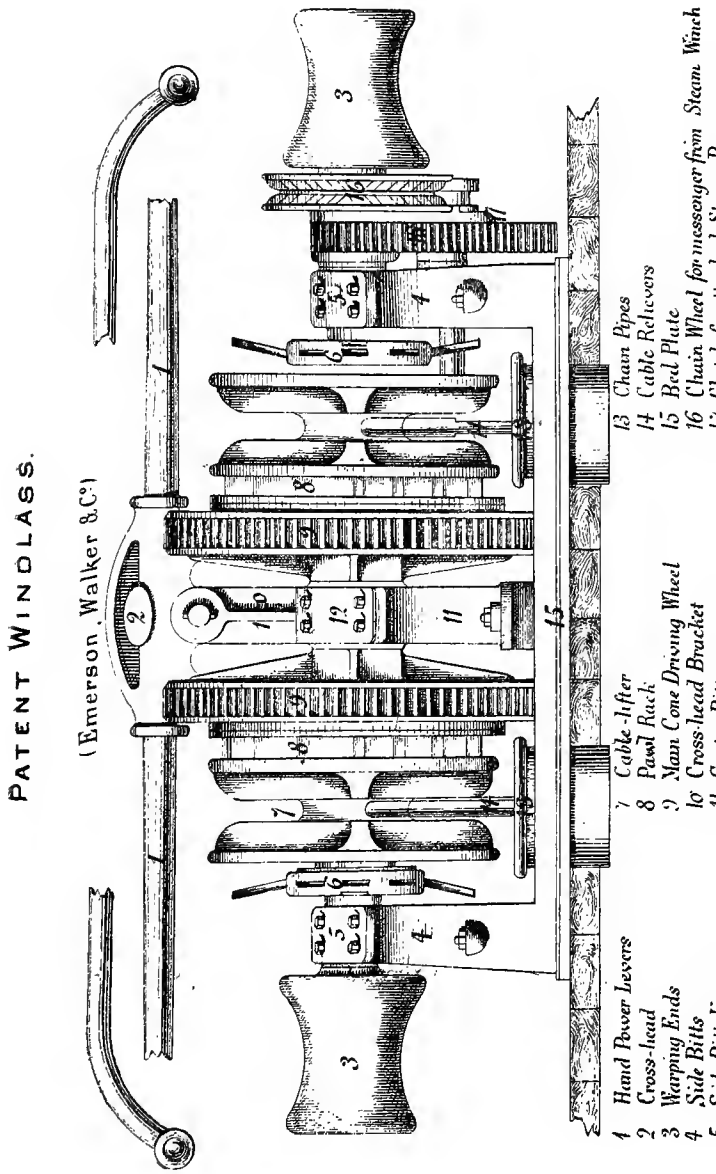
Becalm. A current of air intercepted in its course toward a vessel is said to *becalm her*. When the foresails intercepts a wind which would otherwise blow into the jib it is said that the former *becalms the jib*. (See BLANKET.)

Becalmed. When there is no wind, a vessel is said to be *becalmed*.

Becket. A small piece of rope in the shape of an eye or grommet into and across which a toggle is slipped as a fastening. Also an eye of rope on the gunwale of a boat for the oar to work in.

Becket Rowlock. A rope-becket secured to the gunwale in which the oar works.

Bed. This term applies to many things: pieces of wood placed under the quarters of casks so as to keep the bilge clear of the floor; a vessel makes a *bed* or cradle for herself when she settles in the mud; extra pieces of timber placed on decks like a platform, for raising the guns above the port sills when the latter are too high for the battery; a *bed* is made for the bowsprit, where it rests upon the stem and apron.


PATENT WINDLASS.
(Emerson, Walker & Co.)
1 Hand Power Levers
2 Cross-head
3 Warping Ends
4 Side Bitts
5 Side Bitt Keeps
6 Screw Brake Nut
7 Cable-lifter
8 Pawl Rack
9 Main Cone Driving Wheel
10 Cross-head Bracket
11 Centre Bitt
12 Centre Bitt Keep
13 Chain Pipes
14 Cable Relievers
15 Bed Plate
16 Chain Wheel for messenger from Steam Winch
17 Clutch for attached Steam Power
18 Gearing for Steam Power

Beef. A term applied to muscular effort. "*More beef*" has reference to more strength.

Bees. Pieces of oak bolted to the outer sides of the bowsprit and through a hole in which the fore topmast-stays (double) reeve before they are set up on the bows.

Before the Beam. The bearing of any object from the vessel contained between the ship's beam and that point of the compass towards which the vessel heads.

Before the Mast. Expressive of that portion of the crew who live in the forecastle.

Before the Wind. A vessel is said to be *before the wind* when the latter is blowing after the ship—when the wind is following after the vessel.

Belay. An order to cease pulling or hauling; to make a rope fast to a belaying pin or other object.

Belaying Pin. Wooden or iron shapes found in the pin-rails, and used for securing ropes to.

Bell Buoy. A buoy, on top of which is suspended a deep-tone bell, which rings when the buoy rocks from the action of the waves. It is specially valuable to vessels in its vicinity during foggy weather.

Bell Pulls. The handles to the wires in the wheel-house of a steamer connecting the engine-room bells. Sometimes vessels are provided with engine-room connections in various parts of the decks, and these are called *deck pulls.*

Bells. (See SHIP'S BELLS.)

Belly. A sail is said to *belly* when it is swelled out by the wind.

Bench Marks. (See TIDE BENCH MARKS.)

Bend. To fasten; to secure one rope to another rope, spar, etc.

Bending Cable. To shackle the anchor chain to the anchor.

Bending Sail. To secure a sail to a yard, or to a boom and gaff.

Bends. The thickest planks on the vessel's outboard side, and to which the knees, beams, etc., are bolted; also the ribs of a vessel. (See WALES.) *The midship bend* is that at the broadest part of the ship. (See DEAD FLAT, PART II.)

Beneaped. (See NEAPED.)

Bentick Shrouds. Ropes seized to the weather futtock staves and set up to the lee channels for the purpose of steadying the mast when the vessel was rolling heavily (obsolete).

Berth. Bunks on board of vessels are known as *berths;* a position on board ship; the place of a vessel when at anchor or alongside a dock. (See WIDE BERTH.)

Berthing a Ship. Making a vessel fast alongside of a dock. (See DOCKING A SHIP.)

Best Bower. The largest of the two bower anchors. (See BOWERS.)

Between-decks. The space between two decks.

Between Wind and Water. That part of the vessel around the water line.

Bibbs. Pieces of timber bolted to the hounds of a mast for the trestle trees to rest upon.

Bight. A curve or indentation in the coast is called *a bight.* When a curve or bend exists in a rope it is called *the bight of the rope.* Any part of a rope except the ends may be called the *bight.*

Bilge. That part of the bottom of a vessel that is next to the keel. In reference to a cask, *bilge* refers to the greatest circumference in the direction that the hoops run.

Bilge-boards. Same as LIMBER BOARDS.

Bilge-keel. Fore-and-aft timbers bolted *outside* along the bilges of a vessel to prevent excessive rolling.

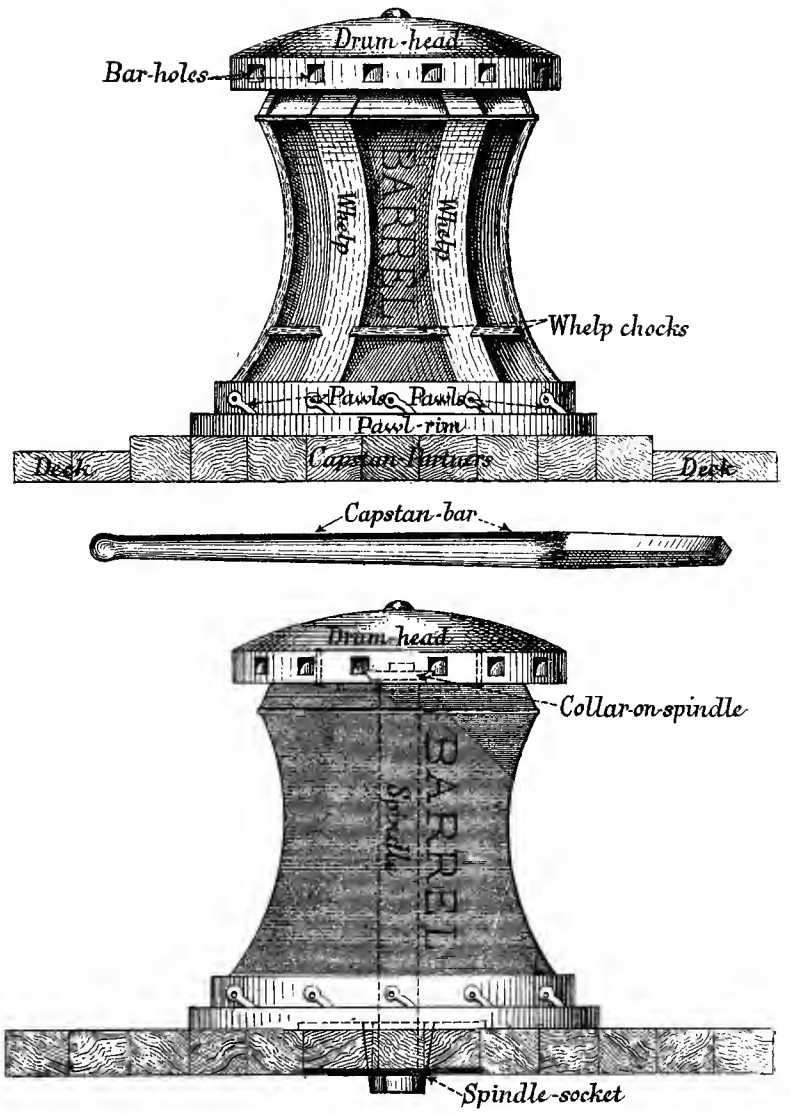
Bilge-keelson. Fore-and-aft timbers bolted *inside* along the bilges for the purpose of strengthening the frame.

Bilge-plank. A thick plank used on the same principle as the bilge keel and keelson—a modification of the latter.

Bilge-shores. A block placed under a vessel's bilge to steady her while on a dry dock.

Bilge-water. Water which has collected in the vessel's bilge either from the natural oozing leaks through the planking of the bottom, as in the case of a wooden ship, or from deck leaks, etc., in reference to iron vessels.

CAPSTAN


Drum-head
Bar-holes
BARREL
Whelp
Whelp
Whelp chocks
Pawls
Pawls
Pawl-rim
Deck
Capstan-partners
Deck
Capstan-bar
Drum-head
Collar-on-spindle
BARREL
Spindle
Spindle-socket

Bilge-ways. Timbers belonging to the launching ways, and on which the cradle rests, the latter supporting the body of the vessel.

Bilged. Said of a vessel when the bilge is broken in by the bottom of the ship coming in contact with a rock, the shore, etc.

Bill. The apex of the fluke of an anchor. The term applied to the end of a knee or compass timber. (See FIRE, WATCH, QUARTER and STATION BILLS.)

Bill-board. The extra planking or the covering of iron, copper, or brass on the rail abaft the cat-head for the fluke to rest on when the anchor is catted.

Bill of Exchange. A written agreement (practically a note) in which the debtor agrees to pay his creditor on a date specified the sum of money which the bill calls for. This bill is drawn in sets of three owing to the risk involved in mailing. Upon presentation of one of these bills, the other two become void.

Bill of Health. A document obtained by the master from the custom house, or from the health officer of the port, certifying to the state of health of the port at the time the vessel leaves, and which must be submitted to the proper authorities when another port is entered.

Bill of Lading. A receipt given by the master, mate, or clerk of a vessel for cargo received alongside or on board.

Billet-head. (See HEAD.)

Binnacle. A stand of wood or brass for the compass to rest in.

Binnacle Hood. The glass-front cover to the binnacle stand, and into which the binnacle lamps are fitted.

Binnacle Lamp. The small lamp which fits into the binnacle hood and lights up the compass-card.

Bitt Heads. The upper ends of the bitts.

Bitt the Cable. To confine the cable to the bitts by one turn under the cross-piece and another turn round the bitt head. When in this position the cable may either be veered away or kept fast.

Bitter. To *bitter* a rope or cable is to take a turn with it around the bitts. (See BITT THE CABLE.)

Bitter-end. The last part of a rope or cable; when the end of the cable by which the vessel is riding is secured to the bitts, the cable is said to be paid out to the *bitter-end.*

Bitts. Forecastle bitts are perpendicular timbers stepped in the keel and extending above the deck; used for securing towing-hawsers, etc. *Quarter bitts* are those found on the quarters of vessels, used for fastening anything to—the sheets of fore-and-aft sails are belayed to them. (See WINDLASS BITTS, BOWSPRIT BITTS.)

Black List. A list of the names of men who have committed some offence against the order and discipline of their ship, and who have been listed for punishment.

Blackwall Hitch. A simple hitch made over and around the hook of a tackle block, and which answers the same purpose as a cats-paw. (See engraving).

Blade. The flat part of an oar that is thrust in the water in rowing. The arms of a steamer's screw-propeller are called *blades.*

Blanket. When one vessel is in such a position to windward as to take the wind out of another vessel's sails, the latter is said to be *blanketed.*

Block. Pieces of wood, or a hollow shape of iron called the *shell*, between or inside of which one or more sheaves (wheels) revolve on a *pin* which runs through the block from side to side. The aperture between the sheave and the top of the block is called the *swallow.* The sides of the block are called *cheeks.* On the outside of the cheeks a groove is cut, into which is fitted the *strop*—the grommet which tightly encircles the block. For definitions of various kinds of blocks look opposite to proper headings. (See engravings.)

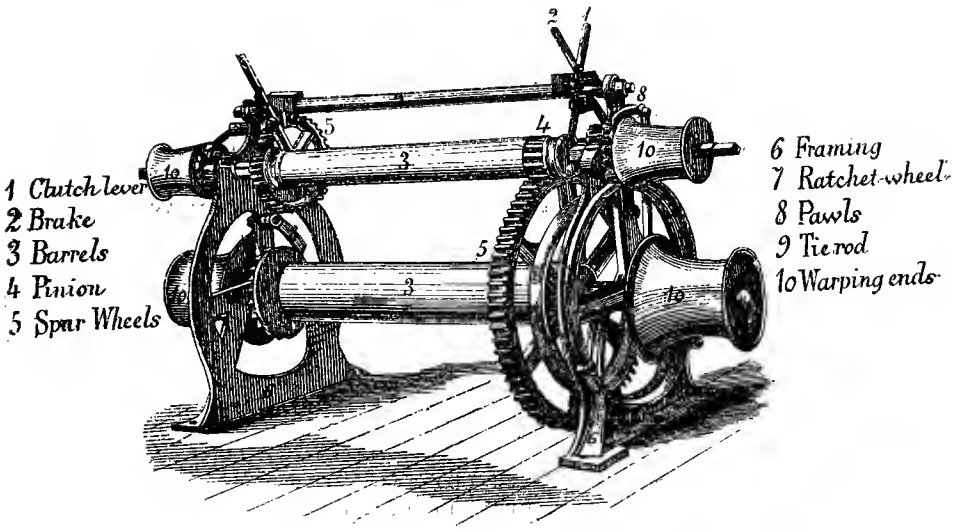
Block-and-Block. (See CHOCK-A-BLOCK.)

Blowing Great Guns. Expressive of a heavy gale.

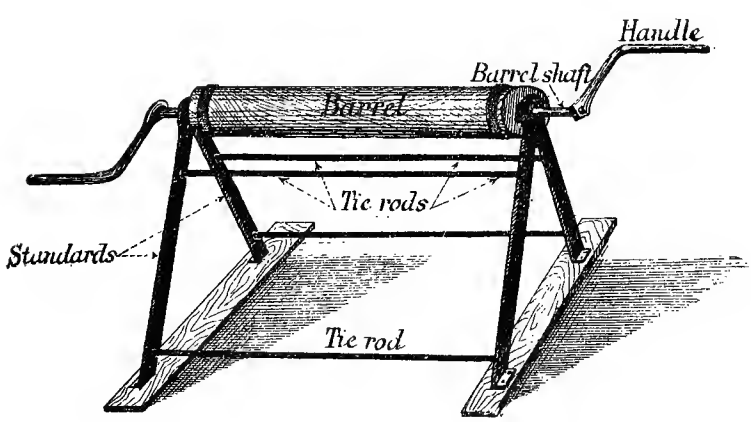
Blue-noser. A designation for a Nova Scotia seaman.

Blue Peter. A flag having a blue ground and a white centre, and which, when hoisted at the fore, signifies that the vessel is ready to sail.

WINCH



CRAB-WINCH



Blue Water. A term applied to the open sea.

Bluff-bowed. A vessel that has full bows, after the style of a canal boat's bows, is said to be *bluff-bowed.* Also known as *apple-bowed.*

Bluff-headed. A vessel having a nearly perpendicular stem, or cut-water, is said to be *bluff-headed.*

Board. When a vessel is sailing close-hauled she is said to be *making a board* on the port or starboard tack as the case may be. (See HALF-BOARD.) *To board* a vessel is to enter upon her deck. (See BY THE BOARD.)

Board of Trade. The English Board of Trade is a public institution having jurisdiction over merchant shipping. One of its duties is to examine and pass upon all seamen applying for a certificate of competency as master or mate.

Boarders. Men who enter upon a vessel other than their own, either in a hostile or friendly manner; in the latter case they may board a vessel to render assistance.

Boarding Nettings. A net work of ropes extending from the bulwark-rail upwards, and completely or nearly encircling the vessel. *A boarding netting* is used for the purpose of frustrating an attack upon the vessel by a body of boarders.

Boarding Pike. A lance or spear used in repelling boarders.

Boat. A small vessel propelled by oars or sails and termed respectively, a *row-boat* or a *sail-boat;* a freight or passenger steam vessel built for the navigation of rivers and harbors is called a *steam-boat,* without reference to size; a vessel used on canals is called a *canal-boat.*

Boat Boom Ladders. Short rope ladders hanging down from the boat-boom for affording access to the boats when the crews are called away, or when they are returning to the ship from the boats.

Boat Boom Pendants. The single lengths of rope seized on to the boat-booms and allowed to hang down so that the boats of the vessel, when at anchor, may be secured to them by hitching the painter through the eye spliced in the lower end of the *pendant.*

Boat Booms. The booms that swing out from either side of the vessel and to which the boats ride by making fast their painters to the boom pendants when the vessel is at anchor.

Boat Chocks. The shapes of wood in which a boat rests when it is stowed on deck.

Boat Falls. Purchases made with two blocks and a length of rope used for hoisting a boat to the davits.

Boat-hook. A wooden staff, with a hook-shape in one end, belonging to the furniture of a boat. It is used for bearing a boat off from a vessel's side or wharf, or holding her in position alongside of some object.

Boat Recall. An understood signal made from the ship summoning a boat to return.

Boat Service. (See SHOVE OFF; UP OARS; LET FALL; GIVE WAY; GIVE-WAY TOGETHER; HOLD WATER; STERN ALL; OARS; TRAIL; WAY ENOUGH; TOSS; IN BOWS.)

Boatswain. An officer under the mates whose duty it is to work the crew under the orders of the officer of the watch. The title is pronounced *bo-s'n.*

Boatswain's Chair. A piece of board shaped and hung like a scup seat, and used to sit on while being swayed aloft to perform certain kinds of work.

Boatswain's Locker. The chest, or other receptacle, in which the boatswain keeps marlinspikes, serving mallets, spun-yarn, etc. (See LOCKER.)

Boat the Oars. To arrange the oars fore and aft in a boat along the thwarts so as to have them ready for the order "*up oars.*"

Bobstays. The chains or ropes leading from the underneath outboard end of the bowsprit to the stem where they are secured, and by which the bowsprit is held down and prevented from jumping. (See BOWSPRIT SHROUDS.)

Boiler Deck. (See DECK.)

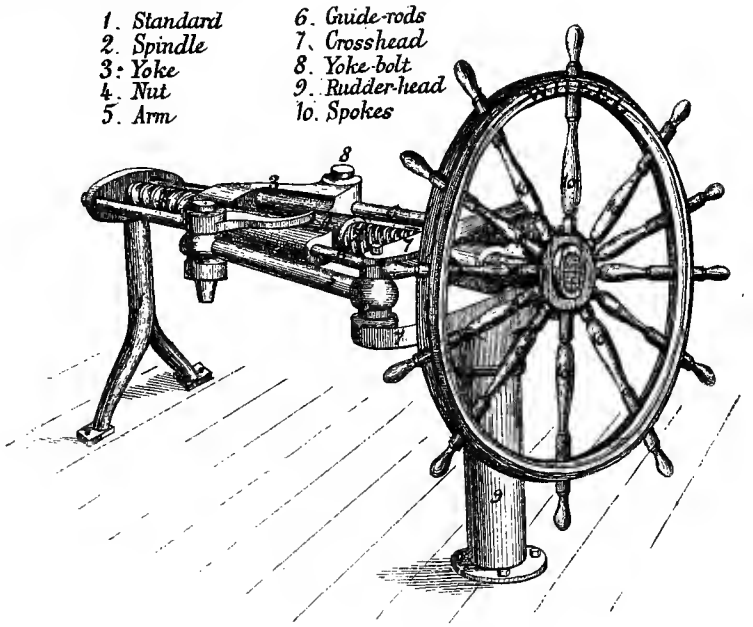
Bold Bow. A broad bow.

Bold Shore. A steep coast; a shore that may be closely approached by a vessel.

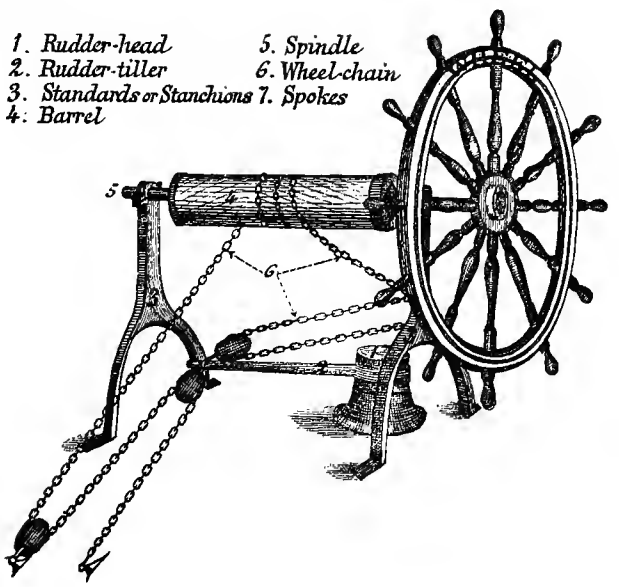
Bole. A small boat.

Bollard Timbers. (See KNIGHT HEADS.)

PATENT STEERING-APPARATUS.



STEERING-APPARATUS



Bolsters. Pieces of soft wood, sometimes covered with canvas, which are placed upon the trestle-trees, and on which the eyes of the rigging rest, so as to prevent chafing.

Bolt. A roll of canvas is called a *bolt*, and contains thirty-nine yards, whatever may be its width. Bars of metal used for various purposes in the construction of a vessel, possessing different names according to their shape, such as *eye-bolt*, etc.

Bolt Rope. The rope that goes around the edges of sails, and to which the latter is sewed.

Bone. A vessel is said to *carry a bone in her mouth* when she is coming along rapidly so as to curl the water about the stem into froth.

Bonnet. The piece of canvas secured to the foot of a head sail by a lacing, and which is taken off in heavy weather.

Booby Hatch. A wooden hood which covers a small after-hatchway which is used for obtaining access to the interior of the vessel without removing the main hatches.

Boom. A spar used for extending the foot of a fore-and-aft sail or a studding sail—pronounced *stun' sail.*

Boom Brace. A rope leading from the end of the stun-sail boom through a tail block in the main rigging.

Boom Foresail. A fore-and-aft foresail having its foot spread by a boom.

Boom Guy. (See BOOM PENDANT.)

Boom Horse. An iron half-circle which is secured to the iron band of a boom for the sheet traveler (the iron ring on the end of the boom sheet block) to traverse on.

Boom Irons. Iron rings or collars at the extremity of the yard arms and through which the stun-sail-booms travel. (See PACIFIC IRONS.)

Boom Jigger. A light tackle used for rigging out and in the stun-sail booms.

Boom Mainsail. A fore-and-aft mainsail, having its foot spread by a boom.

Boom Tackle. A double purchase used to guy out booms when the vessel is running so that they will not come aboard. Also known as *boom-guys* and *lazy-guys.*

Boom Topping Lifts. Whips which lead from the after end of a boom through a block at the lower mast-head, thence down on deck, and are employed for topping up the boom and taking the strain off the sail when the latter is set, and the strain off the peak halliards when the gaff is lowered and the sail tied up. (See QUARTER LIFTS.)

Boot Topping. Scraping off the marine growth from a vessel's bottom, and giving the latter a coating of some mixture to prevent worming.

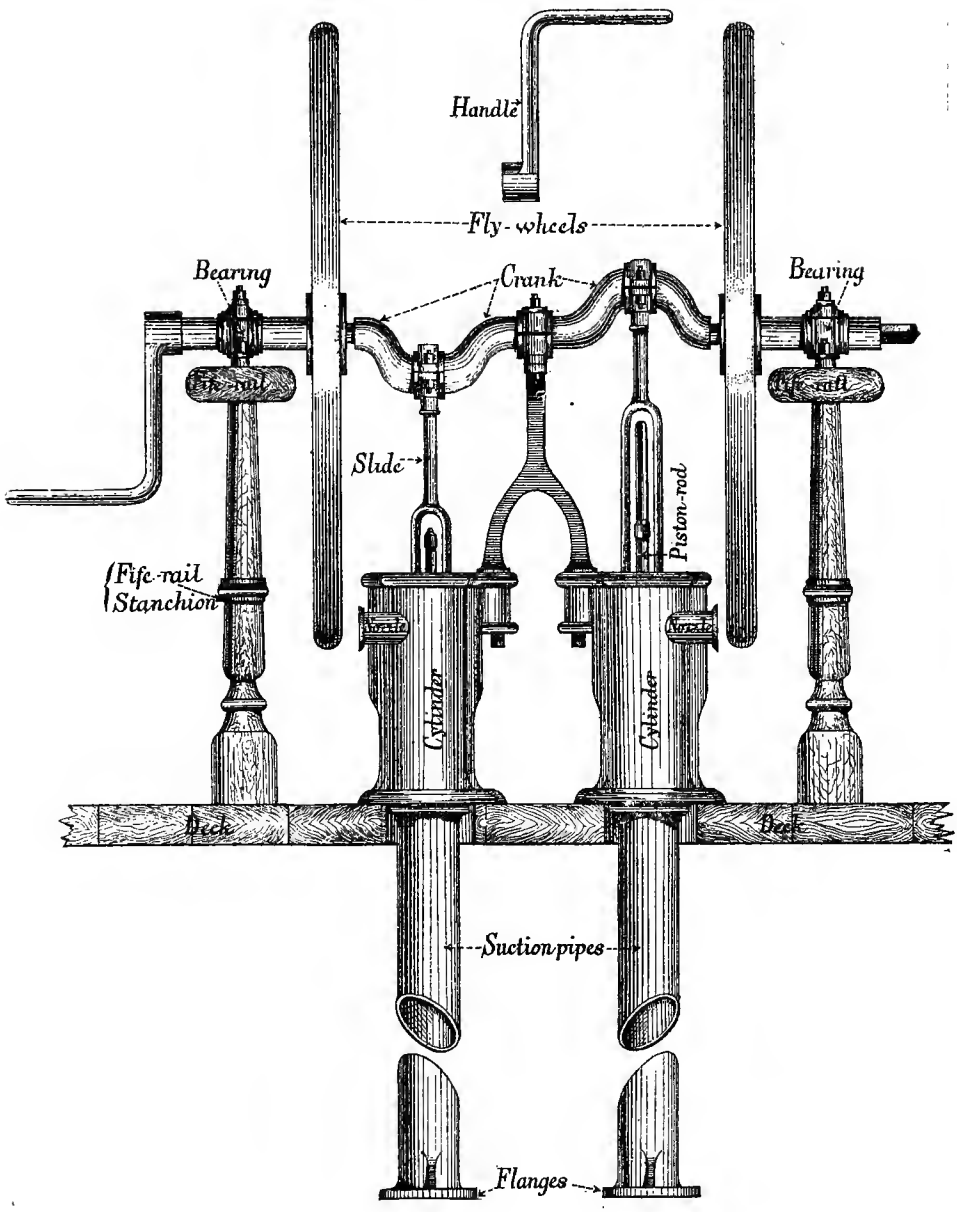
Boring. Forcing a vessel through ice.

Both Sheets Aft. The situation of a square-rigged vessel when sailing right before the wind—the wind dead-aft or nearly so.

Bottle Charts. Charts of currents calculated by the drift of bottles thrown overboard, tightly corked, and containing the date, together with the ship's latitude and longitude. When these bottles are picked up by ships or on the beach the data afforded by their contents is utilized for approximating the direction and force of the current in which they have been borne.

Bottomry. A *bottomry bond* is a contract entered into in order for the master to secure a loan of money on the ship upon maritime risks which are to be borne by the lender It takes effect at the termination of the voyage and at the port or place specified in the document. One of the conditions of the bond is that in the event of the loss of the vessel before reaching the port to which it is bound, the bond cancels itself; but this risk may be provided against by the lender of the money insuring the bond. Oftentimes the freight and the cargo are included in the bond, and in such a case the bond is called a *Respondentia Bond* or *Bond of Bottomry and Respondentia.* In the latter case the holder's lien is first on the ship, next on the freight, and last on the cargo. The prerequisites to the validity of the *bottomry bond* given by the master of a vessel are, that it is given in the absence of the ship owner and at such a distance from his home, combined with such circumstances as to make it impossible to consult him in relation to it without injurious delay; that the money, repairs, or supplies for which the bond is given are necessary for the ship to complete her voyage. In the case of two or more bonds given on the same voyage, the last one takes precedence for payment, and so on in retrograde order.

PUMP.


Handle
Fly-wheels
Bearing
Crank
Bearing
Fife-rail
Fife-rail
Slide
Piston-rod
Fife-rail
Stanchion
Cylinder
Cylinder
Deck
Deck
Suction-pipes
Flanges

Bouilli. Preserved beef put up in air-tight cans and carried in large quantities by naval vessels. Seamen call this "*Bully Beef*" and "*Soup-and-Bully*"—the latter because the meat and the liquid contents of the can are used for making soup in the absence of fresh beef.

Bound. In reference to a vessel's destination.

Bow. The forward part of a vessel on either side. (See APPLE BOWS, BLUFF-BOWED.)

Bow Grace. Chafing gear made of rope and placed around a vessel's bows to prevent them from being chafed from contact with ice.

Bow Lighthouses. The towers placed on each bow of the vessel, and inside of which is contained the lamp for illuminating the colored glass window. These towers are a great improvement over the side-light lanterns. They are also known as *Side-light Castles* and *Side-light Towers.*

Bow Sea. A sea coming from a direction so as to break against the vessel's bow.

Bowed. A mast or yard is said to be *bowed* when it is set up so taut as to spring it.

Bowers. The anchors that are carried at the cat-heads. (See BEST BOWER.)

Bowline. A noose made in a rope with a certain kind of a knot. (See engraving.) A rope attached to the bridle on the leach of a square sail for the purpose of hauling the leach forward so as to sail as close as possible to the wind. When sailing this way a vessel is said to be *on a bowline.* To *steady out* a bowline is to haul it taut.

Bowline Bridle. The span extending between the two cringles on the leaches of a square sail, and to which the bowline is secured.

Bowline Cringle. Eyes worked in the belt-rope on the leaches of square sails, and in which the bowline bridle is made fast.

Bowline Knot. A loop-knot made in the end of a rope. (See engraving.)

Bowline Lizard. A short rope pendant with a thimble spliced in each end, and a part of the bowline bridle.

Bowline on a Bight. A double bowline. (See engraving.)

Bow Line or Bow Fast. The rope leading over the vessel's bows to another vessel or wharf, and by which the forward part of the vessel is made fast.

Bowling. A vessel is said to be *bowling along* when she is sailing rapidly with a free wind.

Bowse. To haul.

Bowsprit. A strong spar projecting outward over the stem of a vessel, and on which all, or a part, of the head sails are extended, according to the rig of the vessel.

Bowsprit Bitts. Perpendicular timbers extending above the deck, and between which the heel of the bowsprit is secured.

Bowsprit Cap. The iron band fitted to the outboard end of the bowsprit, with a ring on top for the jib boom to run through. (See CAP.)

Bowsprit Shrouds. The ropes leading from the side of the bowsprit cap back to the bows of the vessel where they are set up, and which stay the bowsprit sideways. (See BOBSTAYS.)

Box Dock. (See DOCK.)

Box-hauling. To wear a vessel short round instead of making a long sweep. (See ABOX.)

Boxing the Compass. Calling the names of the thirty-two points of the compass in order. (See engraving.)

Brace. Rudder gudgeons are sometimes termed *braces.* The rope leading from the yard arm, and by hauling on which a yard is turned around at various angles to the keel. (See COUNTER-BRACE.)

Brace Aback. To lay the yard so that the sail will throw against the mast.

Brace Abox. To lay the head sails aback and keep the after sails full.

Brace in. To lay the yard more thwartships.

Brace Pendant. (See PENDANT.)

Brace to. To slack the lee head braces so as to permit the ship's head to come quickly to the wind.

Brace Up. To lay the yard nearer fore-and-aft.

SUNDRIES.

Cork-fender.

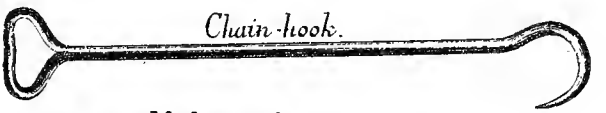
Belaying-pin.

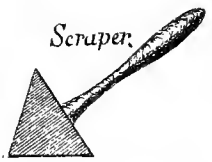
Bolt.

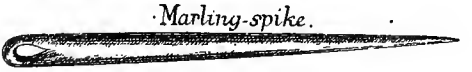
Eye-bolt.

Ring-bolt.

Serving-mallet.


Chain-hook.


Scraper.

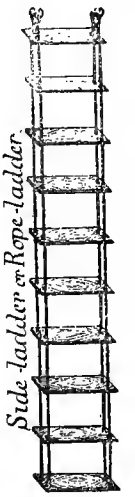

Marling-spike.

Hand-spike.

Ballast-shovel

Bucket.

Boatswain's chair


Side-ladder or Rope-ladder

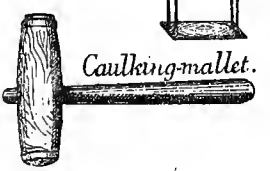
Caulking-iron.

Can-Hooks

Thimble

Hank.

Truck.


Caulking-mallet.

Brace up Sharp. To lay the yard as nearly fore-and-aft as possible.

Bracelets. A common term for handcuffs or hand irons. *Garters* is a name applied to leg irons.

Brails. Ropes used for gathering fore-and-aft sails into the mast; spankers are provided with brails. There are *foot, throat,* and *peak brails.*

Brake. The lever used for working a deck pump.

Breach. When whole seas roll over a vessel it is said that they make a *clear breach;* when the seas sweep the deck of masts and bulwarks they are said to make a *clean breach.*

Break Bulk. To commence to unload.

Break Ground. When the anchor is lifted from the bottom it is said to *break ground.*

Break Off. When the wind comes more ahead so that a vessel is obliged to go off from her course in order to keep the sails full, it is known as *breaking off.*

Break Shear. Said of an anchored vessel when she tends the wrong way so as not to lie well for keeping clear of her anchor.

Break Up. A vessel *breaks up* when she is torn in pieces by the waves; a storm *breaks up* when it ceases.

Breaker. A small cask for containing water, carried in boats under the thwarts.

Breakers. A sudden breaking of waves against a steep shore, or against a coral-reef, rocks, etc. (See SURF.)

Breakwater. A natural or artificial barrier across the mouth of a harbor which prevents the seas outside from rolling into it.

Breaming. Burning off the marine growth from a vessel's bottom.

Breast Backstays (obsolete). They were set up in the channels to support the mast when on the wind.

Breast-band. A band of canvas passing across the breast of the leadsman to prevent him from falling overboard.

Breast Fast or Breast Line. A rope used for securing a vessel's side to a wharf or to another vessel.

Breast Hooks. The knees placed across the stem and apron for the purpose of uniting the bows.

Breast Rail. The rail that runs across the forward part of the poop deck.

Breast Rope. A rope passing across the leadsman's breast to prevent him from falling overboard while sounding.

Breasting a Sea. To meet the sea bows on.

Breech. The outer angle of a knee timber; the bottom of a block, where the standing part of the tackle is made fast to the block; the after-end of a gun.

Breeches Buoy. A life-saving contrivance for getting people ashore from a wreck. It is in the shape of the ring life-buoys which are generally carried at the stern of steamships and large sailing vessels, with the addition of a canvas shape suspended to the ring like the upper part of a pair of breeches—hence the name.

Breeching. The rope passing through the cascabel of a gun and employed to prevent the recoil beyond a certain limit—the ends of the breeching have eyes and are secured by pins (called *breeching bolts*) in the ship's side.

Breeze. (See LAND BREEZE and SEA BREEZE.)

Bridge. A platform which extends across the deck on steam vessels, and which is raised considerably above the rail of the ship. It is for the convenience of the officer of the watch, from which altitude he superintends and manages the vessel.

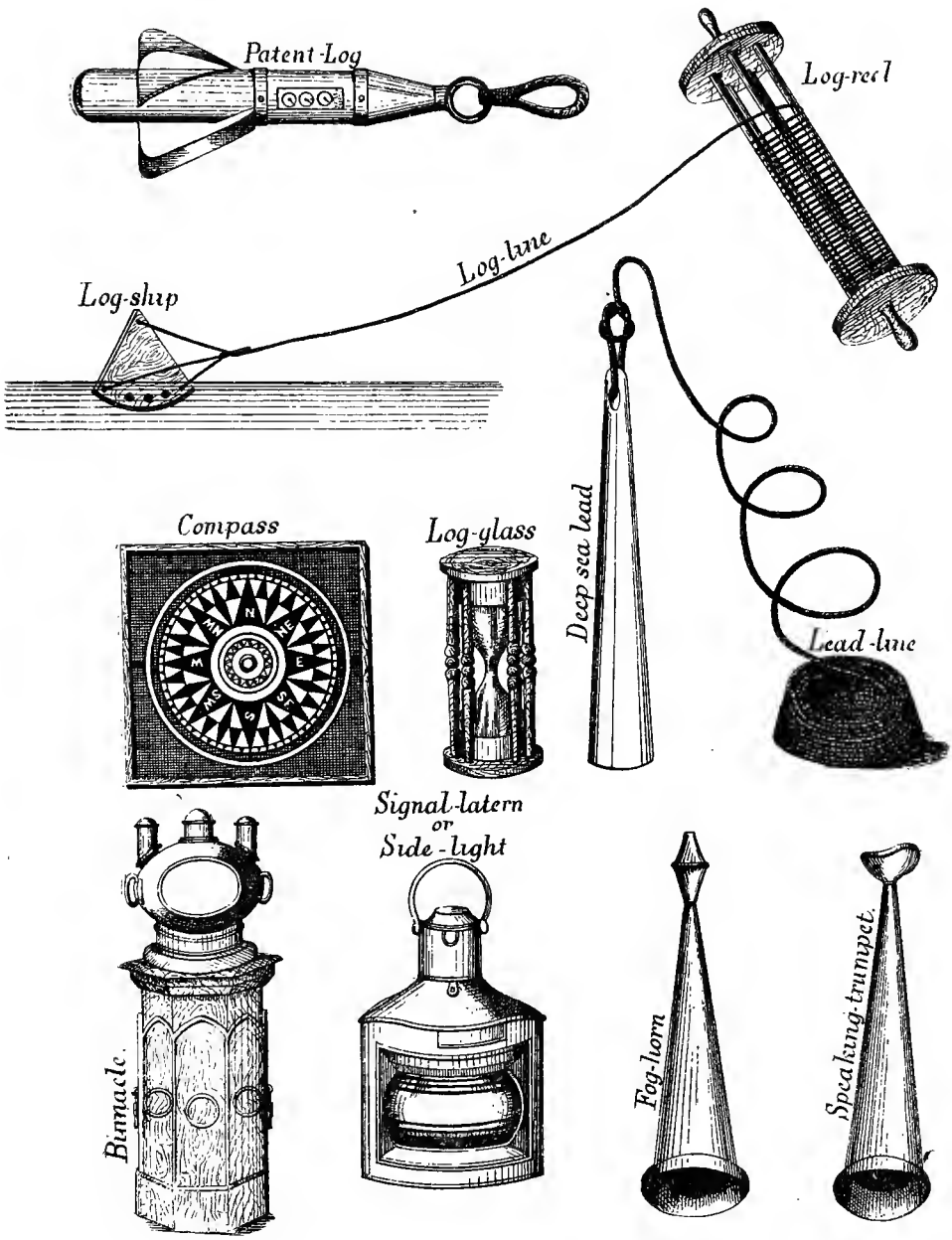
The Steering Bridge has reference to the bridge on which is placed the steering wheel. Some steamships are provided with two bridges, one above the other, and when this is the case the lower bridge is made the steering bridge.

Bridle. (See BOWLINE BRIDLE.) A span of chain or rope, formed by having the ends secured. The hauling power is applied to the bight of the bridle.

Bridle Ports. The foremast ports on the gun deck of a man-o'-war.

Brig. A vessel with two masts, both of them square-rigged. (See BRIGANTINE, HERMAPHRODITE BRIG, JACKASS BRIG.) The cage or prison below decks in which offenders are confined.

SUNDRIES


Patent-Log
Log-reel
Log-line
Log-ship
Compass
Log-glass
Deep sea lead
Lead-line
Signal-latern
or
Side-light
Binnacle
Fog-horn
Speaking-trumpet

Brigantine. In olden times a brigantine was a two-masted vessel, square-rigged on the fore, and schooner-rigged on the main, with this addition, that she carried a light square topsail on the mainmast. In these days a brigantine dispenses with the square main topsail so that no difference exists between the rigs of a brigantine and an hermaphrodite brig. (See HERMAPHRODITE BRIG.)

Bright Work. An expression used in reference to the brass fixings about decks, such as binnacles, belaying pins, capstan heads, etc.

Bright work also refers to the woodwork which is kept scraped instead of being painted over.

Bring by the Lee. To fall off so much when running free as to bring the wind around on what was a moment before the lee quarter. In the position the sails will be aback, and the vessel, if a square-rigger, will be in great danger. On a fore-and-after it would be jibing the vessel.

Bring to. To lie-to; to heave-to; to come to an anchorage.

Bring up. A vessel is said to *bring up* when she casts anchor.

Bring Up all Standing. When a vessel comes to anchor suddenly and without first taking in her sails.

Broach. When, as sometimes happens, the crew break into the ship's stores, they are said to *broach* them. *Broach* is a mild term for *thieving*.

Broach to. To fly up in the wind.

Broadside. The side of a vessel from the cutwater to the end of the overhang; a simultaneous discharge from all the guns on either side of a vessel.

Broad Water. A large expanse of water connecting with and close to the sea.

Broken-backed. When a vessel droops at both ends, owing to weakness, or from having been pounded on the shore, she is said to be *broken-backed*. Also when a vessel is in such a condition so that the line of her sheer is undulating, she is said to be *hogged*.

Broken Water. The breaking of waves as on a shoal; the vertical leaping and tumbling action of water occasioned by a meeting of tides or currents.

Brought to. When a vessel is luffed into the wind.

Bruising Water. A vessel is said to be *bruising water* when she pitches heavily into a head-sea.

Buccaneer. A freebooter; a pirate.

Bucco. A designation for a swaggering, bullying ship officer.

Bucket Lanyard. The rope-handle of a bucket.

Bucklers. A block fitted into the hawse-hole; a tompion for the half ports when there is no gun.

A blind buckler is a solid piece of wood to be used when there is no chain in the hawse-pipe.

A riding buckler has a space in it to accommodate the chain.

Bulge. (See BILGE.)

Bulk. (See LADEN IN BULK.)

Bulkhead. Partitions dividing various parts of the vessel.

Bull. A small keg. (See BULL THE BUOY.)

Bull the Buoy. A vessel is said to *bull the buoy* when she thumps against it.

Bullock Slings. Strong, broad slings of canvas used for hoisting live cattle in and out of a vessel.

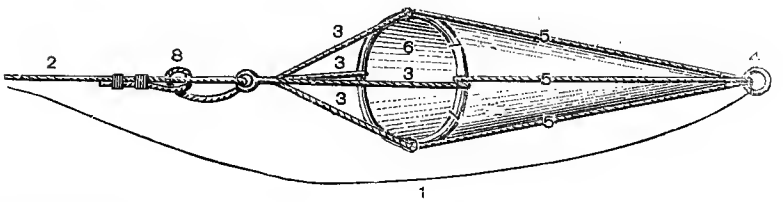
Bull's Eye. An egg-shaped piece of wood having a hole in it for a rope to reeve through. A bull's eye has no sheave, but it is strapped the same as a block. (See DECK BULL'S EYE.)

Bulwark Netting. A framework of ratline stuff seized in diamond shape, and used instead of bulwarks.

Bulwark Rail. The rail on top of the bulwarks, and bolted through to the top of the bulwark stanchions.

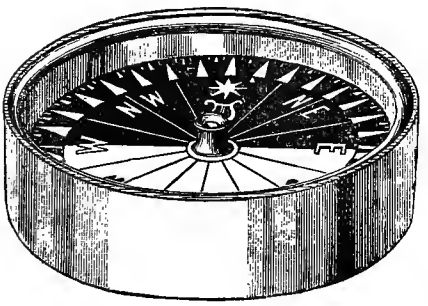
Bulwarks. The fence built around the vessel over the covering board (plank shears). *Bulwarks* are sometimes of wood, and again of iron. They are secured to the *bulwark stanchions*, which in turn are bolted on to the timbers.

THE DRAG, OR SEA ANCHOR.

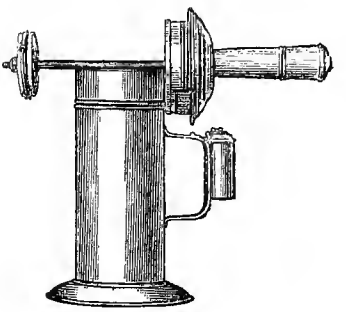


1.—*Tripping Line.*
2.—*Tow Line.*
3.—*Four-part Bridle.*
4.—*Tripping Line Ring.*
5.—*Roping Fore and Aft the Drag.*
6.—*Mouth of Drag.*
7.—*Iron Ring around Mouth of Drag.*
8.—*Place where Hawser is bent on to Drag.*

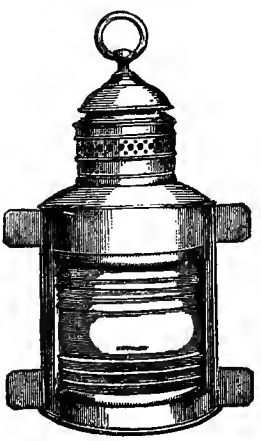
BOAT COMPASS.



FLARE-UP LIGHT.



MAST HEAD LIGHT.



ANCHOR LIGHT

THE BOATSWAIN'S CALL.

Bum Boats. Market boats which come alongside of a vessel in port with vegetables, fruit, etc., to dispose of to the crew.

Bumper. A log fender hung over the side.

Bumpkins. This word is spelled in two other ways, namely: *boomkin* and *bumkin*. They are short horizontal spars projecting out from the vessel's sides to board the fore tack to, and from each quarter to secure the main brace blocks to.

Bunker (See COAL BUNKERS.)

Bunt. The middle of a square sail that lies on top of the yard when the sail is furled

Bunt Gasket. (See GASKET.)

Bunt Jigger. A purchase used for lifting the bunt of heavy square sails to the yard in furling.

Bunt Whip. A whip employed for lifting up the bunt of light square sails to the yard in furling.

Bunting or Buntine. Woolen stuff of various colors out of which flags are manufactured.

Buntline Lizard. A piece of rope having two legs with a thimble spliced into the end of each, and made fast to the topsail-tye; through the thimbles the buntlines reeve, the former acting as fairleaders.

Buntlines. Ropes toggled to the foot of square sails, and used for lifting the foot of the sail to the yard. The buntlines lead through blocks above the yards, thence down on deck.

Buoy. A floating shape anchored to the bottom to mark out a channel; also floated over a shoal, or near a rock, as a warning to mariners. The following names distinguish the various styles of buoys in use: *Can*, *Spar*, *Bell*, *Nun*, *Cask*, and *Whistling*, which are defined under their respective headings. (See BEACON.)

A *buoy* is said to *watch* when it floats upon the water over its anchor.

To stream a buoy is to drop it into the water before the anchor leaves the cat-head.

Buoy Rope. The connecting rope between the buoy and its anchor.

Burgee. A swallow-tailed piece of bunting.

Burton. A tackle used for various purposes.

A single Spanish burton is made of three single blocks.

A double Spanish burton is made of three double blocks.

Bushing. A piece of metal set into a wooden block sheave to prevent wearing away the wood where the pin runs through.

Butt. The ends of deck and outside planks where they meet are termed *butt ends*. *To start a butt* means that one of the plank ends has become loose. This sometimes happens to the outside planking when the vessel is straining and laboring heavily.

Butt End First. When, after a period of calm, a sudden and violent wind strikes the vessel, it is said to come *butt end first*.

Butter Box. A sailor's name for a Dutch seaman.

Buttock. The rounding of the vessel's body abaft, which is bounded by the fashion-pieces, and at the upper part by the wing-transom.

By the Board. Over the ship's side; overboard.

By the Head. A vessel is said to be *by the head* when she draws more water forward than she should do to be in proper trim with relation to her draught aft.

By the Lee. When a vessel in going free has fallen off so much that the wind has been brought around the stern and taken her a-back. (See BRING BY THE LEE.)

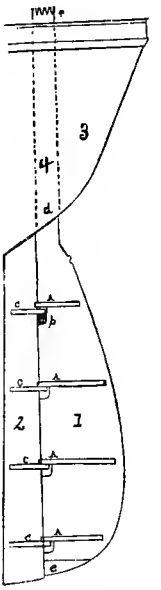
By the Run. To let go altogether instead of slacking away gradually.

By the Stern. A vessel is said to be *by the stern* when she draws more water aft than she should do to be in her proper trim with relation to her draught forward.

By the Wind. Same as FULL AND BY.

SHIP'S BELL

THE RUDDER.



1.—*Rudder.*
2.—*Stern Post.*
3.—*Stern of Vessel.*
4.—*Rudder Post or Stock.*
a.—*Pintles.*
b.—*Wood-lock.*
c.—*Gudgeons or Braces.*
d.—*Rudder Port.*
e.—*Heel or Sole Piece.*
f.—*Rudder Head.*

JURY RUDDER

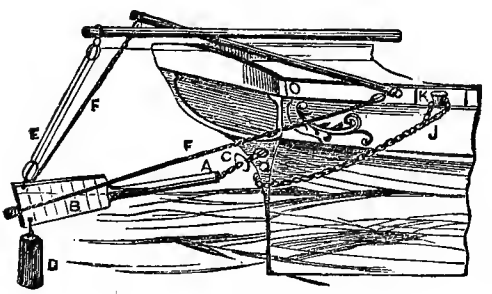


Fig. 1.

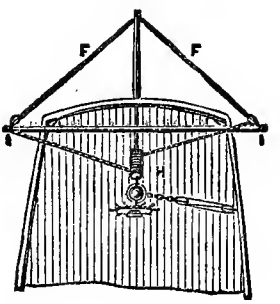


Fig. 2.

A.—*Spar.*
B.—*Blade.*
C.—*Mouse.*
D.—*Weight.*
E.—*Tackle.*
F.—*Guys.*
G.—*Trunk.*
H.—*Barrel of Wheel.*
I.—*Spar lashed on Rail.*
J.—*Chain to be used when Rudder cannot be unshipped.*
K.—*Place where Chain is secured.*

C.

Cabin. That part of a vessel in which the officers live. The captain's cabin is a separate room.

Cable. A rope or chain secured to the anchor.

Cable-laid Rope. A nine-strand left-handed rope, laid up against the sun.

Cable Tier. The place either in the hold or between decks in which the cable is stowed.

Cable's Length. About one-tenth of a mile—100 fathoms of 6 feet each.

Caboose. Also called *galley*. A house on deck where the cooking is done. (See KITCHEN.)

Cache. A hole dug in the ground in which articles are placed for safe keeping, then the hole is covered.

Cairn. A pyramid of stones erected to serve as a landmark.

Calk. (See CAULK.)

Call. The silver whistle or pipe used by the boatswain and his mates, and which is always blown to attract attention before the verbal order is given by them.

Call Away. The preface of an order issued by an officer to a boatswain, or one of his mates, to get a boat ready to send away from the ship, such as: *call away the gig; call away the cutter.* When the order is called along the deck the first word is omitted, and the cry made as follows: *away gig; away cutter.*

Calm. That state of the weather when there is an absence of wind.

Flat calm. Not a breath of air stirring.

Dead Calm. Same as flat calm.

Fall Calm. That condition of the weather when the wind ceases.

Calming Oil. (See QUELLING OIL.)

Cambered. Said of the flooring of a vessel when it is higher in the middle than at either end—towards the stem and stern.

Camel. A peculiar mechanical device for lifting a vessel over a bar; invented by the celebrated Hollander De Witt in 1688, and introduced into Russia by Peter the Great, and now in use at St. Petersburg for lifting deep draught ships over the bar of the harbor. The machine is composed of two watertight half-hulls constructed in such a manner as to permit them to be attached in a fore-and-aft direction to a vessel. The camel is filled with water until it sinks to the required depth, secured with chains to the hull of the vessel, then the water is pumped out, the camel rises and lifts the vessel. Camels vary in size from 50 feet to 150 feet in length, and from 10 feet to 20 feet in breath, and have been known to lift a vessel 11 feet.

Camfering. (See CHAMFER.)

Can Buoy. A buoy formed like a cone, and found floating over shoals and obstructions in navigation.

Can-hooks. A short length of chain having a flat iron hook at each end, and used for hoisting and lowering casks by attaching the hooks to their chimes. The purchase is hooked to the centre of the slings.

Canal. An artificial water-course for light-draught vessels.

Canal Boat. A flat-bottom vessel specially constructed for the navigation of canals.

Canal Pass. A permit obtained from the State authorities at the entrance of canals. This pass must be shown at the various locks upon demand.

Clearance. The canal pass is often referred to as a clearance.

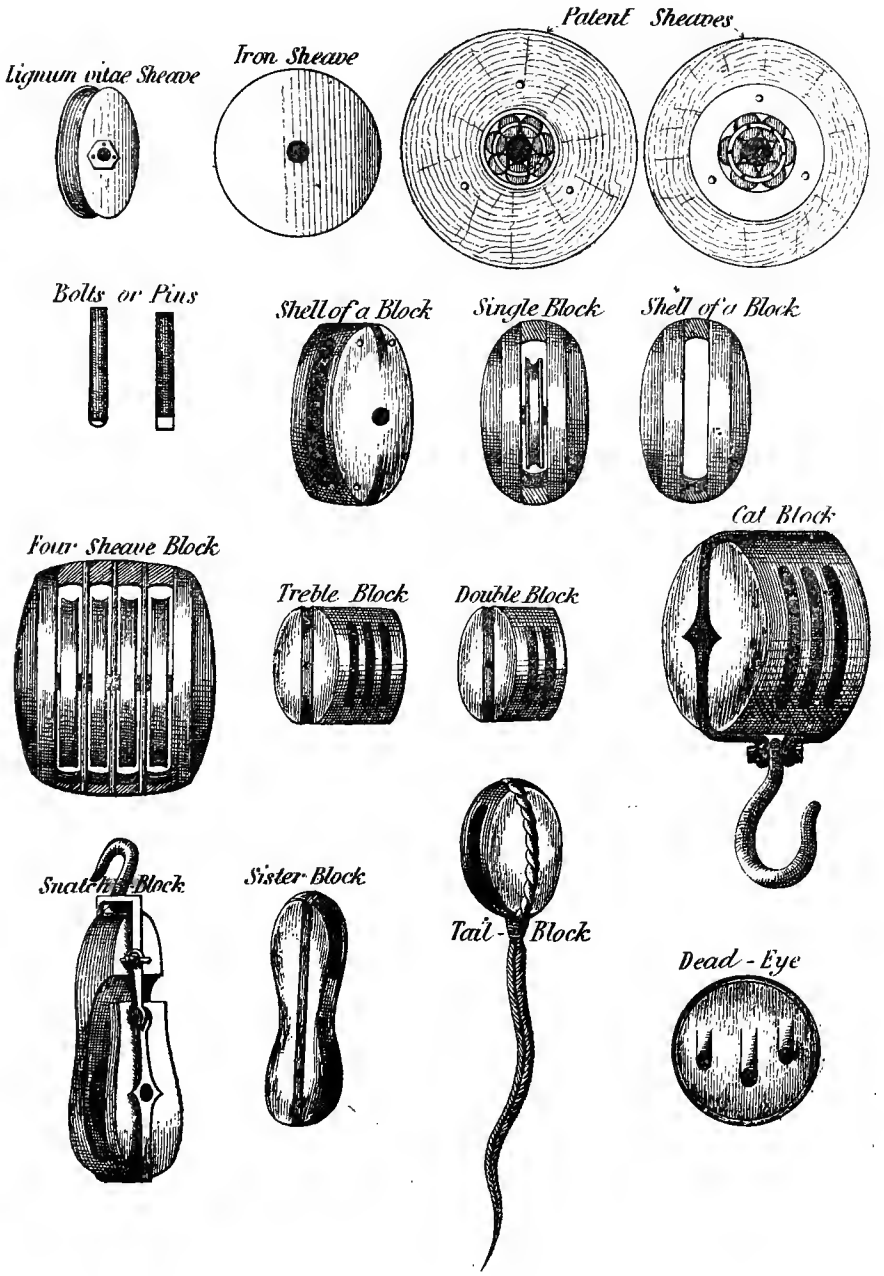
Change Bridge. The tow-path shifts from one side to the other, and where this occurs a bridge spans the canal for the mules to cross over.

Double Header. Two canal boats in line, one pushing or pulling the other.

Free Canal. When no toll is demanded nor charges made for the pass.

Gate Sluice. The blade which opens and shuts on the bottom of the lock gates, and is controlled by a lever in the hands of the lockman. The opening and shutting of this blade floods and drains the lock.

DIFFERENT BLOCKS ETC.



Heel-path. The opposite side of the canal from the tow-path.

Lock. The mechanical structure used on canals for raising and lowering a vessel from one level to another.

Lock Gates. The gates to a lock which may be opened and closed, and by means of which the lock may be flooded or drained and the desired level obtained.

Level. The stretch of water between two locks.

Lowering Lock. A lock which lowers a boat to a new level.

Raising Lock. A lock which raises a boat to a new level.

Tow-path. The roadway for the mules drawing the boats.

Towing Canal Boat. A canal boat drawn by mules.

Single Header. A single canal boat, either steam or towing.

Steam Canal Boat. A canal boat propelled by its own steam.

Canoe. A light, narrow boat, built generally of cedar, and propelled by paddles and fore-and-aft sails.

Canvas. The material of which sails, awnings, etc., are made. 00 is the coarsest and strongest. It ranges from 00 to No. 10. Sails lighter than No. 10 are made of Ravens, which runs from 8 oz. to 15 oz. to the yard. The standard width canvas for yachts' sails is fourteen inches, but as narrow as six inches is often used.

Cap. A leather, canvas, or metal thimble-shape placed over the ends of standing rigging, such, for instance, as the brass acorns on the ends of the lanyards of the lower rigging. A block of wood containing both a square and a round hole, and used for confining two masts to one another. The square hole is fitted over the lower or topmast head and strongly secured, and the round hole permits the topmast or the topgallant mast to run through it. The *bowsprit cap* is situated at the outboard end of the spar, and secures the jibboom to the bowsprit.

Capsize. To overturn. To *capsize* a coil of rope is to turn it over.

Capstan. A barrel-like machine placed perpendicularly on the deck. It is of great power and is used for heaving and hoisting, etc. Also used on naval vessels to lift the anchor from the bottom. (See JEER CAPSTAN.)

Capstan-bar. A wooden bar to ship into the capstan head (bar holes) and by which the latter is hove round.

Capstan-head. The top part of the capstan.

Captain. The title for the commander of a good-sized vessel. The commander of a small vessel is termed *skipper*.

Captain's Boy. The flunkey appointed to wait exclusively upon the captain, keep his room tidy, etc.

Careen. When a vessel lies over on her side, either in sailing or from being hove down to undergo repairs, she is said to *careen*. (See LIST.)

Cargo. The goods, merchandise, or wares with which a ship is loaded.

Cargo Derrick. (See DERRICK.)

Cargo Jack. A *jack* used for lifting or forcing heavy cargo into place, such as a bale of cotton, etc. (See JACK.)

Cargo Port. (See LUMBER PORT.)

Carlings. Short pieces of fore-and-aft timber placed between the beams.

Carpenter. An officer on board ship whose duty it is to have care of the hull of the vessel, masts, yards, blocks, rudder, steering gear, decks, etc.

Carrick Bend. Used for bending two hawsers together. (See engraving.)

Carrick Bitts. The windlass bitts.

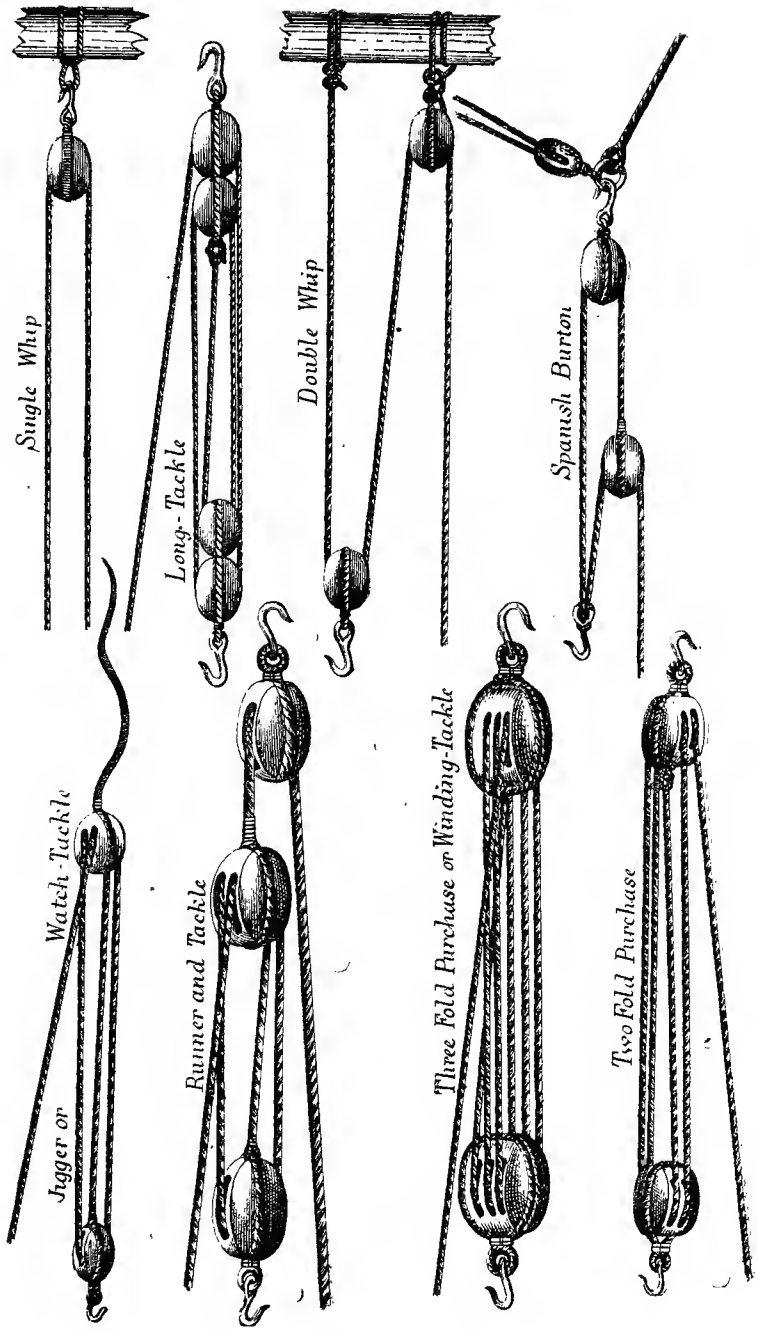
Carry Away. To break or part anything, such as a spar or a rope.

Carvel-built. A manner of building boats so that the planking is flush, or smooth sided; the opposite to clinker or clinched built, where the edges of the planks overlap.

Cask Buoy. A barrel buoy. Sometimes a *cask buoy* consists of a barrel placed over the head of a stake driven in the bottom.

Cask Sling. A length of rope having either a hook or an eye in one end, and used for lifting a cask on its bilge. (See engraving.) This differs from a *barrel sling*, which see.

DIFFERENT TACKLES ETC.



Cast. To pay a vessel's head off, either to port or starboard, in getting under way—*cast to port, cast to starboard.*

Cast Loose. To unfurl; to throw the gaskets off a sail; to untie, etc.

Cat. A whip made of leather or rope ends used to inflict punishment. Also called *cat-o'-nine-tails;* the tackle by which the anchor is hoisted to the cat-head.

Cat Block. The double or threefold block forming part of the tackle used in hoisting the anchor to the cat-head.

Cat Boat. An open, or half-decked, one-mast sailing boat with the mast stepped in the eyes. This vessel has only a gaff mainsail, no head-sail being carried.

Cat Crane. An iron overhanging beam stepped like a boat davit, and used in place of a cat-head for catting the head.

Cat Davit. (See CAT HEAD.)

Cat Harpin. Short lengths of rope used for binding in the rigging abreast of the topsail yards, in order that those yards may be braced up as sharp as possible.

Cat Head. Horizontal timbers projecting from a vessel's bows, and to which the anchor is raised (*catted*) and secured after it has been hove up. (See CAT CRANE.)

Cat Hook. A large hook fitted to the strop of the cat block, and which is hooked into the anchor ring, when catting the anchor, to lift the latter to the cat head.

Cat the Anchor. To lift the anchor ring to the cat-head and secure it there.

Catamaran. A small light-draught vessel, having two separate hulls of canoe shape, which are joined by cross-beams from one deck to another, and rigged with fore-and-aft sails.

Catch a Crab. To make a false stroke in rowing.

Catch a Turn. To take a turn with a rope quickly.

Cat's Paw. The slight ruffling seen on the surface of the water during calm weather, being caused by transient flaws of wind; a twist put in the bight of a rope, forming two small eyes close together, and into which the hook of a tackle is slipped in order to get a strain on the rope for any purpose.

Cattle Slings. (See BULLOCK SLINGS.)

Caulk. To drive oakum into the seams of a vessel to prevent leaking.

Caulking Iron. A chisel-shaped instrument used for driving oakum into the seams of a vessel.

Caulking Mallet. A small wooden maul used in caulking decks.

Cautionary Signals. These are of two classes, known as "Cautionary Signal" and "Cautionary Off-shore Signal."

The Cautionary Signal displayed in the daytime is a red flag with a black square in the centre; in the night-time it is a red light. This is a general cautionary signal, and has reference to an approaching storm from any direction.

The Cautionary Off-shore Signal displayed in the daytime is a white flag with a black square in the centre, shown above a red flag with a black square in the centre; in the night-time it is a white light shown above a red light. This is a signal indicating that the approaching gale is expected to blow off-shore, or from the land. These storm signals are displayed at all the principal ports of the Atlantic and Gulf coasts, and on the Great Lakes. Unless the approaching storm area registers a velocity of at least 25 miles per hour the signals are not displayed.

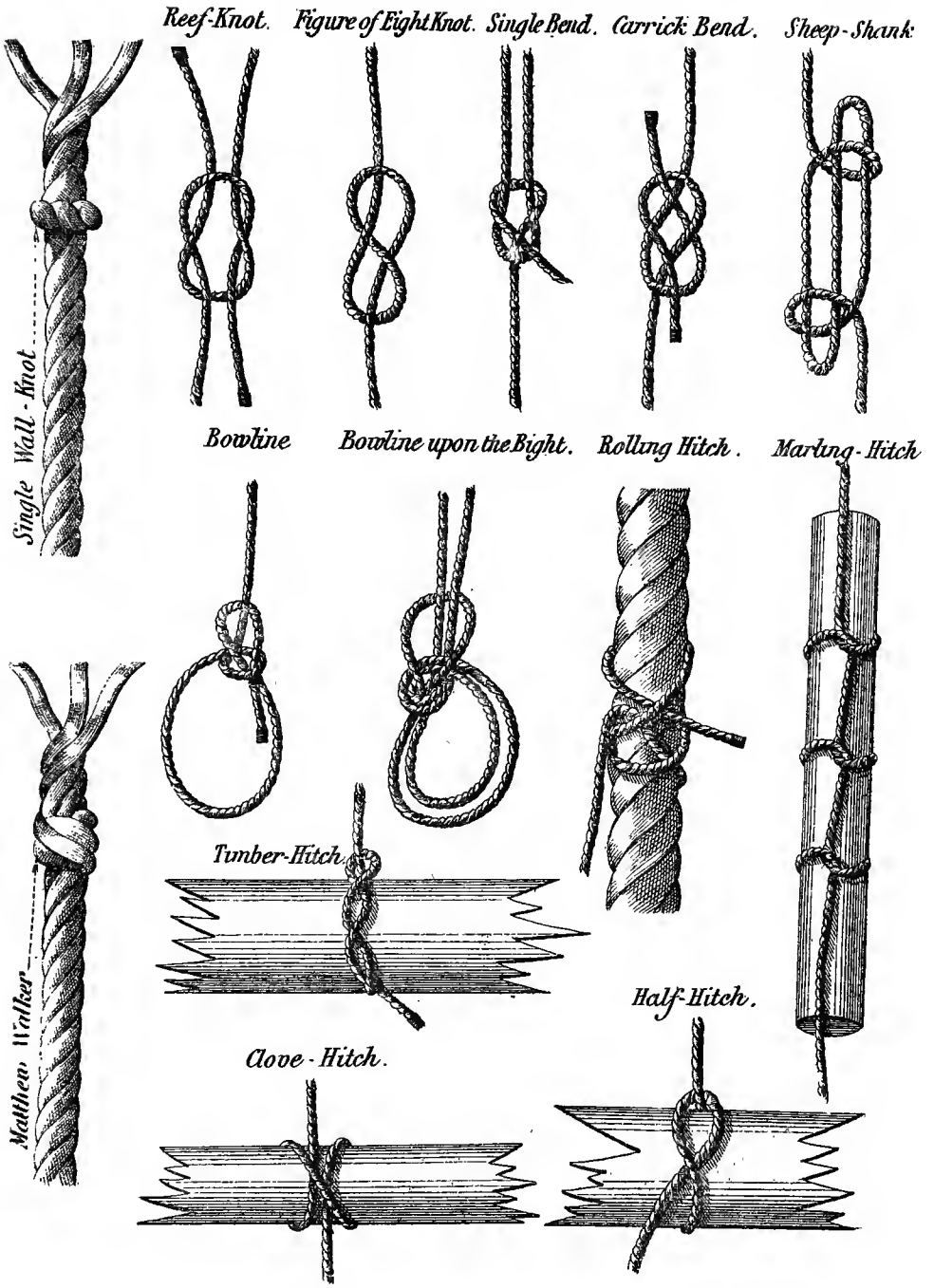
Cavil. A length of timber, like a long cleat, bolted on to the bulwark stanchions in a and-aft direction and used for belaying ropes to.

Cavil Heads. Timber heads when used as *cavils.*

Ceiling. The lining or inside planking of a vessel.

Centre-board. The board which works on a thwartships pin up and down in the centre-board trunk, passing through a fore-and-aft narrow opening in the keel of the vessel. When the board is hoisted all the way up its lower edge is flush and parallel with the keel. When down the board drops a distance below the keel according to the size of the vessel. It is lowered to overcome the sideways drift (leeway) of the ship when she is close hauled.

Centre-board Trunk. The hollow wooden wall from the keel up in which the centre-board slides up and down.


Reef-Knot.
Figure of Eight Knot.
Single Bend.
Carrick Bend.
Sheep-Shank
Single Wall-Knot
Bowline
Bowline upon the Bight.
Rolling Hitch.
Marling-Hitch
Matthew Walker
Timber-Hitch
Half-Hitch.
Clove-Hitch.

Certificates of Competency. Diplomas issued to masters and mates certifying to their excellence as seamen and navigators.

Chafing Gear. Rope, canvas, etc., placed upon rigging, spars, etc., to save them from being chafed.

Chain. Connected links of metal.

Chain Cable. The cable of a vessel when it is composed of iron links.

Chain Locker. (See LOCKER.)

Chain Pipe. A leading pipe to the locker for the cable.

Chain Plates. (See CHAINS.)

Chains. Strong, narrow plates of iron bolted to the ship's timbers through the side. To the upper end of these plates dead-eyes are secured by an iron strop. The ship's channels are also called *chains*, as the fore-chains, main-chains, and mizzen-chains. (See RUDDER CHAINS.)

Chamfer. To take off the angle or edge of a timber.

Chandlery Stores. (See SHIP CHANDLER.)

Channels. Plank secured edgewise to the outside of a vessel, and to which the upper parts of the chain plates with their dead-eyes are secured. *Channels* are used in order to obtain more spread for the lower rigging. (See CHAINS.)

Chapeling. When taken aback in a light breeze the ship may be worn completely around until she arrives on her original course without bracing the yards. This is known either as *chapeling* or *building a chappel.*

Chart. A marine map delineating some part of the sea and the sea coast, giving information as to the rocks, shoals, lights, soundings, and all that is necessary to assist the mariner in shaping the course of his vessel. (See PART III.)

Charter Party. The name given to a contract in writing between the owner, agent, or master of a vessel, under a certain specified condition, for the conveyance of the goods of the freighter to some particular place or places. A charter party also specifies the nature of the voyage, the terms on which the cargo is carried, etc.

Chase. One vessel pursued by another.

Chassé Maree. A French lugger.

Check. To slack off a little on a rope or brace.

Cheek Blocks. Half of a shell containing the sheave bolted on to a spar, the latter acting as the missing *cheek.*

Cheeks. Those projections which are bolted to the sides of the mast and upon which the trestle-trees rest. Also a name applied to the two sides of a block.

Cheerily Oh! Heartily; with good will.

Chess Trees. Pieces of oak, bolted to the topsides of the vessel, containing a sheave, and used for hauling home the main tack (gone out of use.)

Chimes. That part of the staves of a cask where they project beyond the heads.

Chinse. To drive oakum or cotton into a tight seam with a thin caulking iron.

Chip Log. (See LOG.)

Chock. A wedge employed to prevent a body from rolling or moving.

Chock-a-block. When two blocks of a tackle have been drawn as close together as possible. Same as *block-and-block* and *two blocks.*

Choke. A rope is said to *choke in the block* when it fouls and will not render.

Chop Sea. A quick, tumbling sea—short waves.

Chops. Where the waters of a channel and the sea meet, for instance, *the Chops of the English Channel.*

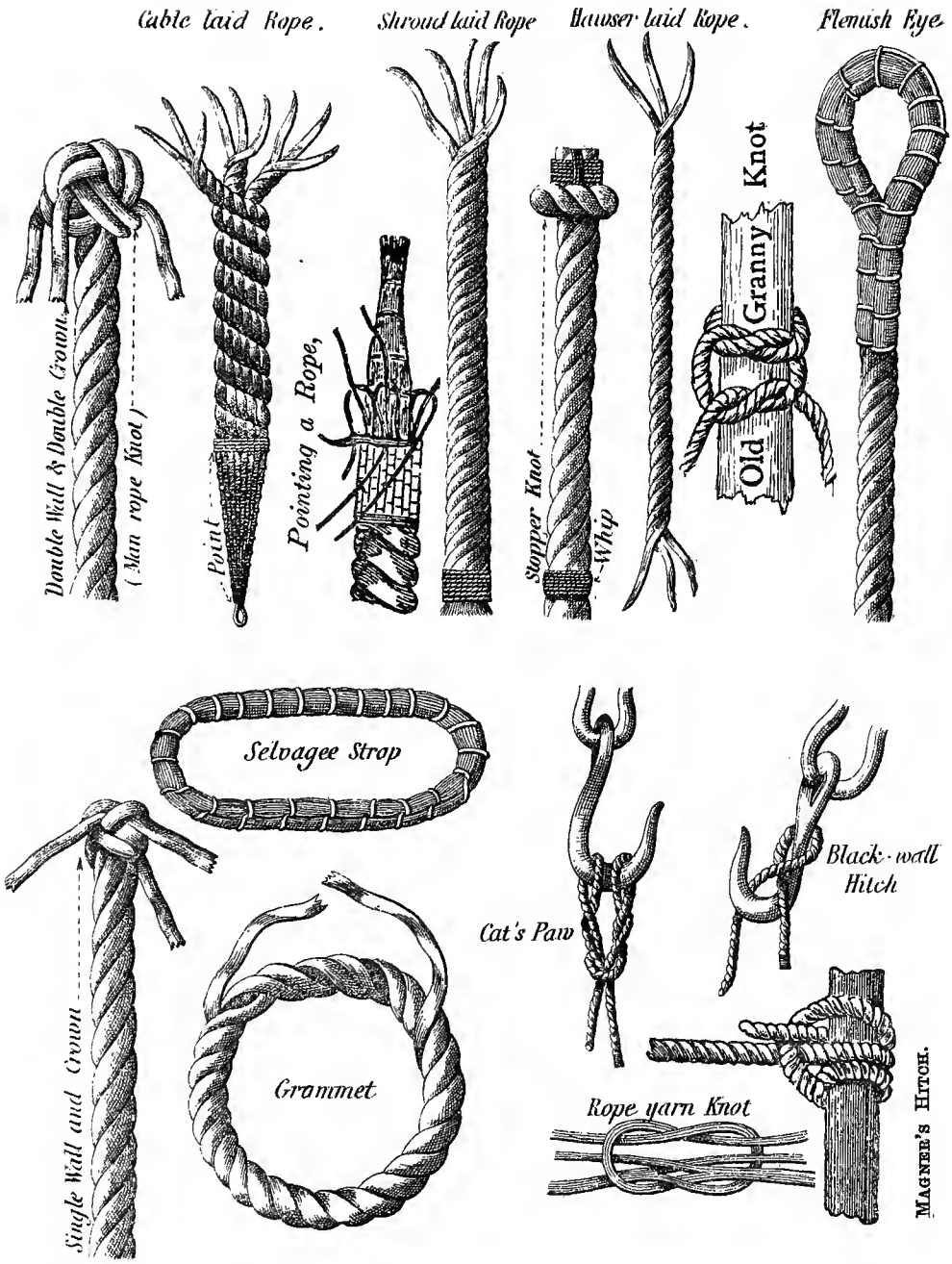
Circular Storms. The name given to revolving storms, such as West India hurricanes.

Cistern. The well in the hold of fishing vessels in which the catch is preserved alive. This well or *cistern* is supplied with water from the sea through a flood-cock pipe connecting the *cistern* with the outside of the vessel.

Clamps. An iron shape which works on a hinge and is used to confine a spar, such as a studding-sail boom.

Clap on. To make more sail; to lay hold of a rope and haul away.

Class. The degree of excellence pronounced upon a merchant vessel, according to her


Cable laid Rope.
Shroud laid Rope
Hawser laid Rope.
Flemish Eye
Double Wall & Double Crown
(Man rope Knot)
Point
Pointing a Rope,
Stopper Knot
Whip
Granny Knot
Old
Selvagee Strop
Single Wall and Crown
Grommet
Cat's Paw
Black-wall Hitch
Rope yarn Knot
MAGNEE'S HITCH.

construction and the material used, American vessels are classed as A 1, A 1½, A 1¾, A 2, A 2½, and A 3. Vessels classifying under A 1 and A 1½ are considered fit for the transportation of all kinds of cargo and for all voyages; those classifying under A 1¾ and A 2 are considered fit for carrying all kinds of cargo on Atlantic voyages, and such cargo as molasses, oil and sugar on long voyages; while those classifying under A 2½ and A 3 are deemed fit for for the coastwise trade only in the transportation of wood and coals. The *class* is given for a certain term of years, and expires by limitation, necessitating a new examination or survey of the vessel in order to re-establish the *class* or secure a new one, and in order to maintain the *class* assigned the vessel must be submitted to occasional surveys not less than once in two years, and must be re-surveyed for a *class* in the event of collision, running ashore, loss of masts, etc.

Claw. To work the vessel off a lee shore is to *claw* her off.

Clear Hawse. (See Open Hawse.)

Clearance. When a vessel is ready for sea the customs officials must be provided with a detailed manifest (see Manifest) of the ship's cargo, which will be sworn to; then, if the port charges of the vessel have been paid, and her inward cargo properly accounted for, the collector will furnish her with a *clearance* document, without which she must not attempt to leave port under penalty, except American vessels under coasting license, which are allowed to sail within certain districts in the United States without entrance or clearance, provided they have domestic cargo on board.

Cleat. A piece of wood bolted to a stanchion or to the deck and used for belaying ropes to.

Clencker. (See Clinker.)

Clew. The two lower corners of square sails and the after lower corner of a fore-and-aft sail.

Clew Cringle. A shackle spliced into the clew of the sail which is the junction of the foot and leech.

Clew down. To let go the halliards and sheet of a gaff topsail and man the clewline; the tack being kept spread, the sail necessarily comes down when the clewline is hauled on.

Clew Garnet. The rope by which the clews of a foresail and mainsail (courses) are hauled up to the yard. The *clew garnet* takes the place of a *clewline* on the courses.

Clew up. To haul up the clew of a sail.

Clewlines. The ropes that lift the clews of square sails to the yards; the clewline bunches the gaff topsail on a fore-and-aft vessel.

Clinch. To *clinch* a bolt is to spread the end of it over a plate by riveting, so that it cannot be withdrawn from the plate. To *clinch* a rope is to stop a half-hitch to its own part.

Clinched. (See Clinker.)

Clincher. (See Clinker.)

Clinker. A style of building boats in which the lower edges of one plank overlaps the top edge of the one below it.

Clip Hooks. Two regular-shaped iron hooks having one side flat, suspended (reversed to one another) from a small iron thimble. By overlapping, these two shapes form one complete enclosing hook. These are also known as *sister hooks.*

Clipper. A vessel with a sharp bow, and built with an idea of making great speed. Said to have been first built in Baltimore, Md., hence the term *Baltimore Clipper.*

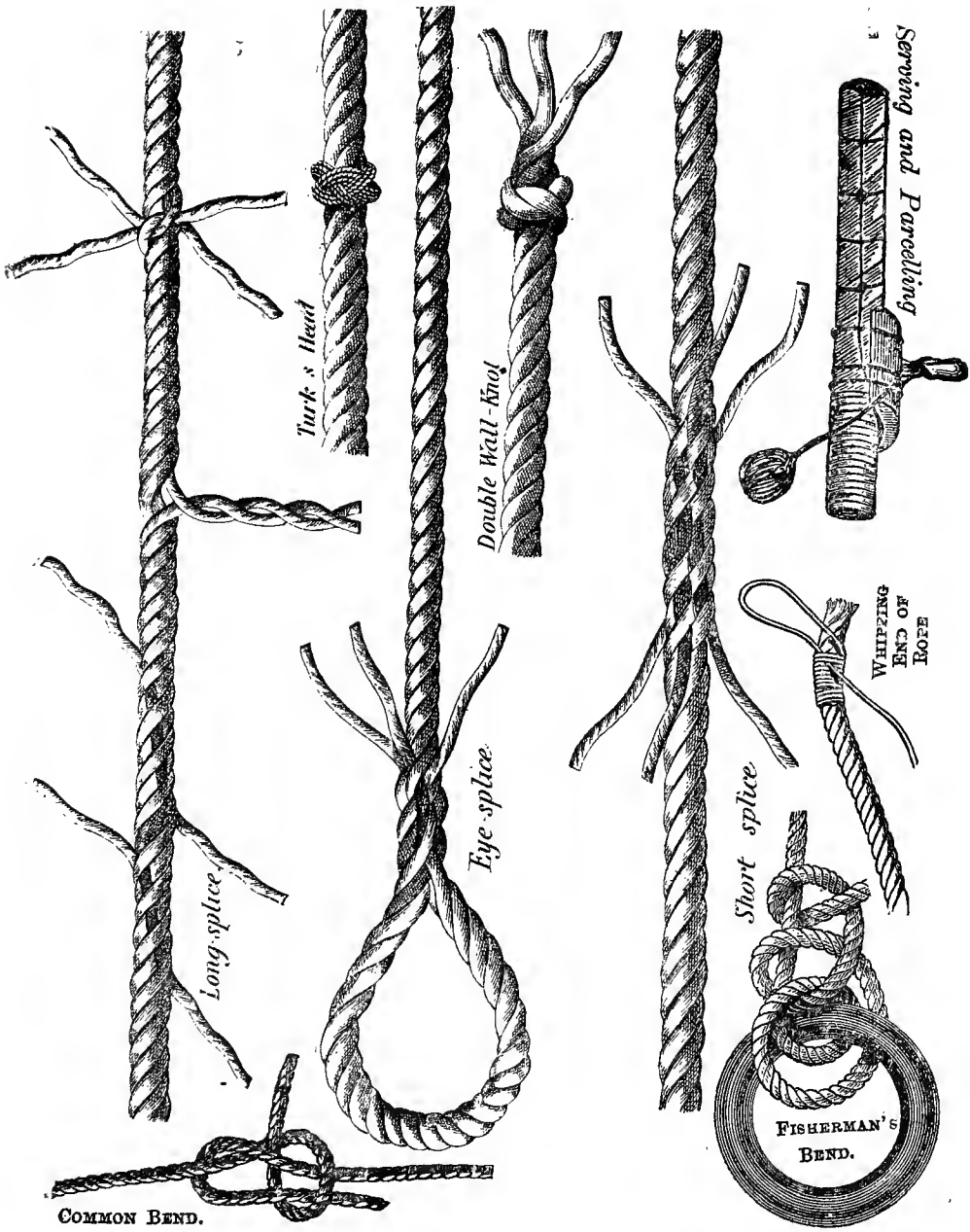
Close Hauled. When a fore-and-aft vessel is sailing with her booms nearly amidships, or a square-rigger with her yards braced up as sharp as possible, she is said to be *close-hauled.* The same as *full-and-by, on the wind, on a taut bowline.*

Close Reefed. (See Reef.)

Clouds. Visible vapor suspended in the atmosphere. Clouds are classed under the following heads: *cirrus, cumulus, stratus, cirro-cumulus, cirro-stratus, cumulo-stratus, and cumulo-cirro-stratus, or nimbus.*

Clove Hitch. Two jamming under and overlaying turns of a line around a spar or a rope, and much used in bending a heaving line to a hawser. (See engraving.)

Clove Hooks. (See Clip Hooks.)


Long-splice.
Turk's Head
Eye-splice.
Double Wall-Knot
Short splice.
Serving and Parelling
Whipping End of Rope
Common Bend.
Fisherman's Bend.

Club Haul. A piece of seamanship performed while endeavoring to claw off a lee shore, and when it is feared that the vessel will miss stays. The lee anchor is dropped (the hawser leading from the lee quarter) after coming head to wind, and when the vessel's head has paid off on the opposite tack the cable is cut.

Club Topsail. A topsail set flying from the deck with the luff laced to a pole called a *sprit*, and the foot laced to a pole called a *club*.

Clubbing. To drift down with a current, having an anchor on the bottom.

Coaking. (See PART II.)

Coal Bunkers. Apartments built in the sides of steam vessels opposite the boilers for stowage of coal.

Coal Tar. A tar made from bituminous coal, used sometimes to smear over a surface to prevent leaking, and for painting the fronts of boilers, etc.

Coaling Ship. The act of filling up the ship's bunkers with coals.

Coamings. Strictly speaking, *coamings* are the fore-and-aft framings in the hatchways and scuttles, and the thwartship pieces are *head-ledges*, but the name *coamings* is commonly applied to the entire raised framework about the openings in the deck in order to prevent water from running below, as well as for strengthening the deck about the hatches.

Coast Guard. A body of men, regularly officered, whose duty it is to prevent the smuggling of dutiable goods into a country.

Coasting. Sailing along the coast.

Coastwise. Along the ocean shore.

Coat. A *mast-coat* is a piece of painted canvas fitted around a mast where it passes through the upper deck to prevent the passage of water.

Cock Bill. (See A-COCK-BILL.)

Cock-pit. The depression in the deck abaft the after cabin. In *cock-pit* vessels the steering wheel is generally found in the afterpart of the pit.

Codline. A line made of eighteen threads.

Coffer-dam. A mechanical device met with in hydraulic engineering for exposing a portion of the bottom of a harbor. A dam or enclosure is built of spiles driven in the mud, then the water is pumped out.

Coil. When a rope is *coiled down* it is wound around and around, one turn on top of another, the mass being named a *coil*.

Coir Rope. Ropes made from the fibrous husks of the cocoa-nut. Coir rope will float upon the surface of the water. (See BASS ROPE.)

Coleman Hook. A hook used on light sails in the same way as clip hooks.

Collar. The eyes in those ends of the standing rigging which go over the mastheads are sometimes called *collars*. Also a strap or grommet when used to seize a heart or deadeye.

Collier. A vessel carrying coal as a cargo.

Colors. The national ensign, which is always flown from the stern of the vessel, either on a flagstaff or from the aftermost mast.

Come. *To come up in the wind* is to luff; *To come to* is to anchor; *To come up on a rope* is to slack it; *an anchor comes home* when it is dragged towards the ship in heaving in the chain.

Coming to. Said of a ship when her head approaches the direction of the wind.

Commodore-Captain. The senior captain in a steamship line—seniority of service, not age.

Companion. A wooden slide or cover over the cabin staircase. The cover to the forecastle hatch is termed *forecastle slide*.

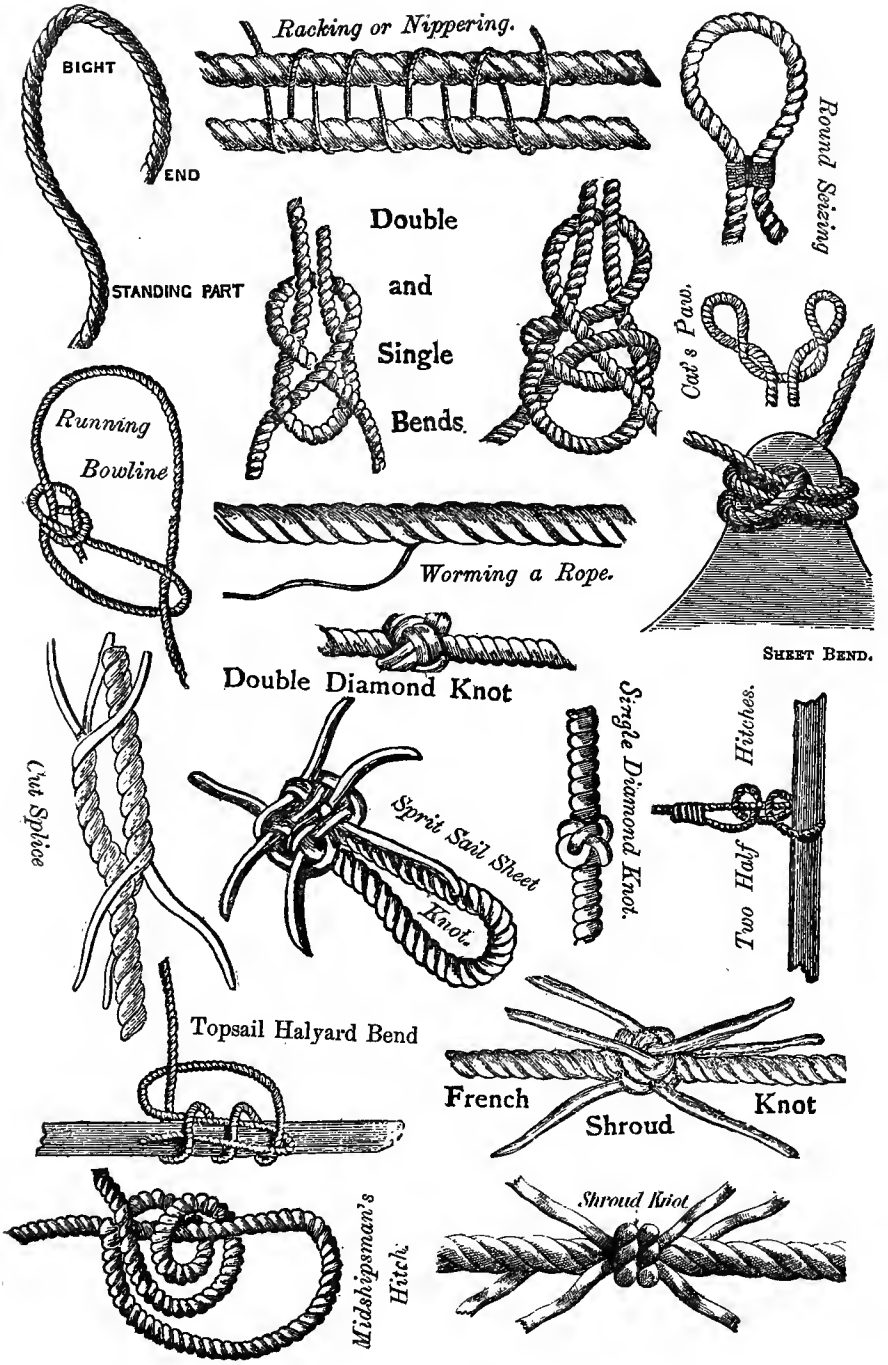
Companion Ladder. A ladder leading from the main deck to the poop.

Companionway. The cabin staircase; the steps leading below from the spar-deck.

Compass. A magnetic instrument which indicates the magnetic meridian, or the magnetic pole, and employed on board ship to obtain bearing of celestial and terrestrial objects and to steer courses. (See PART III.)

Compass Rose. (See FLOWER OF THE WINDS.)

Composite. A *composite* vessel has an iron frame and wooden planking.


BIGHT
END
STANDING PART
Racking or Nippering.
Round Seizing
Double
and
Single
Bends.
Cat's Paw.
Running
Bowline
Worming a Rope.
SHEET BEND.
Double Diamond Knot
Cut Splice
Sprit Sail Sheet
Knot.
Single Diamond Knot.
Two Half Hitches.
Topsail Halyard Bend
French
Shroud
Knot
Midshipsman's
Hitch.
Shroud Knot

Compreesent or **Compressant.** (See CORPOSANT.)

Compressor. An instrument that nips a cable and prevents it from running out.

Compulsory Pilotage. A pilotage law exacting pilotage from vessels entering and leaving port, whether they accept or refuse the services of a pilot.

Concluding Line. A small rope leading through the centre of the steps of a stern ladder or a Jacob's ladder.

Conductor. A marine lightning-rod, being a copper wire secured to and projecting above the truck, and leading over the vessel's side to the water.

Conning. Directing the helmsman how to put the wheel when running through a channel.

Consuls. Agents appointed by the government to reside in seaport towns of foreign countries, and whose duty it is to guard the commercial interests of their nation. Consuls are authorized to receive the protests of masters; to administer on the estates of citizens dying within the limits of their consulates who have left no legal representative; to provide for destitute seamen of their own country and to send them home at government expense; to reclaim deserters from and to discountenance insubordination on board vessels flying the flag of their country; to discharge seamen for cause, and to investigate charges of irregularities preferred against the officers of a vessel by the crew, and to afford the latter protection, etc.

A Consul-General has jurisdiction over several consulates. Aids to consuls are Consular Agents, Deputy Consuls, and Vice-Consuls.

Convoy. One or more merchant vessels sailing in company with and under the protection of a man-of-war.

Copper. A reddish, malleable metal extracted from various ores. Thin sheets of it are used for sheathing the hulls of wooden vessels below the water line.

Copper-bottomed. Said of a vessel when her hull is sheathed with copper.

Copper-fastened. A vessel is said to be *copper-fastened* when the bolts with which the vessel is fastened are of copper instead of iron.

Coppers. The boilers, or large kettles, used for cooking.

Cordage. A term applied in a general way to all the standing and running rigging.

Corinthian. A term used to designate an amateur patron of yachting.

Corinthian Race. When the owner or some other amateur seaman acts as sailing master, the crew also, in whole or in part, being amateurs.

Cornucopia Drag. (See DRAG.)

Corposant. A volatile meteor sometimes seen about the masts and yards of a vessel just before and during storms. Sailors are very superstitious concerning these electrical quantities, believing them to be spirits, and that to be aloft when one of these fire-balls is playing around is very unlucky, and to be touched by one a sign that the man's life is of short duration. Seamen have other names for this phenomena, among which are, *St. Elmo's Light, St. Elmo's Fire, Compreesent, Compressant, Furole*, and *Jack o' Lantern.*

Corrected Time. The figures obtained after applying the time allowance to the actual time made in sailing over the course. (See TIME ALLOWANCE.)

Coston Signals. Colored fireworks of private patterns used for various signaling on board vessels at sea.

Counter Brace. To brace the head-yards one way and the after-yards another.

Counter Sea. A sea which runs in a contrary direction to which the wind is blowing.

Counters. The concave in the after-body of a vessel which forms the *run.*

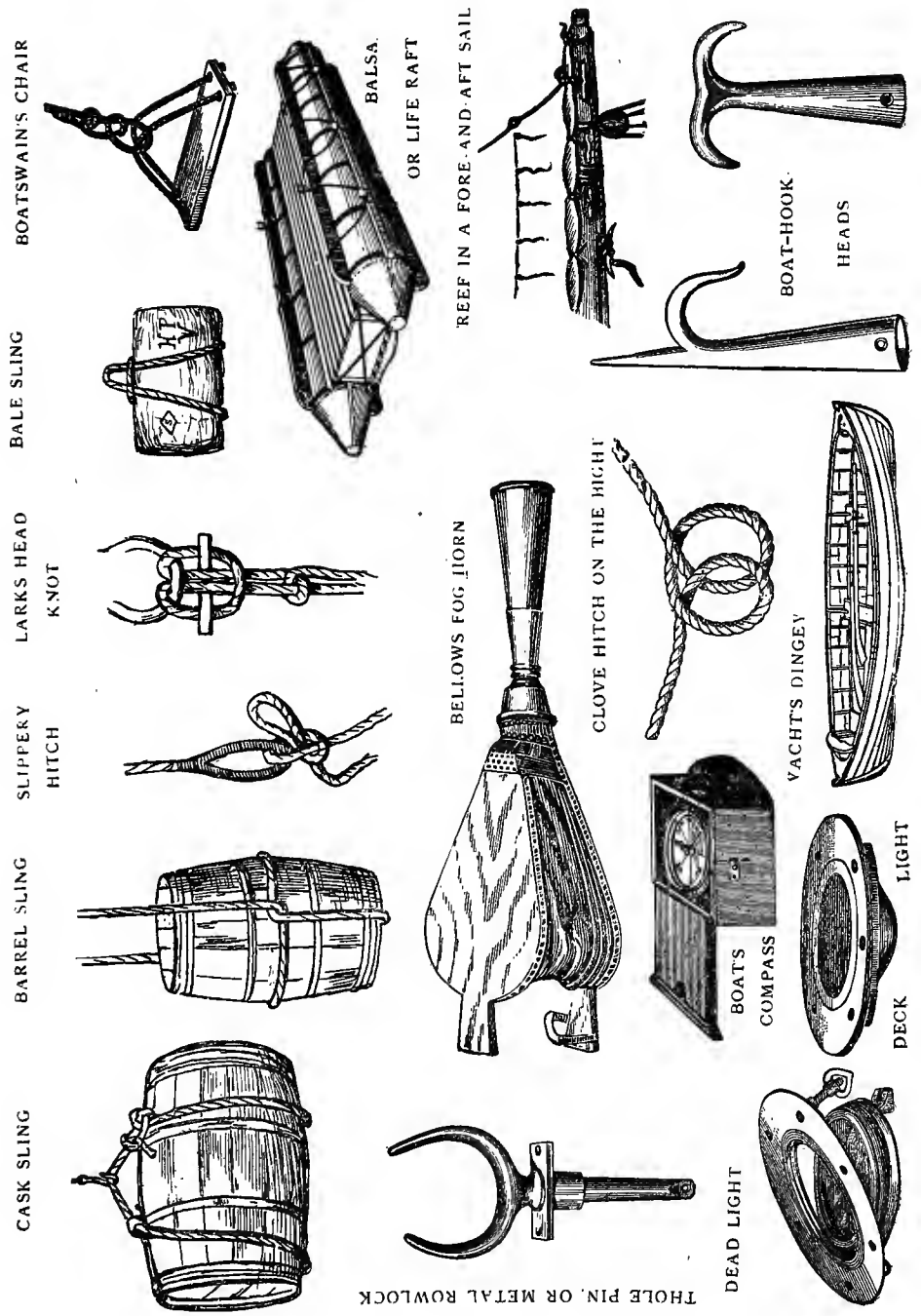
Course. That point of the compass toward which the vessel's head is pointed when under way.

Course Signals. The blasts blown on the whistle by steam vessels to indicate to to one another the respective courses to be pursued.

Courses. The sails upon the lower yards of a vessel, thus the foresail is the *fore course*, the mainsail the *main course*, and the cross-jack the *mizzen course.*

Covering Board. Same as *plank shear.*

Coxswain. The person who steers the boat and is in charge of same in the absence of an officer.


BOATSWAIN'S CHAIR
BALE SLING
BALSA
OR LIFE RAFT
REEF IN A FORE-AND-AFT SAIL
BOAT-HOOK
HEADS
LARKS HEAD
KNOT
BELLOWS FOG HORN
CLOVE HITCH ON THE BIGHT
SLIPPERY
HITCH
VACHT'S DINGEY
BARREL SLING
BOATS
COMPASS
DECK
LIGHT
CASK SLING
THOLE PIN, OR METAL ROWLOCK
DEAD LIGHT

Coxswain's Box. The space between the backboard of the boat and the stern.

Crab. A wooden machine with three claws, used in launching ships.

Crab Winch. A small winch resting on light iron standards. (See engraving.)

Cracker Hash. Made by breaking up a quantity of sea biscuit, soaking them in water until soft, then spreading some slush (grease obtained from the skimmings of the cook's coppers) over the mess and baking it in the oven—a great breakfast dish on board a man-o'-war.

Cradle. A framing built upon launching ways and in which the ship rests while she is being launched.

Crance Iron. (See CRANZE IRON.)

Cranes. A machine used in raising or lowering great weights; a derrick. (See CAT CRANE.)

Crank. A vessel is said to be *crank* or *tender* when she heels over unduly under sail so as to be in danger of capsizing. This may arise from insufficient constructural stability or to the manner in which the cargo or ballast is stowed.

Cranze Iron. The iron band on the bowsprit end to which the bowsprit shrouds and bobstays are shackled.

Creeper. An iron instrument having four claws like a grapnel and used for dragging over the bottom in search of lost cables, anchors, etc.

Crew List. Before sailing on a foreign voyage, or on a whaling voyage, the master of a vessel must make a list of the names of the officers and crew composing the ship's company; this list to specify also the respective places of birth and residence, and to give a description of the men individually.

Crimp. A term applied to a well-known individual who plies seamen with liquor until they are intoxicated, then ships them on some vessel and robs them of their advance money through false claims.

Cringle. A short piece of rope spliced into and forming an eye on the bolt rope on the luff, head, tack, clew, and leach of gaff sails, into the head, foot, and leaches of square sails, and into the head, tack, and clew of jib-headed sails. An iron ring, called a *thimble*, is contained within the eye to prevent chafing. (See REEF CRINGLES.)

Cross Bars. Bars of iron bent at each end; they are used to turn the shank of an anchor.

Cross Jack. The lower yard on the mizzen mast of a ship. It is pronounced as though spelled *crog-ie*. Some merchant ships carry a sail on the *cross-jack*, but on men of war such a sail is never found.

The cross-jack braces are the braces not only which are employed to swing the *cross-jack* yard, but the name refers collectively to the braces of all the mizzen yards.

Cross Sea. A sea that runs contrary to the direction of the wind; a confused, ugly sea, very dangerous for low-sided vessels. This kind of a sea is very trying to a ship as it makes her labor heavily.

Cross Trees. Pieces of oak running thwartships which are supported by the cheeks and trestle trees, and on which the tops on the lower masts rest; they spread the top-gallant rigging at the topmast head.

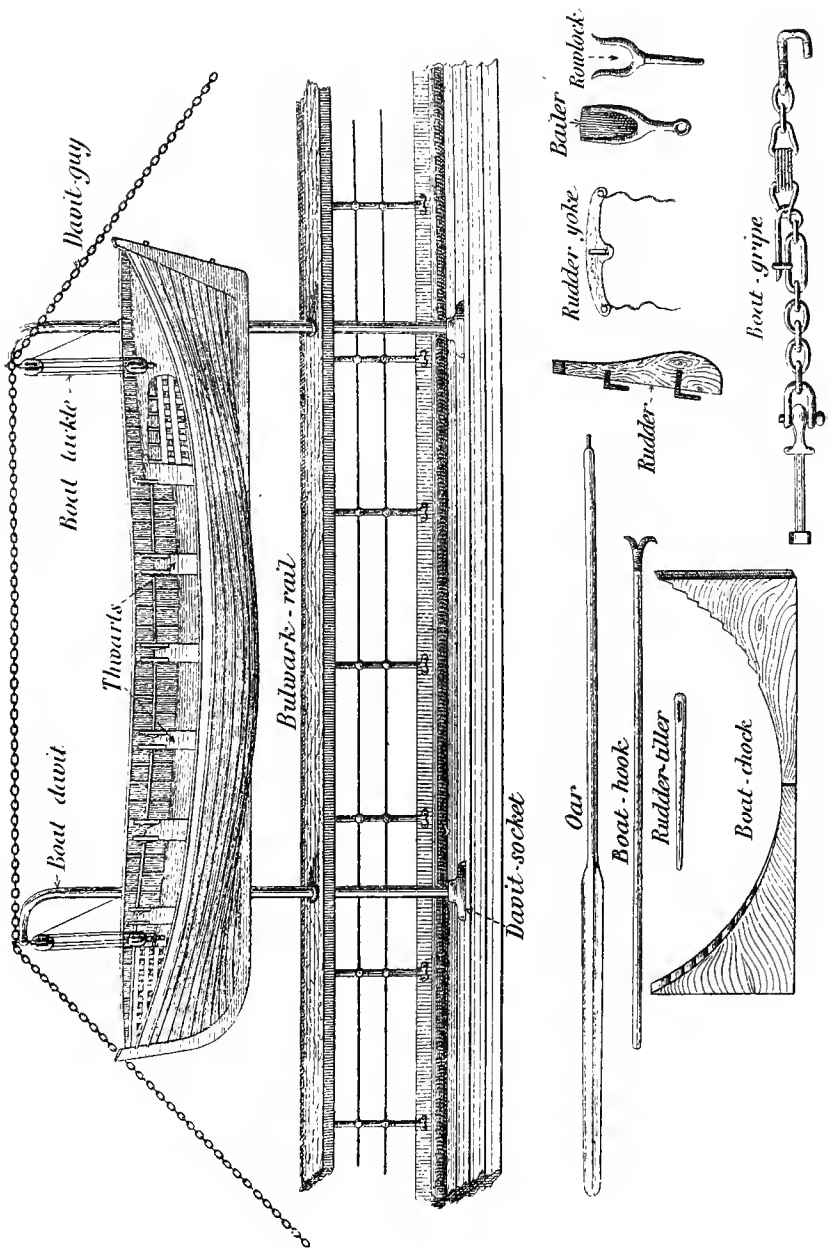
Cross Yards. To send yards aloft and drop them to the horizontal, and secure them with their gear.

Crossing the Line. When a ship sails over the equator she is said to *cross the line*. (See NEPTUNE.)

Crow-foot. A number of small lines suspending an awning, and which are either spliced into or hooked to little thimbles on the awning backbone; these lines reeve through an euphroe, to which is bent or hooked the awning halliards, by which the canopy is triced up.

Crowd. *To crowd sail upon a vessel* is to set everything the ship can stagger under; or, all the sail that the vessel has.

Crowding. When one vessel interferes with another's course by luffing or by bearing away, the former is said to *crowd* upon the other's course.


Davit-guy
Boat tackle
Thwarts
Boat davit
Bulwark-rail
Davit-socket
Oar
Boat-hook
Rudder-tiller
Boat-chock
Rudder
Rudder yoke
Bailer
Rowlock
Boat-gripe

Crown. The crown of an anchor is the lowest part directly beneath the shank, or where the arms are welded to that portion of the anchor.

To single crown a knot is to lay the ends of the strands over and then under each other above the knot.

To double crown a knot is to repeat the process of *single crowning*, following the parts of the latter with the strands of the rope.

Crow's Nest. A look-out perch at the mast-head of whalers. It is made of a barrel minus the head, so rigged as not to interfere with the sails, and provided with a telescope for the use of the seamen who occupy it. A crow's nest is also carried by arctic exploring vessels.

Crutch. The stanchion, forked at its upper end for a spar to rest in; the after-boom rests in a portable crutch when the vessel is at anchor with no sail set.

Cuckold's Knot. (See CUCKOLD'S NECK.)

Cuckold's Neck. The knot by which a rope is secured to a spar, the two parts of the former crossing one another and seized together.

Cuddy. A small cabin or pantry.

Cunning. (See CONNING.)

Curio. A sailor's name for curiosities brought from a foreign country.

Currents. A progressive motion in certain places of the water of the ocean; defined streams traversing the surface of the sea; ocean rivers. (See chart engravings.)

Custom House Measurement. The legal tonnage of a vessel determined by the surveyor of customs. (See TONNAGE.)

Cut Splice. A splice made with two ropes—one a short length. The latter has both its ends spliced into the bight of the former, thus forming a kind of eye splice. (See engraving.)

Cut-water. The foremost part of the stern that divides the water when the vessel is sailing.

Cutline. The space between the bilges of casks when stowed chime-and-chime.

Cutter. A name given to steamers in the revenue service. Also medium-sized boats carried at the davits. A one-masted vessel rigged almost like a sloop, the difference being mainly in the construction of the hulls.

D.

Dago. Strictly speaking the term "*Dago*" refers to the children of Spanish parents born in the State of Louisiana; but English and American seamen apply the designation to all Portuguese and Spanish sailors.

Dandy. Same as a yawl.

Dandyfunk. A kind of pudding made by men-o'-war's men.

Darbies. A term applied to handcuffs.

Dasher Block. A small block at the end of the after-gaff, used for reeving the en sign halliards.

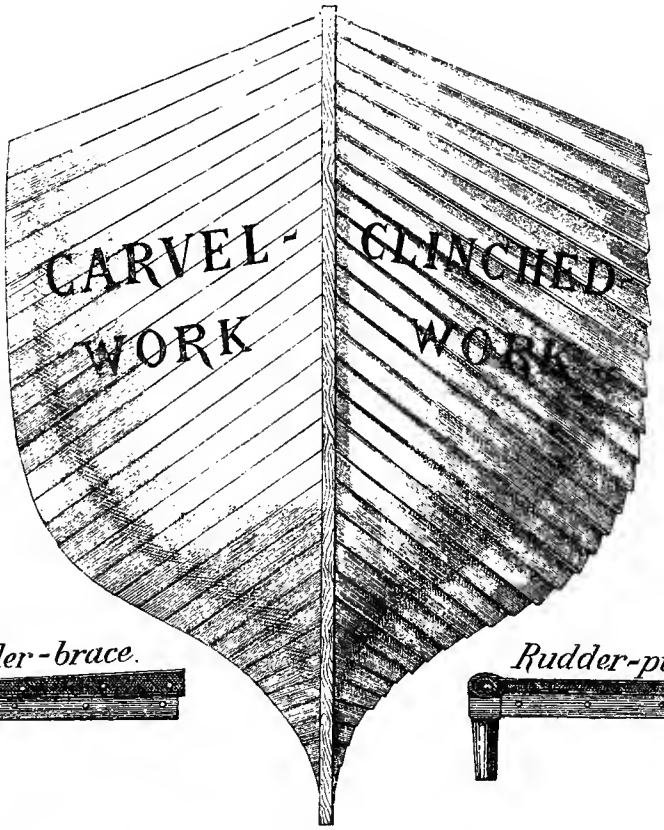
Davit Check. (See DAVIT GUY.)

Davit Guy. A light wire rope secured in the outer eye on the side of each davit, and set taut on the rail by a lanyard so as to keep the davits at right angles to the keel. The *davit check* or *spreader* (a chain) crossing horizontally from davit to davit prevents them from turning too far when the guys are set up. Sometimes a light spar called a *strongback* is used for spreading the davits instead of a chain.

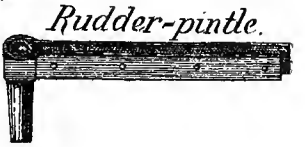
Davit Spreader. (See DAVIT GUY.)

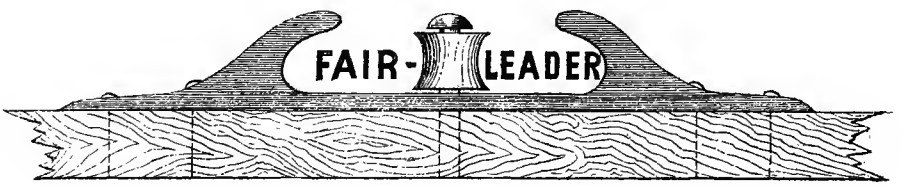
Davit Strongback. (See DAVIT GUY.)

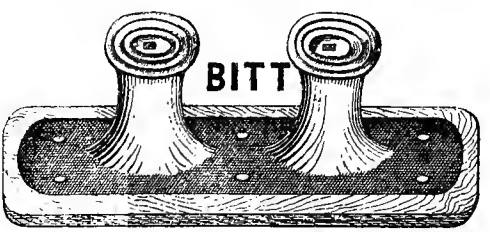
Davits. Lengths of timber or iron having blocks shackled to, or sheaves in, the upper ends, and which project over the stern and side of a vessel, being employed to hang boats to. (See FISH DAVIT.)


CARVEL-
WORK
CLINCHED-
WORK

Rudder-brace.


Rudder-pintle.


FAIR-
LEADER


BITT

Davy Jones. A title applied to a mythical sea devil, otherwise called JIMMY SQUAREFOOT.

Davy Jones' Locker. Infernal regions at the bottom of the sea where *Davy Jones* holds court.

Daylight. When two bodies fail to come into perfect contact, so that a small opening between them is seen to exist, they are said to *show daylight* between them.

Dead Calm. (See CALM.)

Dead Eye. A solid circular block without sheaves, but containing three holes through the flat, and a score or groove cut round it for a strap. It is found on the ends of chain plates and shrouds and stays set up with lanyards.

Dead Flat. The broadest part of the ship—the midship bend.

Dead Freight. When a merchant agrees to supply a full cargo but is unable to do so, the unfilled space should be measured, the freight it could earn be calculated, and a claim made upon the merchant for so much "dead freight."

Dead Lights. Round thick glass windows in the side of the vessel. These panes are generally framed in brass, and work upon hinges, so as to obtain air below when circumstances permit of them being opened. Also heavy wooden shutters to fit in to the stern ports when the glass sashes are taken out.

Dead Rise. The rise of a ship's floor from a level.

Dead Rope. A rope that does not reeve through any block or pass over any sheave.

Dead Water. The eddy of the wake under the vessel's counter.

Dead Wind. A head wind. *Wind dead ahead.*

Deaden the Way. To impede a vessel's progress through the water. Dragging a sail or athwart-rigged spar after a vessel. An old trick resorted to to deceive pirates and the enemy. The idea was to show a great press of sail as though the vessel was endeavoring to escape and thus to bring the chasing vessel within reach of the former's guns, all unsuspicious of her intentions.

Deck. The platform laid upon the deck beams.

The upper, main or spar deck extends the entire length of the vessel.

The quarter deck extends from the mainmast aft.

The poop deck covers the poop cabin, which extends from the mizzen-mast aft.

The boiler deck is the one on river and harbor steamers on which the boilers are placed.

The hurricane deck is a light upper deck, generally covered with painted canvas, and to be found only on steam vessels.

The saloon deck and the *hurricane deck* are the same.

The promenade deck is another name for the hurricane deck.

Deck Bull's Eye. Thick shapes of glass let into a hole cut in the deck for giving light below.

Deck Cargo. That portion of the vessel's cargo which is carried on the upper deck.

Deck Horse. (See HORSE.)

Deck Lights. Shapes of heavy glass let in the deck to give light to the various parts of the vessel below.

Deck Pipe. The hole in the deck through which the cable leads.

Deck Pump. A hand-pump used for washing down decks.

Deck Stopper. (See STOPPER.)

Deck Tackle. A heavy double purchase used about decks for heavy work.

Deep-sea Lead. The lead attached to the *deep-sea lead line* and weighing from forty to eighty pounds. It is *armed* in the same manner as the hand lead.

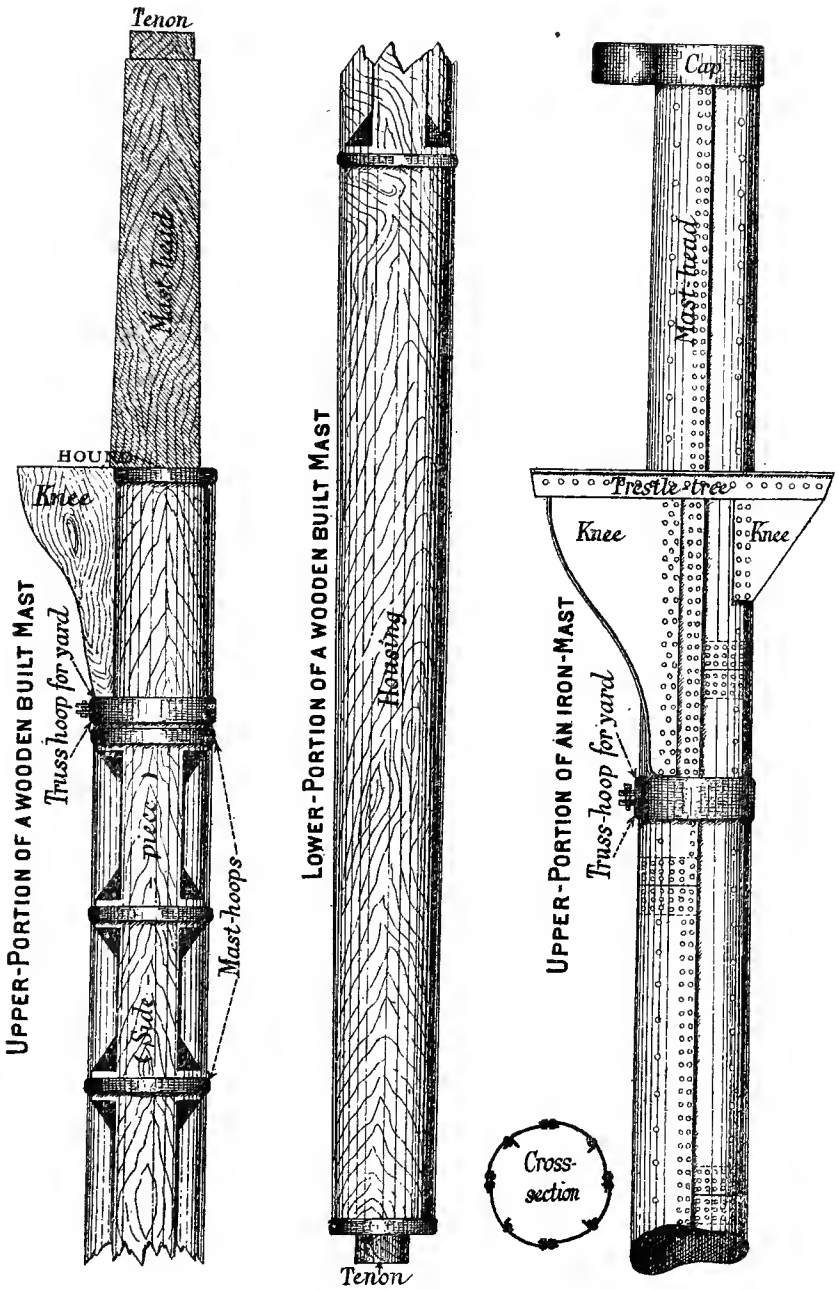
Deep-sea Lead Line. This line is 100 fathoms in length, and is marked as follows:

At 10 fathoms with a tucked strand having one knot.
" 20 " " " " " " two knots.
" 30 " " " " " " three knots.

And so on to 100 fathoms. Between these even ten-fathom marks a strip of leather may be used to represent 15 fathoms, 25 fathoms, 35 fathoms, etc.

Deep Water. Meaning the same as *blue water.*

MASTS


Tenon
Mast-head
HOUNS
Knee
Truss-hoop for yard
UPPER-PORTION OF A WOODEN BUILT MAST
piece
Side
Mast-hoops
LOWER-PORTION OF A WOODEN BUILT MAST
Housing
Tenon
Cap
Mast-head
Prestle-tree
Knee
Knee
UPPER-PORTION OF AN IRON-MAST
Truss-hoop for yard
Cross-section

Deep-water Sailor. A seaman of the long voyage.

Demurrage. When a vessel is detained in port in loading or unloading beyond a limit specified in her charter party she is allowed so much *demurrage money* per day—such detention, however, being the delay for which the charterer or his agent is responsible.

Derelict. A vessel abandoned at sea.

Derrick. A spar supported by guys, with a block at its upper end forming part of a tackle by which cargo is loaded and unloaded.

Despatch. In signing a charter party it is customary for a clause to be inserted to the effect that *the vessel is to be loaded or discharged with despatch*, the same being governed by the custom of the port where she may be. In some countries it also means the facility afforded at the custom houses in clearing a vessel with more than customary promptness, and for which an additional fee is sometimes charged.

Deviation. A voluntary departure without necessity from the regular and usual course of the specific voyage for which the vessel is insured. In such a case the responsibility of the underwriters terminates with the commencement of the act.

Devil's Claw. A strong iron hook used as a stopper for the cable.

Devil's Table-cloth. The white fleecy cloud which often settles over Table Mountain at the Cape of Good Hope; it is the forerunner of a gale from the southeast.

Diagonal-built. A manner of building boats in which the planking runs diagonally, the inside planks running in a contrary direction to the outside planks, their edges meeting.

Diamond Knot. An ornamental knot made with the strands of a rope and used on man-ropes, etc. Diamond knots are made both single and double. (See engraving.)

Dingey. The smallest boat carried by a vessel, and is used for all kinds of rough and dirty work.

Dipping Lug Sail. One which has to be shifted to leeward of the mast each time the vessel is tacked.

Dipping the Colors. The act of lowering the national ensign (which is flown at the stern) and hoisting it again as a salute, or in return for a salute received.

Dismantled. When a vessel is unrigged—stripped of her spars and upper masts.

Dismasted. The state of a vessel when her masts have been carried away—gone over the side.

Dispatch Boat. A fast steaming vessel used in the navy for carrying dispatches two and from the commanding officer of a vessel or fleet.

Distress Signals. Colors hoisted upside down; guns fired, and fireworks set off promiscuously are all signals of distress.

Ditty Bag. A small bag used for the same purpose as a *ditty box*.

Ditty Box. A small box with a hinge lid used by men-o'-war's men to keep sewing gear and such like in.

Dock. A place where ships are loaded and unloaded; the water space between two wharves. (See Dry Docks.)

Docking a Ship. The act of placing a vessel in a dry dock. Also used in connection with making a vessel fast to a wharf. (See Berthing a Ship.)

Doctor. The title given to the cook on merchant vessels.

Documenting. The *documenting* of vessels has reference to *Registers*, *Enrollments*, and *Licenses* which legalize the several trades, etc., in which they may be employed.

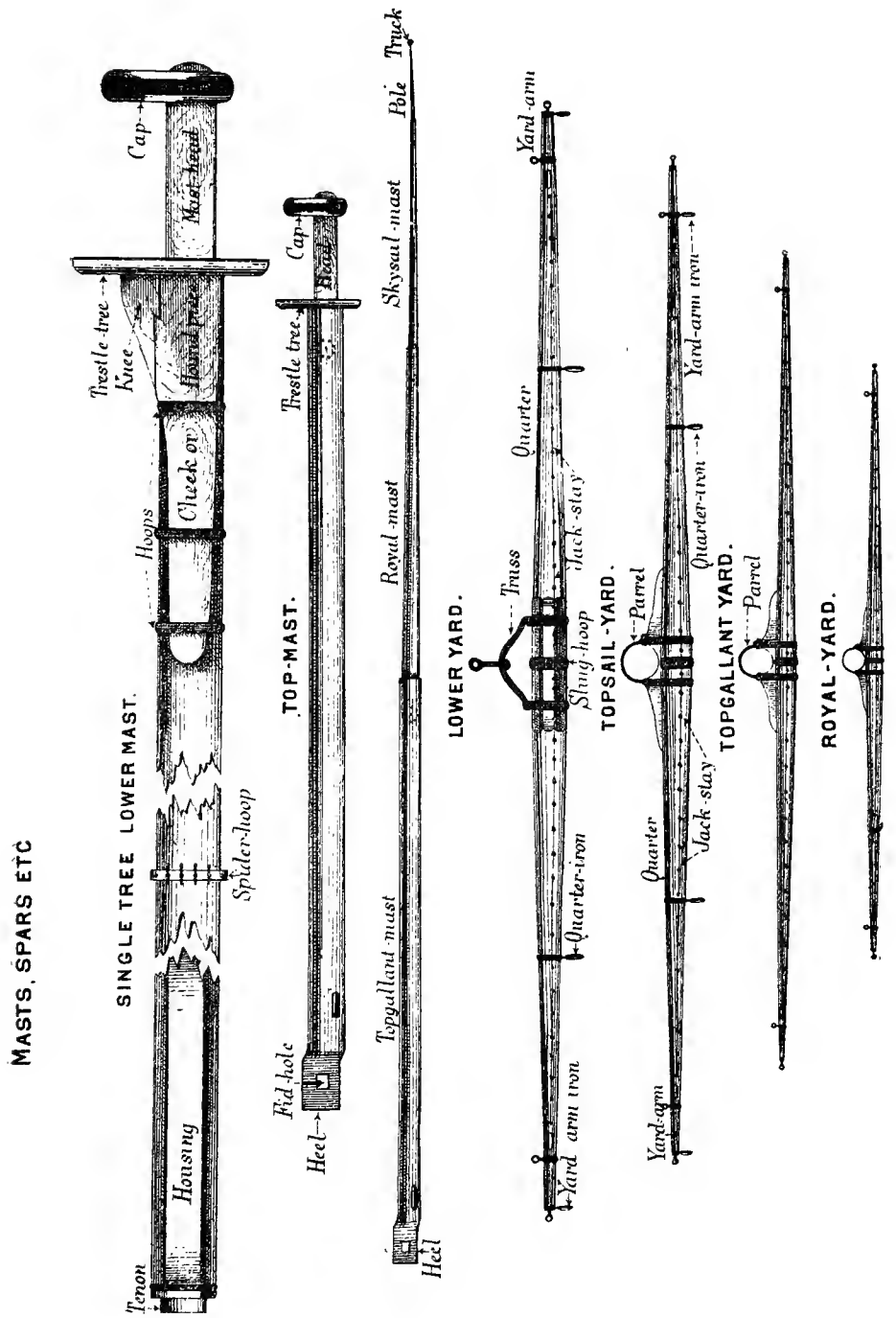
Dog. A short iron bar with a ring in one end and a sharp fang in the other; the latter being driven securely into a piece of timber, and the block of a tackle hooked to the ring of the dog so as to drag the timber along, etc.

Dog Shores. A piece of timber placed at the forward end of the launching ways to hold the ship until ready for launching.

Dog Vane. A kind of weather-cock generally made of bunting, for showing the direction of the wind.

Dog Watches. (See Watch.)

Dog's Ear. The small bight made in the leech-rope of a sail when it is reefed or made up.


MASTS, SPARS ETC
SINGLE TREE LOWER MAST.
Tenon
Housing
Spider-hoop
Hoops
Cheek or
Knee
Trestle-tree
Hound-piece
Mast-head
Cap
TOP-MAST.
Heel
Fid-hole
Trestle tree
Heel
Cap
Topgallant-mast
Royal-mast
Skysail-mast
Pole
Truck
LOWER YARD.
Yard arm iron
Quarter-iron
Truss
Sling-hoop
Quarter
Yard-arm
TOPSAIL-YARD.
Yard-arm
Jack-stay
Parrel
Quarter
Quarter-iron
Yard-arm iron
TOPGALLANT YARD.
Jack-stay
Parrel
Quarter-iron
Yard-arm iron
ROYAL-YARD.

Dolphin. A post on a wharf (not a spile head) to which hawsers are made fast; a spar driven in the sand on a beach for making a mooring line fast; a strap of plaited cordage around a mast to support the puddening; a fender secured permanently below the gunwale of a large boat; a wooden buoy acting as a mooring.

Dolphin Striker. The lower spear-shaped ending of the martingale. Sometimes the *dolphin striker* and *martingale* are spoken of collectively, when either one of the two above names are applied. (See MARTINGALE.)

Double Block. A block containing two sheaves.

Double Diamond Knot. An ornamental knot worked with the strands of a rope and used on man-ropes, etc. (See engraving.)

Double Topgallant Sails. (See TOPGALLANT SAIL.)

Double Topsails. (See TOPSAIL.)

Double Wall Knot. A knot put on the end of a rope. (See engraving.)

Doubling. To sail around or pass beyond a point of land.

Douse. To lower a sail; to put out a light; to cover with water.

Down Helm. An order to put the helm to leeward so as to bring the vessel up to the wind.

Down Killick. Meaning the same as *down anchor*. The expression *down killick* is made use of at times by the men manning the windlass brakes, who cry "*down killick*" as they bear the brake-handle down, and "*up killick*" as they bear it up.

Downhaul. A rope used for hauling down jibs, staysails and studding-sails.

Drabler. A piece of canvas laced to the bonnet of a sail in the same manner as the bonnet is laced to the sail itself. It is employed in order to obtain more *drop*.

Drag. A bag-net used for dragging the bottom for specimens or for lost articles. An instrument made of canvas and rings or spars, with a long hawser attached, led through the weather hawse pipe, to throw overboard in heavy weather to keep the vessel's head to the sea These contrivances are known by the names of *Cornucopia*, *Spar*, and *Kite Drags*, according to their shapes and manufacture.

Dragging the Anchor. To trail the anchor along the bottom by reason of the vessel having stern way on her. The failure of the anchor to hold the vessel.

Draught. The depth of water contained between the water's edge and the bottom of the keel, expressed in feet and inches, is called the *vessel's draught*.

Draw. When a sail is distended by the wind it is said to *draw*; a vessel *draws* so many feet of water; to move away is to *draw from*; to approach is to *draw upon*; to *draw away* or *let draw* is to allow the weather jib or staysail sheet to be slacked off after tacking ship, so that the sail may be sheeted down to leeward.

Drawing String. The rope which runs along the leach of foresails, mainsails, and jibs, being spliced into the head cringle, and leads down through the space in the tabling between the bolt rope and the sewing of the seam. It then leads out through an eyelet-hole in the clew. It is used to strengthen the leach and prevent that part of the sail from slapping when the leach is too slackly roped, or when the body of the sail is shrunken by dampness.

Dreadnaught. (See FEARNAUGHT.)

Dredge. A machine belonging to a mud-digger for scooping up in a great hod or tank the bottom of rivers, harbors, etc., for the purpose of deepening the channel.

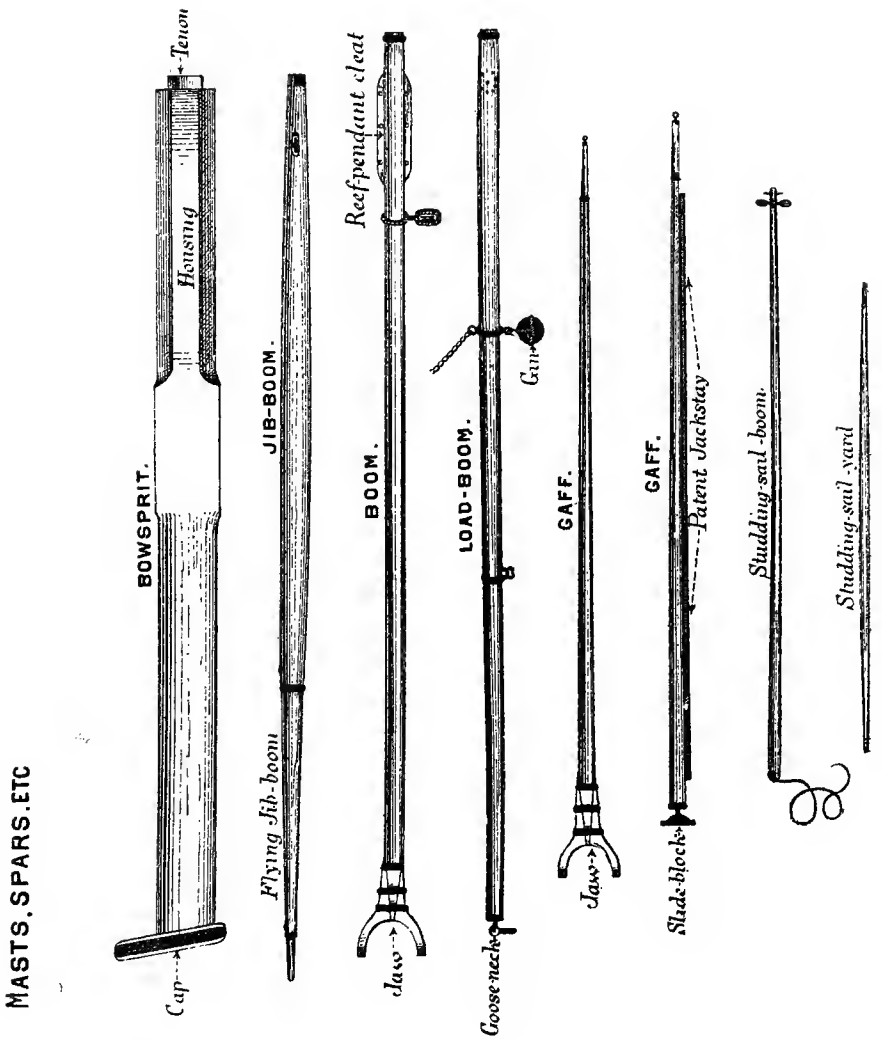
Dressing Ship. Displaying flags at the mastheads; also making a span of them from jib-boom end, over the mastheads and down to the outboard end of the spanker-boom (this latter is called *rainbow dressing*). Otherwise having a string of flags from the mastheads down to the deck.

Drift. The length of rope over and above that which is utilized. Also the set of a tide or current, and a vessel's leeway.

Drift-lead. A hand-lead dropped over the side when at anchor to ascertain if the vessel is dragging by observing the trend of the line.

Drive. To hit home a bolt, etc.; a ship *drives* when scudding before a gale, or *drives to leeward* when under no control of the rudder or her sails.

Driver. A term sometimes applied to the spanker. The name is derived from the


MASTS, SPARS, ETC
BOWSPRIT.
Tenon
Housing
Cap
JIB-BOOM.
Flying Jib-boom
BOOM.
Reefpendant cleat
Jaw
LOAD-BOOM.
Gun
Goose-neck
GAFF.
Jaw
GAFF.
Patent Jackstay
Slide-block
Studding-sail-boom.
Studding-sail-yard

large square sail which in olden days was set on a yard on the end of the spanker-boom.

Drop. The depth of a square-sail amidships from head to foot; applies to courses which do not *hoist*, but are *dropped*.

Drop Anchor. To let go the anchor. To anchor the vessel.

Drop Astern. The retrograde motion of a vessel; when a vessel goes backwards through the water. (See FALL ASTERN.)

Drop Down. (See FALL DOWN.)

Drubbing. Working with an adze.

Drum Head. The same as Capstan Head; the top of the capstan where the bars are shipped.

Dry Dock. An artificial basin into which ships are floated, then the entrance to the basin closed by a gate and the water pumped out, leaving the vessel resting dry, her keel on keel-blocks, and her sides supported by bilge-shores. Also a huge platform which is sunk so as to allow a vessel to be floated over it, then the dock raised by different appliances, lifting the vessel entirely out of water, and supported as explained above. Dry docks are described under the following heads:

A Graving Dock, strictly speaking may be either a basin or platform, but the name is employed principally in connection with *basin* or *stationary* docks. The word "graving" means the cleaning of a vessel's bottom, and this may be done as well on a floating as on a basin dock.

A Sectional Dock is a platform on which a vessel is raised out of water by a series of air-tight boxes.

A Floating Dock is another name for a sectional dock.

A Balance Dock is a platform so-called owing to the means provided for retaining it perfectly level by pumping water into or out of the side chambers as required.

A Box Dock is the name sometimes given to a basin dock.

A Basin Dock is the name at times applied to a stationary dock.

A Stationary Dock is a basin dock.

A Portable Dock is a floating dock.

A Screw Dock is constructed specially for small vessels, being a platform which is is raised and lowered by means of large iron screws connecting the platform and the stationary frame above it.

An Hydraulic Dock is a platform which is lifted clear of the water by means of chains passing over pulleys in the side frames of the dock and connecting with a hydraulic engine. (See GRIDIRON; WET DOCK.)

Dry Rot. A disease to which timber is subject, causing rapid decay.

Dubb. To smooth or round a timber with an adze.

Duck. A term often applied to the cotton material of which a vessel's sails are made, but in reality *duck* is a finer weaving than cotton canvas, and is made up in garments for use in hot climates.

Dudeen. A sailor's name for a favorite tobacco pipe.

Duff. A sea-pudding made from a paste of flour and water and boiled.

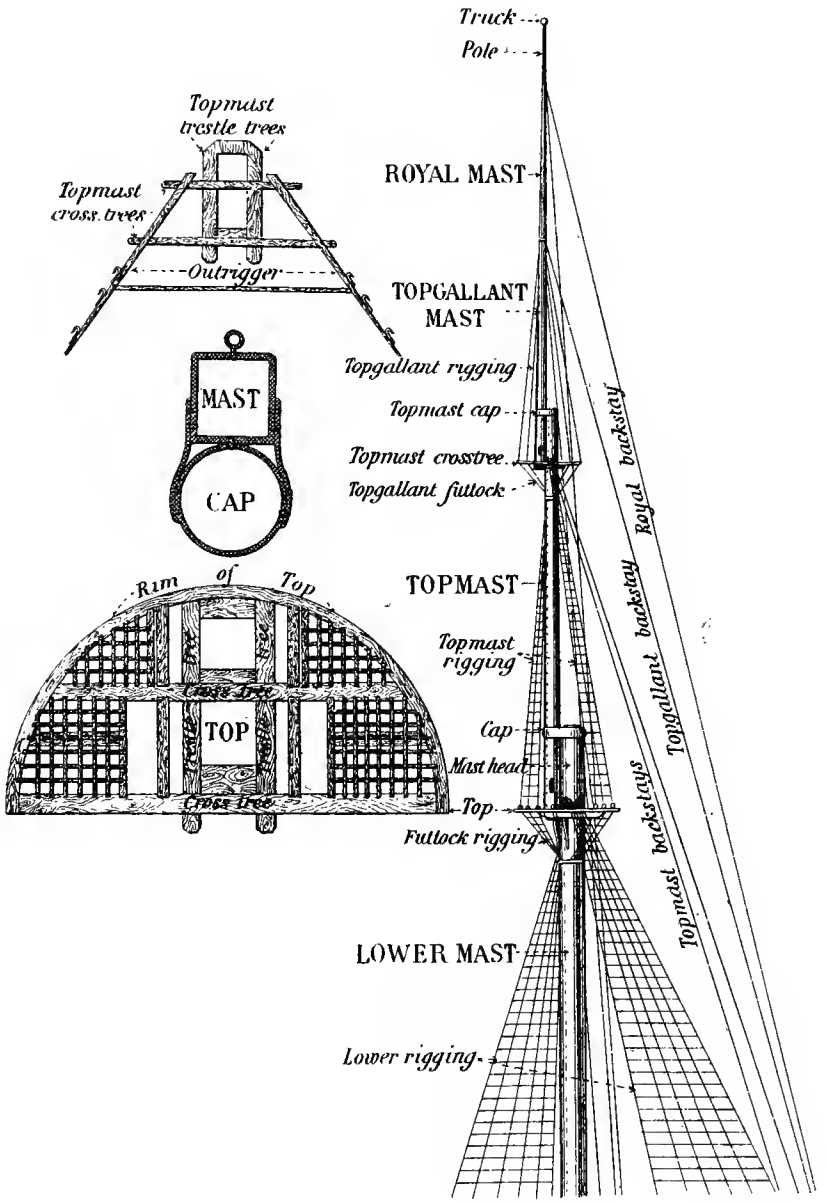
Plum Duff is the above with the addition of raisins.

Railroad Duff refers to a duff in which the raisins are so few and far between that sailors say they find one only at each station.

Dunnage. Loose wood and other material placed on the flooring for the cargo to rest on; also pieces of wood, mats, etc., jammed between barrels and other cargo to prevent motion.

Dutch Galliot. A Holland-built merchant vessel having a flat floor and rounded or pudding-shaped ribs, and carrying the mizzen-mast stepped way aft.

MASTS AND EQUIPMENT



E.

Earing. A rope which secures the cringle of a sail in bending and reefing. (See REEF EARING.)

Ease Her. An order to the wheelsman when the ship is close hauled signifying that the wheel is to be put up a little to let the vessel go off.

Ease Off. To slacken; to come up with.

Ease the Ship. (See EASE HER.) To throw the guns overboard.

Easy There. An order not to pull or haul strongly.

Eating to Windward. Making progress against the wind when close hauled.

Edge Away. To gradually decline from the course, or from the shore.

Edge in with. A gradual approach towards the shore, or a vessel, or other object.

Eiking or Ekeing. To make good a deficiency in the length of a timber.

Elbow. When two crosses exist in a hawse, owing to the bad trending of a vessel.

Elliott Eye. An eye in the end of a hawser containing a thimble.

Elliptic Stern. A stern shaped in a manner to resemble the section of a cone; an oval-shaped stern.

End for End. Moving anything so that it will assume a reverse position.

End on. To advance head on against anything, such as a vessel, or the shore, or other object.

Engine-room Bells. The bell signals rung by the deck officers to the engineer in the engine-room to direct the movements of the engines.

Engine-room Telegraph. A circular instrument placed on the bridge and elsewhere about the decks of steamships, and worked by a short lever connecting with the engine-room, and by the manipulation of which lever the deck officer transmits signals to the engineer. The upper half-circle of the instrument has printed on it the words *half speed ahead, stop, full speed astern*, etc., and by moving the lever to one of these the corresponding word or words is pointed to by an indicator on the engine-room dial.

Engineer Signals. (See ENGINE-ROOM BELLS.)

Engineers. Engineers on board merchant ships are classed as *Chief, First, Second*, and *Third Assistant.*

Enlarge. The wind is said to *enlarge* when it draws more aft.

Enrollment. A marine document issued to a vessel of the United States by the customs officials. Vessels of twenty tons and upward engaged in domestic trade, in the fisheries, or in foreign trade on the inland northern frontiers of the United States, must (*if they are not under register*) be *enrolled. But an enrolled vessel cannot engage in foreign trade by sea.* The *enrollment* identifies the vessel in the following particulars: nationality, official number, ownership, vessel's name, home port, name of master, year of building, place of building, name of the measurer, number of decks, number of masts, rig of vessel, dimensions, and tonnage. The *enrollment* continues in force indefinitely, unless the rig of the vessel, or the tonnage of same, or the ownership changes, in which case a new *enrollment* must be obtained. Yachts may be *enrolled*, although it is not compulsory.

Ensign. The national flag.

Ensign Halliards. The halliards by which the ensign is hoisted, whether the latter is shown at the stern or at the peak.

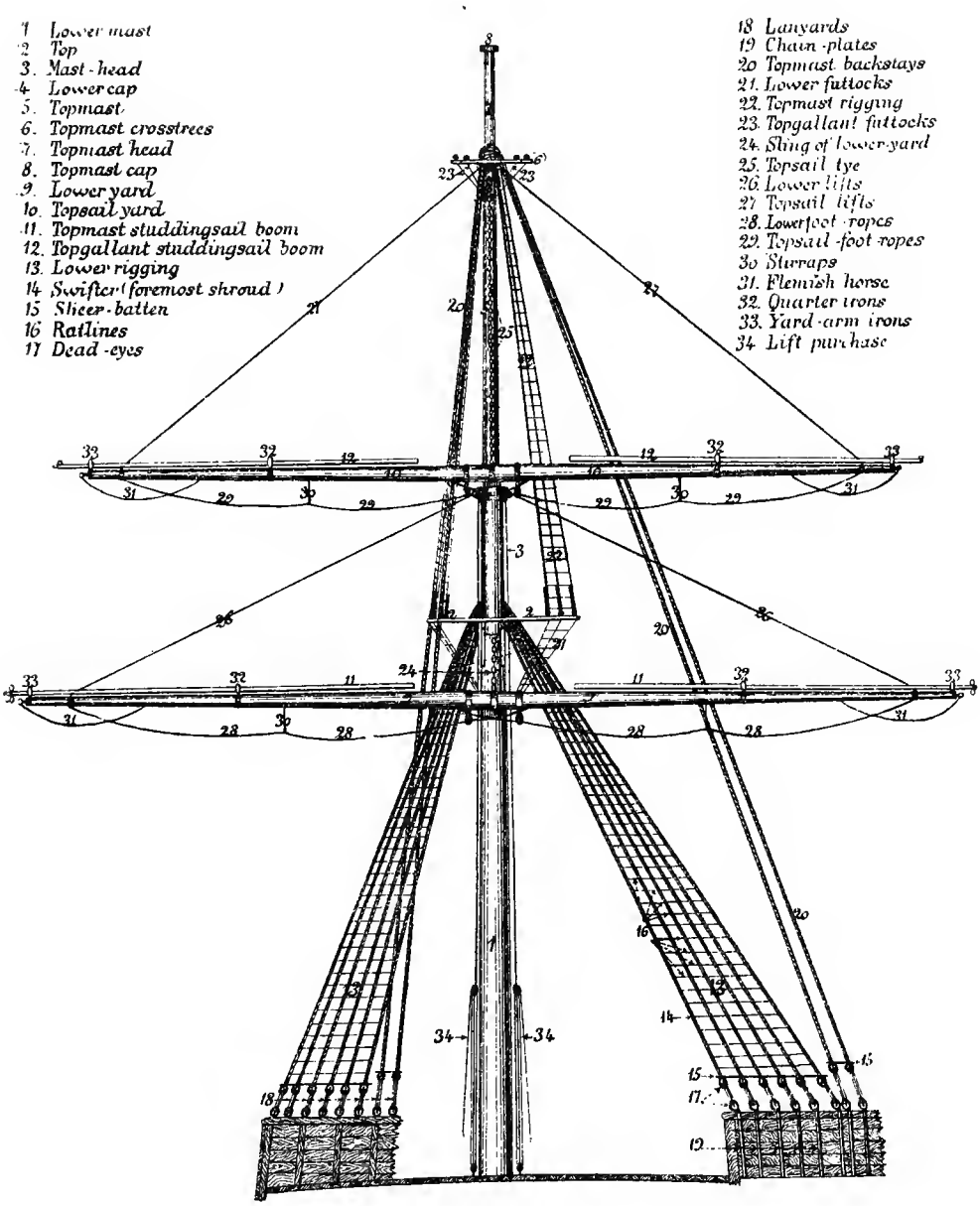
Entering. To enter a vessel the master must report himself upon arrival to the customs officials, and furnish them with a manifest setting forth all the details of his vessel's cargo, and to this paper the master must take oath, and the vessel shall not be considered as being regularly entered until the manifest has been accepted by the collector.

Entrance. The lower part of a vessel's bow about the water line.

Escutcheon. The place on the stern of a vessel where the name is either painted or raised.

Establishment of the Port. (See TIDE ESTABLISHMENT OF THE PORT.)

MASTS, YARDS, STANDING-RIGGING, ETC.



Euphroe. A length of wood having a number of parallel holes bored in it, and used to spread the legs of the awning crow-foot.

Even Keel. When a vessel has no list, and is resting on the water so that the same proportion of the water line forward and aft is either submerged or elevated, she is said to *float on an even keel.*

Evurol. (See EUPHROE.)

Extension of Protest. (See PROTEST.)

Eye-bolt. A bolt having an eye in one end driven through a vessel's side or deck until the shoulder around the eye is flush with the wood; it is used for hooking anything to, such, for instance, as a preventer stay, the standing part of a head sheet, etc. When there is a ring through the eye it becomes a ring-bolt.

Eye-seizing. A seizing which is put on the strop of a block to form the eye and to jam the strop in the score of the block.

Eye-splice. A loop formed in the end of a rope by short-splicing its own end. (See engraving.)

Eyelet-holes. Small holes worked in a sail, and through which the reef points are thrust for half their length, then sewed to the *eyelet-hole;* also the holes for the robands to go through in bending the sail.

Eyes. The loop in a shroud or stay that goes over the mast-head; the hole in the top part of the anchor shank that the ring goes through; *the eyes of a ship* are the hawse-holes; *up in the eyes* refers to the extreme forward part of the vessel either above or below decks.

F.

Fag. To become untwisted; bunting is *fagged* when it becomes ragged.

Fair Leader. A short length of wood with holes bored in it, or a block or thimble so placed as to give running rigging a fair lead, or to change its direction a little, such, for instance, as to make it parallel to the shrouds by gathering it into them through the fair leader.

Fairway. The middle of a channel in a harbor or river.

Fair Wind. A wind which enables a vessel to lay her course.

Fake. A circle of rope in a coil; one of the circles of the lead-line held in the hand in sounding.

Fall. The rope of a tackle.

Fall Aboard. To strike or encounter another ship or object

Fall Astern. The situation of a vessel when she is out-distanced by another. (See DROP ASTERN.)

Fall Down. To sail or to be towed down a river nearer to its mouth.

Falling Glass. Said of a barometer when the mercury descends in the tube.

Falling Home. A vessel's topsides are said to be *falling home* when they incline inboards from the perpendicular. Also said to be *tumbling home* or *tumbling in.* (See FLARING.)

Falling Off. Said of a vessel when her head goes off from the wind.

False Keel. A timber bolted underneath the main keel of vessels in order to deepen the outside keel.

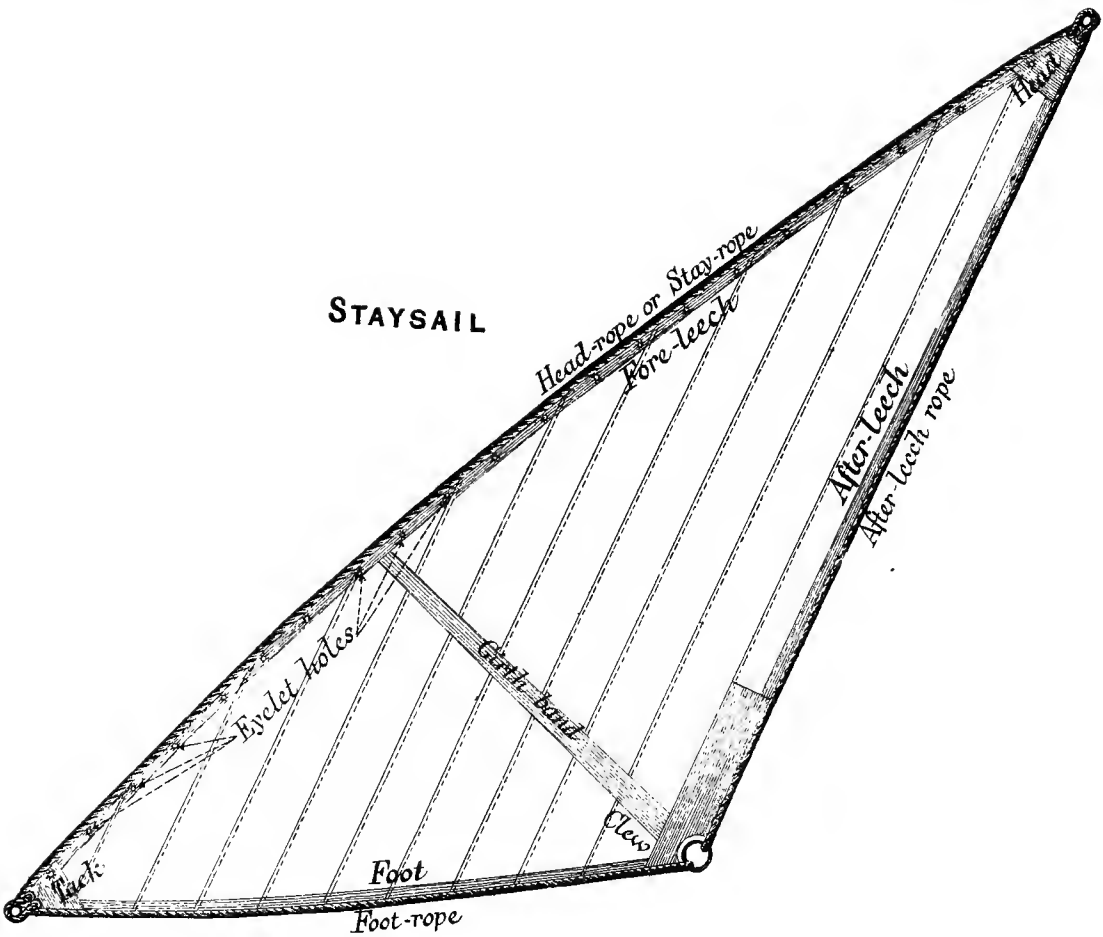
Fancy Line. A line for overhauling a lee topping lift; a line rove through a block seized on to the jaws of a gaff, and used as a downhaul for the spar.

Fast. Secure. The rope used in securing a vessel to a wharf or to another vessel. There are *bow, head, breast, quarter,* and *stern fasts.*

Fathom. Six feet.

Fay. To fit two pieces of wood close and fair together.

Fearnaught. A thick woolen cloth coat. Sometimes called *Dreadnaught.*


STAYSAIL
Head-rope or Stay-rope
Fore-leech
Head
After-leech
After-leech rope
Eyelet holes
Girth band
Clew
Tack
Foot
Foot-rope

Feather. An oar is *feathered* in rowing by turning the blade horizontal after it leaves the water.

Feather-edged. Planks having one of their sides thinner than the other.

Feel the Helm. A ship is said to *feel her helm* when she is sensitive to the rudder

Feeling her Way. Sounding with a hand lead as the vessel proceeds.

Felucca. A vessel having lateen sails, and housed over only in part. It is of Arabic origin.

Fend. To keep off; to bear off from; to prevent touching.

Fender Bar. A long *fore-and-aft fender* hung over a ship's side just above the water line midships to prevent chafing against a dock.

Fender Piles. Piles driven into the bottom, their upper part extending a number of feet above the water, and forming the corners and ends of wharfs, ferry-slips, etc.

Fenders. Shapes of wood, canvas or rope hung over a vessel's side to protect her from chafing against another vessel or dock. *Boat fenders* are small round shapes of canvas stuffed.

Fetch. Meaning that a vessel will succeed in getting to a certain point without another tack when she is being beat to windward.

Fetch Away. To carry away; to break; to part.

Fid. A block of wood or iron to support a topmast or topgallant mast by placing it through the *fid hole* in the heel of the mast and allowing it to rest on the trestle-trees. A conical-pointed piece of hard wood used as a marlinspike for splicing large ropes, opening the eyes of rigging, etc.

Fiddle Block. An elongated sheel containing two sheaves, the largest one on top. (See engraving.)

Fiddle Head. (See HEAD.)

Fiddle Rack. A framework fastened to the table to prevent dishes from sliding off when in a seaway.

Fife Rail. The pin rail surrounding a mast.

Figure Eight Knot. A knot made in the shape of figure 8. (See engraving.)

Figure-head. A carved figure carried under the bowsprit by being bolted to the stem. (See HEAD.)

Fillibuster. Of the freebooter class.

Fill. The sails are said to *fill* when the wind blows into them so as to force the vessel ahead,

Fill Aback. When the wind blows on the forward surface of the sails so as to prevent the vessel's progress through the water.

Fill Away. To brace the yards so as to receive the wind into the sails after the vessel has been braced aback.

Filler. A piece of wood inserted in a made mast to make good a deficiency. A composition used on spars as a priming coat before they are varnished.

Fine. A vessel has a *fine entrance* when she is sharp forward.

Fire Bill. (See FIRE QUARTERS.)

Fire Quarters. Stationing the crew in various parts of the vessel, and alloting to each man a certain task to be performed in the event of fire on board ship. When this is shown in writing and exhibited for the benefit of the crew it is called a *Fire Bill.*

Fish. To lift the flukes of the anchor on the rail so that the shank is horizontal; to strengthen or reunite a spar by bolting pieces of plank over the break, then heaving a strong lashing of rope around the spar over the fish pieces.

Fish Davit. The davit employed in fishing the anchor.

Fish Front. The name of a strengthening slab on the front of a made mast.

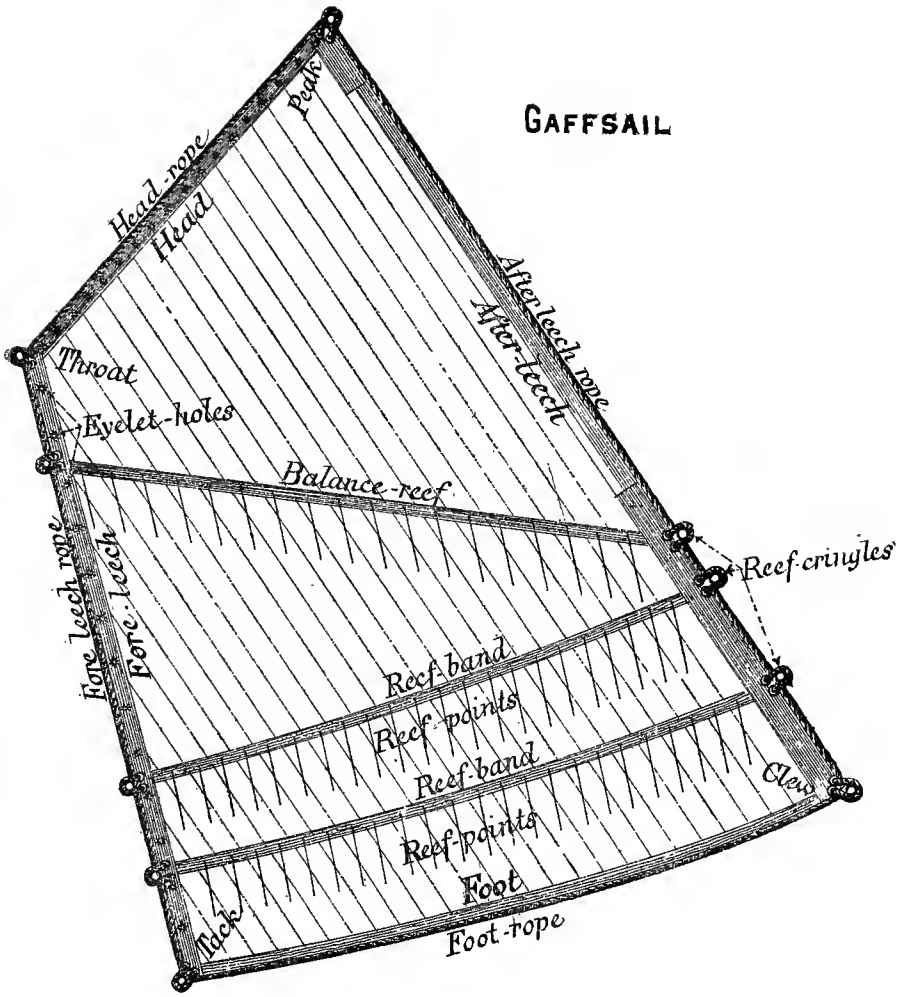
Fish Hook. The large iron hook used to catch the arm of the anchor, and by which the fluke is raised to the bill board on the rail.

Fish Pendant. The rope to which the fish hook is secured.

Fish Tackle. The ropes, blocks, hook, etc., used in fishing an anchor.

Fishermen's Bend. Sometimes used for bending on the gaff topsail halliards, or the topmast stunsail (studding-sail) halliards. (See engraving.)

Fist. To seize; to lay hold upon.


GAFFSAIL
Peak
Head-rope
Head
After-leech rope
After-leech
Throat
Eyelet-holes
Balance-reef
Reef-cringles
Fore-leech rope
Fore-leech
Reef-band
Reef-points
Reef-band
Reef-points
Clew
Foot
Tack
Foot-rope

Flare Up. A distinguishing light carried by a pilot vessel, or exhibited by a vessel being overtaken by another.

Flaring. Opposed to *falling home.* A vessel is said to have a *flaring bow* when the topside inclines outside from the perpendicular. A *flaring bow* keeps the anchor well clear of the vessel's side when it is hanging at the cat-head, and also makes the vessel very dry forward by preventing the seas from breaking over the bow.

Flash Light. A signal made for a pilot by flashing a white light above the bulwarks at short intervals. An alternate vanishing and appearing light in a lighthouse.

Flat. To haul a sheet *flat* is to haul it down or in as close as possible.

Flat Aback. Said of a square sail when the wind is blowing on its forward side so as to press the after-surface against the mast.

Flat Calm. Not a breath of air stirring.

Flat Knot. Known also as a *reef knot* and a *square knot.* It is used in tying reef points, etc. (See engraving.)

Flat Seizing. A seizing put on anything without overlaying or riding turns.

Flatten Down. Same as *flatten in.*

Flatten In. To haul in the head-sheets so that the head-sails will lie closer to the wind.

Flaw. A sudden gust of wind.

Fleet. To shift anything from one place to another; to separate the blocks of a tackle.

Fleet-ho! The order given to shift.

Flemish Coil. To coil a rope down with each succeeding fake outside of and half-way covering the fake beneath it. This is also known as a *French Fake.*

Flemish Eye. A kind of eye splice. (See engraving.)

Flemish Fake. A number of turns of rope being concentric, or having a common centre, and lying flat on the deck instead of riding over each other.

Flemish Horse. The small extra foot ropes at the ends of topsail yards.

Flight. Where an abrupt rise exists in the lines of a vessel it is said to *take flight.*

Floating Anchor. A name for a *drag* or *sea anchor.*

Floating Breakwater. A line of connecting cribs anchored across a harbor's mouth for breaking the force of the seas and preventing them from rolling into the harbor with natural force.

Floating Dock. (See Dry Dock.)

Flood Cock. A kind of faucet which is connected to a pipe leading from the vessel's outer side inboard, and is used to flood powder magazines in the event of fire, etc. A cock for filling bath tubs, etc., is called a *sea cock.*

Flood Tide. A rising tide. When it ceases rising it is *high tide.*

Floor. The platform of a vessel over or on each side of the keelson.

Floor Timbers. The timbers on which the flooring of a vessel rests.

Flotsam. Wreckage floating on the sea; goods found drifting about on the surface of the water.

Flower of the Winds. The name once given to chart compasses. The diagram compasses printed on old charts were elaborated by a rose in their centre. This gave rise to the term *compass roses* as applied to chart diagram compasses.

Flowing Sheets. When a ship has the wind between the beam and the quarter, so that she goes two or three points large, she is said to have *flowing sheets.*

Fluid Compass. A name by which a *liquid compass* is sometimes called. (See Part III.)

Flukes. The triangular shape of iron welded on to the end of the anchor-arm.

Flunky. The title given to the cabin waiters on a merchant passenger vessel.

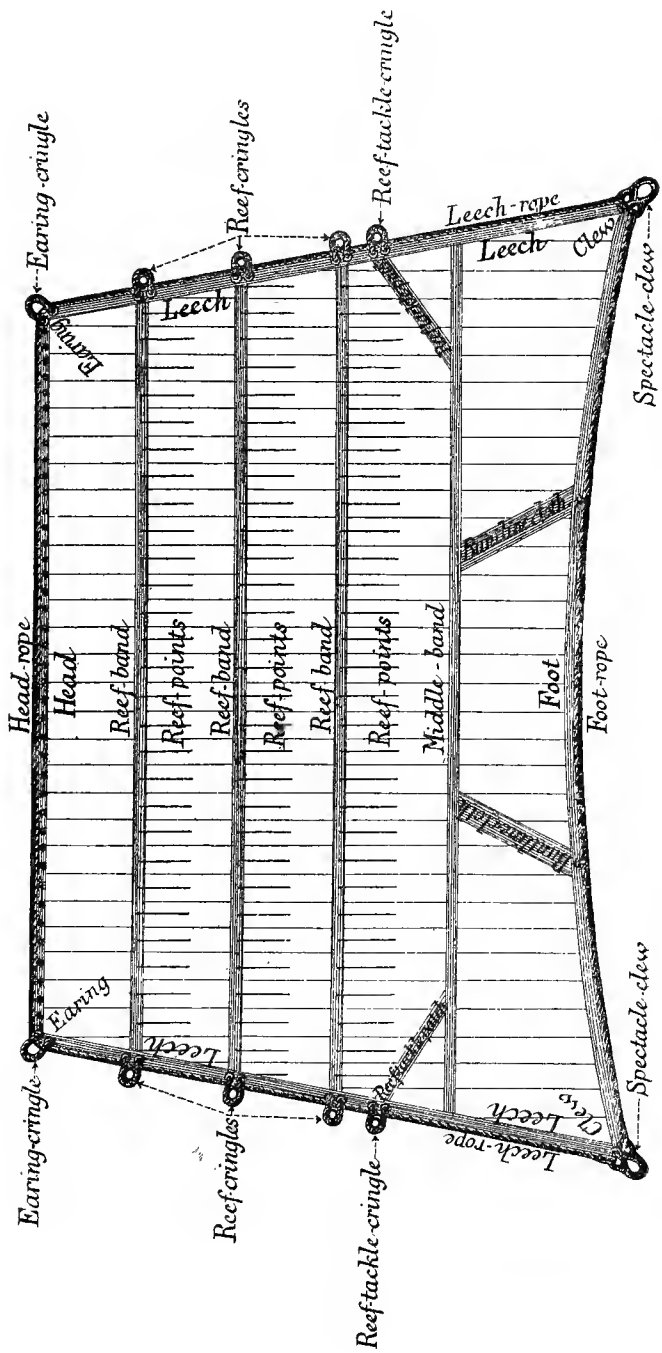
Flush Deck. A deck unbroken by deck houses, poop topgallant forecastle, etc., but presenting an even surface fore-and-aft.

Flux. The rising tide.

Fly. The part of a flag extending from the union to the extreme end. A name also applied to the compass card. (See Union.)

Flying Dutchman. A name applied to the traditional spectre-ship which has been

TOPSAIL


Earing-cringle
Reef-cringles
Reef-tackle-cringle
Leech-rope
Leech
Clew
Spectacle-clew
Earing
Leech
Head-rope
Head
Reef-band
Reef-points
Reef-band
Reef-points
Reef-band
Reef-points
Middle-band
Foot
Foot-rope
Earing
Leech
Earing-cringle
Reef-cringles
Reef-tackle-cringle
Leech-rope
Clew
Leech
Spectacle-clew

met with, according to the claims of many seamen, to the eastward of the Cape of Good Hope. The legend runs that in the year A. D. 1652 one Cornelius Vanderdecken, a Holland shipmaster, sailed from Amsterdam for Batavia in command of a Holland ship called the *Brauve*. The vessel reached Batavia, discharged her cargo, loaded, and sailed for Amsterdam; but, after meeting with a succession of westerly gales which prevented the vessel not only from getting around the Cape of Good Hope, but drove her away to the eastward, Captain Vanderdecken, while in a passion over the delay, defied heaven, and, shaking his clenched fist at the skies, swore that he would double the Cape in spite of God Himself. From that day the phantom ship has been struggling to weather the Cape of Good Hope, but the mark of blasphemy against the Most High is on the vessel, and she is doomed, with her Dutch skipper and crew, to sail hopelessly on forever, sometimes reaching, but never passing, the meridian which calls for them a halt, before they are again driven back into the solitude of the Southern Ocean. Under that great span in the heavens, reaching from pole to pole, they can never sail, for the Almighty has hung upon it in letters of righteous wrath: "*Thus far shalt thou go and no further.*" Seamen believe that to sight this vessel will bring them gales, shipwreck, and death. It is to be remarked that although at one time it was occasionally seen, the *Flying Dutchman* has not been reported now in some years.

Flying Jib. One of the head-sails which sets outside the jib on the jib-boom. (See JIB.)

Flying Jib-boom. The light spar that rests on the jib-boom, and is rigged out ahead of the latter. (See JIB-BOOM.)

Flying Jib-boom Guys. (See JIB-BOOM GUYS.)

Flying Jib Netting. (See JIB NETTING.)

Flying Jib Stay. A stay forward the foremast on which the flying jib is set.

Flying Kites. Skysails, moonsails, and sky-scrapers, the two latter being obsolete.

Flying Light. Said of a vessel when she is crank for want of ballast or cargo.

Flying Sails. (See SET FLYING.)

Flying Start. This is the start now generally adopted by all yacht clubs in this country, and means that upon the firing of the preparatory gun the yachts are supposed to be under way and ready to manœuvre for position, and ready to cross the line upon the firing of the second or starting gun.

Fog. A moist vapor of greater or less density floating near the surface of the land or water; a fine mist.

Fog Bank. A heavy fog cloud lying on the horizon.

Fog Bell. A bell on a light-ship, shoal, etc., rung in foggy weather to warn vessels.

Fog Buoys. Buoys placed on shoals, having an automatic whistle attached, which gives forth a warning noise, the vertical rise and fall communicated from the motion of the waves generating the necessary power to supply the bellows of the whistle.

Fog Eater. A term applied to the risen moon on account of its influence as a dissipator of fog, especially when at its full.

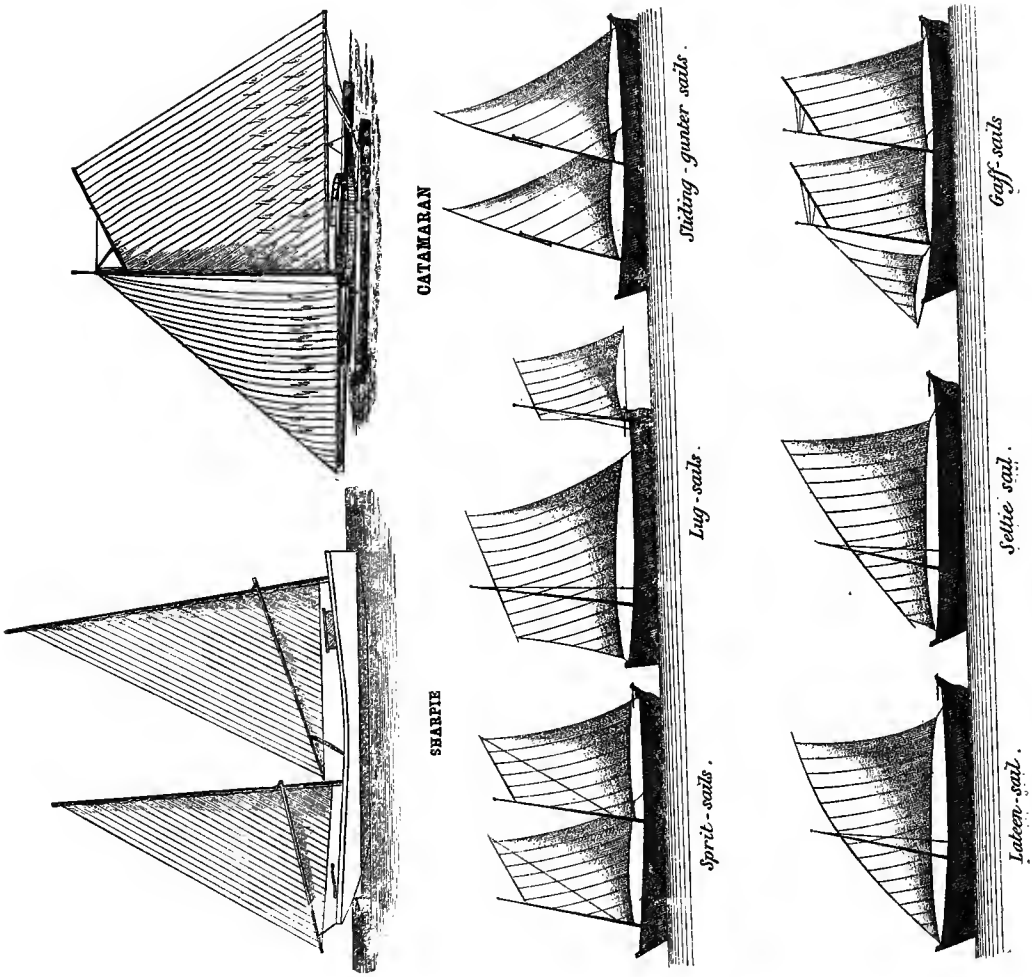
Fog Horn. An instrument blown by steam, by caloric engine or by bellows, from a light-house, etc., during foggy weather to warn mariners. A small fog horn blown by mouth is used on sailing vessels to warn approaching ships.

Fog Signals. When under way at sea a steamship blows a prolonged blast on the steam whistle every two minutes; a sailing vessel on the starboard tack blows one blast on the fog horn every two minutes, but if on the port tack two blasts, and if the wind is abaft the beam three blasts. All vessels at anchor ring the bell every minute. All vessels navigating bays, rivers and harbors during a fog are obliged to sound their respective signals incessantly. A steamer may signify to another the way she is putting her helm by the following: one blast to mean, I am putting my helm to port; two blasts, I am putting my helm to starboard.

Fog Siren. (See SIREN.)

Fog Whistle. A steamer's whistle blown as a warning during fogs.

Following Sea. A sea setting after the vessel; a sea running toward the same point of the compass that the vessel is heading.


CATAMARAN
SHARPIE
Sliding-gunter sails.
Lug-sails.
Sprit-sails.
Gaff-sails
Settie sail.
Lateen-sail.

Following Wind. A wind blowing towards the same point of the compass that the vessel is heading.

Foot. The lower edge of a sail; that part of a mast near the deck. (See FORE FOOT.)

Foot Board. A small portable thwartship piece of wood fitting into notches on top of the flooring in a boat, and against which the rower braces his feet.

Foot Ropes. Lengths of rope made fast to and hanging under a yard, or along the bowsprit, end of the spanker-boom, and jib-boom, for men to stand on while bending, unbending, reefing, and furling sail. These ropes were formerly known as *horses.* The bights are supported or held up by stirrups hanging from the spars.

Footing. When a green hand first goes aloft at sea he is followed up the rigging and lashed to the shrouds unless he pays a forfeit, and this is known as *paying his footing.*

Force Over. To drag a ship over a shoal by ramming it under a big spread of canvas or a full head of steam.

Fore. The forward part of a vessel; anything in the direction of the head of the ship.

Fore-and-aft. In the line of the keel; opposed to athwart ship; a schooner is called a *fore-and-aft vessel.*

Fore-and-aft Sails. Sails which set upon gaffs and booms and stays.

Fore Cabin. A cabin in the forepart of the vessel, or a cabin just forward of the main cabin.

Fore Chains. (See CHAINS.)

Fore Deck. The forward part of the main deck.

Fore Foot. The forward extremity of the keel, upon which the stem of the vessel rests.

Fore Ganger. The roping grafted on the handle of a harpoon and having an eye in its after-end for the harpoon line to be bent into.

Fore Hatch. On sailing vessels generally the first hatch abaft the foremast, and on steamships the hatch forward of the foremast.

Fore Hold. The forward part of the hold.

Fore Hook. Also known as a *breast hook;* a timber that goes across the stem, and which unites the parts of the bow and strengthens the forepart of the vessel.

Fore Leach. The *luff* of a fore-and-aft sail is often termed the *fore leach.*

Fore Lock. A piece of iron slipped thwartships through a hole in the end of a bolt to prevent the latter from drawing.

Fore Peak. That part of the vessel below decks which is close to the stem.

Fore Rake. The overhang of the vessel bows forward of the forefoot.

Fore Reach. A vessel is said to *fore reach* when, after being thrown into the wind, either in tacking or when coming to anchor, she shoots ahead.

Fore Rigging. The shrouds and their ratlines of the fore lower mast.

Fore Runner. The piece of bunting tucked in the strands of a log line (generally ten fathoms from the log chip) to mark the limit of drift line, and from which the knots on the line are marked.

Fore Sail. The sail that on a square-rigger is bent to the fore yard; but the sail that on a fore-and-after is spread by the fore gaff and boom.

Fore Sheet Horse. (See HORSE.)

Fore Sheet Traveler. (See TRAVELER.)

Fore Shoulders. (See SHOULDER.)

Fore Shrouds. The shrouds of the fore lower mast.

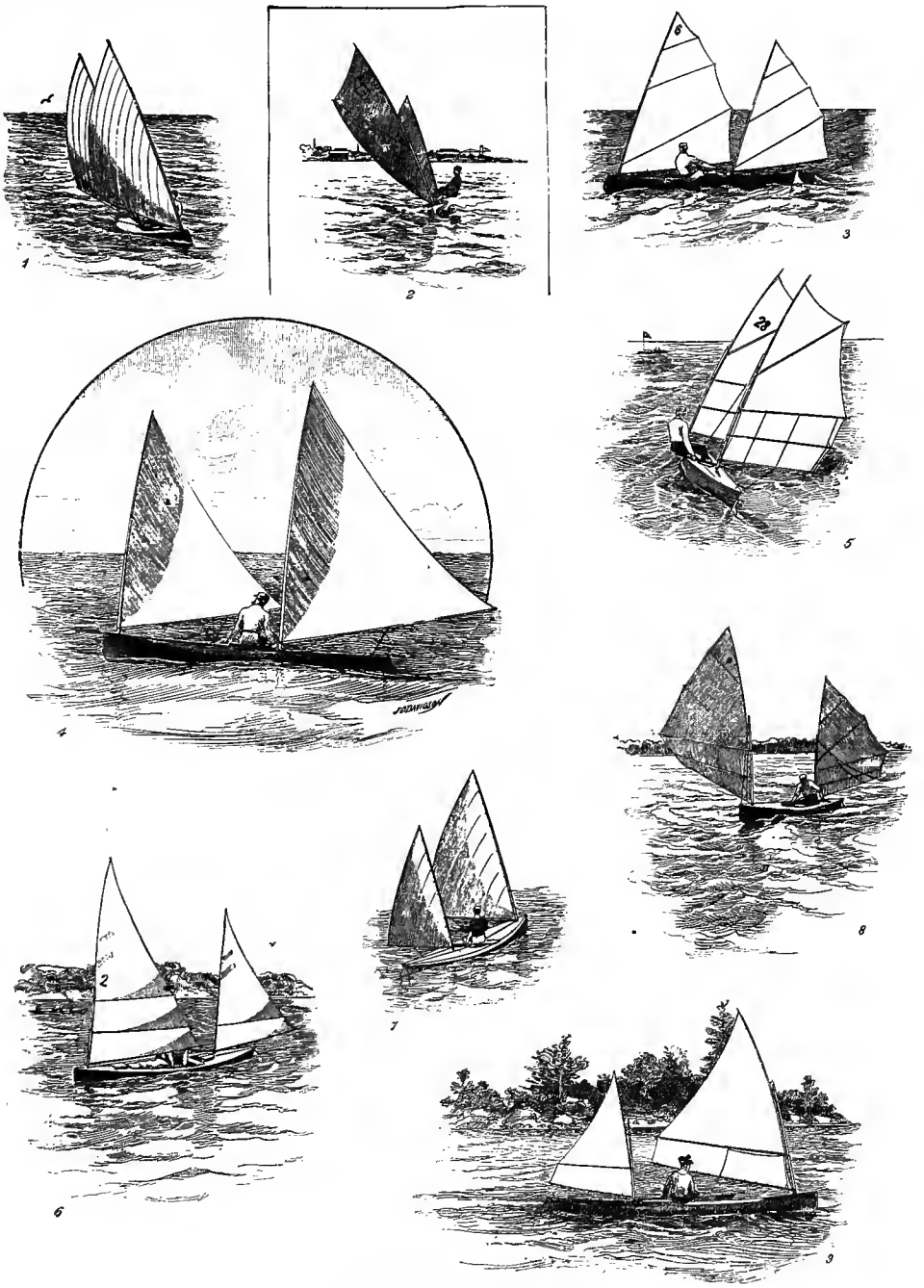
Fore Stay. The hemp or wire rope leading from the foremast head to the stem, where it sets up. The foremast is stayed (supported) forward by it, and on this stay the fore staysail is set. (See STAYS.)

Fore Staysail. The first head sail forward of the foremast, setting on the fore stay. (See STAYSAIL.)

Fore Topmast Staysail. A head sail that sets upon the foretopmast stay.

Fore Yard. The lowest yard across the foremast on a brig, brigantine, bark, barkentine and ship.

MODERN RACING CANOES.



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1. *Mutton Sails.*
2. *Standing Sails.*
3. *Standing Sails.*
4. *Mutton Standing Sails.*
5. *Batten Reefing Sails.*
6. *Hoisting Sail.*
7. *Mutton Standing Sails.*
8. *Vesper Sails.*
9. *Single Reef Hoisting Sails.*

Forecastle. The compartment in the forward part of a vessel, on or under the upper deck, in which the seamen sleep and eat on merchant vessels.

Forecastle Deck. That part of the upper or spar deck which is forward of the after fore shroud. (See TOPGALLANT FORECASTLE.)

Forecastle Head. The forward part of the forecastle deck or topgallant forecastle near the knight heads.

Foremast. The forward mast of all vessels. As sloops and cutters have but one mast, it is always referred to as the *mainmast.* The term, however, is incongruous, and there is no necessity for its use.

Foremast Hand. One of the crew not above the rating of a seaman.

Foremast Officers. A designation for boatswains, carpenters and sailmakers on a merchant vessel.

Forge. Same as *Head Reach.*

Forward. Towards the forepart of the vessel.

Fother. To stitch oakum over the surface of a sail and draw it under a vessel's bottom for the purpose of stopping a leak.

Foul. A rope *fouls* when it jams in a block; a term used to express the opposite of *clear.*

Foul Anchor. When the cable is twisted about the anchor. When the anchor of one vessel locks itself to the anchor of another vessel—both anchors being on the bottom.

Foul Berth. When a ship is anchored in the way of another ship or some other obstruction.

Foul Bottom. When a vessel's bottom is covered with barnacles, grass or slime.

Foul Hawse. When a vessel has two anchors down, and the cables get a cross or twist in them by the revolution of the vessel round her anchors, she is said to have a *foul hawse.*

Foul the Water. When the vessel sails so close to the bottom that the mud is disturbed and rises to the surface of the water.

Founder. When a vessel fills with water and sinks she is said to *founder.*

Fountain Dues. The amount charged a vessel for furnishing her with water while in harbor and filling her water tanks for sea. (See WATER DUES.)

Four-fold Block. A block containing four sheaves.

Four-fold Purchase. A purchase having two blocks, each containing four sheaves.

Fox. Two or more rope yarns twisted together. (See SPANISH FOX.)

Frap. After a vessel's bottom has been fothered, the sail is *frapped* by passing ropes under the sail and keel, and hauling them taut so as to keep the sail in place; to pass a rope around a sail to keep it from blowing away.

Free. To *free a vessel of water* is to pump her dry; *a vessel sails free* when she has a fair wind.

Free-board. The distance from the plank shear, or covering board, to the water line.

Freebooter. (See PIRATE.)

Freight or Freight Money. The amount paid for transportation of cargo.

French Fake. (See FLEMISH COIL.)

French Shroud Knot. A knot used for rejoining a shroud or a stay that has been carried away.

Fresh Breeze. A breeze blowing from thirteen to fifteen miles an hour.

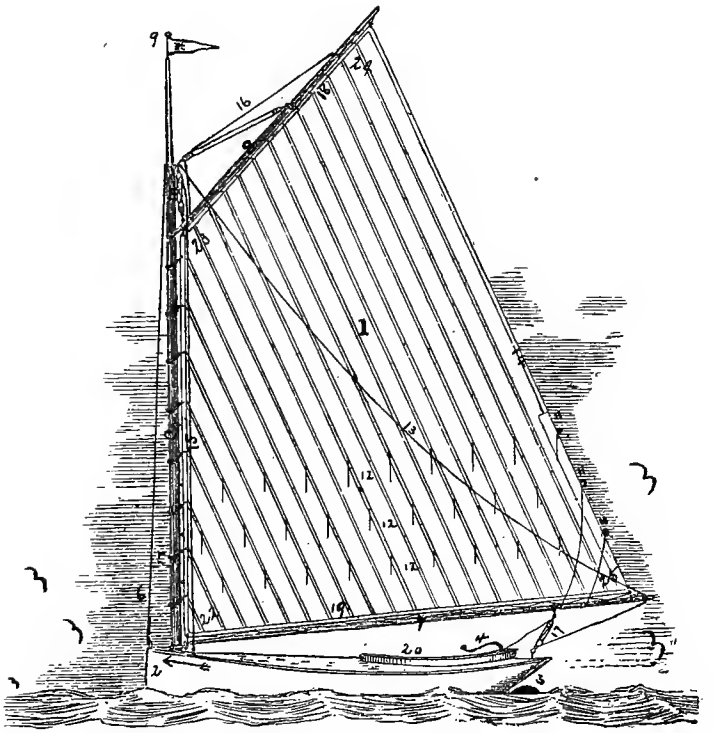
Fresh Grub. Newly-killed, or canned meats and vegetables; any kind of food not salted.

Fresh-water Sailor. A seaman whose experience is limited to lake and river vessels.

Fresh Way. When a vessel increases her velocity she is said to *get fresh way,* or to *gather fresh way.*

Freshen. To *freshen* anything is to shift or renew it.

Freshen the Ballast. To move the ballast about.



NAMES OF SAILS, SPARS, RIGGING, ETC., OF A CAT BOAT.

1. *Mainsail.*
2. *Stem (cutwater).*
3. *Rudder.*
4. *Tiller.*
5. *Mainmast.*
6. *Forestay.*
7. *Main Boom.*
8. *Main Gaff.*
9. *Truck.*
10. *Throat Halliards.*
11. *Reef Cringles.*
12. *Reef Points.*
13. *Topping Lift.*
14. *Leach of Sail.*
15. *Luff of Sail.*
16. *Peak Halliards.*
17. *Main Sheet.*
18. *Head of Sail.*
19. *Foot of Sail.*
20. *Cockpit.*
21. *Mast Hoops.*
22. *Tack of Sail.*
23. *Throat of Sail.*
24. *Peak of Sail.*
25. *Clew of Sail.*

Freshen the Hawse. To veer out or to heave in a little cable so as to allow another part of it to be brought in contact with the hawse hole.

Freshen the Service. To renew the service where it has become worn through or chafed.

Friday. A day of the week once held in superstitious awe by seamen; but with the advent of steam, which has robbed the ocean of most of its romance, the supernatural character or influences attributed to the day rapidly dissipated. Several American steamship lines have adopted *Friday* as the regular sailing day for their vessels.

Frog Eaters. A sailor's name for French people.

Frog Landers. A name employed by seamen when speaking of Hollanders, owing to the character of their country, with its canals, dykes, etc.

Frontier License. A license granted to a vessel of the United States by the customs authorities authorizing her to engage in trade upon the northern inland frontier of the United States. (See LICENSE.)

Full. Said of the sails when they are distended by the wind.

Full and By. Sailing close to the wind but keeping the sails full. An order given to the helmsman to effect the foregoing.

Full Spread. A vessel having all sail set is said to be under *a full spread of canvas.*

Funnel. The smoke-stack of a steam vessel.

Telescopic Funnel. A smoke-stack that telescopes so that all or most of it may disappear below the main deck.

Furl. To roll up and secure a sail or awning.

Furling Line. A small line used to bind a fore-and-aft sail to a gaff or boom after it is furled. Short independent lengths of rope used for this purpose are called *stops*, and when used for square sails, *gaskets.*

Furniture. The rigging, spars, anchors, sails, boats, cables, etc., of a vessel is termed collectively her *furniture.*

Furole. (See CORPOSANT.)

Futtock Band. The iron band which goes around the lower-mast just under the top, and to which the *futtock shrouds* secure.

Futtock Chain Plates. Iron plates secured to the side rims of the tops, with a dead-eye in the upper part for the topmast rigging to set up to, exactly the same as the chain plates of the lower rigging, and a hole in the lower end for the futtock shroud to hook in.

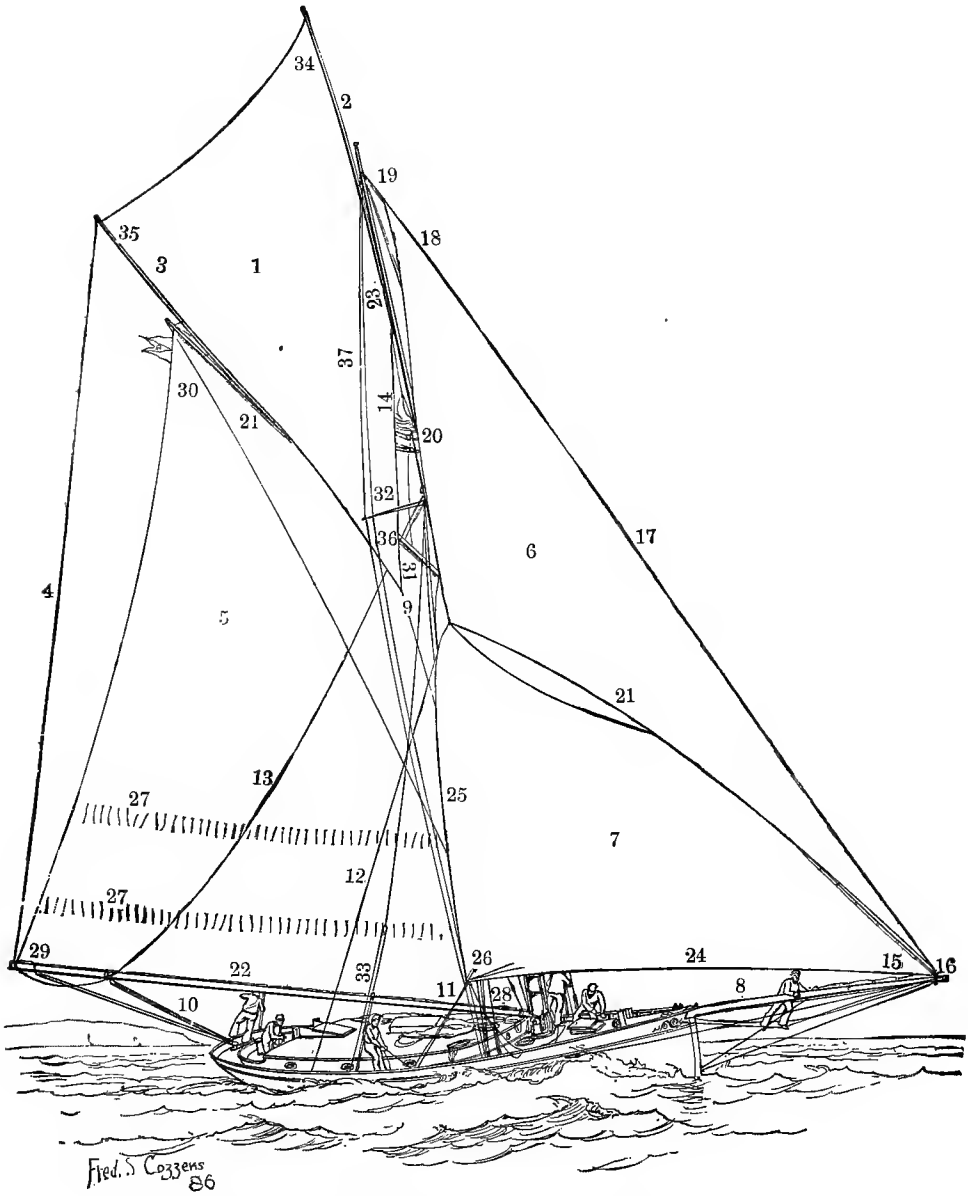
Futtock Holes. Holes in the rim of the top on each side for the futtock chain plates.

Futtock Shrouds. Short shrouds extending from the lower ends of the futtock chain plates to the futtock band.

Futtock Staff. A length of wood or iron covered with canvas or leather seized across the topmast rigging like a shear-pole.

G.

Gaff. A spar which projects abaft a mast, and to which the head of a fore-and-aft sail is bent. That part of the gaff which is near the mast is called the *throat*, and the outer end of the spar is named the *peak*. It is hoisted by throat and peak halliards. The *jaws* are the two horns bolted one on each side of the inner end of the spar to keep it to the mast. The *rollers* are the little wooden wheels on the forward side of the mast, which are strung on a *jaw span* or *jaw rope* made fast through holes bored in the forward extreme end of the jaws. This *span* prevents the gaff from unshipping with a fore-and-aft motion, and the *rollers* do not permit the *span* to jam against the mast when the gaff is being hoisted or lowered. (See RAILWAYS.)



NAMES OF SPARS, RIGGING AND SAILS OF A SLOOP YACHT.

1. *Club Topsail.*
2. *Club Topsail Sprit.*
3. *Topsail Club*
4. *Club Topsail Guy.*
5. *Mainsail.*
6. *Jib Topsail.*
7. *Jib (Forestaysail and Jib in one).*
8. *Bowsprit.*
9. *Club Topsail Tack Line.*
10. *Mainsheet.*
11. *Foresail or Forestaysail Sheet.*
12. *Jib Topsail Sheet.*
13. *Topping Lift.*
14. *Gaff Topsail Clewed Down.*
15. *Tack of Jib.*
16. *Tack of Jib Topsail.*
17. *Luff of Jib Topsail.*
18. *Head of Jib Topsail.*
19. *Jib Topsail Halliards.*
20. *Leach of Jib Topsail.*
21. *Main Gaff.*
22. *Main Boom.*
23. *Main Topmast.*
24. *Foot of Jib.*
25. *Leach of Jib.*
26. *Clew of Jib.*
27 *Reef Points.*
28. *Tack of Mainsail.*
29. *Clew of Mainsail.*
30. *Peak of Mainsail.*
31. *Throat of Mainsail.*
32. *Main Cross Trees.*
33. *Masthead Runner and Tackle.*
34. *Head of Club Topsail.*
35. *Clew of Club Topsail.*
36. *Tack of Club Topsail.*
37. *Topmast Shrouds.*

Gaff Topsail. A fore-and-aft sail set over a gaff, the foot of the former being spread by the spar.

Gage. (See WEATHER GAGE, LEE GAGE.)

Gain the Wind. To get to windward of another ship in sailing

Galleon. A high-sided, armed ship, sometimes of four decks, once used as a treasure ship by the Spaniards.

Galleries. Ornamental projections on the quarters of a vessel.

Gallery Ladder. Same as *Stern Ladder.*

Galley. A flat-built vessel having one deck and being propelled by sails and oars. The place where the cooking is done (See CABOOSE.)

Galliot. A galley having one mast and one sail, and propelled by 16 to 20 oars.

Gallows. A framework above the main deck on which spare spars and boats are secured. This frame is known as well as *gallows-bitts, gallows-tops,* and *gallows-frames.*

Gallows Bitts. (See GALLOWS.)

Gallows Frames. (See GALLOWS.)

Gallows Tops. (See GALLOWS.)

Galvanized Iron. Iron having its surface covered with zinc. The iron is heated and treated to a bath of melted zinc, which, while it lasts, prevents rusting, but the process of galvanizing robs the iron of some of its strength.

Gammoning. The rope or chain lashing which secures the heel of the bowsprit (obsolete).

Gammoning Iron. The iron band which secures the heel of the bowsprit.

Gang. A set of standing rigging is known as *a gang of rigging.*

Gang Board. A plank with cleats nailed across and used as a rough gangway from the vessel to the shore. Also called gang-plank.

Gang Casks. A small cask in size between a breaker and a barrel. It is used for bringing water on board in boats.

Gang-plank. (See GANG BOARD.)

Gangway. The opening through the bulwarks for people to pass in and out of a vessel.

Gangway Ladder. The steps from the gangway extending down along the side nearly to the vessel's water-line. Also known as the "*accommodation ladder.*"

Gantline. A line reeving through a temporary single block hooked aloft. Also known as *girtline.*

Garboard Strake. The first line of planking next to the keel, being rabbetted to the latter.

Garland. A net in which provisions are kept, being triced up clear of the deck for safe keeping in relation to rats, cockroaches, and other vermin. A strop made fast to a spar by which to hoist the latter on board.

Garnet. A purchase rigged on the mainstay and used in getting in and hoisting out cargo. (See CLEW GARNET.)

Garters. (See BRACELETS.)

Gaskets. Ropes employed to secure the square-sails to a yard, or the head-sails to the bowsprit and jib-booms, after the sails are furled. On some vessels the bowsprit is provided with *stops* made fast to small iron screw-eyes on the sides of the spar, and these take the place of a *gasket,* but *gaskets* are always used on jib-booms and on yards. On the latter they are named according to their location, as: *bunt, quarter,* and *yard-arm gaskets. Harbor gaskets* are neatly made of platted stuff or of bands of canvas for use when the vessel is in port. *Sea gaskets* are the ordinary lengths of rope.

Gather. A vessel is said to *gather* on another when she is overtaking her.

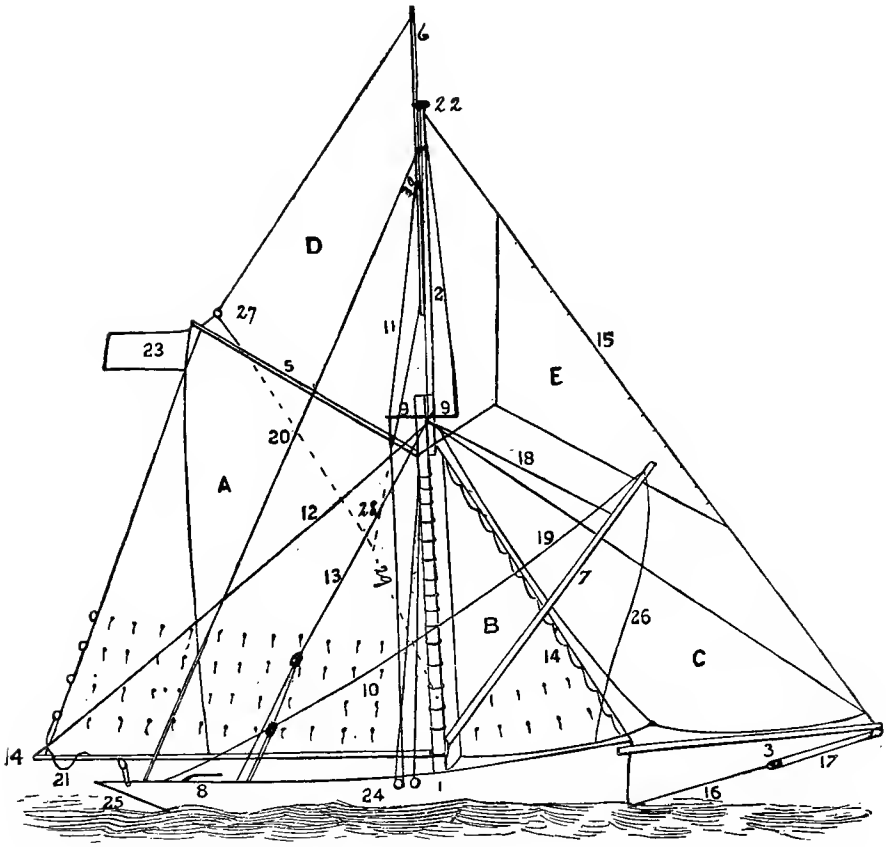
Gather Way. Said of a vessel when she commences to move through the water after leaving her anchorage, or after she has been lying-to.

Gaub Line. (See GOB LINE.)

Gauge. (See GAGE.)

Gear. The name applied collectively to the ropes, blocks, tackles, etc., of any particular spar, sail, etc.

General Average. A contribution made by all parties concerned in a sea venture



NAMES OF SPARS, SAILS, RIGGING, ETC., OF A CUTTER YACHT.

SPARS.

1. *Lowermast.*
2. *Topmast.*
3. *Bowsprit.*
4. *Main Boom.*
5. *Gaff.*
6. *Topsail Sprit.*
7. *Spinnaker Boom.*
8. *Tiller*

SAILS.

A. *Mainsail.*
B. *Forestaysail.*
C. *Jib.*
D. *Sprit Topsail.*
E. *Jib Topsail.*

RIGGING AND ROPES.

9. *Cross Trees.*
10. *Shrouds.*
11. *Topmast Shrouds.*
12. *Topping Lift.*
13. *Masthead Runner and Tackle.*
14. *Forestay.*
15. *Topmast Stay.*
16. *Bobstay.*
17. *Bobstay Fall.*
18. *Spinnaker Boom Topping Lift.*
19 *Spinnaker Boom Brace.*
20. *Topmast Backstay.*
21. *Reef Pennant.*
22. *Truck.*
23. *Ensign.*
24. *Channels.*
25. *Mainsheet.*
26. *Spinnaker Boom Guy.*
27. *Clew of Sprit Topsail.*
28. *Tack of Sprit Topsail.*
29. *Tack Line or Pendant.*
30. *Sprit Topsail Halliards.*

toward a loss which has been sustained by the voluntary sacrifice on the part of the master of the property of some of the parties in the interest and for the benefit of all. It is called *general average* because it falls upon the entire ship's cargo and freight at risk, and which has been saved by the sacrifice.

Particular average signifies the partial loss or damage which has happened to the ship, cargo, or freight in consequence of some unavoidable accident, and it is either borne by the individual owners or their insurers.

General Cargo. An assorted cargo such as is legalized for general transportation —gunpowder and explosives, heavy machinery, etc., excepted.

Gig. The captain's particular boat.

Gig's Crew. The oarsmen belonging to the gig.

Gilguy. A sailor's name for anything he does not know the name of; also the name applied to a makeshift contrivance on board ship.

Gimbals. A pair of rings one of which swings within the other, their respective axles being at right angles to each other; one of the rings provide for the roll or heel of the ship, and its companion for the pitch of the vessel. The ship's compass is suspended within *gimbals* so that its face may always preserve a horizontal position.

Gimblet. To *gimblet* an anchor is to turn it around when it is hanging from the cat-head or from the hawse pipe.

Gin Block. A block made entirely of metal.

Gingerbread Work. Carvings and other fancy work about a vessel. Also applies to unsubstantial fittings on board ship.

Gingerly. To perform a task cautiously.

Girding. A frapping for holding anything together.

Girt. The situation of a vessel when her cables are so taut, owing to either the wind or tide, that she does not swing.

Girtline. (See GANTLINE.)

Give Chase. To pursue.

Give Way. An order to a boat's crew to begin pulling.

Lay out on your oars means to pull with more force.

Give Way Together. An order for all the oarsmen to pull in unison.

Glass. A general name for the mercurial barometer and telescope.

Glory Hole. The lazarette is sometimes referred to as the *glory hole.*

Glut. A piece of canvas having an eyelet hole worked in it and sewed into the middle of a square sail near the head. A becket is made through this hole and the bunt jigger is hooked into it.

Go About. A vessel *goes about* when she tacks.

Gob Line. Another name for the martingale back-rope.

Going Free. A vessel *goes free* when she has a fair wind.

Going Large. A vessel *goes large* when the wind is abaft the beam.

Go Ashores. A seaman's best suit of clothes.

Gondola. A rowing barge used on the canals of Venice.

Good Full. Keeping the sails a little more full than in full-and-by.

Goose Neck. A kind of hook made of iron and fastened to the inner end of a boom having no jaws, also to the inner or lower end of a spinnaker-boom. The *goose neck* confines the end of the boom by being secured to an iron clamp or eye on the mast. Independent steps for spinnaker-boom *goose necks* are found on yachts, the steps being fastened to the deck.

Goose-winged. When the clew of a course or topsail is hauled up and lashed to its yard the sail is said to be *goose-winged.* (See WING AND WING.)

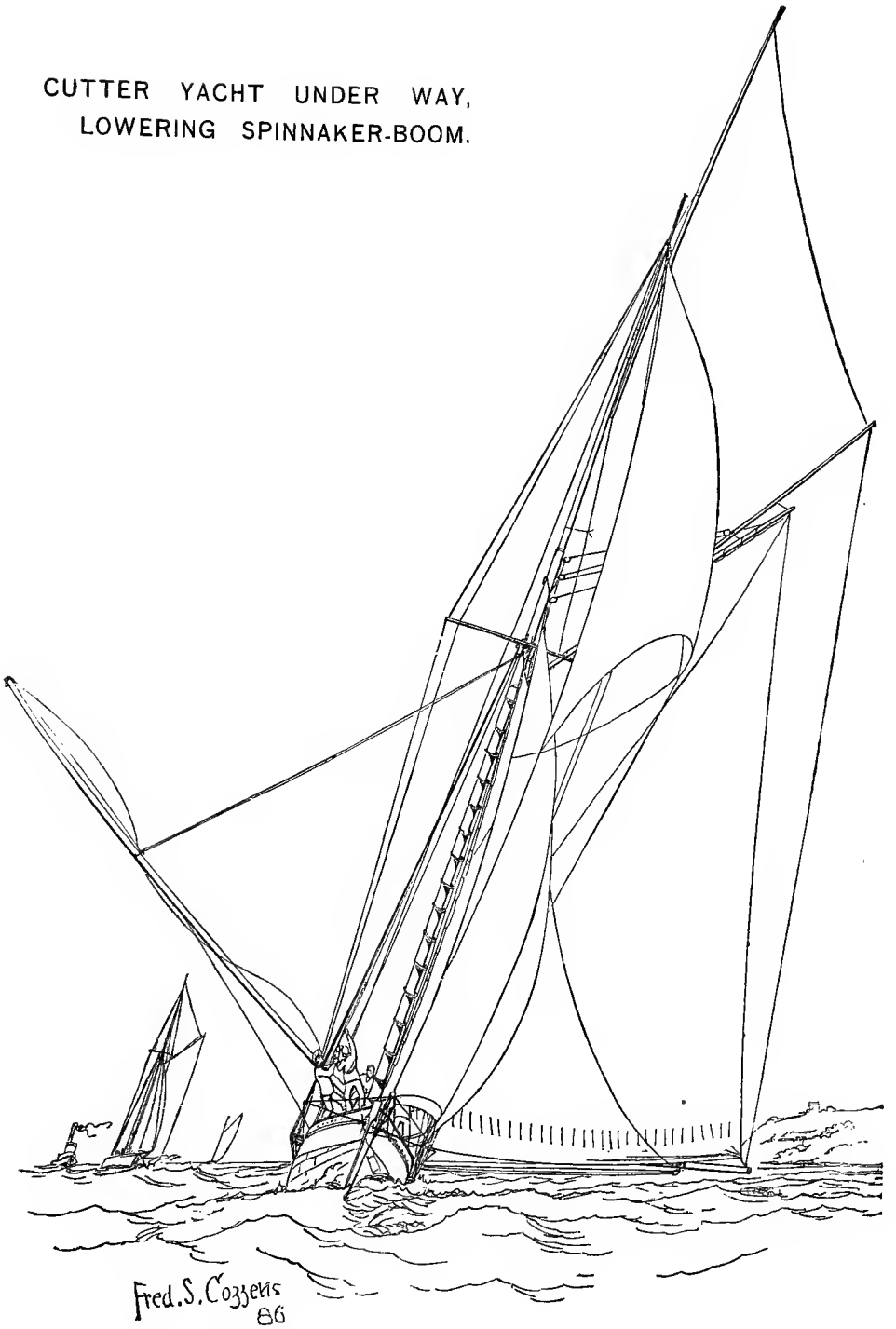
Gores. Angles cut slopewise at one or both ends of cloths in sailmaking, so as to widen or increase the depth of a sail.

Goring Cloths. Pieces of canvas cut on the bias and added to the sail.

Grafting. A weaving of fish line around a ring or the strop of a block. In the latter case it takes the place of parceling and service.

Granny Knot. A capsized reef or flat knot. A knot apt to be made by a novice in seamanship. (See engraving.)

CUTTER YACHT UNDER WAY,
LOWERING SPINNAKER-BOOM.



Granny's Bend. A slippery hitch.

Grapnel. A small anchor having four arms. (See engraving.) (See GRAPPLING IRONS.)

Grappling Irons. Four hooks radiating from a common shank; to the ring in the upper part of the latter a rope being made fast, and the instrument used for the purpose of fastening vessels to one another.

Grating. Lattice-work platforms used to cover hatches; to take the place of bottom boards in a boat; the *grating deck* which covers the helm and tackles on the after-deck of a steamer, etc.

Grave. To *grave* a vessel's bottom is to burn off the accumulation of marine growth.

Graving Dock. (See DRY DOCK.)

Great Circle Tracks. Lines trending east and west traced on charts, always concave to the equator, and which, allowing for the spherical figure of the earth, show the shortest route between two places situated to the eastward and westward of each other. (See CHARTS.)

Great Eastern. The largest vessel ever built; designed by the great English civil engineer Isambard Kingdom Brunel, who was born in 1806 and died in 1859; built by Scott Russell at Millwall, on the Thames, for the Eastern Steam Navigation Company; construction begun May 1, 1854; built broadside to the river on very flat pitch ways, necessitating the launch to be effected sideways; launching process commenced November 3, 1858, and occupied three months, hydraulic power being employed; iron used in construction of hull; length, 680 feet; beam, exclusive of paddle-boxes, 82½ feet; inclusive of same, 118 feet; height of side to bulwark rail, 70 feet; freeboard from water line to covering board or plankshear, 37 feet; draught, 27 feet; tonnage, 20,000; eight engines; aggregate horse-power, 11,000; both screw propeller and paddle-wheels; steam pressure, 25 pounds; revolutions of screw 55 per minute; revolutions of paddle-wheels, 12 per minute; ten anchors; one mile of chain cable; six iron masts, the forward one a pole mast, on which was set a fore-staysail and a gaff foresail; second and third masts square-rigged; fourth, fifth, and sixth masts were pole masts like the first and carried gaff sails; masts were named respectively as follows, beginning with the forward one: fore-staysail mast, fore-mast, main-mast, mizzen-mast, jigger-mast, and spanker-mast; iron masts and yards; 7,000 yards of canvas in the sails; two large steam launches; twenty large row-boats; double bottom; five smoke pipes; wire standing rigging. The *Great Eastern* visited New York in 1860, and again in 1867, the latter time carrying passengers and freight from Havre, France. She was ever a financial failure, and was sold in 1864 by her original owners for £25,000. In 1888 she was sold as *junk* and broken up for her iron.

Great Guns. A violent gale.

Greave. (See GRAVE.)

Green Sea. When a large body of water is shipped at one time it is called a *green sea*, taking the name from its greenish shade as viewed in the daytime against the light beyond the vessel.

Grego. A name for a seaman's great coat.

Greyhound. (See OCEAN GREYHOUNDS.)

Gridiron. A framing of heavy beams for the ship to rest on when the tide is out, so that her bottom may be examined.

Grip. An anchor is said to *grip* when it holds.

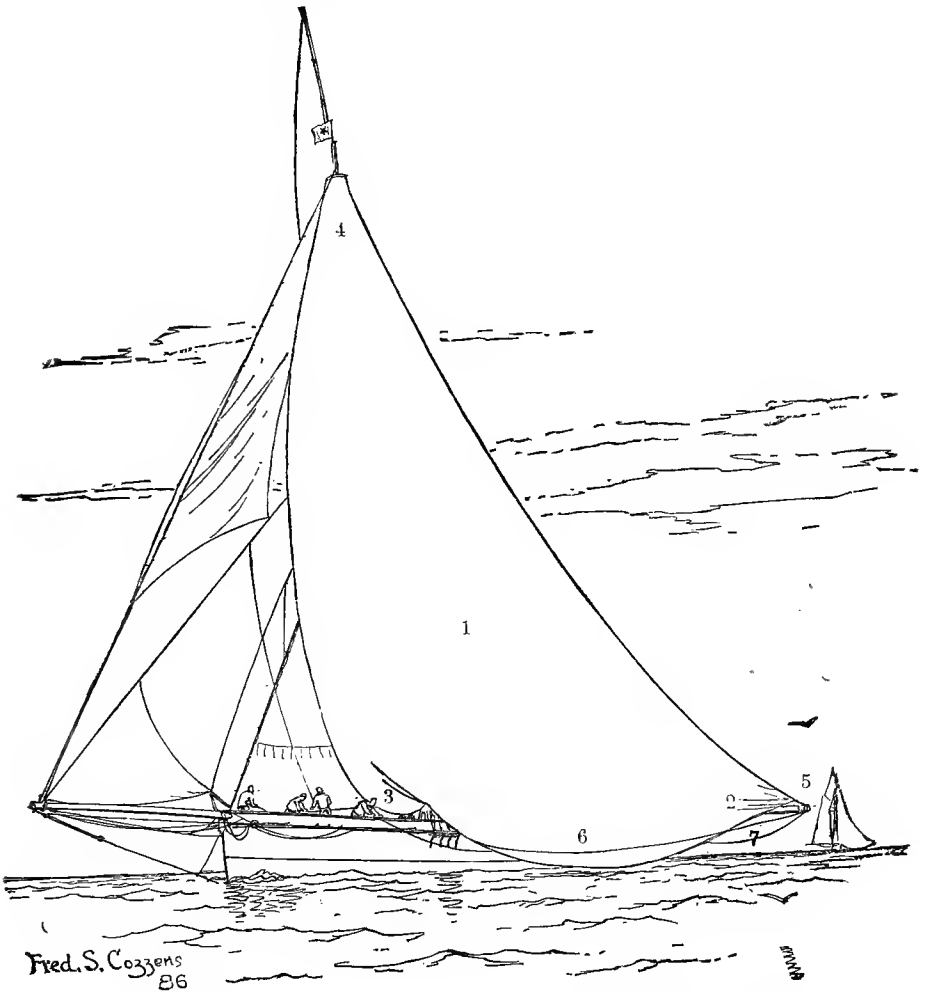
Gripe. When a vessel sailing close-hauled shows a tendency to come up to the wind against a weather helm she is said to *gripe*. The term is also applicable when a vessel steers very hard.

Gripes. The iron fastenings for securing large boats to the deck; bands of canvas with thimbles in their ends which pass over and under davit boats and are set taut with lanyards when the vessel is underway.

Grog. The name given to the spirit-ration once served out to the crew on board men-of-war. (Now abolished.)

Grommet. A ring made of a single strand of rope by laying it three times round. (See engraving.)

CUTTER YACHT UNDER WAY, SHOWING SPINNAKER SET.

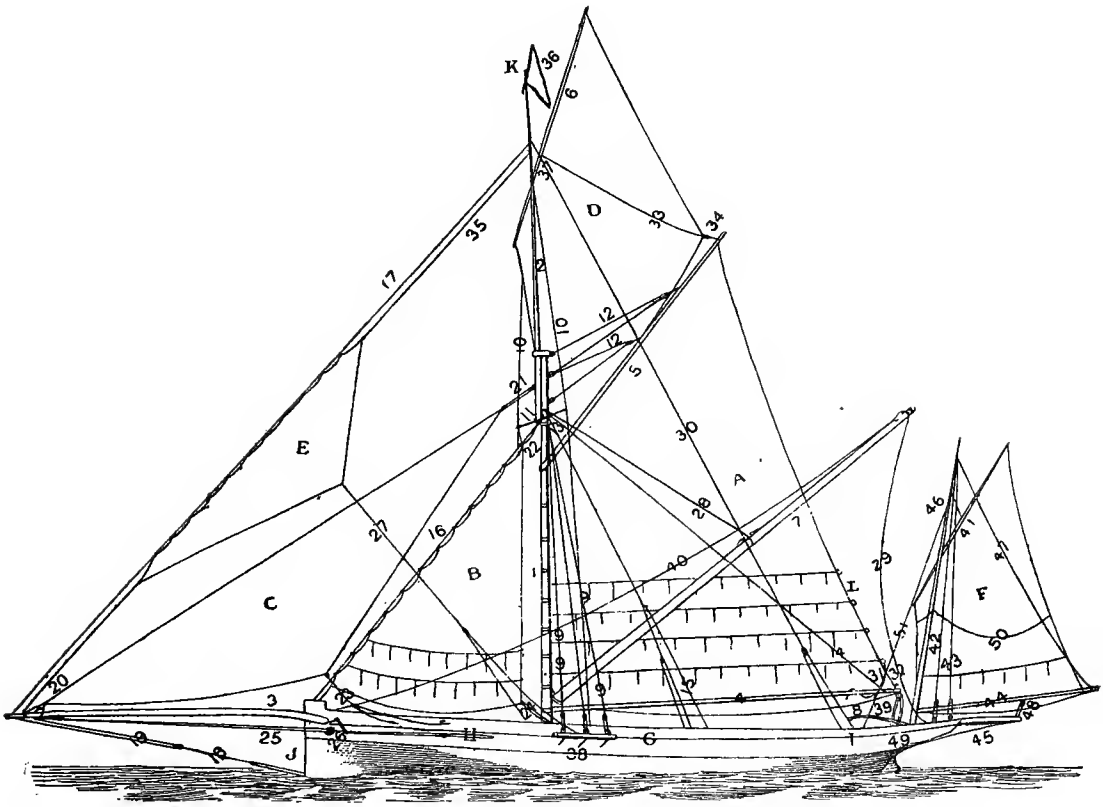


1. *Spinnaker.*
2. *Tack of Sail.*
3. *Clew of Sail.*
4. *Head of Sail.*
5. *End of Spinnaker Boom.*
6. *Foot of Sail.*
7. *Spinnaker Outhaul.*

Gross Tonnage. (See TONNAGE.)
Ground. A vessel is said to *take the ground* when she goes ashore.
Ground Swell. An almost continuous swell along shore owing to the shallowness of the water.
Ground Tackle. A term collectively applied to all the anchors, cables, anchor-purchases, etc.
Ground Tier. The lowest tier of cargo in a vessel's hold.
Ground Ways. Large pieces of timber laid across a dry-dock on which the blocks are placed.
Grounding. Running aground accidentally, or putting the vessel on the beach for the purpose of repairing her.
Growing. To enlarge; to come into sight more and more; gradual development of an object.
Guard Irons. A sort of cage surrounding the carved work on a vessel's stern as a protection.
Guard Rail. A timber bolted on the outside of the covering board or plankshear on wooden steam vessels navigating harbors, lakes, and rivers, to act as a fender when lying alongside of other vessels, or when made fast to a dock. Sometimes a second *guard rail* is carried along the sides just above the water, and this is termed a *bilge guard rail.*
Gudgeons. The metal braces bolted on the stern-post of a vessel, and through the eye in which the pintle of the rudder ships.
Guess Warp. A hawser run out from the vessel to an object and secured for the purpose of hauling the vessel to it.
Guest Rope. The name applied to the rope which is dropped into a boat coming alongside of a vessel, and to which the painter of the boat is bent temporarily.
Gulf Stream. A great ocean current flowing out from the Gulf of Mexico through the Straits of Florida, and progressing along the Atlantic coast, following its trend, and widening as it flows, until off New Foundland it separates, one branch flowing north-east toward Spitzenbergen, and the other branch continuing an easterly course to the coast of Europe where it recurves to the southward and finally joins the Great Equatorial Current and pursues a westerly course until it completes the circuit by again entering the Gulf of Mexico to be expelled anew through the Straits of Florida.
Gun-tackle Purchase. A purchase made of a length of rope and two single blocks.
Gunwale. (Pronounced *gun*-nel.) The rail of a boat.
Guy. A steadying rope. (See JIB-BOOM GUYS.)
Gybe. (See JIBE.)

H.

Hail. A vessel *hails* from the port to which she belongs; to accost another vessel, prefacing the word *ahoy* with the name of the rig of the vessel, as *schooner ahoy!* etc.
Half Board. A vessel is said to make a *half board* when she luffs up into the wind, and then when her headway has almost ceased to go off again on the same tack. This is nothing more than a *pilot's luff.*
Half Davit. The fish davit.
Half Hitch. Formed by passing the end of a rope around its own standing part and bringing it then through its own bight. (See engravings; see TWO HALF HITCHES.)
Half Mast. A flag is *half-masted* when it is hoisted but half way.
Halliards. Also written *halyards.* Tackles used for hoisting and lowering yards, gaffs and sails.
Hambroline. A fine quality of seizing stuff, three-stranded, and tightly laid.
Hammock. A canvas bed swung from hooks in the deck beams.



NAMES OF SPARS, SAILS, RIGGING, ETC., OF A YAWL YACHT.

1. *Main Lowermast and Hoops.*
2. *Topmast.*
3. *Bowsprit.*
4. *Main Boom.*
5. *Gaff.*
6. *Topsail Yard.*
7. *Spinnaker Boom.*
8. *Tiller.*
9. *Shrouds.*
10. *Topmast Shrouds.*
11. *Crosstrees.*
12 *Peak Halliards.*
13. *Throat or Main Halliards.*
14. *Boom Topping Lift.*
15. *Masthead Runner and Tackle.*
16. *Forestay.*
17. *Topmast Stay.*
18. *Bobstay.*
19. *Bobstay Fall.*
20. *Jib Traveler.*
21. *Jib Halliards.*
22. *Fore Halliards.*
23. *Jib Sheets.*
24. *Fore Sheet.*
25. *Bowsprit Shrouds.*
26. *Whiskers.*
27. *Jib Topsail Sheet.*
28. *Spinnaker Boom Halliards.*
29. *Spinnaker Boom Brace or Guy.*
30. *Maintopmast Backstay.*
31. *Reef Pennant.*
32. *Main Outhaul.*
33. *Yard Topsail Clew Line.*
34. *Yard Topsail Sheet.*
35. *Jib Topsail Halliards*
36. *Burgee.*
37. *Yard Topsail Halliards.*
38. *Channels.*
39. *Main Sheet.*
40. *Spinnaker Boom After Guy.*
41. *Yard.*
42. *Jigger Mast.*
43. *Jigger Shrouds.*
44. *Mizen Boom.*
45. *Bumpkin and Bumpkin Shrouds.*
46. *Mizen Halliards.*
47. *Mizen Topping Lift.*
48. *Mizen Sheet.*
49. *Counter.*
50. *Brails.*
51. *Mizen Stays.*

SAILS, ETC.

A. *Mainsail.*
B. *Forestaysail.*
C. *Jib.*
D. *Lug or yard Topsail (English).*
E. *Jib Topsail.*
F. *The Mizen.*
G. *Midships.*
H. *Forecastle.*
I. *The Quarter.*
J. *Stem, Cutwater.*
K. *Truck.*
L. *Reef Cringles.*

Hammock Cloth. The canvas cover over the hammock nettings to protect the hammocks from the weather.

Hammock Nettings. The hollow space between the inner and outer bulwarks on the spar deck in which the hammocks are kept during the daytime. Also the network below decks in which hammocks are kept on board of monitors.

Hand. *To hand a sail* is to furl it; one of the men of the crew; *all hands*, everybody on board; *bear a hand*, to hasten; *lend a hand*, to assist.

Hand Hole. A small hole in the shell of a steam boiler to admit of the latter being scraped and freed from salt scale and grease sediment from the condenser, etc. This hole is secured by a hand hole plate having bolts and nuts.

Hand Lead. A conical shape length of lead weighing from 7 to 14 pounds, used for sounding in water of less than 20 fathoms. It has 9 *marks and* 11 *deeps*, the latter being the unmarked fathoms of the lead line. The following shows the order of the marking:

At	2 fathoms from the bottom of the lead with 2 strips of leather.	
"	3 " " " " " " "	3 " " "
"	5 " " " " " " "	a white rag.
"	7 " " " " " " "	a red rag.
"	10 " " " " " " "	a round piece of leather.
"	13 " " " " " " "	a blue rag.
"	15 " " " " " " "	a white rag.
"	17 " " " " " " "	a red rag.
"	20 " " " " " " "	a strand having two knots.

About 6 feet above the lead a toggle is slipped between the strands of the lead line, the former resting across the fingers of the hand when swinging the lead preparatory to heaving it. The cavity in the end of the lead is to be filled with tallow or soap, so that a sample of the bottom may be obtained.

Hand over Hand. To ascend a rope by putting one hand above the other alternately—the legs dangling. To perform anything rapidly.

Hand Taut. To pull a rope as tight as possible by hand.

Hand under Hand. To descend a rope by dropping one hand below the other alternately.

Handicap. After the firing of the starting gun in a race a certain number of minutes are allowed for the vessels to cross the line, and if they cross within the limit, the time of their crossing is counted as the starting time; but if they do not cross within the prescribed limit the time of crossing is reckoned as the expiration of the limit, although they may not reach the line until long thereafter. This is known as *being handicapped so many minutes in the start.*

Handle. A ship *handles well* when she is obedient to her helm. *To handle a ship well* is to work her in a seamanlike manner.

Handsomely. To do anything carefully or cautiously is to do it *handsomely. Slack away handsomely* is an order to let up easily.

Handspike. A wooden bar like a capstan bar, used as a lever for moving heavy weights.

Handy. A vessel is said to be *handy* if she is quick in stays and always answers her helm quickly.

Handy Billy. A watch tackle; a name for the forecastle boy.

Hanging Block. Blocks used at the mastheads for the halliards of the head sails.

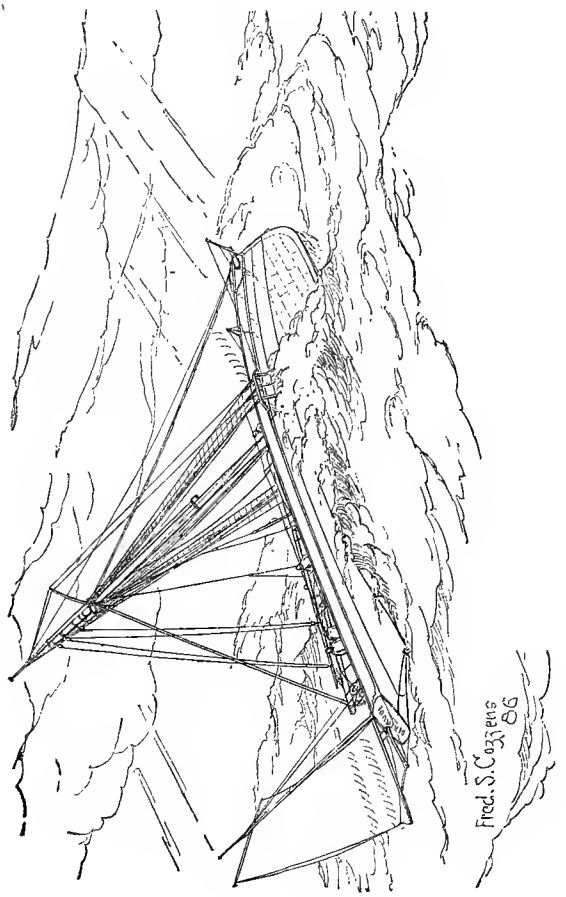
Hanging Stage. A plank hung horizontally over the ship's side for men to stand or sit on while painting ship, etc.

Hanks. The rings of wood, rope or iron round a stay, and to which the luff of the head sails is secured by robands.

Harbor Dues. (See PORT CHARGES.)

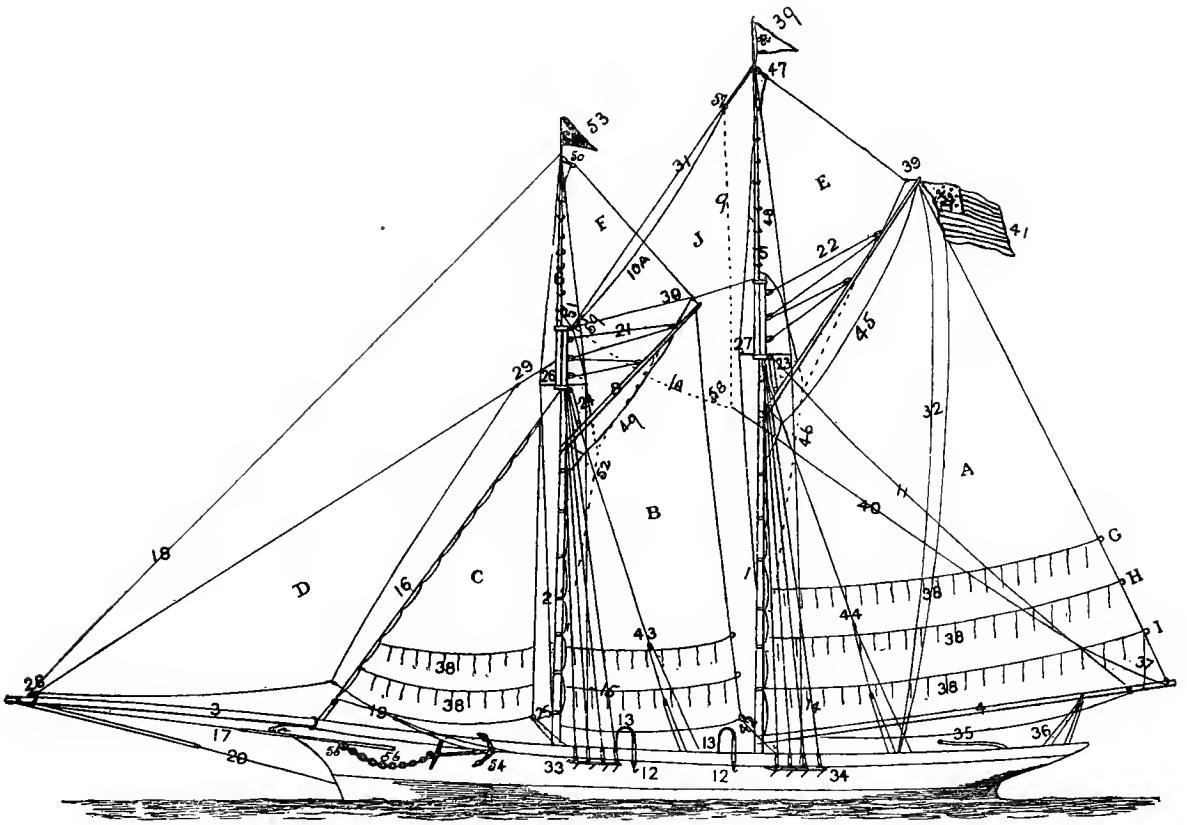
Harbor Gasket. (See GASKET.)

Harbor Master. An officer whose duty it is to inspect the moorings of the harbor, to observe that ships are properly berthed, and to enforce the regulations provided for the shipping in the harbor. (See PORT WARDEN.)



YAWL YACHT HOVE-TO.

Harbor Pirate. Same as RIVER PIRATE—see latter.
Harbor Watch. (See ANCHOR WATCH.)
Hard-a-Weather. To put the tiller all the way over towards the windward side of the vessel.
Hard Down. The helm is said to be *hard down* when it is put over to leeward as far as it can go.
Hard Over. The helm is *hard over* when it is moved to its extreme limit.
Harness. A name for the rigging on a vessel.
Harness Cask. A conical barrel, having a locked lid and kept on deck, containing a quantity of salt pork and salt beef for daily consumption
Harpoon. A spear-shaped iron used for burying in the bodies of large fish.
Hat Money. (See PRIMAGE.)
Hatch Bar. An iron bar which crosses the hatches and keeps them down by having both of its ends secured to the hatch coamings.
Hatch Coamings. (See COAMINGS.)
Hatch Rings. The iron rings in the corners of hatches for lifting the latter.
Hatch Tackle. An ordinary luff tackle, composed of a double and single block, and used for hoisting or lowering stuff through the hatches.
Hatches. The covers for the hatchways.
Hatchways. The openings in the deck to afford passage up and down for the cargo.
Haul. To pull. The wind is said to *haul* when it ships around the compass with the sun, *i. e.*, in the same way that the hands of a watch revolve.
Haul Aboard the Tack. An order given to bring the weather clew of a course to the tack block when setting the sail.
Haul Down. The order given to haul the bunting down from aloft, and from the truck of the flag-pole at the stern.
Hauled Up. A vessel is said to be *hauled up* when her course is changed so that she will lie closer to the wind.
Hauling Line. A line sent down from aloft to bend on to any article required for use, and by which the article is hauled up.
Hauls Her Wind. Said of a vessel when she is brought by the wind after sailing with the wind free.
Hawse. A vessel *rides to a hawse* when she has her two bow anchors down; the surface of the water just ahead of the vessel; *clear hawse* or *open hawse* means that there is no cross in the cables; *athwart hawse* means across the line of the vessel's keel just in advance of the vessel; *to freshen the hawse* is to veer out or heave in a little cable so as to bring the strain or chafe on another part. (See MOORING SWIVEL.)
Hawse Bag. (See JACKASS.)
Hawse Block. A block of wood made to fit into a hawse pipe from inboard, and which is shipped at sea in order to prevent water from coming on board through the hawse holes.
Hawse Bolsters. Pieces of oak plank bolted under the hawse holes in order to prevent the cables from chafing.
Hawse Box. The woodwork to be seen just outside of the hawse pipe on a wooden vessel.
Hawse Buckler. An iron plate to cover the hawse hole, taking the place of *hawse blocks* and *jackasses*.
Hawse Hole. The holes in the bows of a vessel through which the cables pass.
Hawse Pieces. The timbers in the bows of a vessel through which the hawse holes are cut.
Hawse Pipe. An iron pipe in a vessel's bows through which the cable runs.
Hawse Plug. A block of wood made to fit into a hawse pipe from the outside so as prevent water from getting into the manger. (See MANGER.)
Hawser. A large rope used for towing, warping, etc.
Hawser-laid Rope. Same as cable-laid rope—see the latter.
Haze. Punishing a man by keeping him at work upon dirty and unnecessary jobs. (See RIDE DOWN A MAN.)



NAMES OF SPARS, SAILS, RIGGING, ETC., OF A SCHOONER YACHT.

SPARS AND ROPES.

1. *Mainmast.*
2. *Foremast.*
3. *Bowsprit.*
4. *Main Boom.*
5. *Maintopmast.*
6. *Foretopmast.*
7. *Main Gaff.*
8. *Fore Gaff.*
9. *Leach of Maintopmast Staysail.*
10. *Foot of Maintopmast Staysail.*
10A. *Luff of Maintopmast Staysail.*
11. *Main Topping Lift.*
12. *Davit Falls.*
13. *Davits.*
14. *Main Shrouds.*
15. *Fore Shrouds.*
16. *Forestay.*
17. *Bowsprit Shrouds.*
18. *Foretopmast Stay.*
19. *Jib Sheet.*
20. *Bobstay.*
21. *Fore-Peak Halliards.*
22. *Main-Peak Halliards.*
23. *Main-Throat Halliards.*
24. *Fore-Throat Halliards.*
25. *Forestaysail Sheet.*
26. *Fore Crosstrees.*
27. *Main Crosstrees.*
28. *Jib Traveler.*
29. *Jib Halliards.*
30. *Spring Stay.*
31. *Maintopmast Stay.*
32. *Ensign Halliards.*
33. *Fore Channels.*
34. *Main Channels.*
35. *Tiller.*
36. *Main Sheet.*
37. *Reef Pennant.*
38. *Reef Points.*
39. *Private Signal.*
40. *Maintopmast Staysail Sheet.*
41. *Ensign Hoisted on Main Gaff.*
42. *Fore Sheets.*
43. *Fore Masthead Runner and Tackle.*
44. *Main Masthead Runner and Tackle.*
45. *Main Gaff Topsail Sheet.*
46. *Main Gaff Topsail Tack Line.*
47. *Main Gaff Topsail Halliards.*
48. *Main Gaff Topsail Mast Hoops.*
49. *Fore Gaff Topsail Sheet.*
50. *Fore Gaff Topsail Halliards.*
51. *Fore Gaff Topsail Mast Hoops.*
52. *Fore Gaff Topsail Tack Line.*
53. *Club Signal.*
54. *Anchor (fished).*
55. *Hawse Hole.*
56. *Cable.*
57. *Maintopmast Staysail Halliards.*
58. *Maintopmast Staysail Clew.*
59. *Junction of Maintopmast Staysail Head and Foot (the Tack). Some Staysails have a square foot like the Mainsail.*

SAILS, ETC.

A. *Mainsail.*
B. *Foresail.*
C. *Forestaysail.*
D. *Jib.*
E. *Main Gaff Topsail.*
F. *Fore Gaff Topsail.*
G. H. I. *Reef Cringles.*
J. *Maintopmast Staysails.*

Head. The head of anything, as *mast-head, timber-head, capstan-head, head of a sail,* etc. Also the carved figure under the bowsprit is called a *figure-head,* a carved scroll a *billet-head,* a carved board that turns in at the end like the head of a violin a *fiddle-head.*

Head Boards. The boards placed inside the hammock nettings at the forward and after ends.

Head Cringle. The iron ring or shape spliced into the bolt rope at the junction of the leach and head of a fore-and-aft-sail; but at the two upper corners of square sails.

Head Ear-rings. The ropes which secure the two upper corners of a square sail to the yard-arms by alternate passings of the line through the head cringles and the spar.

Head Ledges. (See COAMINGS.)

Head Line or Head Fast. A mooring rope leading ahead of the vessel.

Headmost. The farthest in advance.

Head Rails. Short low rails extending from the stem to the bows.

Head Reach. The forging or progress ahead of a vessel when lying to. (See FORE REACH.)

Head Room. The height of the cabin from the floor to the roof; the height of any place, such as the hold, the forecastle, the caboose. The cabin has *seven feet of head room* when it measures seven feet from the floor to the underneath part of the roof.

Head Rope. The rope to which the tabling on the upper edge of a sail is sewn.

Head Sails. All the sails forward of the foremast. These are named differently on vessels of various rigs. They are known as forestaysails, fore-topmast-staysails, jibs, flying jibs, jib-o-jibs, inner-jibs, main-jibs, outer-jibs, jib-topsails, middle-jibs and standing-jibs. (See engravings of various rigs.)

Head Sea. A sea coming from the same point of the compass that the vessel is directed toward.

Head Sheets. The sheets of all the head sails.

Head Stick. The small round spar about 15 inches long seen on the heads of some spinnakers and jibs. The triangle or apex at the head of the sail is cut off straight across, and the edge tabled and worked with eyelet holes, then laced to the spar, in the centre of which the halliards are bent. Its use is to prevent the heads of the above sails from twisting, as they are very apt to do on account of their luff not being confined to a stay.

Head to Wind. The situation of a vessel when she has been thrown up into the wind and all her sails are shaking.

Head Way. The progress of a vessel through the water in a forward direction.

Head Yards. All the yards on the foremast.

Health Officer. The medical officer who inspects the ship and cargo, physical condition of crews and passengers when vessels first enter port, and who gives or withholds permission to land according to the health of a ship or the presence of contagious disease.

Heart. A block of wood shaped like a heart and stropped, having a hole through it for stays to reeve through. The strand running through the centre of a four-strand rope.

Heart Yarns. The strand running through the centre of some ropes.

Heave Ahead. To advance the vessel by heaving in on the anchor chain, or the rope leading from the ship to some object ahead.

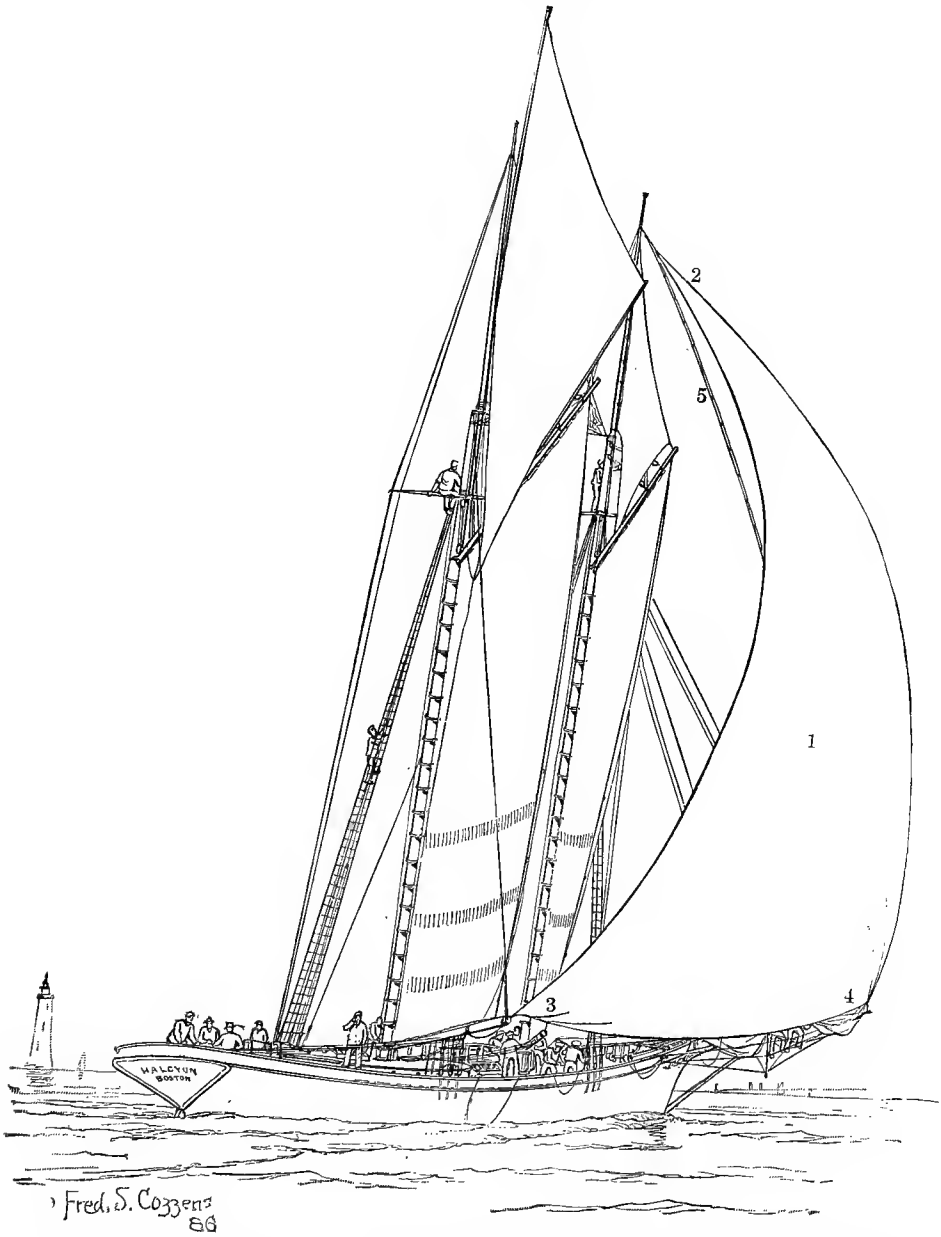
Heave and Awash. A call to the men at the windlass, signifying that one more heave will bring the anchor ring to the surface of the water.

Heave and Aweigh. A call to the men at the windlass to heave once more in order to lift the anchor from the bottom.

Heave and Paul. An order to the men to heave until the paul drops so as not to lose anything.

Heave and Rally, Boys. An order and an encouraging cry to the men at the capstan or windlass.

SCHOONER YACHT UNDER WAY, SHOWING BALLOON JIB TOPSAIL SET.



1. *Balloon Jib Topsail.*
2. *Head of Sail.*
3. *Clew of Sail, from where Sheet leads to the Quarter.*
4. *Tack of Sail.*
5. *Jib Topsail Stay.*

Heave Apeak To heave in on a cable until the anchor is right under the hawse hole, but resting on the bottom.

Heave Astern. To move the ship backwards by hauling on the rope that leads astern.

Heave Away. An order to crew to heave round the capstan; to heave on the windlass brakes, etc.

Heave Down. To careen the vessel in order to repair the side of the vessel on or below the water-line.

Heave Handsomely. An order to the crew to heave slowly.

Heave Hearty. To heave strong.

Heave In. To get in some of the cable.

Heave in Stays. To put the helm down and bring the ship in the wind so as to go about.

Heave of the Sea. The send of the sea. The amount of distance that the vessel gains, or is retarded, or is driven out of her course by the propulsion of the seas breaking against her.

Heave Round. To revolve the capstan by means of the capstan bars.

Heave Short. The cable is hove short when, independent of the depth of water where she may be anchored, the vessel is riding nearly over her anchor without any slack cable out.

Heave Taut. To heave in until the cable or rope gets a strain on it.

Heave the Lead. To throw the lead overboard, and ascertain the depth of water where the ship is.

Heave the Log. To throw the log chip overboard so as to ascertain the velocity of the ship.

Heave-to. To bring a vessel's head to the wind, and manage the sails so as to keep her stationary. (See LIE-TO.)

Heaver. A wooden bar, like a capstan bar, for use as a lever.

Heaving Line. A small rope bent on to a hawser and thrown out to a dock, etc., to be caught, and by which one end of the hawser is to be pulled ashore to be secured.

Heaving Line Bend. (See CLOVE HITCH.)

Heel. The lowest end of a mast; the aftermost part of the keel; the lowest part of the stern-post; a vessel *heels* when she lies over on her side in sailing; *a vessel goes round on her heel* when she wears ship short round.

Heel Lashing. A lashing placed around the heel of a spar.

Heel of the Post. The term applied both to the lowest extremity of the stern-post and the rudder post.

Heel Rope. A rope used in sending up and down spars.

Heeled Over. A vessel is said to be *heeled over* when she is forced over sideways in sailing by the action of the wind on the sails and rigging. (See LIST and CAREEN.)

Heeling. A name applied sometimes to the square part of the lower end of a mast in which is the fid hole.

Helm. A misnomer, as the term wrongly includes all the machinery by which a vessel is steered, comprising the rudder, tiller, wheel and power applied. Properly the word *helm* should relate only to the tiller.

Helm Down. To put the helm towards the lee side, so as to bring the vessel's head up into the wind.

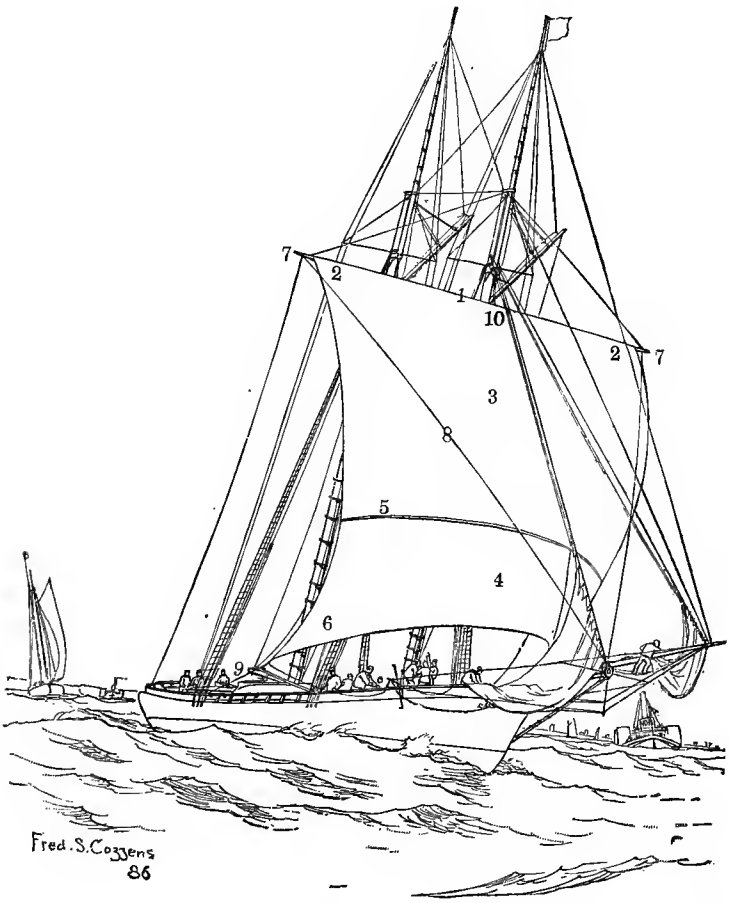
Helm Port. (See RUDDER PORT.)

Helm Up. To let the vessel go off from the wind by putting the helm towards the weather side.

Helm's a Lee. Signifying that the helm has been put over to leeward; the verbal notice given to the men forward, and upon hearing which they lighten up the weather-head sheets so as to allow the vessel to come quickly to the wind, then while she is in stays they sheet down the head-sails on the opposite side.

Helmsman. The man at the helm or wheel; the man who is steering the vessel.

SCHOONER YACHT UNDER WAY, SHOWING SQUARESAIL SET.



1. *Squaresail Yard.*
2. *Head Cringles of Sail.*
3. *Squaresail.*
4. *Bonnet.*
5. *Place where Bonnet is laced to Squaresail.*
6. *Clew, where Sheet leads from.*
7. *Yard Arms.*
8. *Yard Guys.*
9. *Squaresail Sheet.*
10. *Slings of Yard.*

Hemp Rope. Hemp is a plant, from the fibres of which a rope is made, taking its name from the same.

Hermaphrodite Brig. A vessel that is square-rigged forward and schooner-rigged on the main. (See BRIGANTINE.)

Herring Pond. A name by which the Atlantic Ocean is sometimes referred to by seamen.

High and Dry. The position of a vessel when left entirely out of water by a receding tide.

High Tide. The highest point of the flood tide.

Hitch. A manner of fastening ropes around a spar or other object. (See engravings.)

Hog. A rough broom for scrubbing the marine growth from a vessel's bottom.

Hog Chains. Chains with one end attached to the hog frames and the other end to some particular part of the steamer in order to sustain it.

Hog Frames. The two great flying fore-and-aft arches seen on shallow-draught inland steamers, which prevent them from *hogging.*

Hogged. When the two ends of a ship droop from the midship part, causing an upward arching of the keel, she is said to be *hogged.* This may be caused from structural weakness, old age, or from pounding on a rock or on the shore. (See SAGGED, BROKEN-BACKED.)

Hoist. The length of the luff of a fore-and-aft sail—the distance in feet from the jaws of the boom to the jaws of the gaff when the sail is hoisted. Applies to the midship depth of those square sails the yards of which travel up and down masts. (See DROP.)

Hold. The interior of a vessel below the lower deck.

Hold the Luff. To keep the vessel's sails shivering.

Hold the Wind. To keep the sails full.

Hold Water. To check the progress of a boat by keeping the oars in the water with the blades vertical, and the oar itself at right angles to the keel.

Holiday. When a piece of work is only imperfectly executed, such, for example, as leaving patches of the old paint on a boat that has been scraped, these patches are called *holidays.*

Hollow Sea. A curling sea like breakers on a shore.

Holy Joe. A sailor's name for a parson. (See SKY PILOT.)

Holy Stone. A large flat stone used for cleaning the ship's decks by dragging it to and fro. (See TESTAMENT.)

Home. Anything is said to be *home* when it is hauled out as far as it can go, as the clew of a gaff topsail when it is sheeted to the sheave hole in the end of the gaff.

An anchor comes home when it does not get a hold but drags along over the bottom in kedging instead of allowing the vessel to be walked up to it. The same applies to a ship's anchor when heaving in the chain.

Home Port. The *home port* of a vessel is that in which, or the nearest to which, the managing owner resides, established by law for the issuing of marine documents. When a vessel returns from a foreign to any port in her own country such port is known as a *home port.*

Hood. The name of the rise in the quarter-deck which gives more head room to the cabin; a covering of wood or canvas for a hatch, companionway or skylight.

Horns. A name by which the jaws of the booms and the ends of the cross-trees are known.

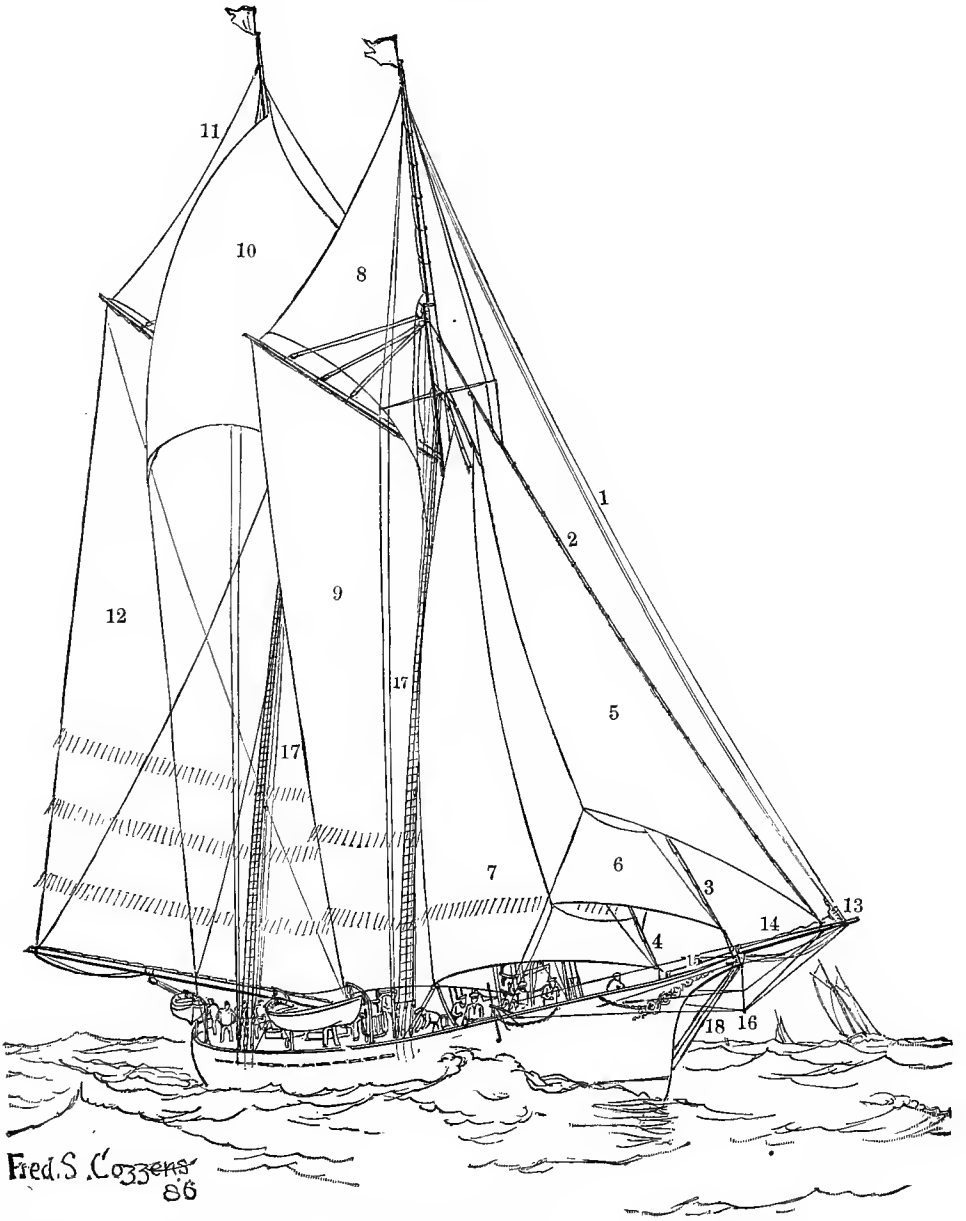
Horse. An iron bar or span fastened to the deck for the fore, main and spanker sheet blocks of a fore-and-aft vessel to travel on, also for the traveler of the fore staysail. A *deck horse* is often wrongly called a *deck traveler,* as it is the *ring* which *travels* on the *horse.* English seamen refer to a deck horse as a *leefange.*

Horse's Manes. (See WHITE CAPS.)

Hospital Ship. A floating hulk, used, as its name implies, as a hospital for seamen.

Hospital Tax. Up to June 26, 1884, a tax of forty cents per month was exacted by law from every person belonging to the crew of an American documented vessel, but on the above date the law was repealed.

SCHOONER YACHT UNDER WAY, SHOWING ALL PLAIN (WORKING) SAIL SET.



1. *Foretopmast or Jib Topsail Stay.*
2. *Flying Jibstay.*
3. *Jibstay.*
4. *Forestay.*
5. *Flying Jib.*
6. *Jib.*
7. *Forestaystail.*
8. *Fore Gaff Topsail.*
9. *Foresail.*
10. *Maintopmast Staysail.*
11. *Main Gaff Topsail.*
12. *Mainsail.*
13. *Jib Topsail furled on Jib Boom.*
14. *Jib Boom.*
15. *Bowsprit.*
16. *Martingale.*
17. *Fore and Main Shrouds rattled down.*
18. *Bobstays, which secure the Bowsprit and prevent it from lifting.*

Hounding. The *hounding* of a mast is all that is contained between the heel and the lower part of the head.

Hounds. Projections bolted on to the masthead which serve as shoulders for the trestle-trees, and which in turn support the top.

House. *To house a mast* is to lower it partly and secure its heel by a lashing to the mast against which it is lowered.

House-line (pronounced *house-lin*). A seizing stuff made of three small yarns and laid up left-handed.

Houses of Refuge. Houses built along dangerous and non-inhabited coasts, and supplied with boats and provisions for the use of shipwrecked seamen who may have been cast ashore in their vicinity.

Housing. The *housing* of a mast is all that is below the spar or upper deck; the housing of a bowsprit is that part from the stem inboard.

Hove Short. (See HEAVE SHORT.)

Hove-to. (See LIE-TO.)

Hug. *To hug the land* is to keep close to it in sailing. *To hug the wind* is to keep the vessel by the wind.

Hulk. A dismasted vessel. (See SHEER HULK.)

Hull. The body of a vessel exclusive of masts, spars and rigging.

Hull Down. When only the spars of a vessel are visible above the horizon.

Hurricane. A revolving wind storm of great violence, extending over an area from a few to hundreds of miles.

Hurricane Deck. (See DECK.)

Hydraulic Dock. (See DOCK.)

Hydrographical Surveying. (See NAUTICAL SURVEYING.)

I.

Ice. Water solidifies by cold at 32° F. Salt-water ice in salt water floats with only *one-ninth* of its mass above water, and fresh-water ice in salt water floats with *one-eighth* of its mass above water. A wide expanse of ice is called a *field*, and one of smaller dimensions a *floe;* when a field is dissevered and broken into numerous pieces it is termed a *pack;* this, again, when of a broad shape is called a *patch*, and when much elongated a *stream*. When it is possible for a ship to sail freely through floating ice, the same is termed *drift ice*, and the ice itself is said to be *loose* or *open*. When the ice is crushed into fragments it is known by the name of *brash ice*. A portion of ice rising above the common level is called a *hummock*. The term *sludge* applies to the soft crystals which the frost forms when it first attacks the ruffled surface of the ocean, and when this sludge separates into small patches by the agitation of the water these patches are called *pan cakes*.

Ice Anchor. A peculiar iron shape used for anchoring a vessel to the ice.

Ice Axe. As its name implies, an axe used for chopping ice. It has an extremely long head. (See engraving.)

Iceberg. A floating ice mass of great magnitude being detached from glaciers on the shores of the polar seas. Icebergs have been seen which were five miles in length and 300 feet in height from the water-line. (See engraving.)

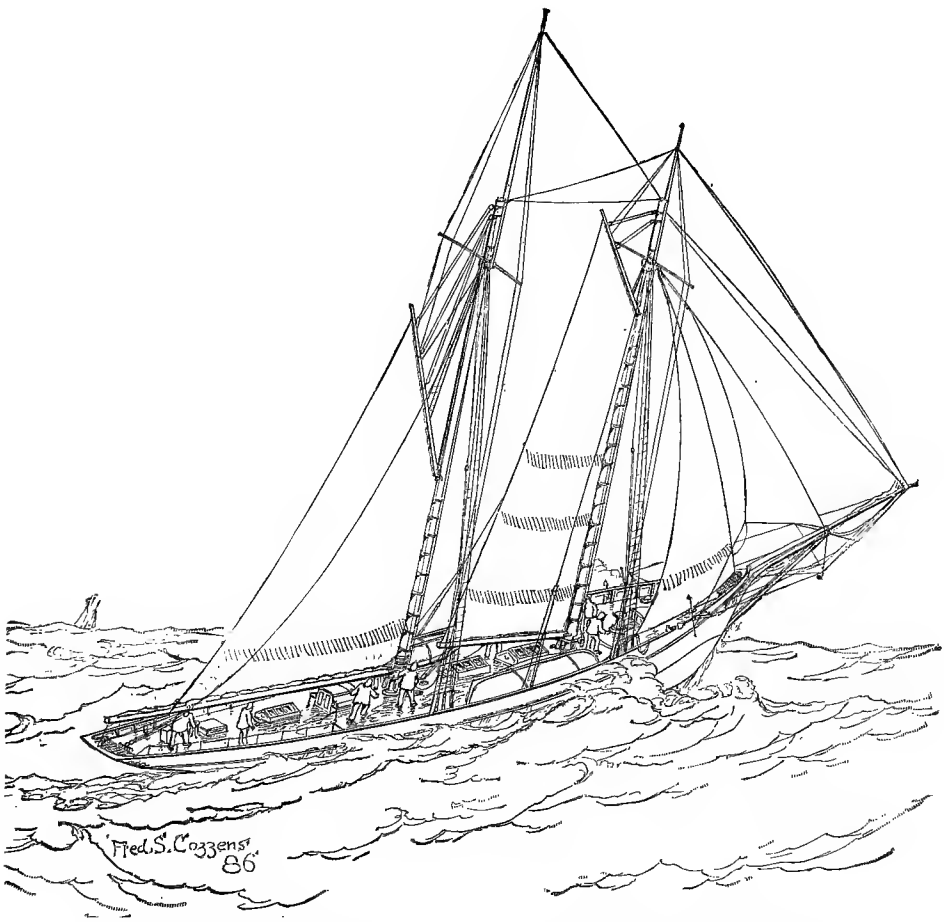
Ice Boat. A fore-and-aft sail is supported by beams resting on iron-shod runners, which are connected like the hulls of a catamaran. These boats are capable of great speed, at times shooting along under such tremendous headway as to outstrip for a brief interval the wind itself.

Ice-bound. Being prevented from sailing by being surrounded by ice.

Ice Blink. A shimmering whiteness about the horizon caused by the reflection of light from a field of ice.

Ice Dock. A basin, either natural or sawed out with ice-saws, sufficiently large to

SCHOONER YACHT UNDER WAY, SHOWING MAINSAIL REEFED AND FORETOPMAST HOUSED.



Schooner under Jib, Forestaysail, whole Foresail and double-reefed Mainsail.

haul the ship into. This is often done by navigators in the polar regions in order to avoid being nipped between two closing floes.

Ice Drag. An iron instrument used for planting in the ice ahead of the vessel and warping her along. (See engraving.)

Ice Lane. (See ICE LEAD.)

Ice Lead. A temporary channel of water leading into or through an ice field, but which is liable to close at any moment with the motion of the ice acting under the influence of the tides and winds.

Ice Master or Pilot. A person employed on board of vessels navigating the polar seas whose duty it is to give counsel to the captain in regard to ice navigation.

Ice Nip. The meeting of two floating bodies of ice. When a vessel is caught between two such bodies she is said to be *nipped.*

Ice Saw. A large steel saw used for cutting a channel through ice, varying in length from 10 to 25 feet.

Ice Vein. (See ICE LEAD.)

Imaginary Line. A line supposed to exist between the race committee's boat and the flag boat or other object, and across which the vessels must go after the firing of the starting gun.

Impressment. To seize for public use; to use compulsion in getting crews for public vessels; to force seamen on board a vessel of war against their wish to serve on board such vessels. (See PRESS GANG.)

In. On board.

In Boats. The order to get on board all the boats not carried at the davits. *Up boats* is the order to hoist the boats to the davits.

In Bows. The order given to the bow oarsmen of a single-banked boat, but the two bow oarsmen of a double-banked boat, signifying that he or they are to cease rowing and ship the oar or oars, standing ready with the boat-hook to catch hold of the dock or vessel's side, as the case may be.

In Sail. The order to clew up a square sail or to drop the peak and throat of a fore-and-aft sail.

In Stays. The situation of a vessel after her helm has been put down and she has come up into the wind preparatory to going about on the other tack.

In the Wind. When a ship is so close to the wind that all her sails are shivering.

In Board. Within the hull.

Indiaman. A name given to the large sailing ships once belonging to the East India Company, but now a general title for all vessels engaged regularly in trade with the East Indies.

Indraught. A strong current setting through a strait, such as the Straits of Gibraltar, which connects the Atlantic Ocean with the Mediterranean Sea.

Inland Waters. Rivers, harbors, bays, gulfs, seas, lakes and sounds.

Inner Jib. The head-sail next forward of the fore-staysail on some merchant sailing vessels. (See engravings of various merchant rigs.)

Inshore. A vessel is *inshore* of another when the former is the nearest to the land.

Inside Course. A sheltered or land-locked course over which vessels race.

Instruments of Navigation. (See PART II.)

Insurance. (See MARINE INSURANCE.)

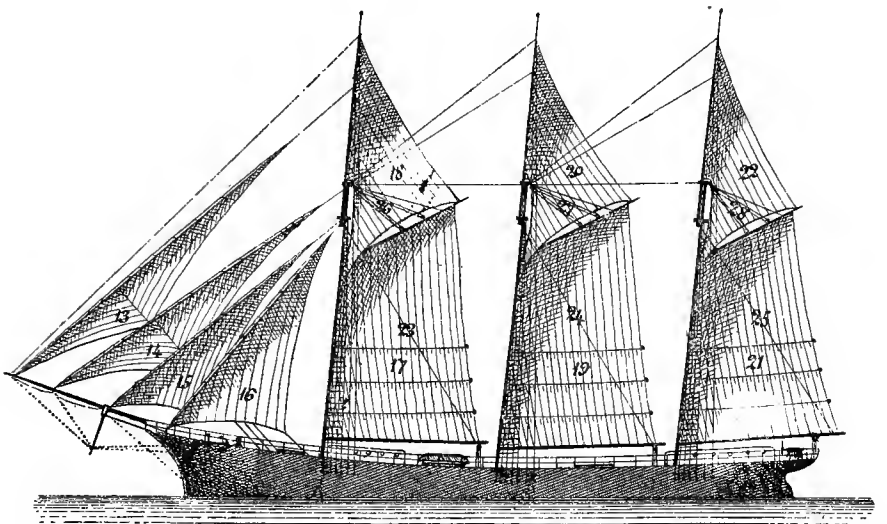
International Code. The code of signals adopted by all maritime nations for communicating with vessels at sea, stations along shore, etc. The "Code" consists of the following flags and shapes, and from which 78,642 combinations can be made: 1 *burgee*, 4 *pennants*, and 13 *square flags.* An additional bunting, used both as a "*Code*" *pennant* and an *answering-signal*, is provided.

Invoice. A statement in writing giving the particulars and prices of each and every parcel of goods in the cargo, together with the amount of freight, duties, and charges thereon.

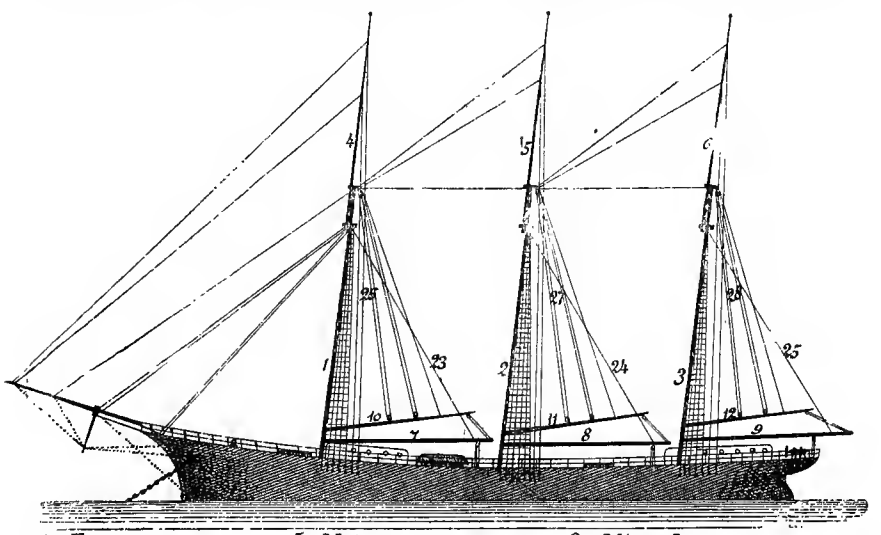
Inward Charges. Inward pilotage, towing into harbor, etc.

Irish Pennant. The loose end of a rope hanging out of a sail or from a yard in a slovenly manner.

THREE-MASTED FORE & AFT SCHOONER.



13 Flying-jib 17. Fore-sail 21 Mizen 25 Mizen boom topping lift
14. Jib 18. Fore gaff topsail 22. Mizen gaff topsail 26 Fore peak halliard
15 Inner jib 19 Main sail 23 Fore boom topping lift 27 Main peak halliard
16. Staysail 20 Main gaff topsail 24 Main boom topping lift 28 Mizen peak halliard



1. Fore-mast 5. Main topmast 9 Mizen-boom
2 Main-mast 6. Mizen topmast 10. Fore-gaff
3 Mizen-mast 7. Fore-boom 11 Main-gaff
4. Fore topmast 8 Main-boom. 12. Mizen-gaff

Iron-bound. Blocks are said to be *iron-bound* when they have a metal strop. A coast is said to be *iron-bound* when it presents perpendicular cliffs of rock.

Iron Horse. The deck-horses for the stay-sail and other fore-and-aft sheet travelers. (See HORSE.)

Irons. A ship is said to be *in irons* when, after being thrown up into the wind in tacking, she refuses to cast one way or the other, in which position she will speedily get sternway on her, and be in a dangerous situation, hence it is important that she should be boxed off at once. (See ABOX.)

J.

Jack. A universal name for a sailor. The union of the national flag. (See UNION.) A horizontal bar of iron at the topgallant masthead, placed there in order to give spread to the royal shrouds. A portable piece of machinery employed in moving heavy weights, and much used on board ship when stowing cotton, as the action of the jack may be regulated for pressure, leverage, screwing, etc. Also known as a *jack screw.*

Jack Block. A block kept hooked aloft through which to reeve the topgallant and royal yard ropes when those spars are sent up and down.

Jack Cross-trees. Iron cross-trees such as are to be seen at the head of the topgallant mast. (See JACK.)

Jack-in-the-Basket. A basket placed on the top of a pole to mark a shoal or cluster of rocks.

Jack Nasty Face. The name given to the cook's helper.

Jack o' Lantern. (See CORPOSANT.)

Jack Rope. The foot of some fore-and-aft sails is secured to the boom by a line called a *jack rope*, running fore-and-aft through the eyes which are screwed in on top of the spar, and through the little thimbles sewn on the bolt rope on the foot of the sail at every seam.

Jack Screw. (See JACK.)

Jack Staff. A short staff, or flag-pole, shipped at the bowsprit cap, and on which the jack is displayed.

Jack Stays. Long strips of wood or iron bolted on to the top of a yard to bend the head of a square sail to, and to the under part of a gaff for the head of a fore-and-aft sail. Formerly jack stays were lengths of rope stretched along a spar.

Jack Tar. A universal name for a seaman.

Jackass. A cornucopia-shaped canvas bag stuffed with oakum, and thrust into the hawse pipes when at sea to prevent the seas as they break against the vessel's bows from flowing inboard.

Jackass Brig. A brigantine-rigged vessel that carries the fore-topmast and the fore-topgallant mast in one spar.

Jack's Quarter Deck. The forecastle deck.

Jacob's Ladder. A ladder with rope sides and wooden rungs, used for getting into the lower rigging on vessels with very high bulwarks, and for getting up to the jack cross-trees—the ladder hanging abaft the mast.

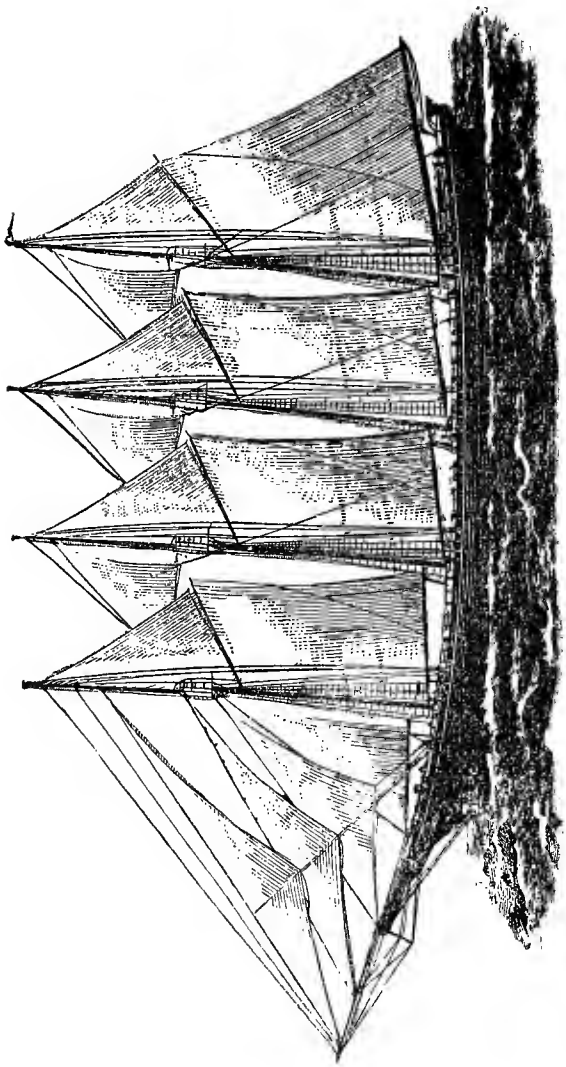
Jammed on the Wind. A vessel is said to be *jammed on the wind* when she is sailing close-hauled.

Jamming. To enclose anything between two bodies so that it is immovable.

Jaw Rope. The span attached to the jaws of a gaff, and sometimes to a boom, on which little hard wooden wheels called *rollers* are strung like beads. (See GAFF.)

Jaws. The inner ends of a gaff, also of some booms, being pieces bolted on to the sides of the spar. Also known by the name of *horns.*

Jawing Tackle. The power of speech. *To clap a stopper on one's jaw tackle* is to cease talking.



FOUR MAST SCHOONER—AFTERMOST MAST CALLED "SPANKERMAST."

Jeer Bitts. The bitts to which the jeers are belayed.

Jeer Blocks. Double or treble blocks belonging to the jeer falls.

Jeer Capstan. The capstan placed midships and between the fore and mainmasts for general use.

Jeer Falls. The ropes rove through the jeer blocks, which together form the jeers.

Jeers. A heavy purchase for hoisting and lowering the lower yards.

Jetsam. Goods thrown from a vessel and found floating upon the sea or cast up on the shore. (See JETTISON.)

Jettison. The act of heaving overboard the cargo of a vessel in order to save the ship.

Jetty. A kind of dyke constructed of timber, earth, stone, etc., at the entrance to river harbors, for the purpose of concentrating the water, and thereby deepening the channel. The largest system of *jetties* in the United States is at the mouth of the Mississippi River in the Gulf of Mexico.

Jewell Blocks. Small blocks at the yard-arms for the studding-sail halliards to reeve through.

Jew's Harp. The peculiar-shaped shackle which connects the cable with the anchor ring.

Jib. A triangular sail which sets on a stay forward the foremast.

Jib-boom. A spar supported on and rigged out beyond the bowsprit through the bowsprit cap. (See JIB-BOOM GUYS.)

Jib-boom Guys. Ropes for steadying the jib-boom sideways, leading from the end of the spar through the whiskers on the end of the bowsprit, and thence to the bows of the vessel where they are set up.

Flying jib-boom guys act in the same way for the flying jib-boom. (See MARTINGALE STAYS.)

Jib-headed. The term applies to the cut of the sail, and means that the head of it is shaped like that of a jib.

Jib Netting. A safety netting under the jib-boom, which is seized to the jib-boom guys and the whiskers.

The flying jib-boom netting is rigged under the flying jib-boom, being seized to the flying jib guys. These nettings are seldom met with outside of naval vessels.

Jib-o'-jib. A triangular sail carried on some merchant schooners which sets on the last stay forward of the foremast.

Jib Stay. A stay forward the foremast on which the jib is set.

Jib Topsail. A triangular sail which sets on a stay forward the foremast.

Jib Traveler. The large iron ring that the tack of a cutter's jib is made fast to. The ring goes around the bowsprit, and runs in and out on the spar by means of an outhaul and an inhaul—this jib is always set flying.

Jibber the Kibber. To decoy a vessel ashore by exhibiting a ship's side light on the beach. The light is carried along the margin of the water, the man holding it giving a sinking and rising action to it as he walks along in imitation of a vessel's motion. A ship's captain seeing this light inshore considers that there is plenty of sea-room, and in consequence his vessel may become stranded by entertaining a false idea as to his position.

Jibe. To shift the booms from one side of the vessel to the other in sailing; to bring the wind on what was the lee side, and allow the booms to swing across the deck and the sails to fill on the new tack.

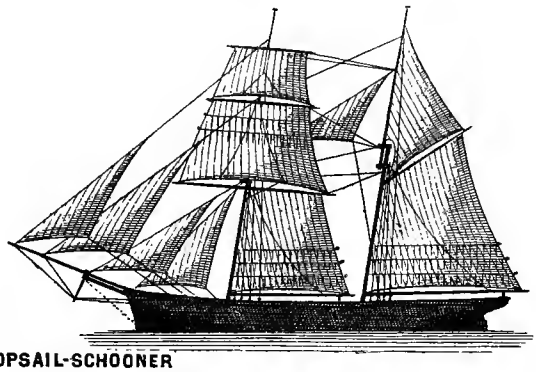
Jig. An extra purchase made fast to one end of the throat and peak halliards. The bight of the halliards is rove through the blocks, and the two ends are led down on deck, one on each side of the mast. One of these ends is the regular hauling part, and the other end has a purchase to it which is called the *jig*.

Jiggamaree. A designation for an abortive contrivance, or an unseamanlike piece of work performed on board ship.

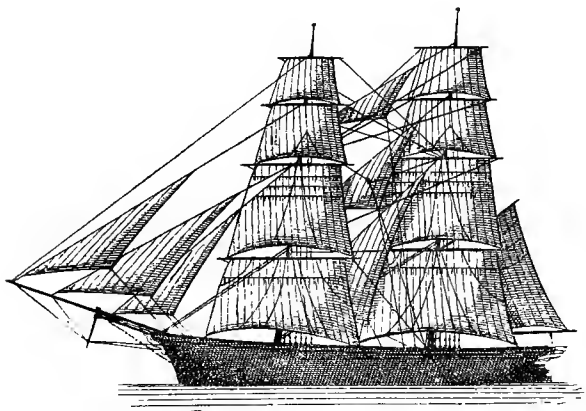
Jigger. A handy-billy tackle used about decks; a sail that sets on a jigger-mast.

Jigger-mast. The aftermost mast on a four-masted vessel; the small mast carried at the stern on yawls.

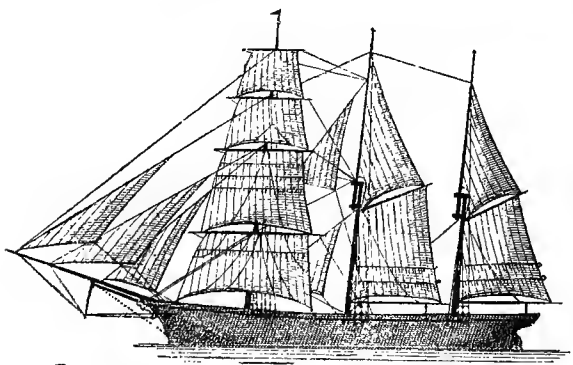
TOPSAIL SCHOONER, SINGLE-TOPSAIL BRIG, AND SINGLE-TOPSAIL BARKENTINE.



TOPSAIL-SCHOONER



BRIG



BARQUENTINE

Jimmy Squarefoot. A sailor's name for the devil.

Johnny Crapaud. A term applied to French seamen, meaning *Johnny Toad.* The armorial bearings of France once had three *toads*, which were exchanged for the three *flowers-de-luce*, and it is undoubtedly from the former that the jocose term was derived.

Johnny Newcome. A term applied to a novice on shipboard. (See JOHNNY RAW.)

Johnny Raw. A sailor's term for a green hand on board ship. (See JOHNNY NEWCOME.)

Jolly Boat. A small boat used for all kinds of work, such as for marketing, washing the ship round, etc. It is to a merchant vessel what a dingey is on board men-o'-war and yachts.

Jolly Jumpers. A name for the fancy sails which tradition tells us were carried on the very lofty ships of *ye olden time.* They were supposed to set above the moon-rakers, which in turn were set above the sky-scrapers.

Jonah. A member of the crew, or one of the passengers, who is accredited with bringing ill fortune to the vessel in the way of accidents, head gales, calms, etc. Parsons and women are considered the most perfect specimens of this order, and the superstitious Jack Tar of olden days deemed it a particularly unfortunate omen if he was obliged to sail in such dangerous company. The idea entertained was, that, as the Evil One was continually following up parsons and women in order to tempt them, his spirit presence could not fail to be attended with all kinds of misfortune for the vsssel.

Jump of a Sea. A short, quick sea.

Jump the Masts. A vessel is said to *jump her masts out of her* when, from the terrific nature of the sea, her masts go overboard.

Jumper. A rope leading from the outboard ends of the whiskers to the martingale to prevent the former from steeving—from leaving a horizontal line by jumping upwards.

Jumper Stay. Extra stays leading from the lower mastheads to the sides of the vessel, where they are set up with tackles.

Jumping a Ship. When seamen desert a ship they are said to *jump it.* (See PIER HEAD JUMP.)

Junk. A Chinese vessel; also old rope, canvas, iron, etc.

Jury Anchor. When guns or other heavy weights are used as anchors they are termed *jury anchors.* This has been done on a lee shore to assist the anchors already down or to take the place of those lost.

Jury Mast. A temporary mast rigged up at sea to the stump of a mast that has been carried away.

Jury Rudder. A temporary rudder rigged at sea in order to steer the vessel in the event of injury to the rudder proper.

Jute. The fibre of an East Indian plant, and in use for making rope, matting, etc.

Jute Rope. A rope made from the fibre of a plant grown in the East Indies.

K.

Keckling. Old rope used as chafing stuff around cables.

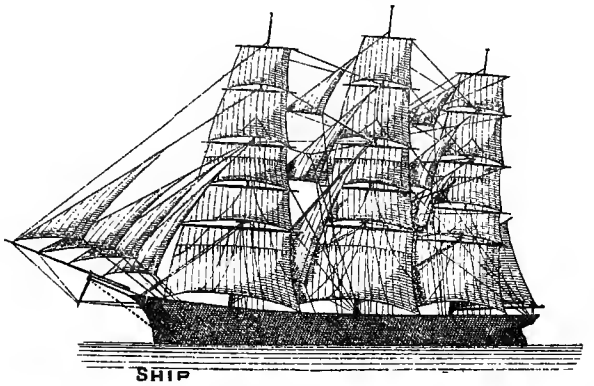
Kedge. A small all-iron anchor used for kedging a vessel.

Kedge Rope. The rope used with a kedge anchor.

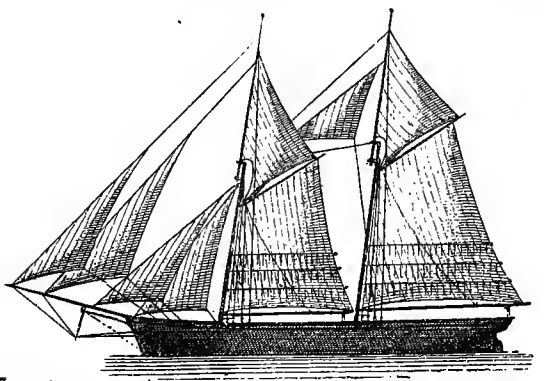
Kedging. Moving a vessel by carrying out in a boat a kedge anchor with a hawser bent to it, and, after dropping the anchor ahead of the ship, hauling away on the rope so as to bring the vessel up to the place where the kedge was thrown overboard from the boat.

Keel. The first timber laid down upon the keel blocks in building a vessel, and the *back-bone* of the ship, supporting the entire frame. The keel runs the whole length of

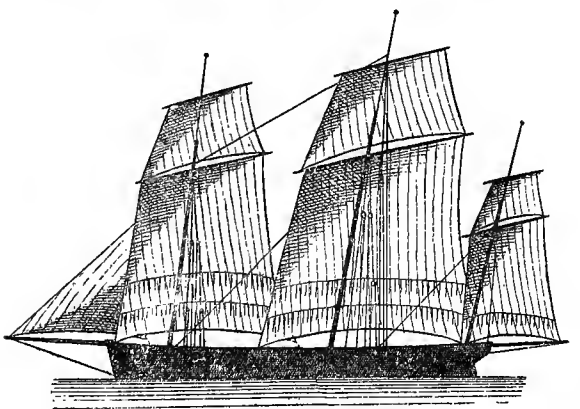
DOUBLE-TOPSAIL SHIP, FORE-AND-AFT COASTING SCHOONER, AND CHASSE-MAREE, OR FRENCH LUGGER.



SHIP



FORE & AFT-SCHOONER.



CHASSE-MAREE.

the vessel, the stem and stern post being set into it, and being in reality continuations of the keel. When the latter is composed of several pieces, owing to the length of the vessel, the pieces are scarphed and bolted together.

Keel Blocks. Blocks which the vessel's keel rests on in building, or when she is on a dry dock.

Keel Haul. A punishment at one time practised upon heavy offenders in the English and other foreign navies. Heavy weights were attached to the culprit, then he was hauled under the vessel's bottom from one yard to the other by means of whips.

Keelson. A timber bolted on top of the keel inside the vessel, and running parallel with it. (See BILGE KEELSON and SISTER KEELSON.)

Keelson Capping. (See KEELSON RIDERS.)

Keelson Riders. Timbers bolted on top of the main keelson, and parallel to it, in order to strengthen the keel. This is also known as *keelson capping.*

Keep Away. To put the helm up; to alter the course of the ship so as avoid another ship or some danger.

Keep Her Full. An order given to the helmsman to keep the sails full of wind.

Keep Off. An order to the helmsman to keep the vessel's head more away from the wind.

Keep the Land. To steer along a coast so as not to lose sight of the shore.

Keep the Luff. (See HOLD THE LUFF.)

Keep the Wind. (See HOLD THE WIND.)

Keep Your Luff. An order to the helmsman to keep the ship close to the wind so that the sails will tremble slightly.

Kentledge. Pig iron ballast laid alongside of the keelson.

Ketch. A small pleasure vessel; a bomb vessel.

Kettle Bottom. A vessel is said to be *kettle-bottomed* when she has a flat floor.

Kevel. (See CAVIL.)

Kevel Heads. (See CAVIL HEADS.)

Key. An iron pin slipping crosswise through a hole in the end of a bolt to prevent it from drawing out.

Key Bolt. A bolt fitted with a key.

Kid. A small wooden tub in which the beef and pork ration is carried into the forecastle.

Killock. A stone anchor used in small boats.

King Spoke. That spoke of the steering wheel (usually distinguished by a mark) which is directly over the barrel-hub when the rudder is amidships.

Kitchen. The place below decks where the cooking is done. When the cooking is done in a house on deck the latter is called *caboose* or *galley.*

Kink. A twist in a rope or cable.

Kite Drag. (See DRAG.)

Kites. (See FLYING KITES.)

Knee Staple. The staple employed in fastening the false to the main keel.

Knees. Pieces of timber having two arms, and used for connecting the beams of a vessel with the timbers.

Knife Lanyard. A cord worn around the neck and attached to a ring in the handle of a knife, which prevents it from falling from aloft and insures it against loss.

Knight Heads. The timbers next to and on each side of the stem.

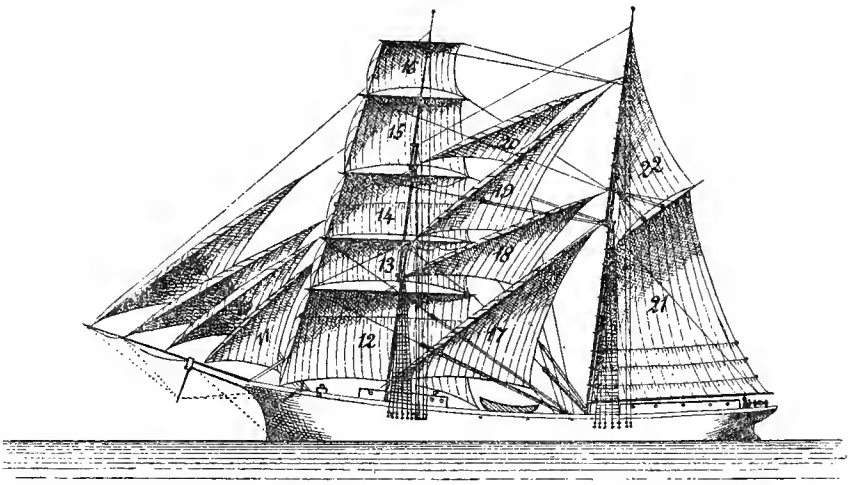
Knittles. (See NETTLES.)

Knock Off. An order to stop work. At noon in port the crew are *knocked off* for dinner.

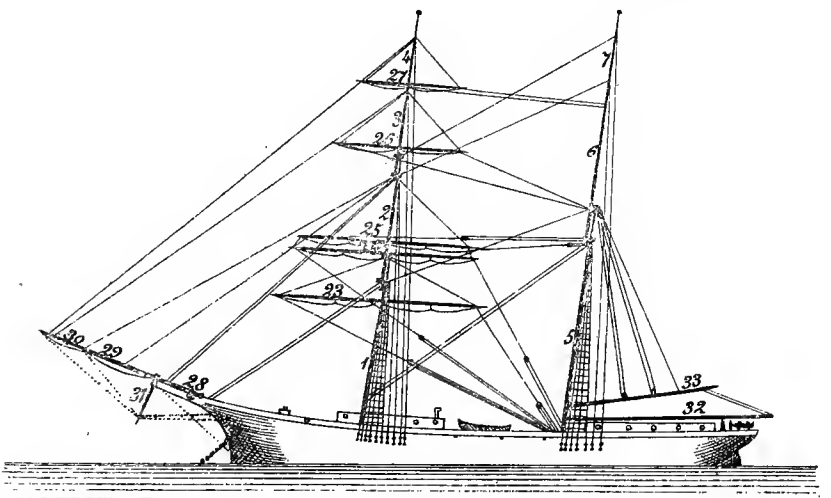
Knocked Down. Said of a vessel when, by the force of the wind acting upon her sails and spars, she is careened to such an extent that she does not recover herself.

Knot. To make a bunch in a rope. (See engravings.) A division mark placed on a log line which answers to a mile of distance on the ocean. In other words, the divisions on the log line are made to be of the same proportion of a sea mile (6,080 feet) as the 30″ glass is to an hour, viz., the one hundred and twentieth part. Hence the 120th of a sea mile is 50 feet and 8 inches, which will be the distance apart for the knots on the line used with a 30″ glass. (See LOG.)

BRIGANTINE



1 Fore-mast
2. Fore-topmast
3. Fore topgallant mast
4 Fore royal mast
5 Main mast
6 Main topmast
7 Main topgallant mast
8 Flying-jib
9 Outer-jib or Main-jib
10. Inner-jib
11 Fore topmast staysail
12. Fore-sail
13. Lower topsail
14. Upper topsail
15 Topgallant-sail
16. Royal
17 Main staysail
18 Middle-staysail
19. Main topmast staysail
20. Main topgallant staysail
21 Main sail
22. Gaff-topsail



23. Fore-yard
24. Lower topsail yard
25 Upper topsail yard
26. Topgallant-yard
27. Royal-yard
28. Bowsprit
29. Jib-boom
30 Flying jib-boom
31. Martingale-boom
32. Main boom
33. Main gaff

L.

L's of Navigation. Lead, lookout, lights, latitude and longitude. (See THE THREE L'S.)

Labor. A vessel is said to *labor* when she strains heavily in a violent sea from rolling and pitching.

Lacing. The rope used to lash the head of a fore-and-aft sail to a gaff; to secure a bonnet to a sail, etc. (See LATCHINGS.)

Laden in Bulk. Cargo carried loose in a vessel, such as wheat, corn, salt, etc.

Lagan. Sinkable articles thrown overboard and buoyed so as to be recovered.

Laid up. Out of commission; not in use.

Land Breeze. On the coast in the tropics a breeze begins to blow from the shore (*land breeze*) after sunset, and lasts until sunrise, when a breeze commences to blow from the sea (*sea breeze*), and lasts until near sunset, being replaced again at that time by the *land breeze*.

Land Fall. To see the land when coming from sea. *A good land fall* signifies that the land sighted is the exact point navigated for.

Land ho! The cry made when the land is first discovered.

Land-locked. Surrounded by land.

Land Lubber. A sailor's name for a man who passes his life on land.

Landing Strake. The second line of planking on a boat from the gunwale.

Landsman. A designation for forward men on shipboard below the grade of ordinary seamen. A man who has had little or no sea experience.

Lanyards. A rope rove through dead eyes in setting up rigging; a rope made fast to anything for securing it, as the lanyards of the davit guys. (See KNIFE LANYARD and BUCKET LANYARD.)

Lap Streak. An expression used in boat-building, signifying that the planks of the boat overlap.

Larboard. The left-hand side of a vessel in looking towards the bow (now obsolete). The word *port* takes the place of *larboard*.

Larbolines. A name once given to the men of the larboard watch.

Large. A vessel *goes large* when she has the wind free. (See FLOWING SHEETS.)

Lark's Head. A knot made by doubling the bight of a rope, passing it around a spar, or through a ring or hook about a foot, then bending it down towards you and spreading it out, and slipping a toggle through the four parts—across the two outer and under the two inner. To finish with take a half hitch around the standing part with the loose end hanging down so that it will not slip when a strain is put on it. (See engraving.)

Lash. To bind anything with ropes or chain.

Latchings. The rope loops on the head of a bonnet and by which it is laced to the foot of the sail.

Lateen. A rig similar to that of the lugger, excepting that the sail is triangular. A long yard which hoists obliquely to a mast forms the luff.

Launch. A large boat. When a vessel is slid off the ways into the water. To haul a spar along the deck is to *launch* it along.

Law of Storms. The science of the phenomena relating to violent winds.

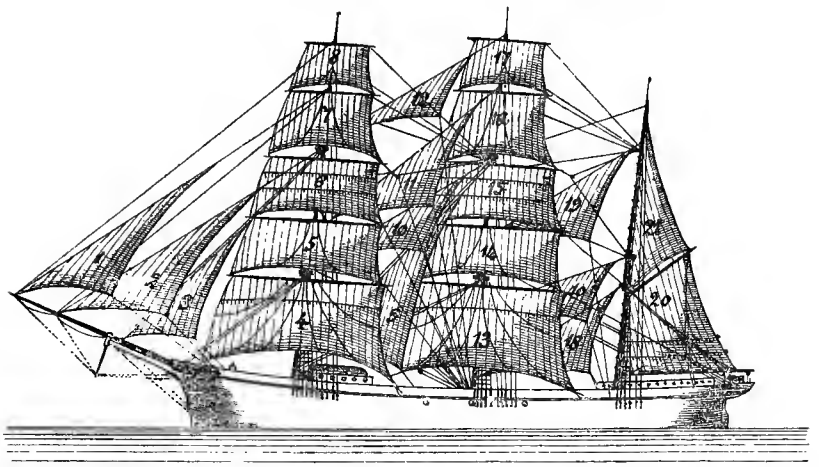
Lay. The direction in which the strands of a rope are twisted; the preface of an order for the men to come or to go, as *lay aft*, *lay forward*, *lay aloft*, *lay out*, etc. (look under respective headings.) A percentage of the profits paid to the officers and crew of a whaling vessel instead of salary.

Lay a Course. A vessel *lays her course* when the wind allows her to point toward the place of destination.

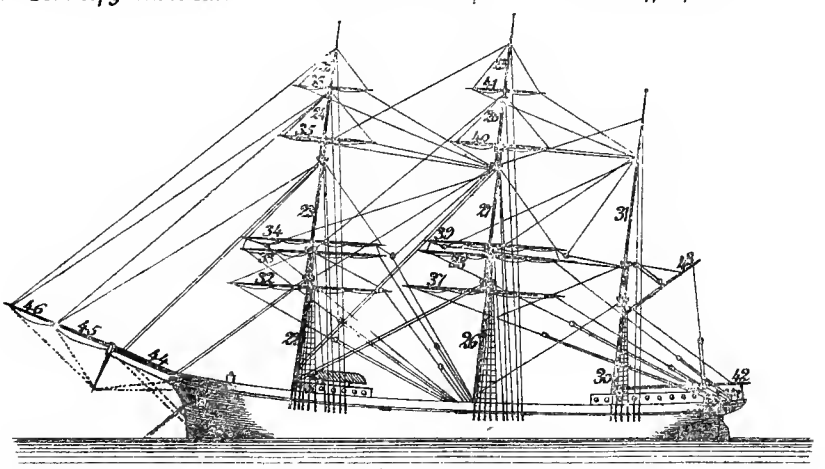
Lay Aft. The order to the crew individually or collectively to proceed towards the stern of the vessel.

Lay Days. A certain number of days agreed upon between the shippers and the

BARK.



1 Flying-jib
2 Jib
3 Fore topmast staysail
4 Fore-sail
5 Lower-fore-topsail
6 Upper-fore-topsail
7 Fore topgallant sail
8 Fore-royal
9 Main topmast staysail
10. Middle staysails
11 Main topgallant staysail
12. Main-royal staysail
13 Main-sail
14. Lower-main-topsail
15. Upper-main topsail
16 Main-topgallant sail
17 Main royal
18. Mizen staysail
19 Mizen topmast staysail
20 Spanker
21. Gaff-topsail



22. Fore-mast
23 Fore topmast
24. Fore topgallant mast
25. Fore royal mast
26. Main mast
27. Main topmast
28. Main topgallant mast
29 Main royal mast
30. Mizen-mast
31 Mizen topmast
32. Fore-yard
33. Lower fore topsail yard
34. Upper fore topsail yard
35. Fore topgallant yard
36 Fore royal yard
37. Main yard
38 Lower main topsail yard
39 Upper main topsail yard
40 Main topgallant yard
41 Main royal yard
42 Spanker-boom
43 Spanker-gaff
44 Bowsprit
45 Jib-boom & 46 Flying jib-boom

master, or the agent of a vessel (shown in the charter party) for loading or discharging, and beyond which a stipulated per diem demurrage is to be paid to the vessel. (See DEMURRAGE.) Sundays and holidays do not count unless the term *running days* is inserted, in which case all days count.

Lay Forward. An order for the crew to proceed towards the bows of the vessel.

Lay on Your Oars. An order to the boat's crew to cease rowing, but to keep their oars shipped in the thole pins or rowlocks, the blades out of water and horizontal, the oar itself kept at right angles to the keel. (See OARS.)

Lay Out. An order to the men in the slings of the yard to go out on the yard-arms.

Lay Out on Your Oars. An order to a crew to pull the boat faster through the water.

Lay the Land. As a ship recedes from the shore she is said to *lay the land.*

Lay-to. (See LIE-TO.)

Laying Down a Vessel. To delineate the different parts of a vessel upon the mold-loft floor. When the lines of a vessel are chalked out on the floor from the draft the builder is said to *lay down the lines of the ship.*

Lazarette or Lazaretto. A low-headroom space below the main deck on the afterpart of the vessel where provisions and spare gear are stowed.

Lazy Guy. A name sometimes applied to the *boom-guy* or *boom-pendant.*

Lazy Jacks. The lengths of rope rove through thimbles seized on to the boom topping lifts and made fast to the boom. When the sail is lowered they prevent the folds of canvas from falling on the deck.

Leach. The edge of a square sail at the sides, but the after-edge of a fore-and-aft sail. Oftentimes the *luff* of a sail is called the *forward leach,* and the leach proper is termed the *after-leach.* Among English seamen this is universal.

Leach Line. A line made fast to the leach ropes of sails, and passing up through blocks on the yards to haul the leaches up by.

Leach Rope. The roping on the after-edge of fore-and-aft sails, but the roping on the sides of square sails.

Lead. (See HAND LEAD and DEEP SEA LEAD.)

Leader. (See FAIRLEADER.)

Leading Block. (See SNATCH BLOCK).

Leading Part. The part of the tackle that is hauled upon.

Leading Wind. A wind which permits a vessel to lay her course with sheets started.

Leadsman. The seaman who heaves the lead to ascertain the depth of water.

League. Three miles. (See MARINE LEAGUE.)

Leak. A hole in a vessel's hull which admits water. *To spring a leak* is to strain the vessel so that some of her planking separates sufficiently for the water to find entrance into the vessel.

Leaper. The name given to a sea which breaks over the bow of a vessel.

Ledge. A cluster of rocks a short distance below the surface of the water.

Lee Board. A board arranged to fit to the lee side of flat-bottomed boats, in order to prevent leeward drift, by acting as a centre-board.

Lee Gage. Being to leeward of another ship or object.

Lee Helm. A vessel carries a *lee helm* when the tiller is put over towards the lee side of the vessel.

Lee Lurch. A sudden roll of the vessel to leeward.

Lee Shore. The land to leeward of the ship, or the shore towards which the wind is blowing.

Lee Side. The opposite side to which the wind is blowing on.

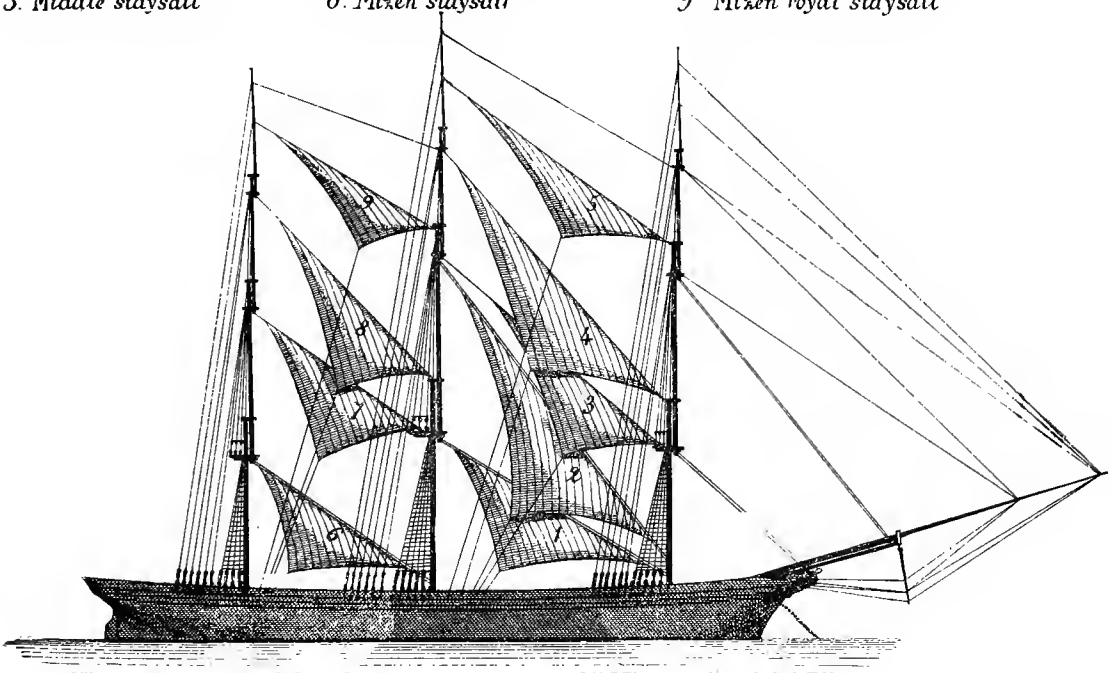
Lee Tide. A tide that runs in the same direction as the wind is blowing; tide and wind in harmony.

Lee-way. The amount a vessel loses by being forced sideways through the water owing to the pressure of the wind on the vessel's sails, side, and rigging.

Lee Wheelsman. The assistant to the helmsman. The *lee-wheelsman* stands on the lee side of the wheel.

STAYSAILS—

1. *Main staysail*
2. *Main topmast staysail*
3. *Middle staysail*
4. *Main topgallant staysail*
5. *Main royal staysail*
6. *Mizen staysail*
7. *Mizen topmast staysail*
8. *Mizen topgallant staysail*
9. *Mizen royal staysail*



Leech. (See LEACH.

Leefange. (See DECK HORSE.) Also a rope made fast to the clew cringle of a jib in order to haul it flat amidships while the bonnet is being laced.

Leeward. (Pronounced as though spelled *lu-ard.*) The lee side. The opposite to windward.

Left-handed Rope. Rope laid up against the sun; *i. e.*, twisted from left to right.

Leg. When a vessel sails close-hauled she is said to *make a leg*, and the terms *long leg* and *short leg* apply to the comparative distances sailed on different tacks.

Let Draw. (See DRAW.)

Let Fall. An order given to a boat's crew to let their oars fall from the perpendicular to the horizontal. It follows the order "up oars." Also an order to the men on the yard to let the sail drop.

Libel. To seize a vessel under admiralty process at the beginning of a suit. A vessel may be libelled by the crew, or officers under the rank of captain, for non-payment of wages, for damages, etc.; but the master cannot libel the vessel for the *wages* which may be due him.

License. A marine document issued to a vessel of the United States by the customs authorities.

A vessel of five tons and upwards (*unless under register*), employed in domestic trade, in the fisheries or in foreign trade on the inland northern frontiers of the United States, must be licensed.

Yachts must be licensed if of five tons or upwards, or be subject to light money fees of fifty cents per ton at each port of arrival. All licenses expire by limitation at the end of one year, when they must be renewed.

Officers' licenses are certificates of competency issued by the U. S. Local Inspectors of Steam Vessels to masters, mates, pilots and engineers, and authorizing them to perform their several duties. These licenses must be renewed yearly.

A wrecking license is issued specially. (See AMERICAN SHIPMASTERS' ASSOCIATION.)

Lie Along. A vessel is said to *lie along* when heeled over by the weight of the wind on her sails.

Lie-to. To stop the progress of a vessel through the water by reducing sail and keeping her so close to the wind that she will make little or no headway. The helm is generally lashed to leeward on a sailing vessel so as to prevent the ship from falling off too much, and the after-sail set prevents her from coming up too close to the wind; thus she is kept continually see-sawing through two or three points of the compass. Steamships generally *lie-to* under steam, just turning the engines over fast enough to keep steerageway on the vessel. Some steamships *lie-to* head on, and others take the seas on the bow.

Life Boat. A boat built to be specially seaworthy. Air-tight tanks in either end of the boat and along the sides insures it against sinking, though the body of the vessel be filled with water.

Life Buoys. There are several kinds of life buoys. One style is that of a ring covered with canvas, enclosing a cork stuffing; another that of two connecting metallic cylinders, provided with a red fire to be burned at night when dropped overboard, and a red flag whereby to keep it in sight in the daytime. The red fire is ignited before letting the buoy go by the simple means of an attached percussion cap and hammer lock.

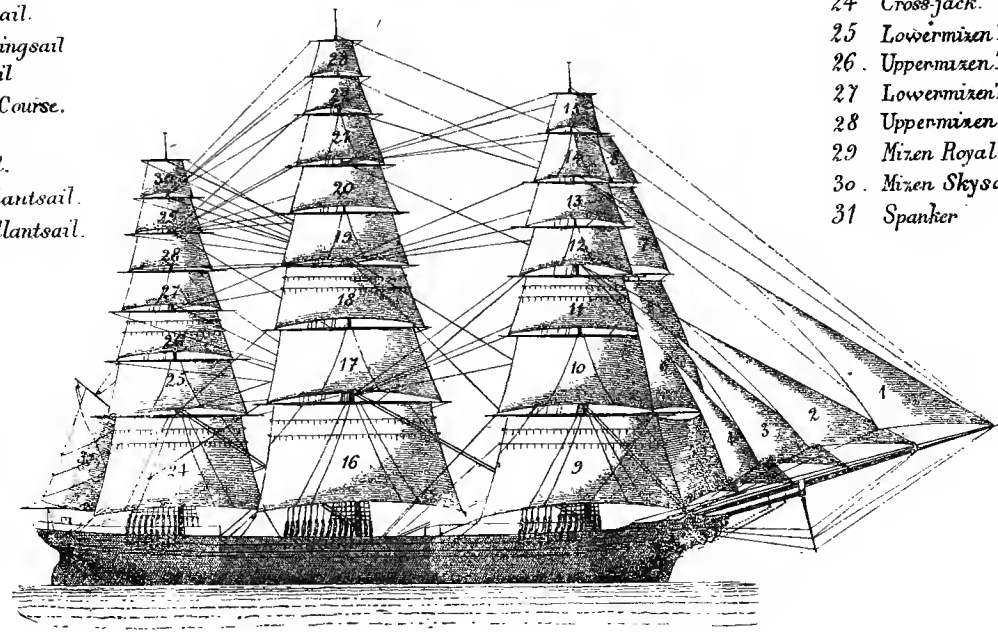
Life Car. A tank used by the Life Saving Service for bringing shipwrecked people ashore. It will hold from four to six persons, and is closed from the inside when loaded so as to be water-tight while being hauled through the breakers.

Life Kite. A kite made of thin sticks and muslin on board of a wrecked vessel as a means of getting a line ashore. After the kite has been settled on the land to leeward of the ship and secured by the people there, a stouter line is bent on to the kite line and hauled ashore; to this a hawser is bent on and also hauled ashore.

Life Lines. Ropes stretched along the decks to lay hold of, and by which the crew

SAILS

1. Flying Jib.
2. Standing Jib or Outer Jib
3. Inner or Middle Jib.
4. Fore Topmast Staysail.
5. Lower Studdingsail.
6. Topmast Studdingsail.
7. Topgallant Studdingsail
8. Royal Studdingsail
9. Fore-Sail or Fore Course.
10. Lower fore Topsail
11. Upper-fore Topsail.
12. Lower fore Topgallantsail.
13. Upper-fore Topgallantsail.
14. Fore Royal
15. Fore Skysail
16. Mainsail or main course
17. Lower main Topsail.
18. Upper main Topsail
19. Lower main Topgallantsail
20. Upper main Topgallantsail.
21. Main Royal.
22. Main Skysail
23. Moonsail
24. Cross-jack.
25. Lower mizen Topsail
26. Upper mizen Topsail.
27. Lower mizen Topgallantsail
28. Upper mizen Topgallantsail.
29. Mizen Royal
30. Mizen Skysail.
31. Spanker



may save themselves from being washed overboard during heavy gales when the vessel is shipping seas. Also horizontal ropes stretched between the yard lifts and the mast, about four feet above the yard, as a support for the men on board a ship of war when manning yards.

Life Preserver. Forms of canvas-covered cork made either as a jacket or belt for sustaining the weight of a person while in the water.

Life Raft. A pair of segar-shaped sheet iron cylinders connected on the same principle of a catamaran, with thwartship slats to sit on and attached thole pins in the sides for the use of oars. This contrivance is also known as a *balsa.*

Life Saving Station. Buildings erected along the coast and provided with life boats, mortar apparatus, etc., for succoring shipwrecked seamen and passengers. A station crew under an officer live in these houses during certain stormy months in the year, and patrol the beach regularly on the lookout for vessels in distress.

Lift. A rope extending from a yard-arm to the mast to support the yard, and by means of which the yard may be topped up, etc.; when a vessel is kept so close to the wind that her sails shiver they are said to *lift.* Fog *lifts* when it rises from the surface of the sea or land. The weather *lifts* when it clears. (See TOPPING LIFT; QUARTER LIFT.)

Light. *To lift* anything along is *to light* it along. When the jibs are to be slacked off a little the order is given *light up* or *lighten up* the head sheets. When a square sail is being reefed the men *light out to windward* and *haul out to leeward.*

Lighthouse. A tower erected on the coast line, or upon rocks or over shoals, which acts as a beacon by day to warn mariners, and at night the large lantern at the top of the tower is brilliantly lighted, throwing its beams in some cases twenty miles seaward. The various lighthouses are distinguished by the tabulated character of their lights, as red, white, fixed, flashing, etc.

Light Money. A tax of fixty cents per ton levied upon vessels under certain conditions by the customs authorities.

Light Sails. All the sails above the topsails, also the studding sails and flying jib.

Light Ship. Vessels anchored in the vicinity of shoals to mark the danger, and provided with distinguishing shapes at the mastheads for the daytime, and powerful lights for the night time. (See FLYING LIGHT.

Lighten. To *lighten* a vessel is to throw cargo overboard. To *lighten up the head sheets* is to slacken them off a little.

Lighter. A flat-bottom boat for transporting merchandise about harbors and rivers. It is generally provided with a loose-footed sail hoisted on a gaff, and one head-sail.

Lightning Conductor. A copper wire fastened to and extending a short distance above each truck, thence leading down along one of the stays and overboard.

Limber Boards. Small portable boards fitted to the flooring in the hold, and which are removed when it is required to clear the limbers.

Limber Chain. A small chain rove through the limber holes, and which is used to clear them of dirt, by pulling it back and forth, thus giving passage to the water. A rope sometimes is used in place of a chain.

Limber Streak. The plank in the flooring of the hold which lies next to the keelson.

Limbers. The holes cut in the lowest part of the floor timbers and near the keelson, so as to allow water to pass through them fore-and-aft along the line of the keelson to the pump well.

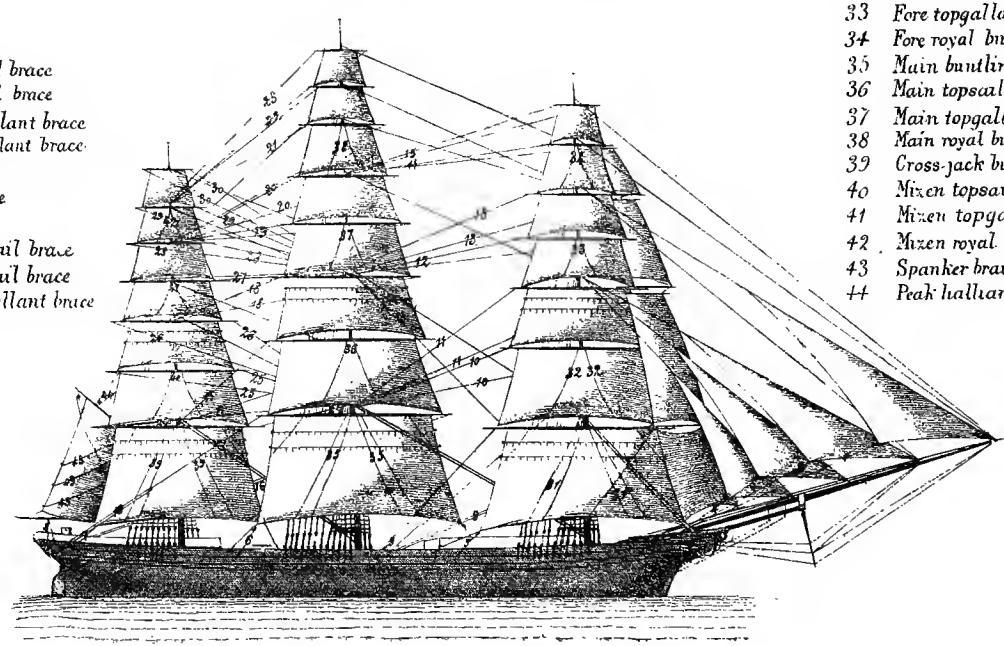
Lime Juicer. A term applied to English seamen owing to the Board-of-Trade law concerning the serving out of lime juice to the crews of vessels under the British flag.

Lines. Ropes used for various purposes on board ship and known as head-lines, bow-lines, breast-lines, quarter-lines, stern-lines, bunt-lines, clew-lines, leach lines, spilling-lines, towing-lines, hauling-lines, tripping-lines, etc. Also one or more vessels belonging to a particular firm and engaged in regular trade between two or more ports, as the *Red "D" Line.*

Lines of a Vessel. Drawings which show the lines of a vessel comprise three sep-

RUNNING-RIGGING

1 *Flying-jib sheet*
2 *Jib-sheet*
3 *Middle jib sheet*
4 *Fore topmast staysail sheet*
5 *Fore sheet*
6 *Main sheet*
7 *Cross-jack sheet*
8 *Spanker sheet*
9 *Fore brace*
10 *Lower fore topsail brace*
11 *Upper fore topsail brace*
12 *Lower fore topgallant brace*
13 *Upper fore topgallant brace*
14 *Fore royal brace*
15 *Fore skysail brace*
16 *Main brace*
17 *Lower main topsail brace*
18 *Upper main topsail brace*
19 *Lower main topgallant brace*
20 *Upper main topgallant brace*
21 *Main royal brace*
22 *Main skysail brace*
23 *Moonsail brace*
24 *Cross-jack brace*
25 *Lower mizen topsail brace*
26 *Upper mizen topsail brace*
27 *Lower mizen topgallant brace*
28 *Upper mizen topgallant brace*
29 *Mizen royal brace*
30 *Mizen skysail brace*
31 *Fore buntlines*
32 *Fore topsail buntlines*
33 *Fore topgallant buntline*
34 *Fore royal buntline*
35 *Main buntlines*
36 *Main topsail buntlines*
37 *Main topgallant buntline*
38 *Main royal buntline*
39 *Cross-jack buntlines*
40 *Mizen topsail buntlines*
41 *Mizen topgallant buntline*
42 *Mizen royal buntline*
43 *Spanker brails*
44 *Peak halliard*



ate plans, depending one upon the other, and which must correspond in all particulars and be used in conjunction. These three plans are known as the shear plan, body plan, and half-breadth plan. The first shows the outline of the longitudinal vertical section; the second shows the vertical cross-sections, and the third shows the longitudinal transverse section of the vessel at the deck-line, the water-line, and at other stations on the same plane as the water-line.

Lining Cloth. Extra pieces of canvas sewed on the back of square sails to take the chafe.

List. When a vessel's masts are inclined from the perpendicular, or her decks from the horizontal she is said to have *a list*, provided that the inclination is caused by an unequal distribution of the cargo, or deck weights, or by the coal bunkers on one side of the vessel holding more coals than those on the opposite side. But the word *list* does not apply to the inclination of a vessel when she is borne over by the wind in sailing. (See CAREEN and HEELED OVER.)

Listing. A narrow strip cut from the edge of one of the ship's planks so as to expose the timbers inside. This is sometimes done when examining a vessel.

Lizard. A length of rope having one or more thimbles spliced into it and used as a leader for ropes. (See BUNTLINE LIZARD.)

Lloyds. An English society of underwriters who establish the classes of vessels. This society was formed in 1601. (See CLASS.)

Load Water Line. The line of flotation or immersion when a vessel is loaded.

Lob. A stupid fellow on board ship.

Lobby. The name of the forward passageway in the cabin.

Loblolly Boy. A sick-bay nurse; also called *bayman.*

Lobscouse. A hash composed of meat and sea-biscuit, with or without vegetables.

Lock. (See CANAL.)

Locker. A chest or small apartment used for stowing away articles of ship's stores, as the *paint-locker* and *boatswain's locker;* or the *chain-locker* where the cable is stowed. (See DAVY JONES' LOCKER.)

Lofty Ship. A vessel with high masts.

Log. The old-fashioned log is an apparatus employed for ascertaining the ship's rate of sailing. It consists of the log-line, log-chip, reel, and two sand-glasses, of 14 and 28 seconds respectively. (For descriptions of various kinds of *logs* see PART II.)

Log Board. Same as log slate.

Log Book. A journal kept by the mate in which is entered the position of the ship, the winds, currents, state of the sea, courses, leeway, and all matters of importance in relation to the vessel.

A harbor log records the state of the weather, the tides (if the vessel is at anchor), the work or business being carried on, etc. (See form of log page.)

Log Slate. The slate kept on deck for the mates to enter on it a record of the vessel's speed, sail carried, etc., during their watch.

Loggerhead. A small bitt in a whale boat, around which a turn of the harpoon-line is taken.

Logging the Ship. Ascertaining the ship's speed by heaving the log.

Long Board. A long stretch upon one tack.

Long Boat. The largest boat carried on a merchant-man, and is provided with mast, sail, oars, rudder, and tiller, and is carried on deck when the vessel is at sea.

Long-legged. A vessel having a great draught of water.

Long Sea A uniform motion of long waves.

Long Splice. Joining two ropes together by interweaving their strands, so that no bulge exists. (See engraving.)

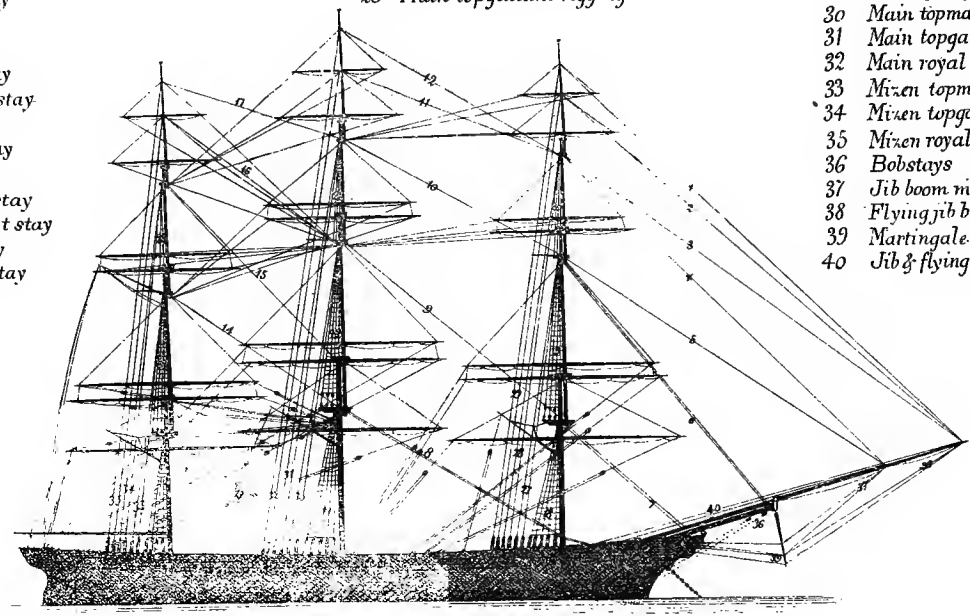
Long Stroke. When it is desired that the boat's crew should send the boat through the water faster by putting more strength into their rowing, they are ordered to *take a long stroke*, or *bend your backs*, or *rip her through.*

Long-tailed Swinger. One of the names by which molasses is called on shipboard.

Longers. A name given to the casks which are stowed next to the keelson.

STANDING RIGGING

1 *Fore skysail stay*
2 *Fore royal stay*
3 *Flying jib stay*
4 *Fore topgallant stay*
5 *Jib stay*
6 *Fore topmast stay*
7 *Fore stay*
8 *Main stay*
9 *Main topmast stay*
10 *Main topgallant stay*
11 *Main royal stay*
12 *Main skysail stay*
13 *Mizen stay*
14 *Mizen topmast stay*
15 *Mizen topgallant stay*
16 *Mizen royal stay*
17 *Mizen skysail stay*
18 *Fore rigging*
19 *Fore topmast rigging*
20 *Fore topgallant rigging*
21 *Main rigging*
22 *Main topmast rigging*
23 *Main topgallant rigging*
24 *Mizen rigging*
25 *Mizen topmast rigging*
26 *Mizen topgallant rigging*
27 *Fore topmast backstays*
28 *Fore topgallant backstays*
29 *Fore royal & skysail backstays*
30 *Main topmast backstays*
31 *Main topgallant backstays*
32 *Main royal & skysail backstays*
33 *Mizen topmast backstays*
34 *Mizen topgallant backstays*
35 *Mizen royal & skysail backstays*
36 *Bobstays*
37 *Jib boom martingale stay*
38 *Flying jib boom martingale stay*
39 *Martingale guys or back ropes*
40 *Jib & flying jib boom guys*



Longshoreman. A dock laborer or a member of a stevedore's crew.

Look Up. A vessel is said to *look up* when by the changing of the wind she is enabled to point closer to the place of her destination.

Lookout. The man on watch stationed at the bows to observe and report upon the presence and movements of other vessels, etc. (See CROW'S NEST.)

Loom. A vessel *looms* in a fog, or at night, when she appears indistinct to the observer. The part of an oar which is inside the rowlock in rowing is called *the loom of the oar*. *The loom of the land* is known as the dark shading often seen above the horizon before the land itself appears.

Loose. To unfurl a sail is to *loose* it.

Lost the Number of his Mess. When a seaman dies he is said to *lose the number of his mess.*

Low Tide. The lowest point of the tide.

Lower. To settle away; to ease down.

Lower Hold. The second space beneath the spar deck in the interior of a vessel having two decks.

Lower Mast, The first mast above the deck; the mast which is stepped in the keel; foremast, mainmast, mizzenmast.

Lower Rigging. The shrouds and the ratlines belonging to the lower fore, main, and mizzen masts.

Lower Shrouds. The shrouds of the lower fore, main, and mizzen masts.

Lower Topgallant Sail. (See TOPGALLANT SAIL.)

Lower Topsail. (See TOPSAIL.)

Lower Yards. The fore-yard, main-yard, and cross-jack.

Lubber. A clumsy fellow; a green hand on shipboard. (See LUBBER'S HOLE.)

Lubber's Hole. An opening in the top next to the mast, and through which the shrouds pass after going over the lower mast head. It is sufficiently large for the passage of a man. To get into the top through the *lubber's hole* instead of climbing over the top-rim by the futtock shrouds, is considered very unseamanlike, and anyone performing the first act is called a *lubber* by his shipmates.

Lubber's Point. The black vertical line which is painted on the inside of a compass bowl, and which represents the vessel's head to the helmsman. It seems strange that such a name, implying more or less contempt, should have been given to this mark, as it is an indispensible guide to the most experienced helmsman.

Luff. The forward edge of fore-and-aft sails; often called the *forward leach.* A vessel is luffed by putting the tiller to leeward and bringing her to the wind. *The luff of the bow* is the place where the rail begins to curve towards the bow. (See KEEP THE LUFF and SPRING THE LUFF.)

Luff Cringle. The iron ring or shape spliced into the bolt rope of a gaff fore-and-aft sail at the junction of the head and luff. Jib-headed sails have but three cringles, *head*, *tack*, and *clew*.

Luff of the Bow. (See LUFF.)

Luff Tackle. A tackle formed of a length of rope and a double and single block.

Luff upon Luff. One luff-tackle applied to the fall of another luff-tackle.

Lug Foresail. A sail which takes the place of the regular working foresail on a schooner. It is cut long on the foot so as to sheet about six feet abaft the mainmast, and is sometimes bent on to the fore-boom as far as the spar goes.

Lugger. Vessels on one, two and three masts with quadrilateral or four-cornered fore-and-aft sails bent to a hoisting yard, the luff being about two-thirds the length of the leach.

Lumber Port. A square port in the bows of some vessels through which the long lengths of lumber are taken in and discharged, and for which the hatches are useless. Also known as *cargo ports.*

Lurch. A sudden, quick rolling of the vessel.

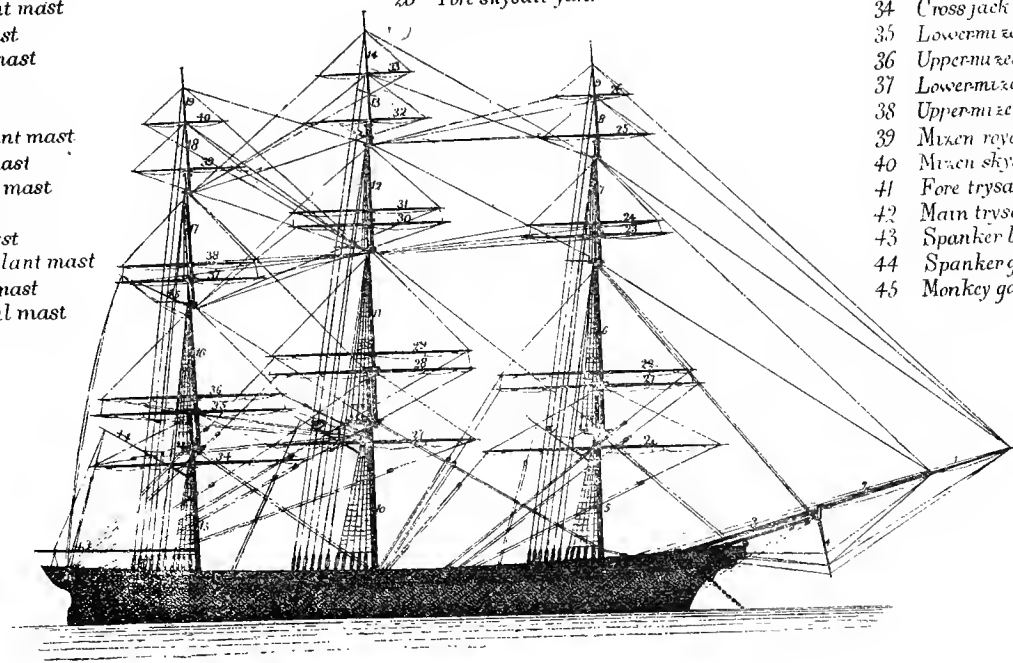
Lying to. (See LIE-TO.)

MASTS & SPARS

1 *Flying Jib boom*
2 *Jib boom*
3 *Bowsprit*
4 *Martingale boom*
5 *Fore mast*
6 *Fore topmast*
7 *Fore topgallant mast*
8 *Fore royal mast*
9 *Fore skysail mast*
10 *Main mast*
11 *Main topmast*
12 *Main topgallant mast*
13 *Main royal mast*
14 *Main skysail mast*
15 *Mizen mast*
16 *Mizen topmast*
17 *Mizen topgallant mast*
18 *Mizen royal mast*
19 *Mizen skysail mast*

20 *Fore yard*
21 *Lower-fore topsail yard*
22 *Upper-fore topsail yard*
23 *Lower-fore topgallant yard*
24 *Upper-fore topgallant yard*
25 *Fore royal yard*
26 *Fore skysail yard*

27 *Main yard*
28 *Lower-main topsail yard*
29 *Upper-main topsail yard*
30 *Lower-main topgallant yard*
31 *Upper-main topgallant yard*
32 *Main royal yard*
33 *Main skysail yard*
34 *Cross jack yard*
35 *Lower-mizen topsail yard*
36 *Upper-mizen topsail yard*
37 *Lower-mizen topgallant yard*
38 *Upper-mizen topgallant yard*
39 *Mizen royal yard*
40 *Mizen skysail yard*
41 *Fore trysail gaff*
42 *Main trysail gaff*
43 *Spanker boom*
44 *Spanker gaff*
45 *Monkey gaff*



M.

Mackeral Sky. Small rounded patches of clouds.

Made. *A made mast* is composed of different pieces, likewise a *made block.* Topmasts and topgallant masts are whole spars—not made.

Magnus or Magner's Hitch. A round turn around a spar, the turn itself being jammed by a half hitch. (See engraving.)

Main Chains. (See CHAINS.)

Main Hatch. The hatch between the fore and main masts, just forward of the latter.

Main Hold. That part of the interior of a vessel which is in the vicinity of the main hatch.

Main Piece. The piece of timber of which the rudder head is composed.

Main Rigging. The shrouds and ratlines of the main lower mast.

Main Sail. The sail that on a square-rigger is bent to the main yard, but the sail that on a fore-and-after is spread by the main gaff and main boom.

Main Shrouds. The shrouds on the main lower mast.

Main Stay. The hemp or wire rope leading from the mainmast head to the foremast near the deck, where it sets up. The mainmast is stayed (supported) by it, and on this stay the main staysail is set. (See STAYS.)

Main Topmast Staysail. A triangular sail that hoists between the fore and mainmasts, both on square-rigged vessels and on schooners. (See engravings of each showing the sail set.)

Main Yard. The lowest yard on the mainmast of a brig, bark or ship.

Mainmast. The mast next abaft the foremast on a vessel carrying two or more masts, but the name given to the single mast carried by sloops and cutters, etc. (See FORE MAST.)

Mainsail Haul. The order given to the crew to swing the main yards around when tacking ship—properly speaking, *main topsail haul,* as the mainsail is clewed up before tacking.

Make Sail. An order to the crew to set the sails.

Make the Land. The first appearance of the shore. (See LANDFALL.)

Make Water. When a vessel leaks she is said to *make water.*

Making Colors. At 8 A. M. the vessel's ensign (also the club pennant and private signal, if a yacht) is hoisted and displayed, and this is known as *making colors.*

Making Sail. Spreading the sails.

Making Sunset. At sundown the colors are struck (hauled down), and this is known as *making sunset.*

Making the Course Good. In running before the wind a vessel will yaw more or less; that is, the ship's head will swing both to left and right of the compass course. To make the course good the helmsman endeavors to keep the deviations equal, so that the middle point will be the course given to him to steer.

Mall. (See MAUL.)

Mallet. *A caulking mallet* is a wooden maul with a short handle, and a long head, iron bound.

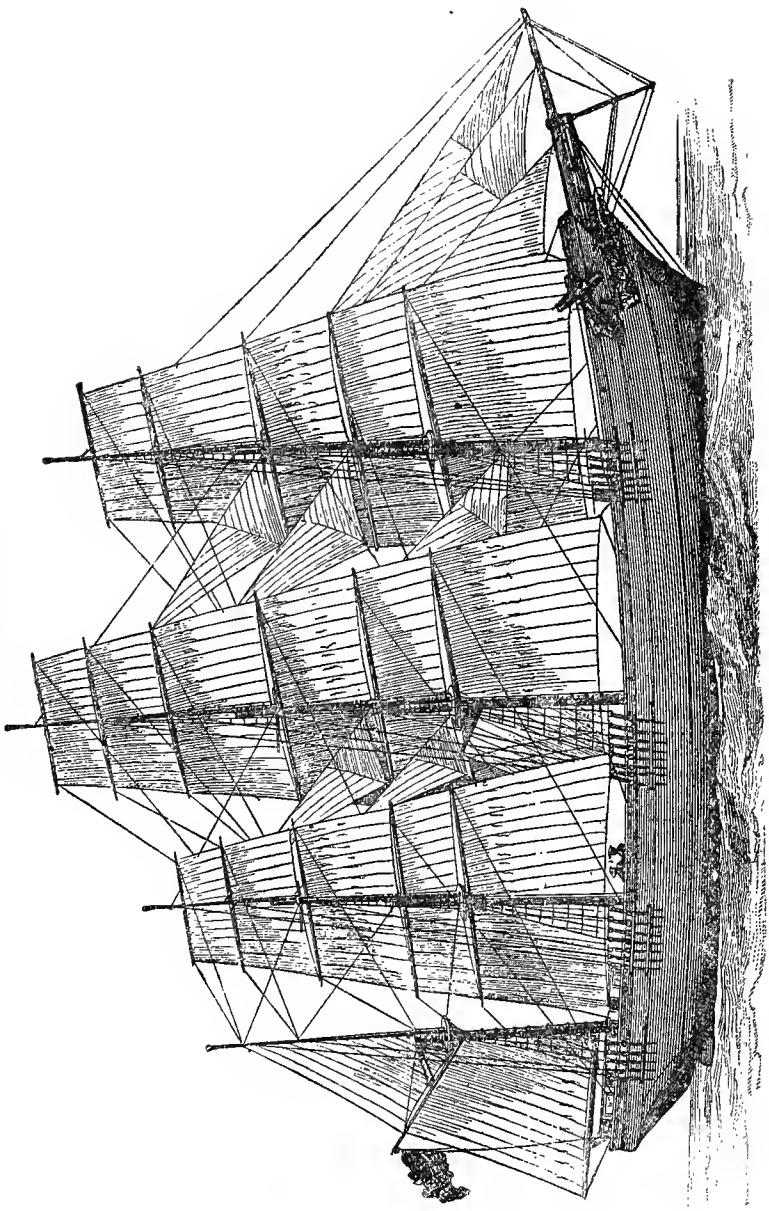
A serving mallet is a wooden maul with a groove cut lengthwise in the top of the head so as to fit into a rope when the latter is being served.

Man-rope Knot. A knot made in the ropes used for ascending and descending a vessel's side. (See engraving.)

Man Ropes. The ropes hanging down a vessel's side from the rail, and which are used to assist in ascending and descending.

Man the Yards. To send seamen out to stand on the yards. This is done when firing a salute for and in the presence of great official notability.

Manavalins. Bits of pie, cake, and pudding left over from the officer's meals; the scourings of the cabin table.



FOUR MAST SHIP—AFTERMOST MAST CALLED "SPANKERMAST"—SOMETIMES REFERRED TO AS "JIGGERMAST."

Manger. A space just abaft the hawse holes, partitioned by a coaming or manger board, which crosses the deck, and prevents water shipped through the hawse pipes, when the vessel is at anchor and pitching, from flowing along the deck.

Manhole. A hole in a tank or boiler, or in the deck leading to a coal bunker, large enough to admit the body of a man.

Manifest. A document which is signed by the master and submitted to the customs authorities, showing to what port or ports the cargo is destined; giving an itemized account and description of the contents of all the packages on board, together with their distinguishing marks and numbers, also the names of the respective shippers and consignees. The manifest must be made out, and dated and signed by the master, at the place or places where the goods, or any part of the goods, are taken on board the vessel.

Manilla Rope. The finest and most expensive quality of rope made (excepting cotton and silk). It is made from the fibre of the wild plantain.

Marine Documents. (See SHIP'S BUSINESS.)

Marine Glue. An English gutta-percha composition used instead of pitch or putty in caulking decks.

Marine Hospital Service. A national institution for the benefit of disabled and sick merchant seamen, having hospitals in the principal seaport cities, and medical officers in all seaports to administer gratuitous medicine, medical advice and services, and to afford shelter to sick seamen.

Marine Insurance. A contract entered into between the owners of a vessel or her agents, or the master on one side, and an insurance company on the other side, whereby the latter, in consideration of a certain sum of money, insures or idemnifys the vessel, or the cargo, or both, against the perils of the sea for a certain voyage, or for a certain length of time. The written instrument in which the contract of marine insurance is embodied is called a *policy of insurance.*

Marine League. A certain distance seawards from the coast over which a government has jurisdiction, according to international law. This distance is considered to be the limit of range of effective artillery.

Marine Railway. (See WAYS.)

Marine Surveying. (See NAUTICAL SURVEYING.)

Mariner. An experienced seaman. Sometimes the term is used in a broader sense to include all men who follow the sea as a profession.

Mariner's Compass. (See COMPASS.)

Maritime. Pertaining to the sea.

Mark Boat. A distinguishing boat at the turning point in the course over which vessels are racing.

Market Boat. A small boat, such as the dingey used by the stewards to bring off marketing.

Marks and Deeps. (See HAND LEAD.)

Marl. To hitch marline, spun yarn, etc., around the parcelling in order to keep it in place while it is being served.

Marline. (Pronounced *mar-lin.*) Two yarns laid up left-handed and used for fine seizing. It is finer than spun yarn.

Marline-spike. A pointed iron instrument used in splicing to separate the strands of a rope and as a heaver in putting on seizings.

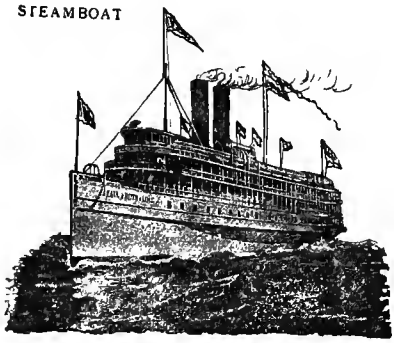
Marline-spike Hitch. A peculiar but simple way of catching the marline-spike in the seizing stuff, whereby it may be hove tant.

Marling Hitch. A simple hitch used in marling.

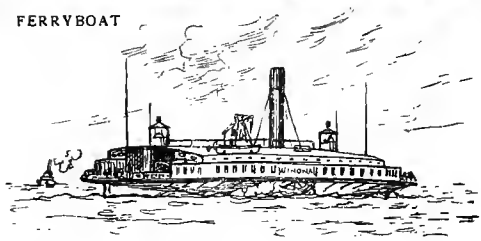
Marry. To sew the ends of two ropes together temporarily so that there will be no bulge, and so that it will render through a block. This is done when reeving new signal halliards, as it saves a climb aloft.

Martingale. Sometimes called *martingale boom.* A short spar hanging down from an eye-bolt in the bowsprit cap for giving spread to the headstays. The martingale ends at the spear on the lower end, which is termed the *dolphin striker.* (See JIB-BOOM GUYS.)

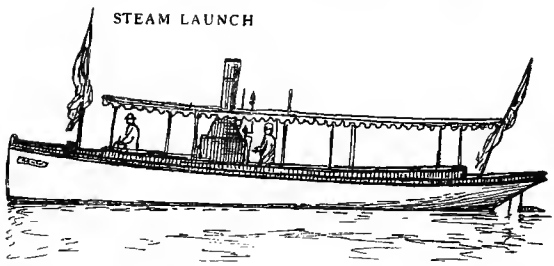
STEAMBOAT



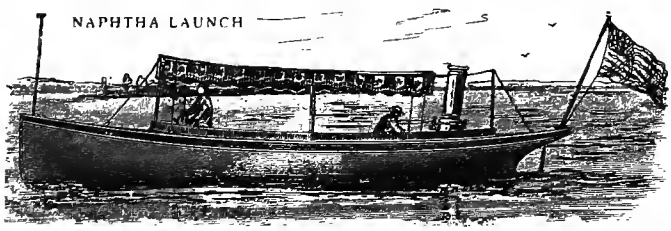
FERRYBOAT



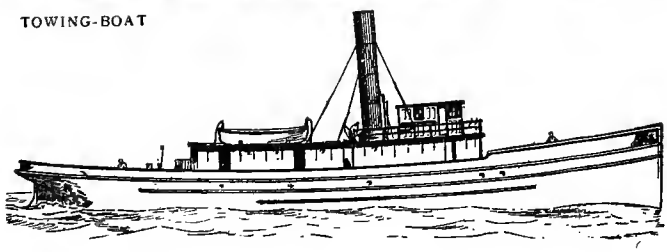
STEAM LAUNCH



NAPHTHA LAUNCH



TOWING-BOAT



Martingale Back Ropes. (See BACK ROPES.)

Martingale Stays. Lengths of rope hooked or seized to the outer part of the jib-boom and leading to the lower end of the martingale, where they set up. They steady the martingale and keep the jib-boom from jumping.

Mast Coat. (See COAT.)

Masthead. The top part of a mast; that part of a mast from the cross-trees to the cap. *To masthead a man* is to send him aloft to remain a certain time for punishment.

Masthead Light. A bright white light carried in front of the foretopmast head by steamships when under way.

Mast Hole. A hole in the deck of a vessel, or in the thwart of an open boat, for the mast to go through.

Mast Hoop. A wooden hoop that goes around a mast and to which the luff of a fore-and-aft sail is seized by robands. These hoops travel up and down the mast when the sail is hoisted and lowered.

Mast Rope. A rope used in swaying up or in striking (sending down) a mast.

Mast Winch. (See WINCH.)

Master. The title of a merchant ship captain. In order to command a vessel of the United States the *master* must be a citizen thereof.

Master Mariner. A captain in the merchant service who has passed a successful examination in seamanship, navigation, etc., before an authorized board of shipmasters, and received from them a certificate of competency.

Master's Manifest. (See MANIFEST.)

Masting. Determining the position in which the masts of a vessel are to be placed; also the mechanical process of stepping the masts.

Masts. Spars rising above the deck of a vessel perpendicularly, and which support the yards, booms, gaffs and sails. The lower masts extend from the keel, where they step, to a height above the upper deck, and are secured sideways by shrouds, and fore-and-aft by stays. (See TOPMASTS, TOPGALLANT MASTS, ROYAL MASTS and SKY-SAIL MASTS.) Masts are either *whole* or *made*.

Mat. A mat woven from strands of old rope, and used to prevent chafing.

Mate. An officer under a master. There are first, second, third, and fourth Mates.

Matthew Walker Knot. A knot named after the originator. It is used on dead-eye lanyards. (See engraving.)

Maul or Mall. A heavy iron hammer, employed in driving bolts, etc.

Meal Flag. A square flag hoisted at the starboard spreader, or in the rigging, to signify that the officers are at the mess table.

Meal Pennant. A red flag hoisted on the port side of a vessel, signifying that the forward hands are at mess.

Meet Her. An order to the helmsman directing that he should put the tiller so as to check the swing of the vessel's head.

Mend. *To mend the furl* is to partly refurl the sails after they have been tied up slovenly, or have become untidy looking from various causes.

Mermaid. A fabulous sea woman having the body of a human from the head to the waist, and the form of the after-half of a fish below the hips.

Merchant Service. The mercantile marine.

Merchant's Shipping Act. In the year 1854 what is known as the *Merchant's Shipping Act* was passed in Great Britain, which requires all masters and officers of British merchant vessels to be examined and to hold certificates of competency issued in accordance with the provisions of the act before they can clear a vessel from any English custom house. The certificates are issued by the British Board of Trade.

Merchantman. A vessel employed in transporting freight and passengers.

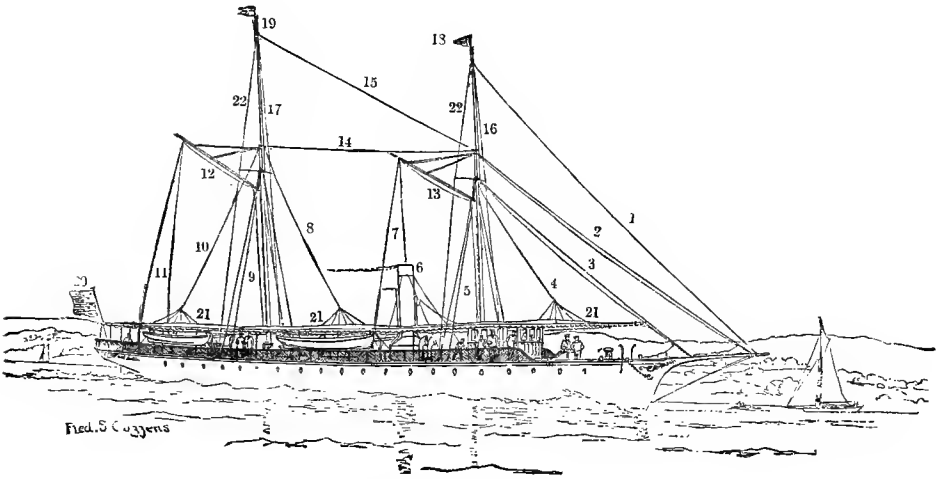
Meshes. The openings between the cords in a net of any kind, as a fish net, boarding netting, etc.

Mess. A number of officers or forward hands who eat together.

Messman or Messboy. The one who waits on the officer's table on a merchant steamship.

Messmate. A member of the same mess on shipboard.

Messenger. An endless rope used for heaving in a cable by a capstan. (Obsolete.)

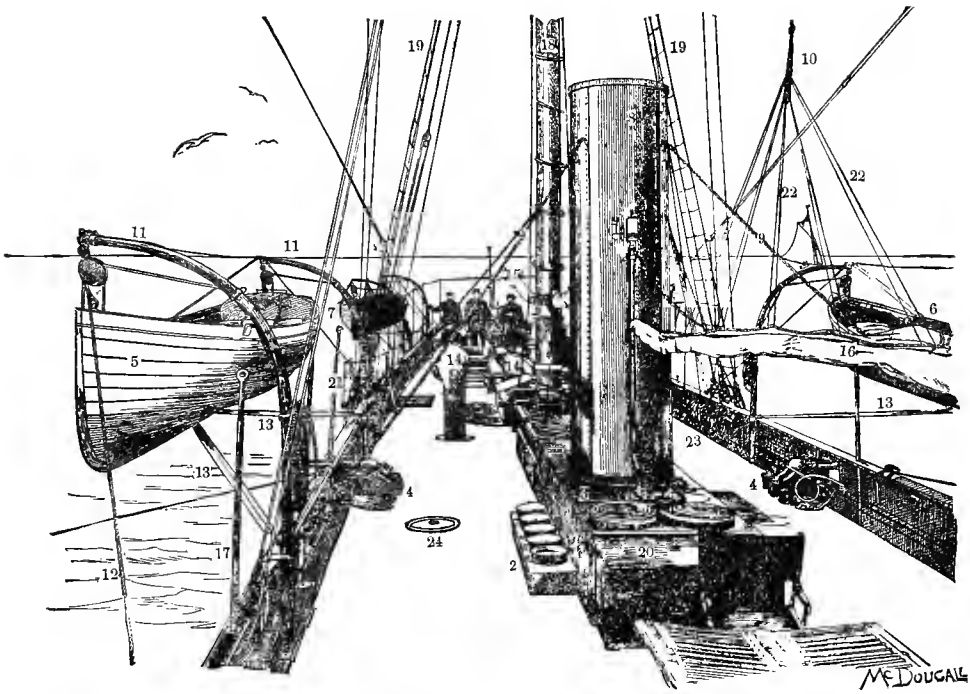


SIDE VIEW.

NAMES OF SPARS, RIGGING AND VARIOUS PARTS OF A STEAM YACHT.

1. *Topmast Stay.*
2. *Jib Stay.*
3. *Fore Stay.*
4. *Forecastle Awning Gantline.*
5. *Foremast.*
6. *Smokestack.*
7. *Fore Gaff Vangs.*
8. *Midship Awning Gantline.*
9. *Mainmast.*
10. *Quarter Deck Awning Gantline.*
11. *Main Gaff Vangs.*
12. *Main Standing Gaff.*
13. *Fore Standing Gaff.*
14. *Spring Stay.*
15. *Maintopmast Stay.*
16. *Foretopmast.*
17. *Maintopmast.*
18. *Club Flag.*
19. *Private Signal.*
20. *Ensign.*
21. *Awning Crow's Foot.*
22. *Topmast Shrouds.*

Middle a Rope. To double a rope in two equal parts.
Midship Beam. The timber at the broadest part of the ship.
Midshipman. A cadet both on board merchant, revenue and naval vessels.
Midshipman's Hitch. (See engraving.)
Midships. (See AMIDSHIPS.)
Mildew. Black and green spots on sails caused by dampness.
Minister. A diplomatic agent of the government representing it, and attending to its interest abroad.
Mirage. An optical phenomenon arising from excessive refraction. From this cause the image of a ship is sometimes observed inverted in the sky, and again the image of an object which is below the horizon is seen above it.
Miss Stays. When a vessel fails to go around in tacking she is said to *miss stays.*
Mizzen. The after fore-and-aft sail; the spanker.
Mizzen Chains. (See CHAINS.)
Mizzen Mast. The aftermast on a three-masted vessel.
Mizzen Rigging. The shrouds of the mizzen lower mast, together with their ratlines.
Mizzen Shrouds. The shrouds on the mizzen lower mast.
Mizzen Stay. The hemp or wire rope leading from the mizzen masthead to the mainmast near the deck, where it sets up. The mizzen mast is stayed (supported) by it, and on this stay the mizzen staysail is set. (See STAYS.)
Mold Loft. The large room in a shipbuilder's establishment used for laying down the lines of a vessel by delineating them by chalk marks on the floor.
Molded Breadth. The breadth of a vessel to the outside of her frame timbers at the widest part.
Molding. The process of marking out a vessel's timbers by the employment of the molds made in the mold loft.
Molds. A pattern by which the frames of a vessel are shaped.
Monk Bag. A small money bag purse hung around the neck by a string, and much worn by seamen.
Monkey Block. A small block containing one sheave and stropped with a swivel.
Monkey Rail. A light rail raised above the regular quarter rail of the vessel; an extra height given to the rail around the quarters.
Moonsail. A small sail once carried by very lofty ships. It set above the skysail.
Moor. A ship is moored when she has two anchors down.
Mortice Block. A block made out of a single piece of wood by having a hole chiseled through it for the sheave to turn it.
Mortar Apparatus. A small gun used by the Life Saving Service to shoot a line over a stranded vessel so that the crew may be brought to shore by means of a breeches buoy or life car.
Mother Carey's Chickens. A name applied to the stormy-petrel by sailors, who have a superstitious reverence for the bird, believing that to harm them will bring ill fortune to themselves and their ship.
Mouse. A kind of washer put over a chain or rope to prevent the latter from slipping further through an aperture.
Mousing. Small stuff, like rope yarns, seized across a hook so that it may not unhook by the lowering or canting of the block.
Mud Digger. A flat-bottomed boat fitted with machinery for dredging out harbors and rivers. (See DREDGE.)
Mud Scow. A large, open, flat-bottomed boat (a companion to a mud-digger) for receiving the contents of the great iron scoop.
Muffle. *Oars are muffled* when soft chafing gear is fastened around their looms so that they will not creak and knock in the rowlocks.
Mushroom Anchor. An iron shape used for moorings. It is bowl-shape, with an iron upright rod welded in the centre, having an eye at the upper end to fasten the chain or rope, which in turn is connected with the mooring.
Muslin. A term sometimes applied to sails.
Muster. To assemble the crew.



DECK VIEW.

NAMES OF SPARS, RIGGING AND VARIOUS PARTS OF A STEAM YACHT.

1. *Steam Whistle.*
2. *Fire Buckets.*
3. *Fire Hose.*
4. *Broadside Guns.*
5. *Gig.*
6. *Lifeboat.*
7. *Cutter.*
8. *Smokestack.*
9. *Smokestack Guys.*
10. *Euphroe-forward Awning.*
11. *Boat Davits.*
12. *Davit Guy.*
13. *Boat Gripes.*
14. *Ventilators.*
15. *Quarter Deck Awning Furled.*
16. *Forward Awning Furled.*
17. *Awning Stanchions.*
18. *Mainmast.*
19. *Main Shrouds.*
20. *Boatswain's Deck Chest.*
21. *Gangway Ladder.*
22. *Crow's Foot.*
23. *Pin Rail.*
24. *Coalbunker Plate, sometimes called Manhole Plate.*

N.

Naked. A vessel is said to have a *naked bottom* when her copper is stripped off—removed.

Name Board. The place on the stern of a vessel where her name and home port are painted or shown.

Naphtha Fuel Launch. A small propeller carrying a regular steam boiler, but using naphtha for fuel instead of coal.

Naphtha Launch. A small boat propelled by the explosive force of naphtha.

Nautical Mile. One knot, 6,082.66 feet.

Nautical Surveying. The delineation of rivers, harbors, and sea coasts, bordering shores, and such natural and other objects as may serve to show the existence of channels, shoals, rocks, etc. This is also known as *Hydrographical Surveying.* (See SURVEYING.)

Naval Dock. A place provided with all descriptions of naval stores, timber, shipbuilding material, etc.

Naval Hoods. (See HAWSE BOLSTERS.)

Naval Officer. An officer of the customs; an officer on board a man-of-war.

Naval Reserve. Either a national or State body of seamen or artillerists on the same footing as State militia, and who are subject to duty in case of emergency. At the present writing (1891) the United States naval reserve is in its infancy.

Naval Station. A navy yard; a place possessing natural advantages in the way of depth of water, shelter, etc., and which is used as a rendezvous for vessels of war.

Naval Stores. Pitch, resin, turpentine, oils, etc.

Navigable. Water of sufficient depth to permit the passage of vessels.

Navigation. Conducting of a vessel from one port to another. (See PART III.)

Navigator. An officer whose special duty it is to have care of the chronometers, compasses, charts, etc., who takes sights of the sun, moon, and stars, from which he calculates the ship's position, shapes the course, etc.; all, however, under the authority of the captain.

Neap Tides. A name given to the lowest tides which take place four or five days before the new and full moons. (See SPRING TIDES.)

Neaped. A vessel is said to be *neaped,* or *be-neaped* when she is aground at the height of the spring tides.)

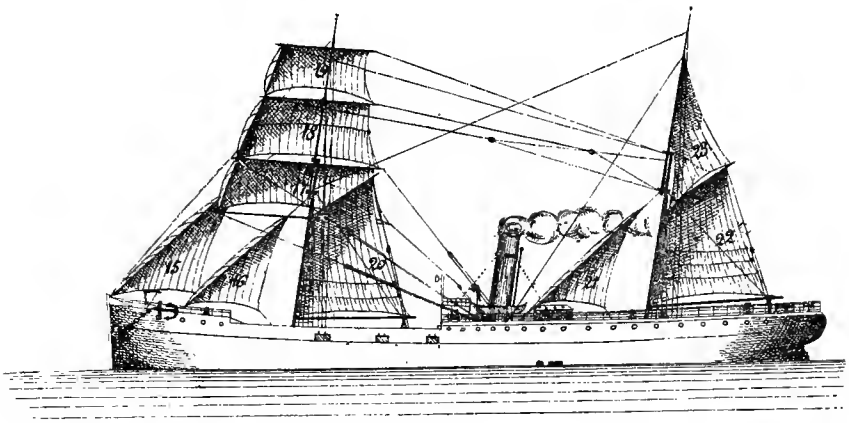
Near. Close to. When a vessel is close-hauled she is sometimes said to be *sailing near the wind.*

Neptune. A mythical god of the sea. When crossing the equator for the first time a forward hand, in former days, was conducted blindfolded to a seat consisting of a piece of board laid across a tub filled with water. He was informed by his messmates that Father Neptune would be along shortly to interview him and give him a pass to cross the line. Shortly after this a tremendous bellowing would be heard from over the bows; the blindfold would then be removed, and the poor greeny treated to a view of the most astonishing looking object coming from over the bows. A tremendous rope-yarn beard, deck-swab hair that had been dipped in green paint and dried for the occasion, a spare royal, or some other light sail for a robe, a trident in one hand and a speaking trumpet in the other, completed the *tout ensemble* of this mythological deity, who roared his questions into the victim's ears through the trumpet. Neptune would then decide that the applicant required shaving, so the face of the sufferer would be covered with Stockholm and then scraped off with an iron barrel hoop. Next the victim would be congratulated for passing the ordeal, and again blindfolded; Neptune would disappear; the board pulled away from across the tub, and the final scene would be the newly initiated floundering about in the water to the intense amusement of all hands.

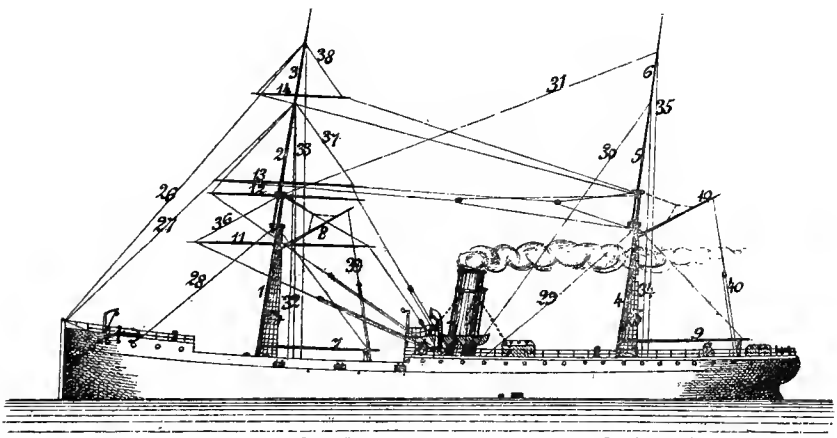
Net Tonnage. (See TONNAGE.)

Netting. A rope network used on board ship for various purposes, such as a bag for

TOPSAIL-SCHOONER RIGGED SCREW-STEAMER.



1. Fore-mast
2. Fore topmast
3. Fore topgallant mast
4. Main mast
5. Main topmast
6. Main topgallant mast
7. Fore boom
8. Fore-gaff
9. Main boom
10. Main gaff
11. Fore yard
12. Lower topsail yard
13. Upper topsail yard
14. Topgallant yard
15. Fore topmast staysail
16. Fore staysail
17. Lower topsail
18. Upper topsail
19. Topgallant-sail
20. Boom Fore-sail
21. Main Staysail
22. Main-sail
23. Gaff-topsail



24. Fore rigging
25. Main rigging
26. Fore topgallant stay
27. Fore topmast stay
28. Fore stay
29. Main stay
30. Main topmast stay
31. Main topgallant stay
32. Fore topmast backstays
33. Fore topgallant backstay
34. Main topmast backstay
35. Main topgallant backstay
36. Fore-lift
37. Topsail-lift
38. Topgallant lift
39. Fore vang
40. Main vang

seizing to the foot of the fore topmast and jib stays on board of a steamer, and into which those fore-and-aft sails are stowed instead of being furled. Also the bulwark network which takes the place of panels on steam vessels. (See HAMMOCK NETTINGS.)

Nettles. (See REEF POINTS.)

Ninepin Block. A swivel block deriving its name from its shape resemblance to a *ninepin.*

Nip. A twist in a rope. When two fields of ice jam together a *nip* is said to occur.

Nippering. (See RACKING.)

Nippers. A short length of rope used in securing a cable to the messenger (obsolete.)

No Higher. An order to the helmsman not to bring the vessel any closer to the wind.

No Man's Land. A space or article left uncleaned, unpainted, or otherwise uncared for on account of not falling within the limits of the work assigned to individuals of the crew.

Nock. The name sometimes applied to the forward upper corner of a boom sail.

Norman. A fid through the rudder head to prevent its loss in the event of it getting unshipped; heavy iron pins in the windlass holes to prevent the fouling of the chain.

Nose. The cutwater of a vessel is sometimes referred to as her *nose.*

Nose-pole. A name sometimes given to the bowsprit.

Nothing Off. An order to the helmsman not to allow the vessel to go any further off from the wind.

Nun Buoy. A buoy tapering at each end.

Nurse. An experienced officer, next in rank to the captain, who teaches the latter his business in relation to handling the vessel, navigation, etc., when the command has been obtained through influence or from the captain being the owner of the vessel.

Nut. Projections on an anchor shank to secure a wooden stock to its place; the round ball on the end of an iron anchor stock.

O.

Oar. A wooden instrument used to propel a boat. It consists of the *blade, loom* and *handle.* The loom is the part from where the flat part (the blade) ends, to the small length of round wood at the extreme inboard end, which is the handle.

Oar Lock. The square, open hole cut in the wash streak of a boat, also known as row-lock. Where iron shapes are used rising above the gunwale they are called *thole-pins.*

Oars. An order given to a boat's crew by the coxswain signifying that the crew are to cease rowing temporarily, and to feather their oars and keep them horizontal in the thole-pins or row-locks.

Oakum. Old pieces of rope, called *junk,* untwisted and picked into shreds. It is used for caulking seams. *White oakum* is made from untarred rope like Manilla.

Ocean Greyhounds. A term applied to fast steamships.

Off and On. A vessel stands *off-and-on* when by alternate tacks she approaches the land and again recedes from it.

Off-Shore Signals. (See CAUTIONARY SIGNALS.)

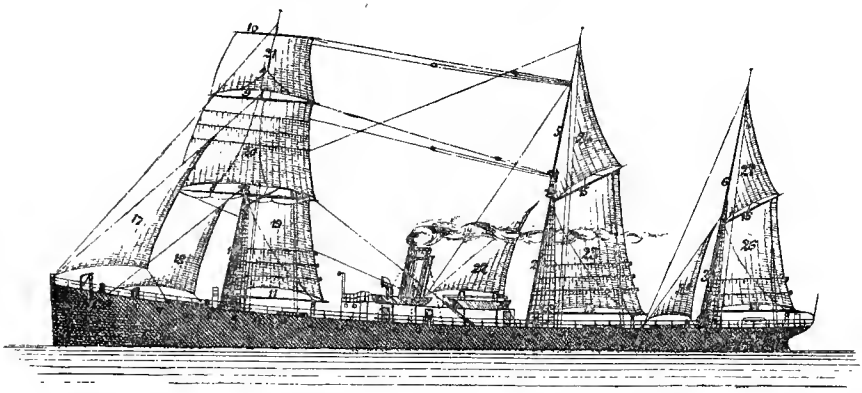
Off the Wind. A vessel is *off the wind* when she is sailing two or three points free.

Officer of the Deck. The officer of the watch who has charge of the ship.

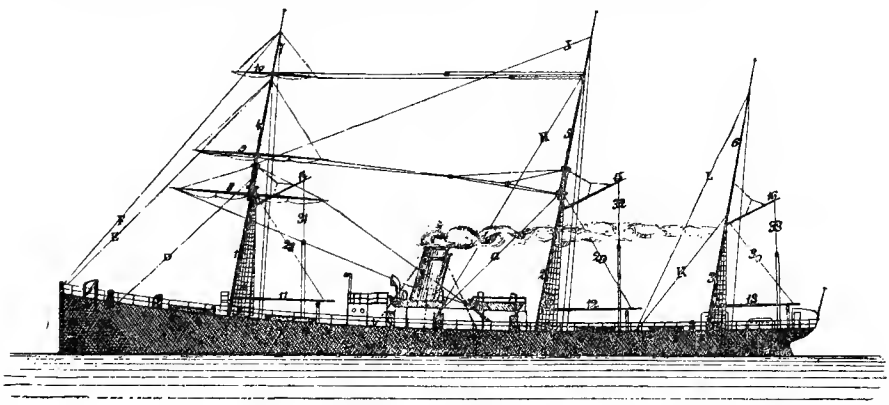
Officer of the Watch. (See OFFICER OF THE DECK.)

Official Number. All documented vessels of the United States are required by law to obtain from the Bureau of Navigation certain identifying numbers, which are to be marked on the main beam in the same manner as the tonnage.

SCREW-STEAMER RIGGED AS A THREE-MASTED TOPSAIL SCHOONER.



1. Fore-mast
2. Main-mast
3. Mizen-mast
4. Fore topmast
5. Main topmast
6. Mizen topmast
7. Fore topgallant mast
8. Fore-yard
9. Topsail-yard
10. Topgallant-yard
11. Fore boom
12. Main boom
13. Mizen boom
14. Fore gaff
15. Main gaff
16. Mizen gaff
17. Fore topmast staysail
18. Fore staysail
19. Boom fore sail
20. Topsail
21. Topgallant-sail
22. Main staysail
23. Main sail
24. Main gaff topsail
25. Mizen staysail
26. Mizen
27. Mizen gaff topsail
28. Fore boom topping lift
29. Main boom topping lift
30. Mizen boom topping lift
31. Fore vang
32. Main vang
33. Mizen vang



A. Fore rigging
B. Main rigging
C. Mizen-rigging
D. Fore stay
E. Fore topmast stay
F. Fore topgallant stay
G. Main stay
H. Main topmast stay
J. Main topgallant stay
K. Mizen stay
L. Mizen topmast stay

Offing. A distance to seaward. Beyond anchoring ground, but within sight of the land.

Old Ice. A name applied to ice made in a previous winter.

On. A ship is *on a bowline* or *on the wind* when she is close-hauled; one is *on board a vessel* when on her deck.

On Board. (See ABOARD.)

On Soundings. When the ship is sailing over a depth of water that can be measured with the lead and a line marked to eighty fathoms (within eighty fathoms.)

On the Beam. Any object bearing so as to be at right angles with the line of the vessel's keel.

On the Bow. The bearing of an object contained between the ship's head and inclusive of four points (45°) to right and left. Thus we say, *a ship bears one, two, three,* and *four points on the starboard* or *port bow.*

On the Quarter. The bearing of any object contained in an arc of 45° measured from right-aft to four points (45°) forward on either side. (See ON THE BOW.)

One Gun Start. A preparatory flag signal is made, and usually about ten minutes later a single gun is fired, and the time of commencing the race is calculated from the time of firing.

Open. A harbor is said to be *open* when it is exposed to the sea. A distant object not intercepted in any way to an observer is said to be *open.*

Open Boat. A boat not decked over.

Open Hawse. When with two anchors down the cables lead straight ahead to their respective bowers the ship is said to have an open hawse. Same as Clear Hawse.

Ordinary. A vessel is in *ordinary* when she is laid up—out of commission.

Ordinary Seaman. A sailor inferior in knowledge to a seaman; the next lower grade to *ordinary seaman* is *landsman,* then *boy.*

Organization. Appointing the petty officers and placing the vessel under efficient discipline, drilling the crew, etc.

Orlop. The lowest deck of a line of battle ship. It is laid over the beams in the hold.

Out Foot. To sail faster than another vessel is to *out foot* her.

Out-haul. The rope that hauls out the clew of some boom sails, the tack of a lower studding sail, and the head of a sail that brails in to the mast.

Out Oars. An order given in boat service where trailing oars are used, signifying that the crew are to ship their oars, prepared for pulling. To ship them the men reach over the side of the boat, grasp the oars by the handle, throw them into the rowlocks, and lift the blades out of the water, holding them horizontal and at right angles to the keel of the boat, the blades feathered. In this position they await the coxswain's next order.

Out of Trim. Said of a vessel when she does not sit properly on the water.

Out-point. For one vessel to sail closer to the wind than another is to *out-point.* Also known as *sailing higher.*

Outboard. Attached to but outside the vessel.

Outer Jib. The head sail next forward of the inner jib on some merchant sailing vessels. (See engravings of various rigs of merchant vessels.)

Outrigger. A spar (sometimes of iron) projecting from the cross-trees to give spread to the backstays, or any spar rigged out to give spread to rigging, like the whiskers or whisker-booms on the bowsprit, the spreaders on each bow for the jib sheets, etc.

Outlying. A reef or cluster of rocks are outlying when some distance from the shore.

Outside Course. An open or ocean course.

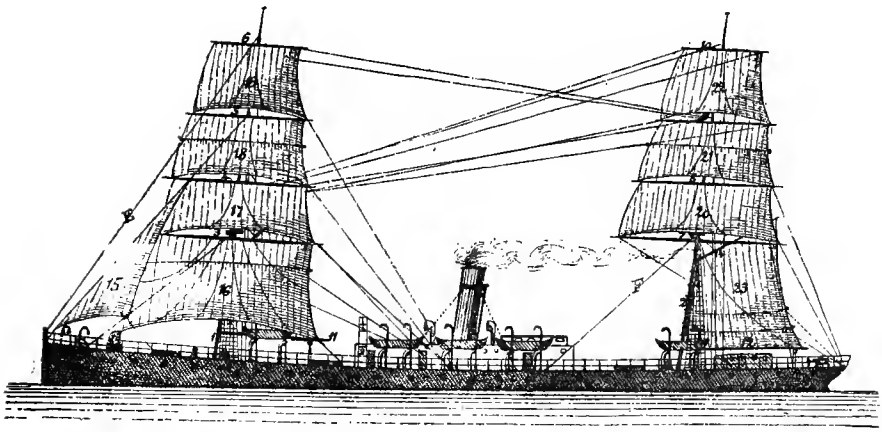
Outward Charges. Outward pilotage, towing out of the harbor, and any other expense that may be incurred in leaving port.

Over All. The extreme length of the hull of a vessel from end to end on deck.

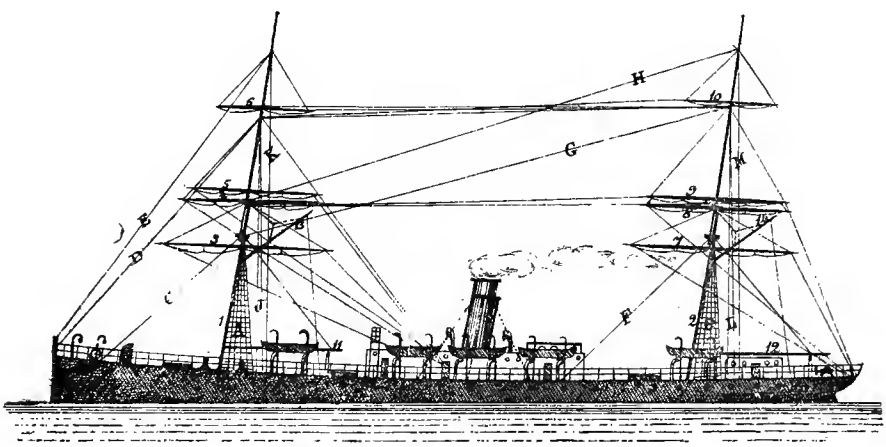
Overbear. One vessel overbears another when from her stability she is able to carry a greater press of sail.

Overboard. Over the side; out of the ship.

BRIG RIGGED SCREW-STEAMER.



1 Fore-mast
2. Main-mast
3 Fore-yard
4. Lower fore topsail yard
5 Upper fore topsail yard
6 Fore topgallant yard
7 Main yard
8. Lower main topsail yard
9 Upper main topsail yard
10 Main topgallant yard
11 Fore boom
12 Main boom
13 Fore gaff
14 Main gaff
15 Fore topmast staysail
16. Fore sail
17 Lower fore topsail
18 Upper fore topsail
19 Fore topgallant sail
20 Lower main topsail
21 Upper main topsail
22 Main topgallant sail
23 Main boom sail



A. Fore rigging
B. Main rigging
C Fore-stay
D. Fore topmast stay
E Fore topgallant stay
F Main stay
G. Main topmast stay
H. Main topgallant stay
J Fore topmast backstays
K Fore topgallant backstay
L. Main topmast backstays
M Main topgallant backstay

Overhang. The projection a vessel's stern from the stern post, or of a vessel's head from the stem.

Overhaul. To examine; to separate the blocks of a tackle by coming up with the hauling part and pulling one block away from the other.

Overlap. An overlap is established when an overtaking vessel has no longer a choice on which side she will pass, and continues to exist as long as the leeward vessel by luffing, or the weather vessel by bearing away, is in danger of fouling. An overtaking vessel shall, as long as an overlap exists, keep clear of the vessel being overtaken.

Over-rake. When a vessel is at anchor in a heavy seaway and the waves break over her head they are said to *over-rake her.*

Over-rigged. When a vessel has heavier gear than necessary.

Over-risen. A vessel showing such a high side out of water as to be out of all proportion for her length and breadth is said to be *over-risen.*

Over-sparred. When a vessel has heavier masts and yards, or booms and gaffs, than necessary.

Ox-eye. A small cloud peculiar to the African coast, and which derives its name from its form resemblance to the eye of an ox. It presages a speedy and violent storm.

P.

Pacific Irons. Stun'-sail-boom irons are known sometimes as *Pacific Irons.*

Paddle. A short oar having a broad blade, and used in propelling canoes. It does not set in a rowlock, but is held perpendicularly.

Paddle Boxes. (See PADDLE WHEELS.)

Paddle Wheel. The large wheels in the sides of some steam vessels, such as ferry boats and river craft, and by the revolutions of which the vessel is forced ahead or astern. These wheels are partly encased in what is known as *paddle boxes.*

Paddy's Hurricane. When there is little or no wind, so that the pennant hangs down alongside the mast. Hence it is said that the wind in a *Paddy's Hurricane* is "*up and down the mast.*"

Painter. A length of rope made fast to the inner side of the stem of boats, and used for making fast to anything in order to hold the boat.

Palm. The inner side of the fluke of an anchor, also called the *pea.* A piece of stout leather which fits across the hand and is used when sewing upon canvas, marrying a rope, etc. A small round iron shield on the outboard face of the leather is employed to drive the needle through the substance.

Paper Boat. A boat made of *papier-maché.* Also a boat made by applying lengths of linen to a form and coating them with shellac. The frame of the boat is inserted after the shell is complete.

Parbuckle. To hoist or lower a spar or cask on its bilge by the bight of two separate ropes passed round it. One end of the ropes is secured and the other ends are used for slacking away or for gathering in the bight.

Parcel. Long strips of canvas used in parcelling.

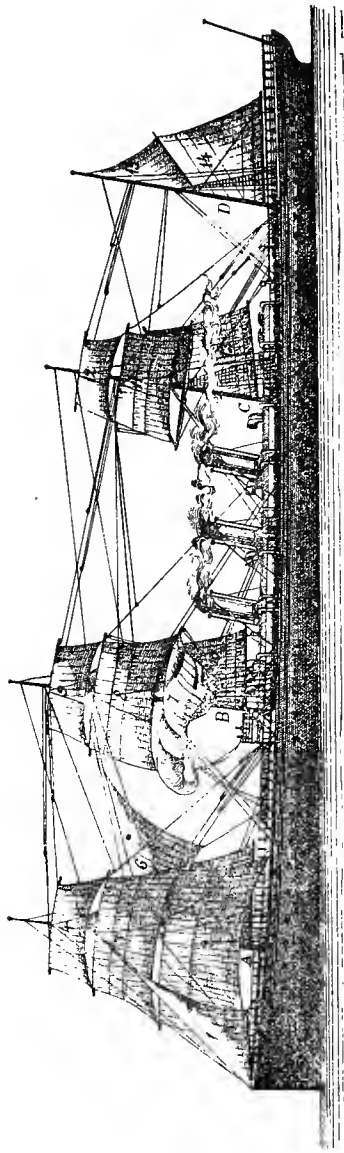
Parcel a Seam. To lay a narrow strip of canvas over a seam that has been caulked to prevent it filling up with dust, etc., before it is payed (filled with pitch, etc.)

Parceling. To wind long strips of canvas around a rope preparatory to serving it.

Parliment Heel. Said of a vessel when she is careened in order to get at her bottom.

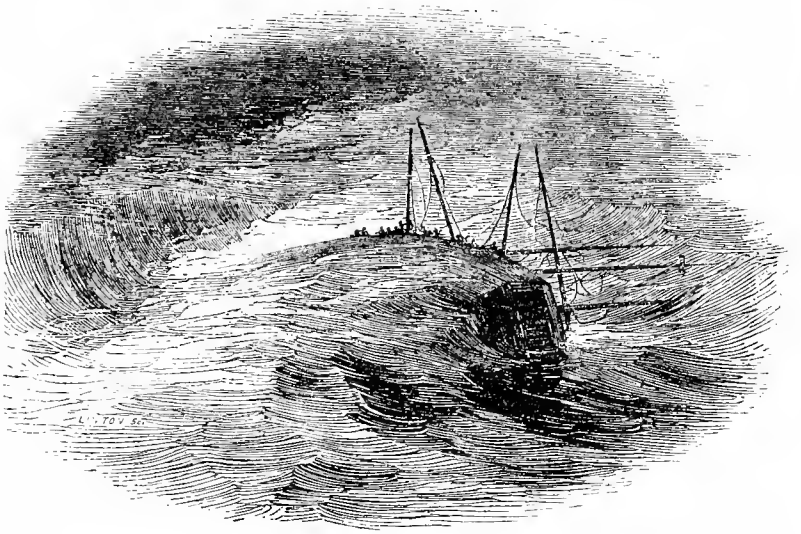
Parral. The rope or iron ring which confines a yard to the mast, but permits of a vertical movement; in other words which acts as a traveler for the yard when being hoisted or lowered in setting or furling the sail.

MAIL STEAMER

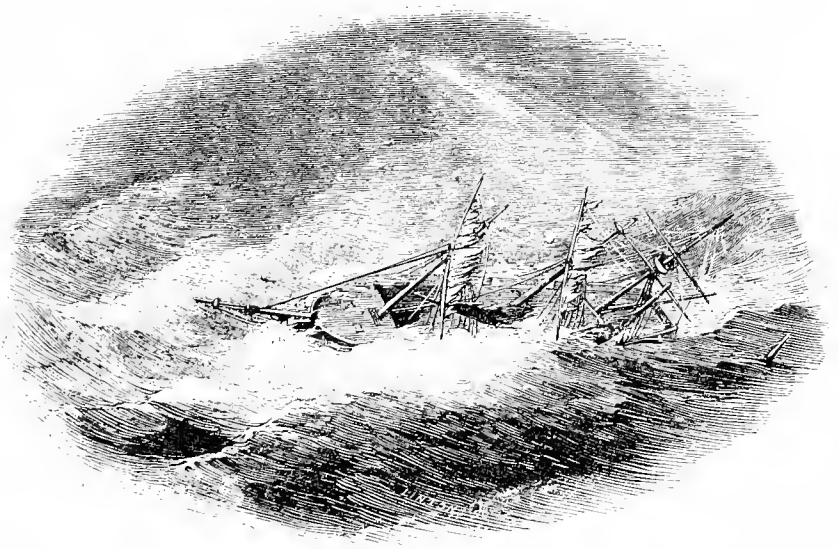


Part. To break a rope or cable is to *part* it.
Particular Average. (See GENERAL AVERAGE.)
Partners. (See PART II.)
Pass. *To pass the word* is to repeat the order to the crew. *To pass an earing, gasket, seizing*, etc., is to secure the same.
Passenger List. The names of both cabin and steerage passengers *en transit.*
Passport. A document carried by a merchant vessel in time of war to certify to her nationality, etc., as a safeguard if boarded by the belligerents; a pass to leave a harbor; an authority to remove people and chattels from a hostile country; a safe-conduct paper given to a citizen who is to travel in foreign countries.
Patent Block. A block in which the sheave works on friction rollers—a circle of little brass revolving wheels as a bearing for the pin.
Patent Log. (See PART III.)
Paul. (See PAWL.)
Paul Rim. An iron rim or scupper around the lower part of a capstan, or around the barrel of the windlass, provided with pockets or notches into which the lower ends of the pawls fall when the capstan or windlass is hove round, and which prevent either of the above instruments from revolving backward.
Paunch Mat. A thick mat used to protect yards and rigging from chafe.
Pawl. A short iron bar used to prevent a backward motion of the capstan or windlass.
Pay. To cover over anything with melted pitch, tar, etc., or to fill the seams of a vessel with pitch.
Pay Off. When a vessel's head falls off from the wind she is said to *pay off.*
Pay Out. To let out more cable; to slack up a towing hawser and let it run out more; to give anything like a chain or rope more scope.
Pazaree. A rope used for guying out the clews of the square foresail when before the wind.
Pea. (See PALM.)
Pea Ballast. A coarse sand or fine gravel.
Peak. The upper after or outer corner of a gaffsail. (See A-PEAK.)
Stay Peak. When the cable and forestay are parallel.
Short Stay Peak. When the anchor is nearly under the hawse hole.
Peak Halliards. The halliards on a fore-and-aft sail which hoist the outboard end of the gaff and straightens the leach.
Peak the Mizzen. To have the mizzen yard perpendicular and alongside the mast.
Pendant. A length of rope with a block or thimble strapped or spliced into one end, the other end being secured to the end of a yard, masthead, or outboard end of a gaff. The braces reeve through the blocks on the ends of the brace pendants.
Pendant Tackle. A tackle hooked on to a pendant.
Pennant. A long strip of bunting carried at the masthead.
Perch. A pole driven into the bottom on a shoal as a warning to mariners.
Pier Head Jump. Deserting the ship when she first gets alongside of a dock after coming into port is known as making a *pier head jump.*
Pig Yoke. A sailor's name for a quadrant of reflection.
Pile. A pointed spar driven into the bottom, and projecting a number of feet above water.
Pile Driver. A machine for hammering piles into the bottom.
Pillow. A block of timber upon which the inner end of the bowsprit rests.
Pilot. A person familiar with local dangers along the coast, who conducts vessels in and out of port. He may be either a *State pilot* or a seaman licensed by the local inspectors of steam vessels.
Pilot House. (See WHEEL HOUSE.)
Pilot Signals. *In the daytime* the jack, or other national color usually worn by merchant ships, having round it a white border one-fifth of the breadth of the flag; or

VESSEL KNOCKED DOWN—ON HER BEAM ENDS.



VESSEL IN THE TROUGH OF THE SEA.



the International Code Pilotage Signal indicated by "P. T." These signals to be hoisted at the fore.

In the night time a blue light *every fifteen minutes*, or a bright white light flashed, or shown at short intervals, just above the bulwarks, for about a minute at a time.

Pilot's Luff. To luff around a buoy or point of land when by holding the course the vessel would go to leeward of the object. When this manœuvre is accomplished successfully it saves a tack. (See HALF BOARD.)

Pin. The metal axle passing through the sides of a block and upon which the sheave revolves.

Pinch her. An order given to the helmsman to shiver the sails a little when close-hauled.

Pink. A ship (obsolete) having a flat bottom and a very narrow stern with a high house built above it, like one sees in prints of the Pilgrims' *Mayflower*, Hendrick Hudson's *Half Moon*, and such vessels.

Pink Stern. A high, narrow stern. Also a pointed stern like that of a lifeboat, peculiar to some small American fishing schooners.

Pinnace. A larger boat than a cutter. It generally is pulled double banked.

Pintle. A metal bolt by which a rudder hangs.

Pipe. The boatswain's whistle or *call*.

Pipe Down. The conclusion of quarters or drill, when the boatswain or his mates blow the call to signify that the men are dismissed.

Pipe the Eye. A sailor term for weeping.

Pipe the Side. When the commanding officer of a man-o'-war or other official dignitaries enter or leave a naval vessel the side is *piped* in their honor; that is, according to the official's rank, a certain number of side-boys face one another and form a hollow thwartship line from the gangway inboard, and as the official passes through this line the boatswain, or one of its mates, winds (blows) his call and the side-boys salute. The ceremony is under the immediate charge of the officer of the deck.

Pipe to Quarters. (See QUARTERS.)

Pirate. A robber; a freebooter of the seas.

Pirate Ship. The ship of a sea-robber: an unlawful plunderer. (See RIVER PIRATE.)

Pitch. A substance obtained from the pine tree, and boiled down to such a consistency as to become hard and dry when cool. It is melted, then poured into the seams of a vessel's decks and planking after caulking.

Pitching. The fore-and-aft motion of a vessel in a seaway; for a ship to bury her head in the seas.

Places of Call. The ports specified in a charter party at which the vessel is to touch.

Plain Sail. The regular working sails of a vessel and not such as are set flying like stun' sails, balloon sails, etc.

Plank Sheers. Horizontal timbers laid fore-and-aft over the tops of the frame timbers which are even with the deck. Also called *covering boards*.

Planking. (See PLANKS.)

Planks. Broad timbers of oak, pine, etc., from 1½ to 8 inches thick, and used for *planking* a vessel's sides and covering the deck beams.

Plat. To braid small stuff or rope is to *plat* it.

Plates. (See CHAIN PLATES.)

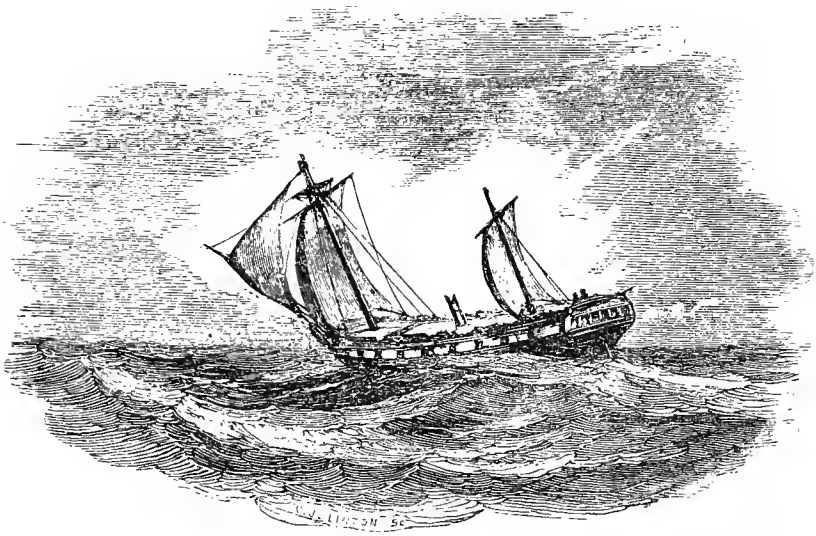
Play. A certain freeedom of movement. A rudder plays in the rudder-port when the port is so large as to have considerable space between it and the rudder-head.

Plug. A wedge of wood which fits into the plug-hole in the bottom of a boat. The plug is withdrawn when the boat is hoisted, so as to allow the water in the bottom to escape.

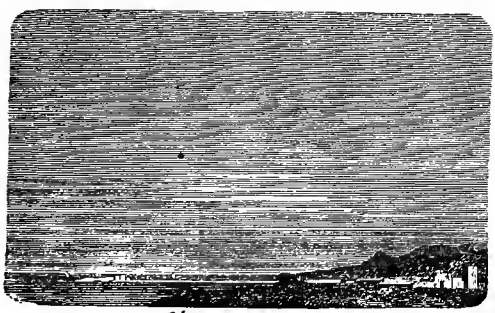
Plum Duff. (See DUFF.)

Plumbing. (See SHIP PLUMBING.)

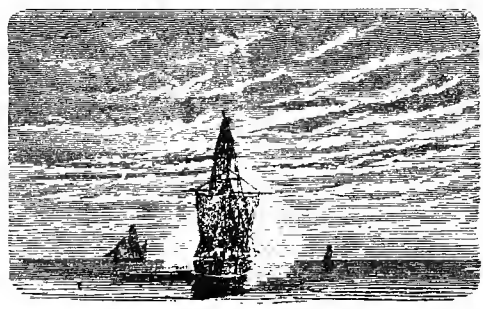
Ply. A vessel is said to *ply* when she is working to windward.



VESSEL UNDER JURY RIG.

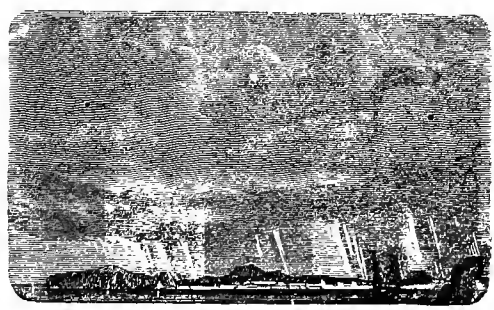


Stratus.



Cirrus.

Cumulus.



Nimbus.

Stratus.—The Night Cloud ; the Lowest of Clouds.
Cirrus.—The Curl Cloud ; The Highest of Clouds.

Cumulus.—The Day Cloud ; the Summer Cloud.
Nimbus.—The Rain Cloud ; Mixed Clouds.

Point. To taper the end of a rope. (See engraving.) One of the 32 divisions on the mariner's compass.

Point Blank. The natural line of sight; the direction of a gun when leveled horizontally.

Pointing Higher. (See OUT POINT.)

Polar Explorations. The admiralty chart of the Arctic regions, contained in PART I. of this volume, records the names and the dates of the various polar expeditions from 1818 to 1874. Since the latter date several exploring parties have sailed north, namely, the English Expedition of 1875, the Nordenskjöld Expedition of 1875, the Jeanette Expedition of 1879, and the Greeley Expedition of 1881. Lieutenant Lockwood, U. S. A., second in commmand of the Greeley Expedition, sledged to the highest latitude ever reached by man—83° 24′ north, 396 miles from the pole; consequently, in this year, 1891, the United States is awarded the honor of first rank in polar explorations.

Pole. That part of the highest mast which is above the shoulder on which rests the eyes of the rigging. A topgallant mast has a royal pole, and a royal mast has a skysail pole.

Pole Mast. A lowermast and topmast in one piece.

Pollacca. A vessel peculiar to the Mediterranean. It is square-rigged, but has neither tops nor cross-trees, and the masts are single spars, running without a break from their step to the trucks.

Poop Deck. (See DECK.)

Pooped. A vessel is *pooped* when a sea breaks over her stern.

Pooping. When a vessel is scudding, and a sea follows so fast after the vessel as to fall on her poop or on the after part of the ship, it is said to be *a pooping sea.*

Poppets. A name sometimes applied to the small pins set into the gunwale of a boat, between two of which the loom of the oar works. Also upright pieces of timber between the vessel's bottom and the bilge ways at the forward and after-ends, and which support her in launching.

Port. The left hand side of the vessel looking forward; at one time called *larboard.*

Port Bars. Pieces of timber which secure the port shutters after they are closed.

Port Captain. The superintendent of a line of vessels.

Port Charges. Taxes levied upon vessels in the way of wharfage, tonnage money, light money, fees for health officer, port warden, harbor master, etc.

Port Holes. Holes in the sides of a vessel for guns; ronnd glass windows in the vessel's sides for giving light and air; these are styled *dead lights* as a rule. (See CARGO PORT and LUMBER PORT.)

Port of Entry. A harbor having a custom house.

Port Sashes. A frame-work of glass to fit into the ports in pleasant weather at sea, or when at anchor, for the admission of light.

Port Shutters. The hinged coverings for the port holes.

Port Sills. Pieces of timber bolted horizontally inside of and flush with the lower edge of the port for the gun-carriage to fetch up against.

Port Tack. A square-rigged vessel is on the *port tack* when the port tacks of her courses are inboard, or any vessel is on the *port tack* when the wind is blowing on the *port side* of the ship.

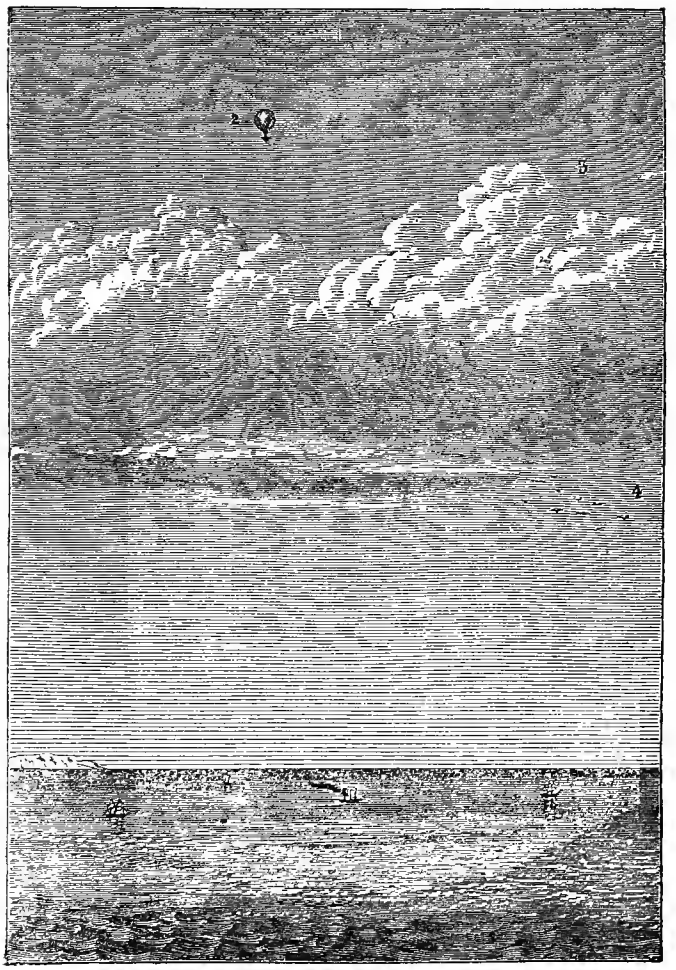
Port the Helm. An order to the helmsman to put the tiller toward the port side of the vessel.

Port Warden. An officer having guardianship over the shipping in a port, where he performs the duties of a harbor master (see same); one whose duty it is to examine the hatches of newly arrived vessels, and the stowage of the cargo, so that in case of damage to same the responsibility may be fixed.

Portable Dry Dock. (See DOCK.)

Portable Lights. A double hand-lamp carried by small boats when under way. It has two slides, showing a green and red light respectively as the slides are withdrawn.

Portoise. The yards are said to be *a-portoise* when they are resting on the rail.



THE TWO OCEANS.

(1) Aërial Ocean. (2) Greatest height attained by Messrs. Glaisher and Coxwell, being 36,960 feet, or seven miles above the sea level. (3) Aërial Alps, or stratum of clouds 15,000 feet in depth. (4) Highest bird-region.

Portuguese Man-o'-war. A *physalis;* a compound found floating on the surface of the ocean, the lower or submerged part being provided with tentacles, and supporting a transparent shell-like hull with a silken lateen sail, which can be lowered (collapsed) and set at will by the little creature.

Pratique. A limited (generally two days) quarantine placed upon a newly-arrived vessel from an unhealthy port by the health authorities of the place, as a matter of precaution, during the sickly season.

Admitted to Pratique is the term employed to signify that the port surgeon is satisfied as to the general health of the ship's company and the *bill of health* obtained from the last port of clearance, and that he will permit the vessel to have unrestricted communication with the shore, if, at the expiration of the pratique, no contagious sickness has developed on board.

Preparatory Flag. A flag hoisted on the race committee's boat, or at some convient place on shore, notifying the vessels to be prepared to cross the line.

Preparatory Gun. The first gun fired. A notice from the race committee for the vessels to be prepared to cross the line.

Press Gang. A body of naval seamen who, commanded by an officer, impress men to serve on board men-of-war. (See IMPRESSMENT.)

Press of Sail. All the sail that a ship can carry.

Preventer. A rope used as an additional support for a spar, as preventer braces, preventer backstays, etc.

Preventer Backstays. A name given to extra ropes used as stays during storms at sea for the additional security of the masts.

Preventer Braces. (See PREVENTER BACKSTAYS.)

Pricker. A small marlinspike.

Primage. A gratuity originally given to the captain in compensation for his particular care of the cargo. It was also known as *hat money.* It is now generally given to the owners of the vessel.

Privateer. A vessel fitted out by private (hence the name) parties during a war to prey upon the commerce of the enemy. In order to make seizures legally these vessels must be commissioned by the government of the country they belong to.

Professional Race. Where the sailing masters, officers and crews are professional seamen.

Promenade Deck. (See DECK.)

Propeller. The two, three, and four-bladed propelling wheels in the stern of some steam vessels revolved to right or left on the shaft connected with the engine. (See engraving.)

Protest. A writing filed with the race committee or proper officials, charging another vessel with violation of the racing rules. (See SHIP'S PROTEST.)

Prow. An East Indian vessel. The edge of a vessel's cutwater.

Puddening. A pad made of rope yarns, oakum, etc., to prevent chafing.

Pull. To row.

Pulpit. A small platform on the end of the bowsprit of sword-fishing vessels upon which the harpooner stands when striking the fish.

Pump. A machine for drawing water out of a vessel's hold by suction.

Pump Chamber. The space in the upper part of the pump-box; also called the *pump well.*

Pump Brake. The handle of a pump.

Pump Spears. The iron rods which have the leather suckers on the lower ends, and which work in the upper part of the pump box.

Pump Well. (See PUMP CHAMBER.)

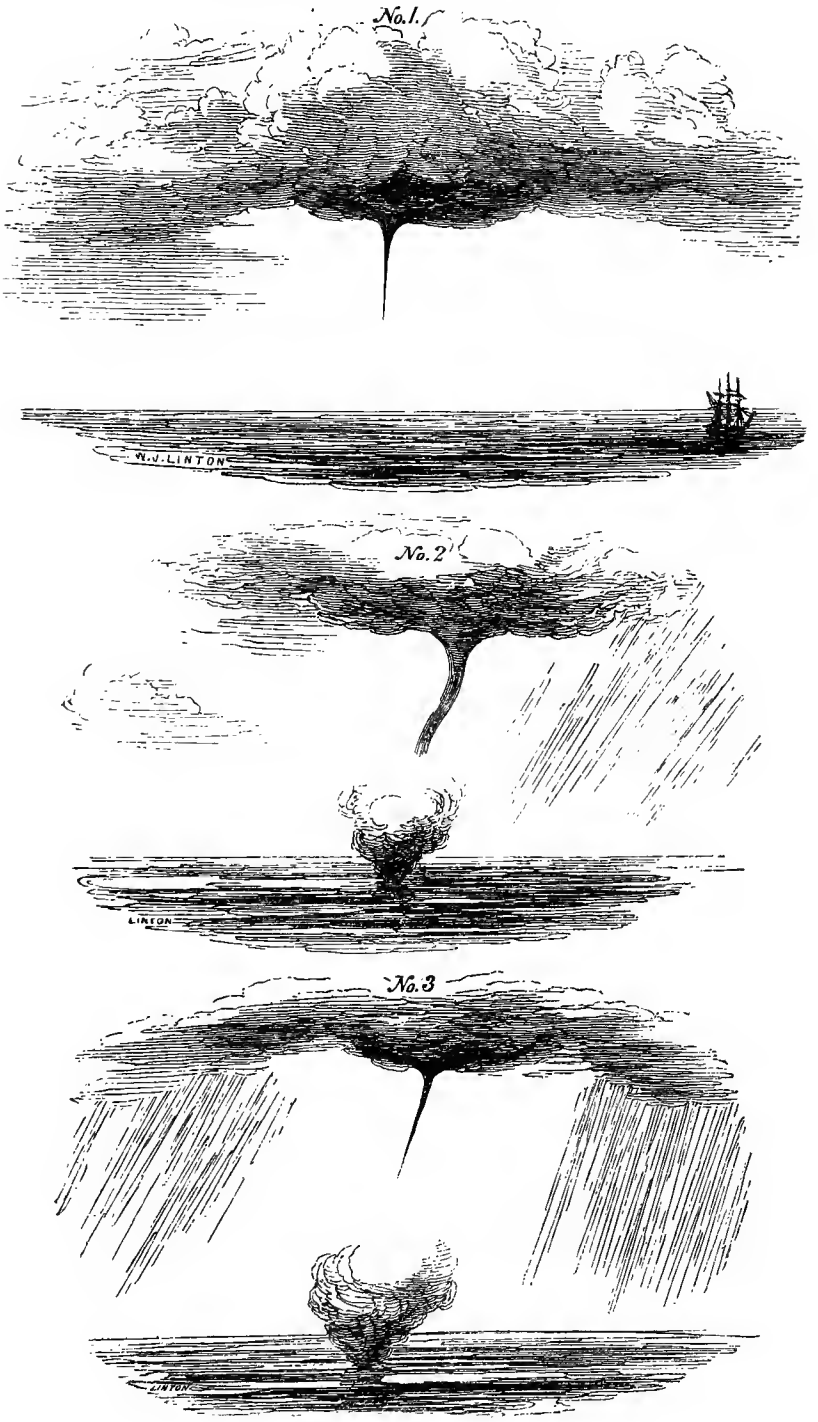
Punt. A flat-bottomed boat used by fishermen.

Purchase. A mechanical appliance to obtain an increase of power. *A purchase* is formed of ropes and blocks.

Purser. An officer on board of a merchant ship who keeps the vessel's accounts, has charge of the cargo, etc.

Put About. To tack ship.

To put to sea is to sail away from the land.



No. 1. Whirlwind cone shooting downward from the cloud.
No. 2. Water rising from the sea to meet the wind column.
No. 3. Bursting of the waterspout, and receding of the cone.

Q.

Quadrant. A quarter. The four quadrants of the compass—90° each. An instrument for measuring altitudes. (See PART III.)

Quarantine. Prohibited intercourse between persons on shipboard and those on shore when the vessel has, or is suspected of having, contagious disease on board.

Quarantine Flag. A bright yellow flag hoisted on board a ship lying at anchor to indicate that the vessel is infected with some contagious disease and that the ship is *quarantined.*

Yellow Jack is the common name given by sailors for a quarantine flag.

Quarter. The part of a yard that is just outside the slings. That part of the vessel's side near the stern.

Quarter Bill. A written or printed form showing the various stations assigned to the officers and men. (See QUARTERS.)

Quarter Blocks. Blocks suspended under the quarters of a yard as leads for the clewlines and sheets.

Quarter Boat. A boat that hangs on quarter davits.

Quarter Davits. The boat davits on the quarters of a vessel.

Quarter Deck. (See DECK.)

Quarter Galleries. Ornamental projections on the quarters of some vessels—generally confined to men-of-war.

Quarter Lifts. The double boom topping lifts that lead from the iron band on that spar (about a quarter ways in from the end) up to and through single blocks under the eyes of the rigging at the lower masthead, thence down on deck. Each hauling part is provided with a purchase. In sailing free the weather lift is hauled taut and the lee one slacked off, so that the sail will set well without a crease up and down its belly. In sailing by the wind both lifts are slacked so that the sail will hang as flat as possible by the weight of the boom.

Quarter Line, or Quarter Fast. The moving rope leading over the quarter of a vessel.

Quarter Sheet Blocks. The single blocks to be seen on some fore-and-aft vessels secured to eye-bolts in the deck on the quarters. Through these blocks the main sheet reeves in addition to the boom and traveller blocks, and are used for securing an additional purchase on the boom. When fitted this way the bight of the sheet is rove through the boom and traveller blocks, and the two hauling ends lead through these quarter blocks and make fast on the quarter bitts.

Quartering Sea. A sea running in such direction as to break against the quarter of the vessel.

Quartermaster. A petty officer who steers the vessel, attends the gangway in port, keeps the wheelhouse in order, and cleans the bright work belonging to the steering gear, etc.

Quarters. The mess room and sleeping rooms set apart for the officers are known as *officers' quarters.*

Assembling the crew at their stations for inspection by the commanding officer, for exercise and drill, or for battle.

Beat to quarters. To order the drummer to beat the drum for assembling.

Pipe to quarters. To order the boatswain or his mates to wind the call for assembly.

Quartering Wind. A wind blowing on the quarter of a vessel—45 degrees or four points abaft the beam.

Quay. (Pronounced *key.*) A wharf or artificial bank at which vessels discharge and load cargo.

Quayage. Wharfage.

Quelling Oil. A preparation of animal or vegetable oils for throwing on the sea in heavy weather to prevent the seas from breaking in the vicinity of the ship.

Quicken. To give a greater curve—a term belonging to ship building.

Quilting. A coating of woven rope about the outside of a vessel.

Quoin. A wooden wedge; pieces of wood used for steadying casks when the latter are bedded.

FORM OF LOG PAGE USED BY SAILING VESSELS—NAMES OF THE WATCHES ADDED.

H		K	F	Courses.	Winds.	Leeway.	Thermometer. Air.	Thermometer. Water.	Barometer.	Remarks.	1891.
A.M.	1										
	2										
Mid Watch.	3										
	4										
	5										
Morning	6										
Watch.	7										
	8										
	9										
Forenoon	10										
Watch.	11										
	12										

NOON.		Course.	Distance.	Diff. of Lat.	Departure.	Lat. by D. R.	Lat. by Obs.	Variation.	Diff. of Lon.	Lon. by D. R.	Lon. by Obs.
	1										
Afternoon	2										
Watch.	3										
	4										
1st Dog Watch.	5										
	6										
2d Dog Watch.	7										
	8										
	9										
First	10										
Watch.	11										
P.M.	12										

R.

Rabbet. A groove cut in a piece of timber into which another timber is fitted.

Race. A rippling commotion of the water caused by a meeting of two tides, or from the tide flowing through a narrow channel. A contest of speed between two vessels. The propeller is said to *race* when, in a heavy sea, the vessel's stern is so high out of water that the propeller revolves in the air. *Racing* of this kind not only strains the vessel but threatens the shaft and engines with a breakdown.

Racing Sails. Under this caption comes club-topsail, spinnaker, and all the balloon sails.

Racing Shell. A long, narrow, and very light boat with outriggers for the oars to work in, used in racing, and manned with from one to eight oarsmen, according to the size of the boat.

Rack. To seize two ropes together with turns of spun yarn, etc., so that they cannot move.

Rack Block. A length of wood containing a number of sheaves, and used as fair-leaders.

Raffeé Rail. A sail in the shape of an equilateral triangle △ which is sometimes set over the highest yard. The foot of the *raffeé* is spread by the yard, and the head, or apex of the sail, hoists directly in front of the mast. This sail is common to English schooner yachts rigged to carry a squaresail, as the *raffeé* is set over the yard.

Raft. A floating shape manufactured out of spars, planks, barrels, etc.

Rail. The top edge of the bulwarks, called *bulwark-rail.*

Railroad Gaff. (See Railways.)

Railways. Iron jack stays bolted under standing gaffs and used on steam vessels where booms are not carried. The head of the sail is hauled out along the gaff by means of an outhaul, and the sail is brailed in when it is desired to furl it. (See Gaff, Ways.)

Rainbow Dressing. (See Dressing Ship.)

Raise. As a vessel approaches an object its increasing elevation to the eye of the observer is called *raising;* hence *to raise the land* is to bring it more within vision.

Raising the Dead. *Heave and raise the dead* is an old order given to the men at the windlass brakes, signifying that they are to heave strong and lift the anchor from its mud grave. The performance is characterized as *raising the dead.*

Rake. The inclination of a vessel's masts from the perpendicular. A term sometimes applied to the overhang of a vessel's stern.

Raking. *Raking a vessel* is firing a shot so that it will plough through her in a fore-and-aft direction.

Rakish. A vessel is said to be *rakish* when she presents a saucy appearance—generally when her masts have a good rake.

Ramline. A small rope used to determine the centre line of a vessel; also in mast-making to obtain a straight middle line on a spar.

Range Alongside. When in sailing one vessel runs up close abeam of another she is said to *range alongside.*

Range Light. The light carried on the after-part of steam vessels, elevated above the deck, and forming with the stem light the line of the keel. Also two lights placed on shore in such situations that when they are in line with one another, as seen from a vessel, the latter may know that she is in the channel.

Range of Cable. A length of cable overhauled so that when the anchor is let go it will fall to the bottom without being checked.

Rap Full. Not quite close-hauled.

Rate. The *class* to which a vessel belongs—in the navy according to her tonnage and armament, and in the merchant service according to her material and construction. (See Class.)

Ratline Stuff. A small tarred line used to rattle rigging. It is generally of 18 threads.

FORM OF LOG PAGE USED BY STEAMSHIPS.

Journal *from* ..... *towards* .....

H	K	COURSES.	WINDS.		SEA-SWELL.		CURRENTS.		THERMOMETER.		BAROMETER.	REMARKS.
			Direction from which coming.	Force. Scale 0 to 12.	Direction from which coming.	Character.	Direction from which coming.	Velocity in Knots.	Air.	Water		day of..... 18
A.M. 1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

	Distance by Log.	Distance by Obs.	Distance by Wheel.	Slip of Wheel.	Lat. by D. R.	Lat. by Obs.	Lon. by D. R.	Lon. by Obs.
NOON.				per cent.				

1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
P.M. 12												

Ratlines. Short lengths of ratline stuff seized and clove-hitched 14 inches apart across the shrouds, parallel with the sheer pole, and which act as the rounds of a ladder for the crew in ascending or descending from aloft. All the ratlines extend from the swifter (the forward shroud) to the one next to the aftermost shroud, but every fifth ratline is seized to this after shroud, and is called both a *catch ratline* and a *sheer ratline.*

Rattle Down Rigging. To seize and clove-hitch the ratlines across the rigging.

Ravens. (See CANVAS.)

Razee. A ship of war after being cut down so as to reduce her to the next inferior rate.

Reach. (See HEAD REACH.)

Reaching. (See FORE REACH and HEAD REACH.)

Ready About. An order to the crew to be prepared for tacking ship.

Red Lead Putty. A mixture of white lead and red lead used for various purposes. Some shipmasters fill up the deck seams with this preparation after caulking, instead of using pitch or marine glue. This putty does not become soft and stick to the feet when the ship is in warm latitudes. (See WHITE LEAD PUTTY.)

Reef. To contract a sail is to *reef* it. Square sails are taken in upon the head, but fore-and-aft sails upon the foot. *Close reef* means to reduce the sail to the last row of reef points. *To shake out a reef* is to open out the sail to the value of a breadth contained between two reef bands.

Reef Band. A band of canvas sewed across the sail in order to support the strain placed upon it by the reef points. A *reef band* has ear-rings at each end.

Reef Cringles. Galvanized iron rings (called thimbles) spliced in the bolt rope on the leaches of square sails, and on the leach and luff of fore-and-aft sails at the end of the reef bands, and used for confining the ends of the reef bands to the yard or boom.

Reef Earing. On a square sail a *reef earing* is a small line used to secure the reef cringle to the yard-arm. On a fore-and-aft vessel *reef earings* are short platted lengths of rope passed through the reef cringle and around the boom several times, so as to keep the leach of the sail secure to that spar after the reef points are tied and the sail again hoisted.

Reef Knot. (See FLAT KNOT.)

Reef Pendant. A rope made fast in the reef cringle on the leach, and to which the reef tackle is hooked.

Reef Points. The short cordage on the reef bands used to tie up the sail in reefing. *Reef points* are often referred to as *nettles.*

Reef Tackle. The tackle which holds the middle of the leach of a squaresail up to the yard in reefing. On a fore-and-aft vessel the *reef tackle* hauls the reef earing on the leach of the sail out along the boom.

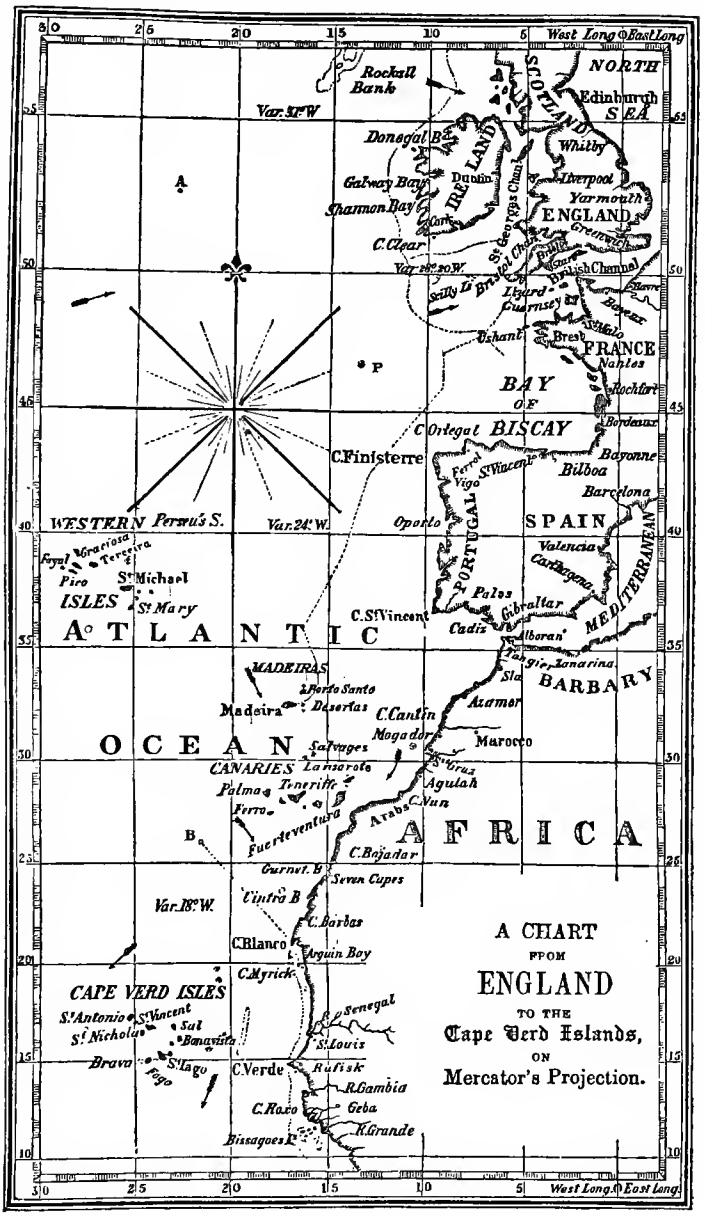
Reefing Bowsprit. (See RUNNING BOWSPRIT.)

Reemer. An iron used by caulkers to widen the seams of a wooden vessel before driving in the oakum.

Reeve. *To reeve a rope* is to pass the end of it through a block, dead-eye, bull's-eye, or any aperture.

Register. A marine document issued to a vessel by the customs officials, permitting such vessel to engage in trade with a foreign country, to be employed in the fisheries, and to engage in domestic trade. In other words, a *register* does not limit a vessel's occupation. The *register* identifies the vessel in the following particulars: nationality, official number, ownership, vessel's name, home port, name of master, year of building, place of building, name of the measurer, number of decks, number of masts, rig of vessel, dimensions and tonnage. Vessels of the United States engaged in trade with a foreign country (except upon the northern inland frontier of the United States) *must be under register.* The *register* continues in force indefinitely unless the rig of the vessel, or the tonnage of same, or the ownership changes, in which case a new register must be obtained.

Relieving Tackle. Tackles which are hooked to the tiller in a gale of wind, and by which the vessel may be steered in the event of injury to the tiller ropes or wheel.


West Long East Long
Rockall Bank
NORTH SEA
Edinburgh
SCOTLAND
Var. 31° W
Donegal B.
IRELAND
Whitby
Galway Bay
Dublin
Liverpool
Shannon Bay
Yarmouth
ENGLAND
C. Clear
Var. 26° 30' W.
Scilly
Ushant
Brest
FRANCE
Nantes
Rochfort
BAY OF
C. Ortegal
BISCAY
Bordeaux
C. Finisterre
Bayonne
Bilboa
Barcelona
WESTERN Pertus S.
Var. 24° W.
Oporto
PORTUGAL
SPAIN
Valencia
Cartagena
Palos
Gibraltar
C. St Vincent
Cadiz
MEDITERRANEAN
Alboran
ISLES
St Mary
St Michael
Piro
Terceira
Graciosa
Fayal
ATLANTIC
MADEIRAS
Porto Santo
Madeira
Desertas
C. Cantin
Azamor
BARBARY
Mogador
Marocco
OCEAN
Salvages
CANARIES
Lanzarote
Palma
Teneriffe
Ferro
Fuerteventura
Agulah
Arabs
C. Nun
AFRICA
C. Bojador
Gurnet B.
Seven Capes
Var. 18° W.
Cintra B.
C. Barbas
C. Blanco
Arguin Bay
C. Myrick
CAPE VERD ISLES
St Antonio
St Vincent
Sal
St Nicholas
Bonavista
Brava
Fogo
St Iago
C. Verde
Senegal
St Louis
Rufisk
R. Gambia
C. Roxo
Geba
R. Grande
Bissagoes
A CHART
FROM
ENGLAND
TO THE
Cape Verd Islands,
ON
Mercator's Projection.

Render. A rope *renders* when it passes freely through any aperture, such as through a block.

Respondentia. To pledge or sell sufficient of the ship's cargo to pay the bill for repairs upon the vessel which has put into port in distress when the money cannot be obtained otherwise. (See BOTTOMRY.)

Return Sound Tubes. The tubes placed in the wheel-house of a steamer which run to the engine-room and convey to the former place the sounds of the bells rung to the engineer. By these means the officer in the wheel-house knows if the number of pulls made on the bell-wire handles are correspondingly sounded on the gongs, etc.

Revenue Laws. Laws passed by a nation in order to derive an income from the duties for the support of the government. This may be a tax upon the internal products of the country or the importations.

Ribs. A name applied to the timbers of a vessel.

Ride. A vessel *rides* when she is at anchor. *To ride the seas* is to bow them. *To ride out a gale* is to weather it successfully. *To ride down* is to force anything by main strength, as to *ride down the main tack.*

Riders. Casks which form the top tier in the vessel's hold. (See PART II.)

Riding Bitts. The bitts to which the anchor cables are secured.

Riding Booms. Same as *boat booms.*

Riding Down. *To ride down a halliard* is to have the men go aloft and, grasping the rope, swing their feet clear of all support, and, while holding tight to the halliard, allow their aggregate weight to overcome the resistance offered. As the yard or gaff goes up the men come down, when the latter mount the rigging nimbly, if required, and once more tail on to the halliards.

Riding Down a Man. An expression signifying that the man is to be punished by being kept at work and made as miserable as possible. (Same as WORKING UP.)

Riding Light. (See ANCHOR LIGHT.)

Ridge Rope. The rope rove through the holes in the upper end of the awning stanchions to secure the sides of the awning to when it is spread.

Rig. To rig a vessel is to send the shrouds and stays over the masthead and set them up, send up masts and cross the yards, etc. The word used in describing various kinds of vessels, as brig rig, schooner rig, ship rig, etc.

Rigging. A term applied collectively to all the ropes of a vessel. (See FORE RIGGING, MAIN RIGGING, MIZZEN RIGGING, STANDING RIGGING and RUNNING RIGGING.)

Rigging in Bowsprit. (See RUNNING BOWSPRIT.)

Rigging Loft. A room in which rigging is cut and made.

Rigging Luffs. Watch tackle purchases used for setting up rigging.

Rigging Mat. A mat seized to standing rigging to take chafe.

Rigging Screw. An iron instrument on the principle of a carpenter's clamp, and used for pressing the two parts of a heavy rope together so that it may be seized to one another.

Right. To put the helm amidships is to *right* it. When the deck of a vessel returns to a horizontal position after a roll, or after being listed by the wind acting upon the sails, the vessel is said to *right herself.*

Right-handed Rope. Rope that is laid up with the sun ; *i. e.*, twisted from right to left.

Rim of the Top. The edge of the top.

Ring. The round iron at the upper end of an anchor shank.

Ring Bolt. A bolt having a ring through its eye.

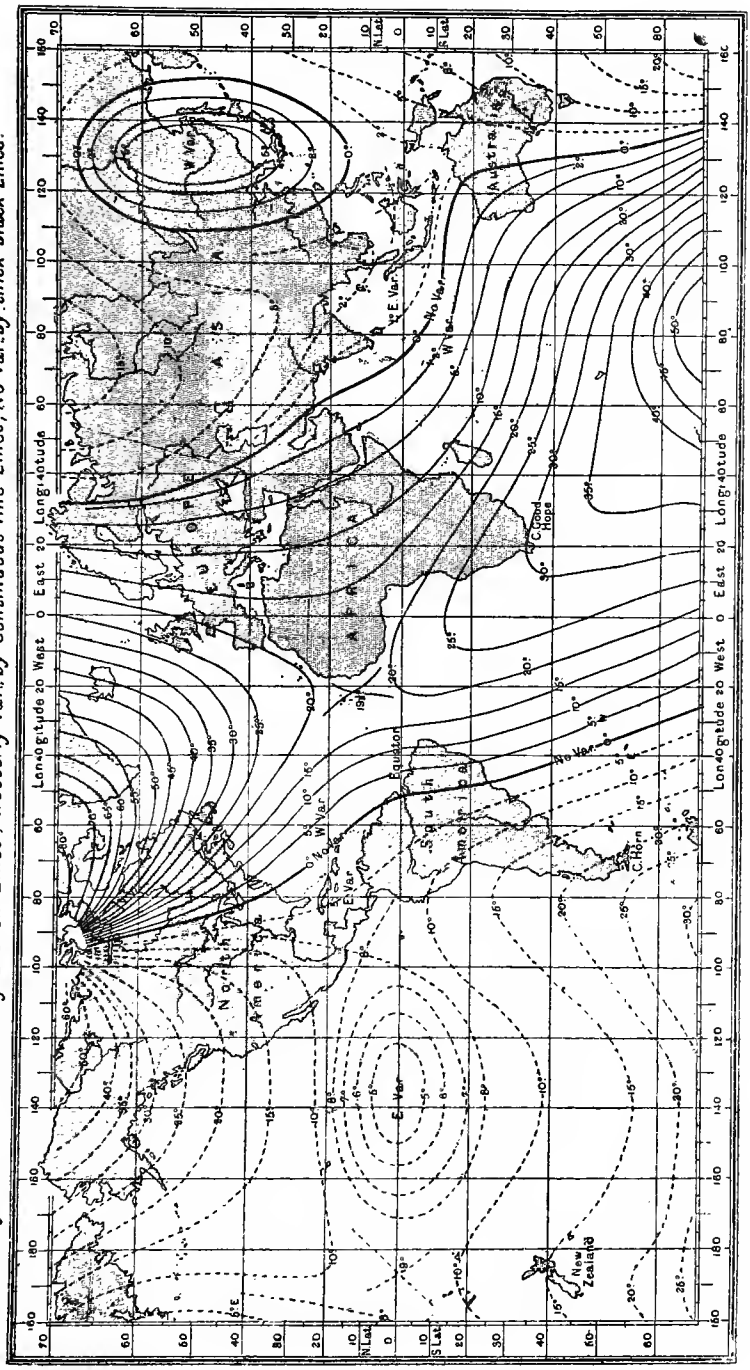
Ring Rope. The rope by which the end of the cable is lifted from the hawse-hole to the anchor ring in bending the chain.

Ring Tail. A jib-headed sail, the foot of which sets on an additional boom rigged out on the end of the after-boom. Its head hoists to the gaff, and the sail itself might be called a *spanker-stunsail.* It is rarely carried, and is only set in light airs.

Ripping Iron. A tool used by caulkers for getting oakum out of a seam, or by sheathers in tearing the old metal off of a ship's bottom.

CHART OF THE WORLD, showing LINES of EQUAL MAGNETIC VARIATION 1890.

Easterly Variation is shown by Broken Lines; Westerly Var. by Continuous fine Lines; No Var. by thick black Lines.



River Pirate. One who robs vessels in port by sneaking alongside in a small boat and carrying off anything handy to pass over the side.

Roach. The curve on the foot of a square-sail. The *roach* of a fore-and-aft sail can be on any one or its sides.

Road. Same as *Roadstead.*

Roadstead. An anchorage more or less exposed.

Robands or Robans. Small pieces of Manilla or spun yarn used to secure the luff of a fore-and-aft sail to the mast hoops or stay-hanks, and the head of a square-sail to its yard. Also to secure the head of a fore-and-aft sail to a gaff fitted with a jack stay. Manilla spun yarn is preferable, as it is not tarred and will not stain the sail.

Roger. A pirate's flag.

Rollers. (See GAFF.)

Rolling. The rocking motion of a ship from side to side. (See ANGLE OF SAFETY.)

Rolling Hitch. A kind of a three-part heaving-line bend. (See engraving.)

Rolling Rope. A rope used for steadying light yards, on the same principle as a rolling tackle.

Rolling Tackles. Tackles used during a heavy sea for the purpose of steadying the yards.

Rollocks. (See ROWLOCKS.)

Rombowline. Old pieces of rope and junk in general.

Rope. (See RIGHT and LEFT-HANDED ROPE, HAWSER-LAID ROPE.)

Rope Yarn. An untwisted strand of rope used for rough seizings, etc.

Ropes-end. The end part of a rope.

Ropes-ended. To inflict punishment by whipping a person with a rope's end.

Rose-lashing. A lashing which is made by passing the parts alternately over and under, and finishing by passing the end of the lashing around the crossing.

Rose Seizing. Same as *rose-lashing.*

Rough Log. The original log, generally written in pencil.

Rough Tree. A spar in the rough.

Round Down. To overhaul a tackle so as to allow the lower block to come down.

Round House. A house arranged for the convenience of the ship's company, situated near the bows.

Round In. To haul in a rope quickly. *To round in a weather brace.*

Round Line. Three right-handed yarns used for heavy service, such as the eyes of rigging, heavy seizings, etc.

Round Ribbed. A flat-built vessel.

Round Seizing. Put on the eyes of rigging, etc. (See engravings.)

Round To. To change the course so that from sailing free the vessel is brought by the wind.

Round Top. A platform of circular shape at the lowermast heads.

Round Turn. To pass a rope entirely around anything.

Round Up. To haul away on a tackle so as to bring the two blocks together.

Rounding. Service placed on a rope or spar to take the chafe.

Rousing. To pull and haul by main force without the aid of tackles.

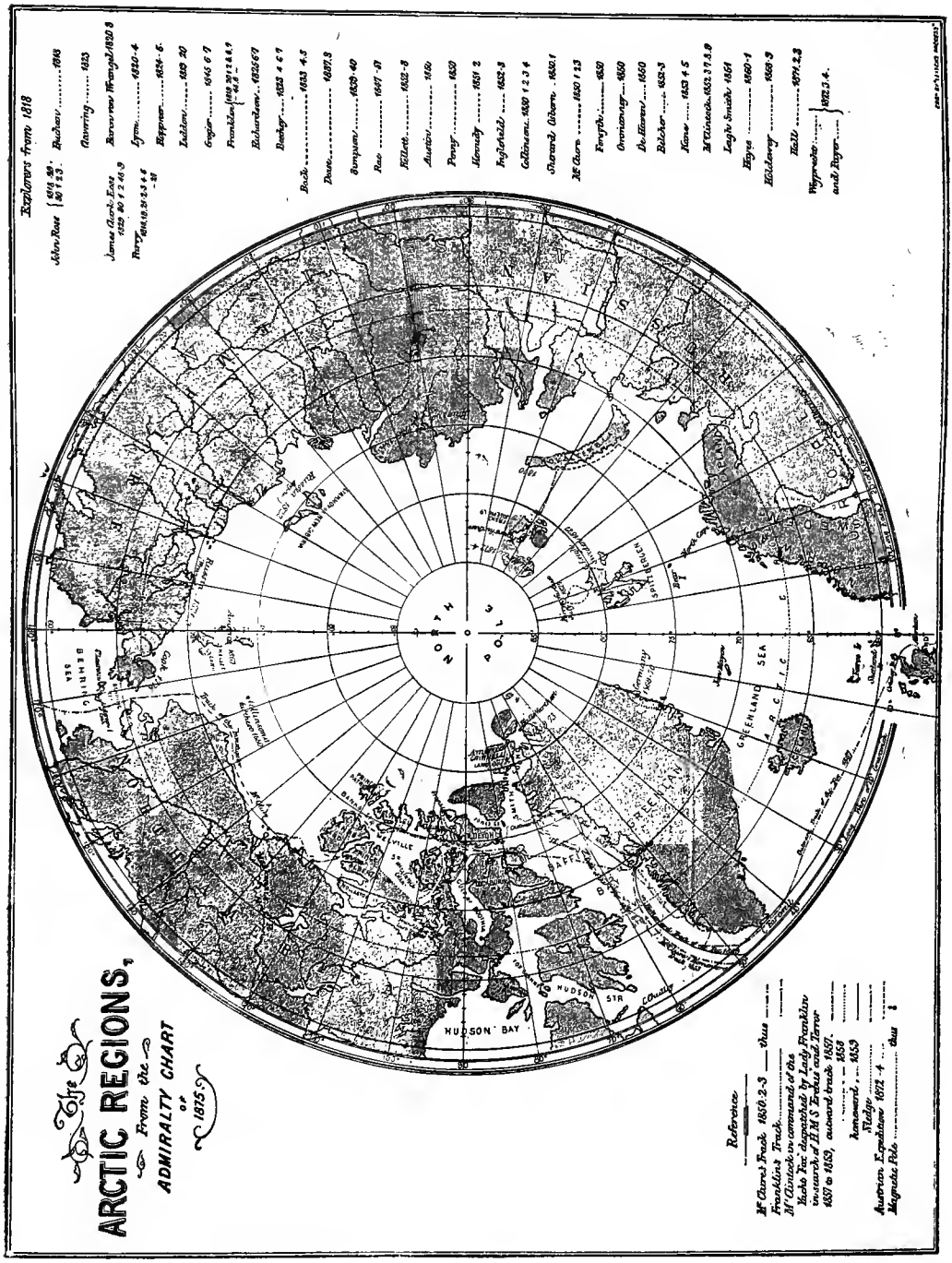
To rouse up an anchor is to lift it without mechanical appliances.

Routine. (See SHIP'S ROUTINE.)

Rowlocks. Squares cut in the wash-boards of boats for the oars to rest in. Thole pins are often referred to as *rowlocks,* as they form a *rowlock* elevated above the gunwale.

Royal. A square sail next above a topgallant sail. A ship carries fore, main and mizzen royals.

Royal Mast. If it is a *fidded royal mast* it is a separate spar rising above the topgallant mast, but otherwise it is that part of the topgallant mast above the shoulder (and terminating at the truck) from which the topgallant rigging leads. In the latter case it is also referred to as a *royal pole.*


The ARCTIC REGIONS, From the ADMIRALTY CHART of 1875.
Explorers from 1818
John Ross 1818, 19, 20 & 1829 Buchan
Clavering 1823
James Clark Ross 1829 30 1 2 4 5 9 Parry 1818, 19, 20, 21, 22, 24, 25, 27
Beechey 1825 6
Lyon 1824-4
Beaufort 1824-5
Dalton 1825 26
Ogilvie 1825 6 7
Franklin 1825 27 1828 9 32 3
Richardson 1826 27
Back 1833 4 5 7
Dease 1837 8
Simpson 1839 40
Rae 1847 51
Pullen 1852-3
Austin 1850
Penny 1850
Kennedy 1851 2
Inglefield 1852-3
Collinson 1850 1 2 3 4
Sherard Osborn 1850 1
M'Clure 1850 1 2 3
Forsyth 1850
Ommanney 1850
Belcher 1852-3
Kane 1853 4 5
M'Clintock 1853 37 8 9
Leigh Smith 1861
Hayes 1860-1
Hall 1860-3
Koldewey 1869 70
Payer 1871 2 3
Weyprecht
and Payer 1872 3 4.
Reference
M'Clure's Track 1850 2-3 thus
Franklin's Track
M'Clintock in command of the Lady Franklin and Fox despatched by Lady Franklin in search of Sir J. Franklin and Terror 1857 to 1859, outward track 1857.
" " 1858
homeward " 1859
Tegetthoff
Austrian Expedition 1872 4
Magnetic Pole thus
NORTH POLE
GREENLAND SEA
HUDSON BAY
HUDSON STR
BEHRING SEA
ICELAND
SPITZBERGEN
NOVA ZEMBLA

Royal Pole. (See ROYAL MAST.)

Royal Yard. The yard next above the topgallant yard. The royal is bent to the royal yard.

Rubber. An instrument used by sailmakers to flatten the seams of a sail.

Rudder. An instrument for steering a vessel, consisting of a flat frame of wood or iron hung upon the stern post by means of pintles and gudgeons.

Rudder Band. An iron band placed around the head of a wooden rudder.

Rudder Brace. The metal hinges on which the rudder turns, otherwise called *gudgeons.*

Rudder Case. The casing built around the head of a rudder, sometimes called the *well.*

Rudder Chains. The chains by which the rudder is secured to the quarters of a vessel, and to save the rudder in the event of its being unshipped by accident. The chains are hung slack. (See CHAINS.)

Rudder Chock. A piece of timber or anything employed to stop the motion and noise of the rudder when at anchor, or when desiring to ship a new tiller, etc. On patent steering gear a set screw takes the place of a chock.

Rudder Horn. An iron crutch bolted to the back of the rudder for attaching the rudder chains.

Rudder Irons. The name applied collectively to the pintles and gudgeons.

Rudder Pendant. The continuation of the rudder chains leading to each quarter.

Rudder Port. The hole in the counter in line with the stern post that the rudder head passes through, the head rising to a sufficient height above the deck to have the tiller or gear connected by which the rudder is moved around and the vessel steered.

Rudder Shoulder. Additional timbers secured to the forward and after sides of the main piece from the lower part of the head (*the shoulder*) to the lowest part of the rudder (*the heel*).

Rudder Stock. The main piece of the rudder.

Rudder Tackle. Purchases hooked to the rudder chains and by which the ship is steered in the event of the rudder head being carried away.

Rudder Wood Lock. (See WOODLOCK).

Rules of the Road. The laws regulating the government of vessels when under way so that collisions may be avoided between them.

Run. To scud before a gale. That part of the ship which narrows in approaching the stern post—sometimes called *after-peak.* The distance sailed, as the *day's run. To let go by the run* is to let go entirely instead of slacking gradually.

Run down a coast. To sail along the coast.

Run down a parallel. To sail north or south until the desired parallel is reached, then heading either east or west until the port is arrived at.

Run down a vessel. To collide with a vessel head on.

Run out a warp. To send a line out from the vessel. (See WARP.)

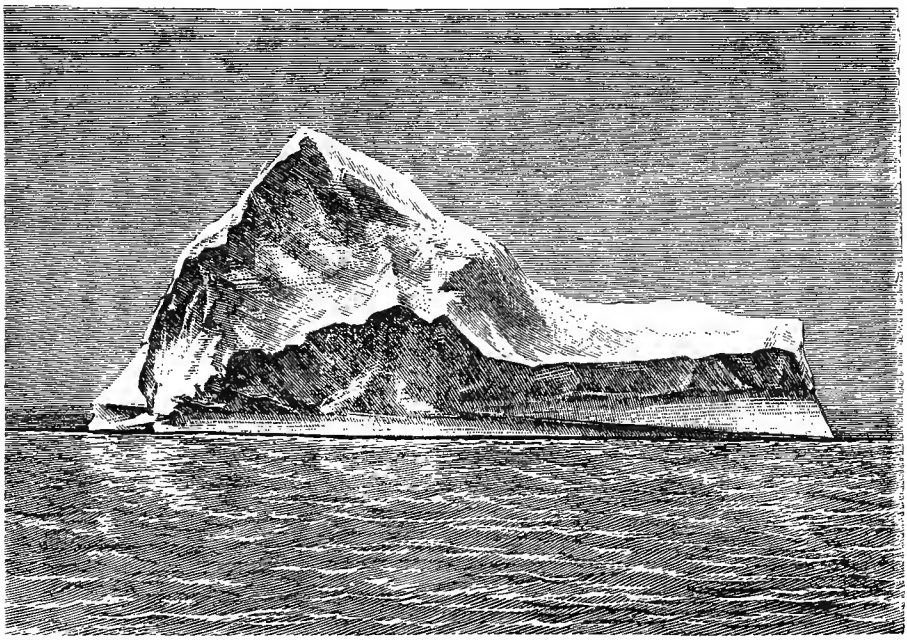
Runner and Tackle. A rope rove through a single block that you wish to bring down, one end of the rope secured as a standing part, and the other provided with a tackle. (See engraving.)

Running Bowline. A bowline made over the standing part of its own rope so that it will form a sliding noose. (See engraving.)

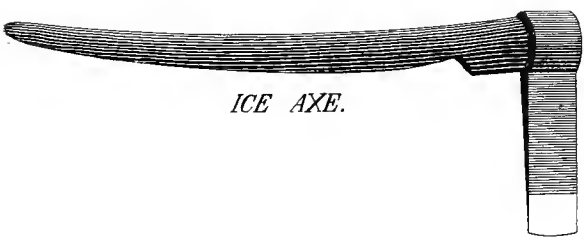
Running Bowsprit. A bowsprit fitted so as to run in and out—now in general use on cutters, sloops, yawls and schooner yachts.

Running Days. (See LAY DAYS.)

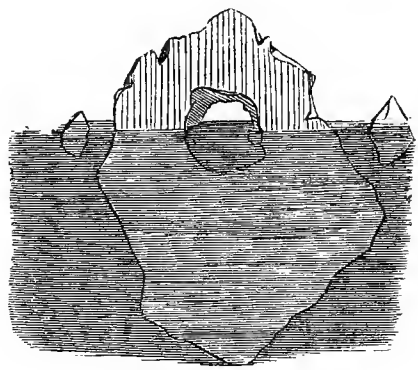
Running Rigging. All the movable ropes of a vessel, such as braces, sheets, tacks, clewlines, buntlines, leachlines, halliards, downhauls, reef-tackles, outhauls, etc.



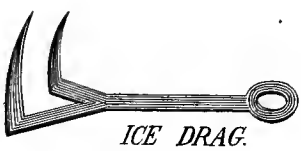
PHOTOGRAPH OF AN ICEBERG GROUNDED IN 1,600 FEET OF WATER.



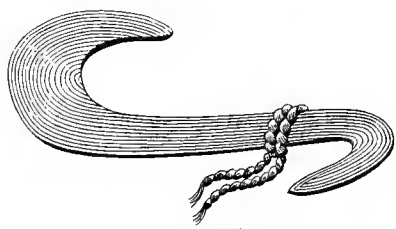
ICE AXE.



SPECIFIC GRAVITY OF ICE.



ICE DRAG.



ICE ANCHOR.

S.

Saddles. Pieces of wood, sometimes called *saddle crutches*, bolted on to the sides of the masts near the deck to receive the weight of the boom jaws.

Safety Angle. (See ANGLE OF SAFETY.)

Sag. To settle. A vessel *sags to leeward* when she drifts off sideways under the influence of the wind or sea.

Sagged. Said of a vessel when she droops amidships, so that the line of her shear settles at that point—opposed to *hogged.* (See HOGGED.)

Sail Covers. A covering of canvas placed over sails when they are furled so as to add to their neatness, also to protect them more or less from dampness.

Sail ho! A cry used in reporting the first appearance of a sail at sea.

Sailing Higher. (See OUT-POINT.)

Sailing Trim. When a vessel is so trimmed as to do her best sailing—as a rule referring to the amount and disposition of her ballast. It may also mean the trim of her sails.

Sailmaker's Splice. A splice made by sailmakers in uniting two ropes of different sizes.

Sails. The canvas suspended from yards, spread by gaffs and booms, and hoisted upon stays. The first are called *square-sails*, the second *fore-and-aft sails*, and the third *staysails.* (Look under various headings.)

Saloon Deck. (See Deck.)

Salt. A sailor.

Salt Horse. A sailor's term for the salt beef issued to the crew.

Salt Water Soap. Soap made from cocoa-nut oil and which makes a good lather when used with salt water.

Salvage. A percentage of the value of a ship and cargo awarded under certain circumstances to one or more individuals who have been instrumental in saving the vessel.

Save All. (See WATER SAIL.)

Scandalize. To haul up the tack or to drop the peak of a fore-and-aft sail. To goose-wing a square sail by hauling up one of the clews.

Scanting. When the wind hauls so that the vessel is obliged to brace up to head her course the wind is said to *scant.*

Schooner. *A fore-and-aft schooner* has no yards, all her sails being spread by booms and gaffs and by hoisting upon stays.

A topsail schooner carries a fore-and-aft foresail and mainsail, a square fore-topsail and topgallant sail and sometimes a royal.

A main topsail schooner carries a square topsail on the main.

Fore-and-aft schooners carry from two to five masts.

Score. The groove cut in the sides of blocks for the strop to fit in.

Scotchman. A piece of wood or hide placed over the turnings in of rigging to prevent chafe.

Scow. A tub-shaped vessel used in shallow waters for the transportation of merchandise, etc. Some scows are sloop-rigged, and others schooner-rigged.

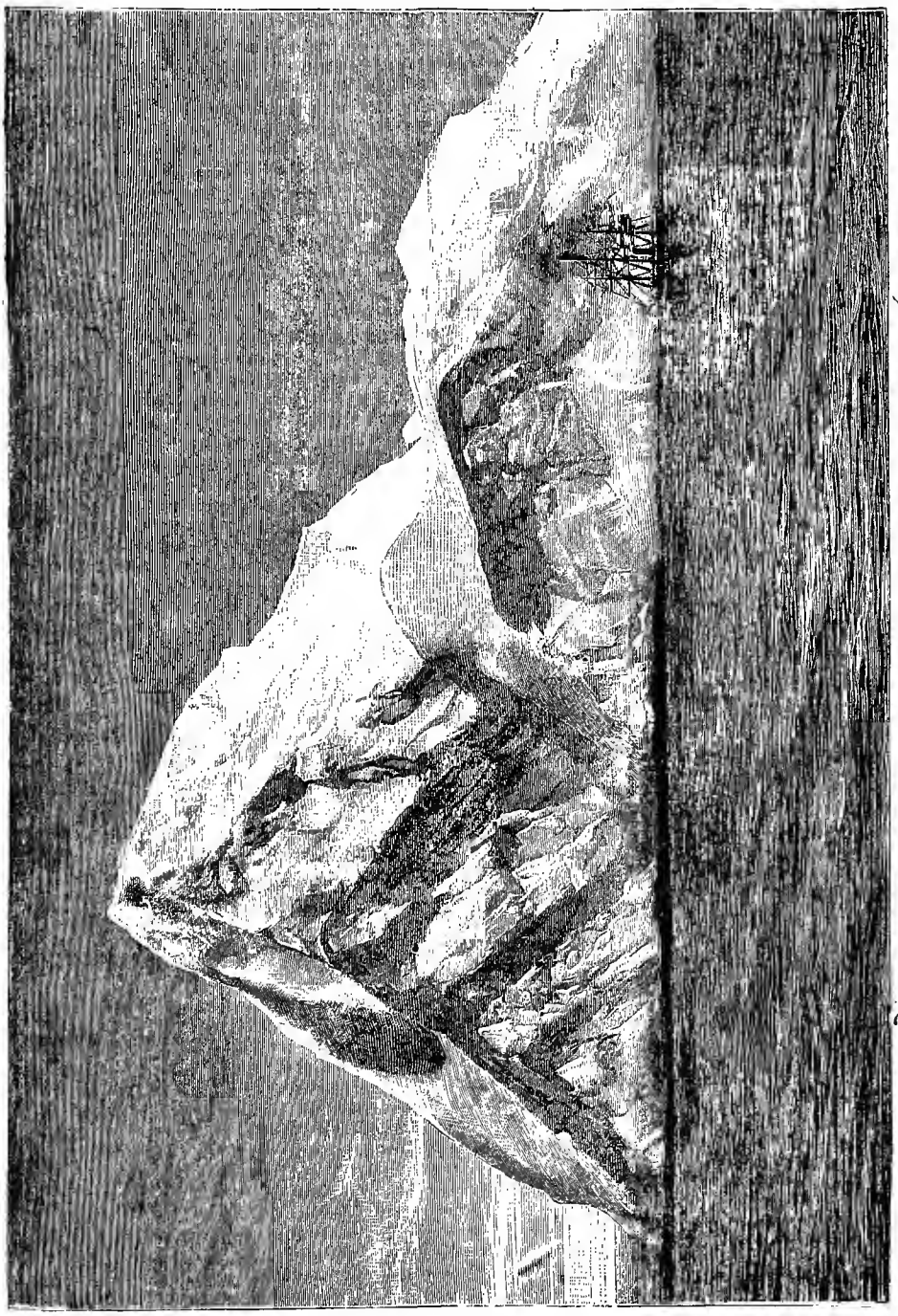
Scraper. A small iron instrument used for scraping masts and other wood and iron work.

Screw Dock. (See DOCK.)

Scroll. A piece of timber bolted to the knee of the head, and which takes the place of a figure-head. (See HEAD.)

Scud. Clouds of mist driving along close to the water. To drive before a gale.

Scull. *To scull a boat* is to propel her through the water by working an oar from side to side over the stern. It was this principle which suggested the idea of a screw propeller for steam vessels. *A pair of sculls* refers to two short, light oars such as are used in pleasure row-boats



THE "PANTHER" ANCHORING BY THE SIDE OF A GIGANTIC ICEBERG.—FROM A PHOTOGRAPH BY W. BRADFORD.

Scupper Shutters. The narrow lengths of board covering the scupper holes which hang on hinges, opening outwards to the pressure of water on the decks.

Scuppers. Holes cut through the bulwarks next to the plankshear to allow water to run overboard from the decks.

Scuttle. A small hole in a vessel's deck, used as a hatchway. *To scuttle a ship* is to chop or bore holes in her bottom so as to make her sink.

Scuttle Butt. A cask with a hole cut in its bilge, and kept on deck to hold water for daily use.

Sea. A wave. Under this head are classed: *smooth sea, moderate sea, heavy sea, head sea, long sea, short sea, ugly sea, following sea, beam sea, bow sea, quartering sea.*

Sea Anchor. A *drag* is also known as a *sea anchor.* (See DRAG.)

Sea Boat. A vessel that rides the seas easily, and is capable of weathering storms, is said to be *a good sea-boat.*

Sea Breeze. (See LAND BREEZE.)

Sea Cock. A kind of faucet connected to a pipe which leads from the outside of the vessel to the bath tubs for the purpose of filling them with sea water. (See FLOOD COCK.)

Sea Dog. A name given to an old sailor.

Sea Lawyer. A worthless sort of seaman, commonly given to inciting the crew and making them dissatisfied with things in general on shipboard. One who argues against instead of obeying at once certain orders that may be given by the officers.

Sea Pie. A dish of fish and vegetables in layers between crusts. A small mess (*i. e.,* few men) will have a *double-decker pie,* and a large mess will have a *three,* and sometimes a *four-decker.*

Sea Quelling Oil. (See QUELLING OIL.)

Seaman of the Long Voyage. A sailor who goes on long voyages; one who cruises to various parts of the world.

Seams. The spaces between the planks of a vessel's decks and sides.

Search Light. A powerful electric reflector light which can be thrown completely around the horizon, bringing into view any object within its rays.

Sectional Dock. (See DOCK.)

Seize. To seize a rope to another or to any object is to bind it with small stuff.

Seizings. Seizings are named according to their position and use. There are *throat, round, flat* and *eye seizings.* (See under respective heads.)

Selvagee. Rope yarn or spun yarn marled together and used as a strop.

Send. A ship *sends* when she pitches into the trough of the sea suddenly and with violence.

Send of the Sea. The power, direction and velocity of the waves.

Sennit. Rope yarns or spun yarn braided. There are several kinds of *sennit,* known as *flat, French, round* and *square,* taking the name of the figure braided. *French sennit* is a flat figure, but made more open than the common-flat sennit, and is also woven of several more strands.

Serve. The act of covering a rope by winding small stuff, such as spun yarn, around it. (See WORMING, PARCELLING.)

Service. The covering of a rope that has been *served.*

Serving Board. A small piece of flat board attached to a handle and used in place of a serving mallet when putting a service on small rope.

Serving Mallet. A mallet having a groove cut lengthwise in its head, and used for serving large rope.

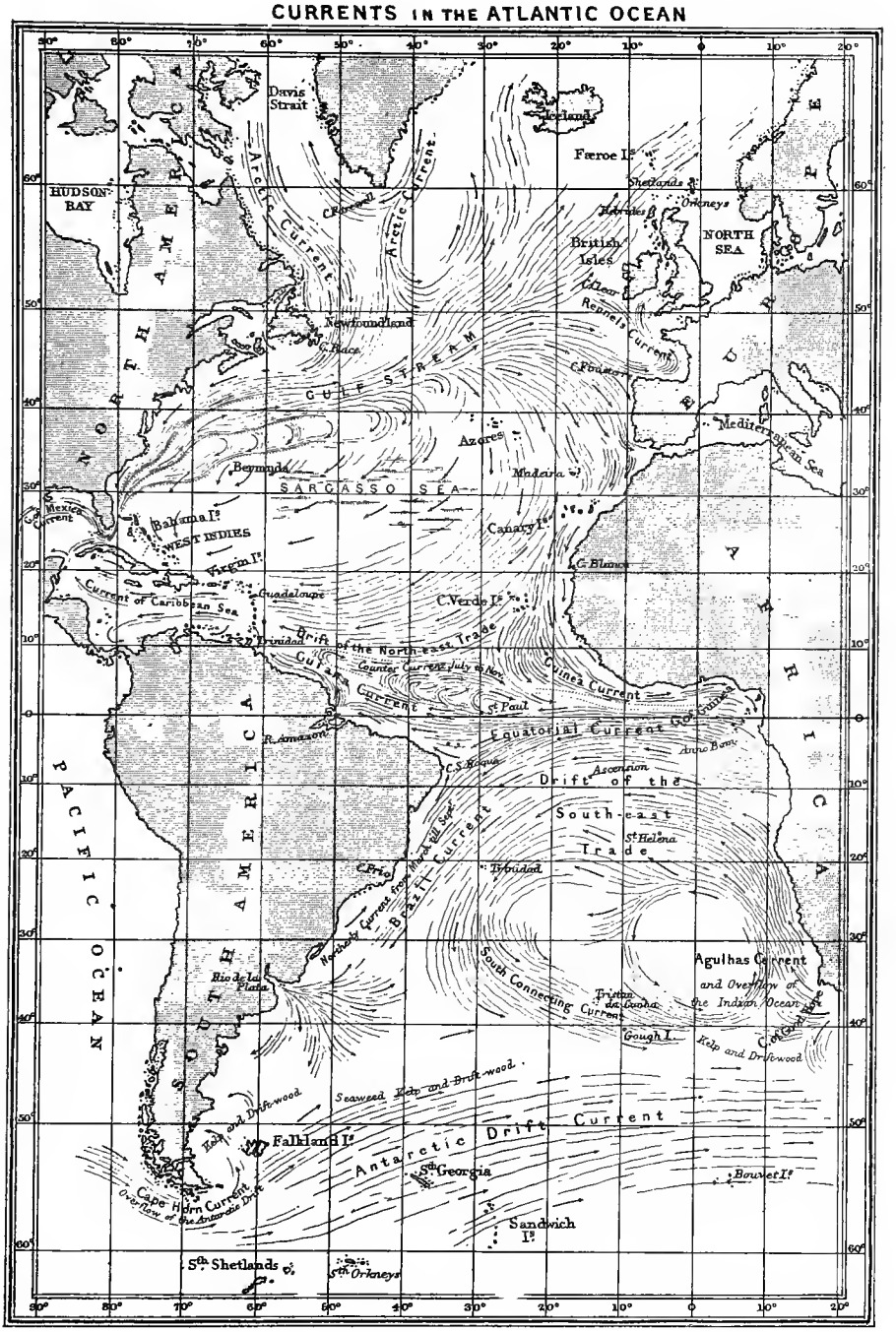
Serving Stuff. Spun yarn is in general use for serving, but rope yarn, round-line, etc., is sometimes employed.

Set Flying. A sail not confined, but set from the deck like the jib of a cutter, a sprit or club-topsail, etc.

Set of the Tide. The direction in which the tide is flowing—*not* the direction from which it is coming.

Set Sail. To put to sea.

Set the Course. To give the helmsman the compass course to steer.


CURRENTS IN THE ATLANTIC OCEAN
Davis Strait
Iceland
Faeroe Is
Shetlands
Orkneys
Hebrides
British Isles
NORTH SEA
HUDSON BAY
Arctic Current
Arctic Current
C. Farewell
Newfoundland
C. Race
GULF STREAM
Rennel's Current
C. Finisterre
Mediterranean Sea
Azores
Bermuda
Madeira
SARGASSO SEA
Mexico Current
Bahama Is
WEST INDIES
Canary Is
C. Blanco
Virgin Is
Guadeloupe
Current of Caribbean Sea
C. Verde Is
Trinidad
Drift of the North-east Trade
Counter Current July to Nov.
Guinea Current
Guinea Current
St Paul
Equatorial Current
Gulf of Guinea
R. Amazon
C. S. Roque
Ascension
Anno Bono
Drift of the South-east Trade
St Helena
C. Frio
Trinidad
Northern Current from the Gulf Sea
Brazil Current
South Connecting Current
Agulhas Current and Overflow of the Indian Ocean
Tristan da Cunha
Gough I.
Kelp and Drift-wood
Rio de la Plata
Kelp and Drift-wood
Seaweed, Kelp and Drift-wood
Falkland Is
Antarctic Drift Current
St Georgia
Bouvet I.
Cape Horn Current
Overflow of the Antarctic Drift
Sandwich Is
St Shetlands
St Orkneys
NORTH AMERICA
SOUTH AMERICA
EUROPE
AFRICA
PACIFIC OCEAN

Set the Watch. To muster the crew aft at 8 P.M., on the day of leaving port, and divide the ship's company into two watches, named starboard and port watches respectively. The starboard watch, which is the captain's watch, always stands the first watch out, and the port watch, which is the mate's watch, stands the first watch on the home voyage. If the vessel carries a second mate, he always stands the captain's watch.

Set up a Vessel. To raise her from the keel blocks by wedging.

Set up Rigging. To tauten the shrouds and stays by the aid of purchases.

Settle. To lower. To settle a yard on the cap is to lower it so that the parrel rests on the cap.

Settle the Land. (See LAY THE LAND.)

Sewed. (See SUED.)

Shackle. An iron horse-shoe shape which closes across the end with a moveable bolt. It either secures with a thread (*screw shackle*) in one of the eyes of the shackle, or is provided with a pin which is either slipped through the hole in the outside end of the bolt, or by a wooden pin passing through the shackle-eye and bolt. This latter is used on chain cables, so that the bolt may be knocked out readily and the chain slipped.

Shadow. A sail devised some years ago to take the place of a spinnaker, but which proved anything but satisfactory to yachtsmen. The idea was to make a square-headed spinnaker by setting the *shadow* on a gaff which was secured to the mast by a goose-neck under the hounds. The foot of this sail was spread by the swinging boom the same as the spinnaker. When the *shadow gaff* was not in use it hung down and was secured to the mast. The head of the *shadow* traveled on the gaff by the aid of hoops, and was hauled out and in by means of an outhaul and head brails respectively.

Shake Out a Reef. To let a reef out of a sail by untying the reef-points, coming up with the reef tackle and casting adrift the reef earings.

Shakes. Crevices in a spar, generally referred to as *sun-shakes.*

Shaking. A sail is said to be *shaking* when it flutters from being too close to the wind.

Shanghaied. When men are pressed into the merchant or naval service against their will they are said to be *shanghaied.* (See IMPRESSMENT.)

Shank. The main piece of an anchor. (See engraving.)

Shank Painter. The rope or chain which confines the fluke of the anchor to the rail.

Shape a Course. To ascertain the compass point necessary to head in order to reach the desired port or place.

Sharp Up. Yards are *sharp up* when they are braced as near fore-and-aft as possible.

Sharpie. A sharp-built vessel of from 20 to 40 feet long, flat bottom, carrying a centre-board, and fore-and-aft rigged.

Shear. The upward curve of a vessel's decks.

Shear Off. To remove to a greater distance.

Sheathing. The copper or yellow metal covering on a vessel's bottom.

Sheave. The wheel within the shell of a block.

Sheave-hole. The space between the cheeks of a block.

Sheep Shank. A method employed for temporarily shortening a rope. (See engraving.)

Sheer. The position of a vessel when riding to a single anchor.

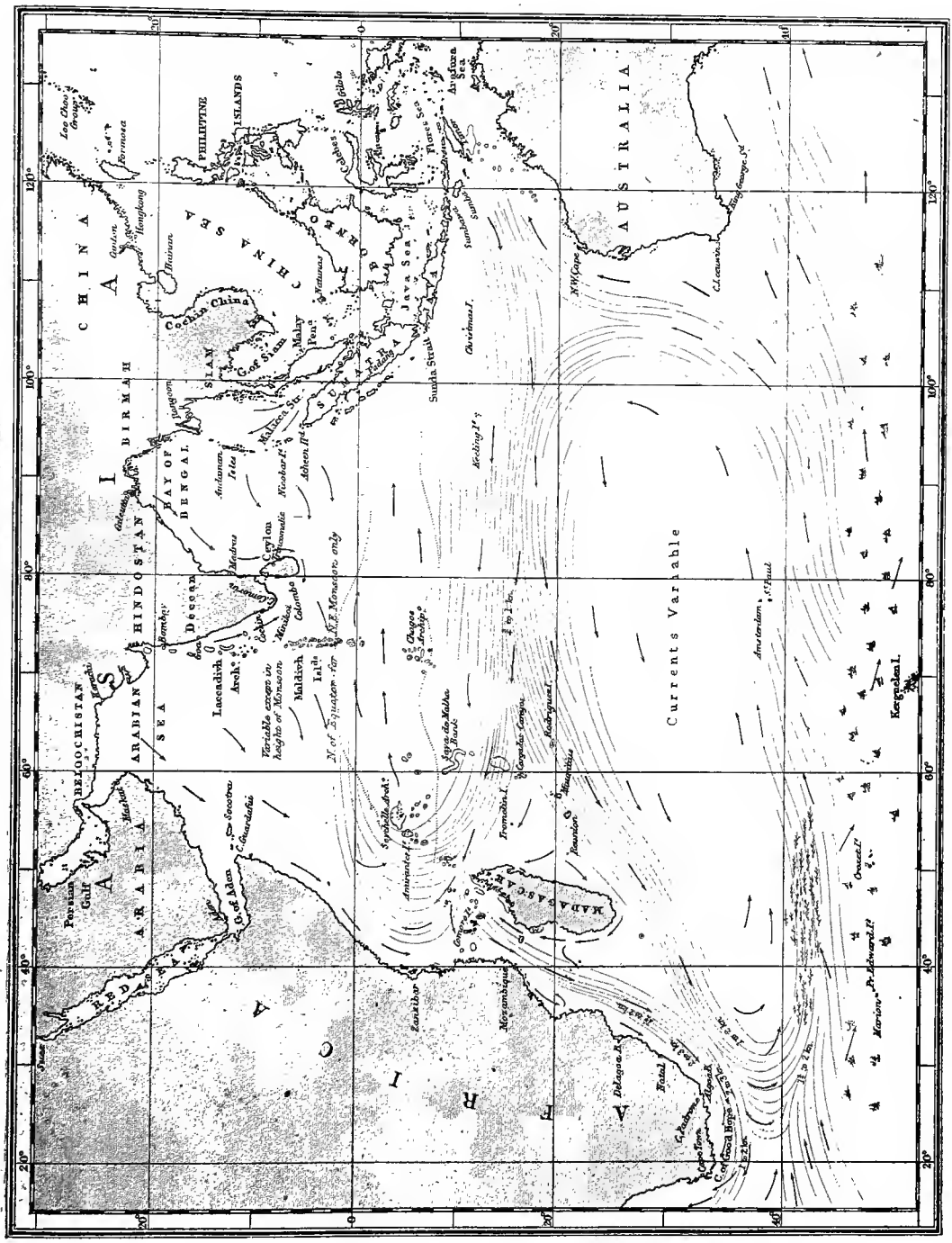
Sheer Hulk. An old vessel employed in taking out or lifting in a vessel's lower masts.

Sheer Pole. A bar of metal seized across the shrouds and resting on top of the upper dead-eyes. The sheer pole keeps the shrouds spread, and acts as the first rat-line.

Sheer Strake. The line of planking on a vessel's side upon which the plank-shear or covering board rests.

Sheers. Two or more spars raised perpendicularly, their upper ends lashed together

CURRENTS in the INDIAN OCEAN



and supported by guys. To the under part of the lashing a tackle block is hooked, and the contrivance is employed for lifting in and out masts.

Sheet. A rope employed to spread the clew of square-sails and head-sails. With boom sails sheets are used for controlling the boom.

Sheet Anchor. The anchor carried in the waist on board men-o'-war. It is the same in weight as the bowers; sometimes called the *waist anchor.*

Sheet Bend. This bend is made by passing the end of one rope through the bight of another, then around both parts, and last under its own part. (See engraving.)

Sheet Bitts. Bitts near the mast to which the topsail sheets are belayed.

Sheet Cable. The cable belonging to the sheet anchor; the heaviest anchor on the vessel.

Sheet Home. (See HOME.)

Sheets. The spaces in a rowing boat forward and abaft the thwarts, and named respectively *fore-sheets* and *stern-sheets.*

Shell. The case of a block in which the sheave turns. (See RACING SHELL.)

Shell-back. An old sailor.

Shift. To change the position or direction of anything, as to *shift the helm, shift the berth, shift the ballast, a shift of weather, shift of wind,* etc.

Shift the Helm. To reverse its direction.

Shifting Backstays. Backstays used only as necessity requires. They are always shifted when a vessel goes about so that the weather ones are tant and the lee ones slack. *Shifting backstays* set up with their own permanent tackle, and are nothing more nor less than preventer stays for the topmast when the vessel is under a press of sail. When not employed, they are set up in the after-part of the channels of the mast to which they belong.

Shifting Boards. Portable wooden bulkheads used to separate cargo.

Shingle Ballast. (See BALLAST.)

Ship. A vessel having three masts and square-rigged on all. Some large ships carry an additional mast stepped way-aft, which is known as a *jigger-mast.* The term *Ship* is often used in a general sense in speaking of vessels.

To ship a man is to engage him for duty on board a vessel.

To ship goods is to send them on board a vessel for transportation.

To ship a sea is to have the top of a wave fall on the vessel's deck.

To ship anything is to put it in place, as *to ship the capstan-bars, to ship the tiller,* etc.

Ship Broker. One who transacts the ship's custom house business, negotiates for cargoes, buys and sells vessels on commission, etc.

Ship Chandler. A man who deals in naval stores, rope, chain, paint, etc.

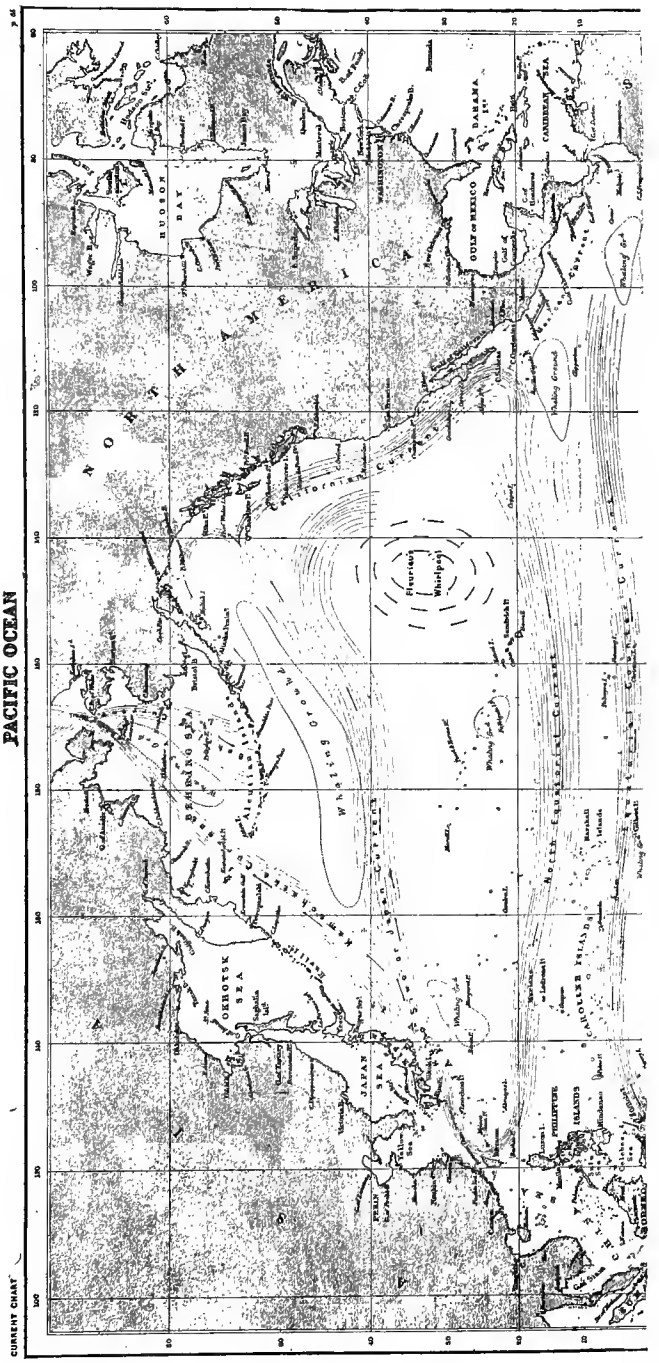
Ship Keeper. A watchman who looks after a vessel having no crew on board.

Shipmate. A man serving on board the same ship.

Ship Oars. (See OUT OURS.)

Ship Plumbing. The principal feature to be overcome is the impossibility of having all wastes from fixtures, including basins, baths, sinks and water-closets, discharge overboard by gravity; the fixtures being in the majority of cases below the water-line, combined with which is the fact that the supply of water is below the floor, being carried in tanks placed below the floor, and as near to the keel as possible; consequently pumping becomes necessary, both to obtain a supply and to dispose of it after it has served its purpose. The supply for basins, baths and sinks is usually obtained by placing pumps at or near the fixtures, though sometimes in steam vessels it is obtained by air-pressure on the tanks, causing the water to run at fixtures without the use of pumps. The waste usually goes to a waste-tank, either connected to a pump placed under galley sink in sailing vessels, or in steam vessels sometimes by a connection to the steam syphon, by which means the contents of tank is forced overboard. The waste of galley sink, on account of the large amount of grease contained in it, is not usually drained into the waste-tank, but is pumped directly overboard, the pump under sink having valves not affected by hot water, and being so connected by stop cocks that either the sink or the waste-tank may be pumped out. Hot water to fixtures may be ob-

CURRENT CHART OF THE NORTHERN HEMISPHERE.



tained from boiler in galley, connected to range, or by steam injected into fixture when water is drawn. The old-style water-closet, which had simply a valve in the outlet to prevent the sea from swashing up through funnel-pipe, and which to discharge was necessarily placed well above water-line, being supplied by tank placed overhead and filled from deck above, cannot be used where the floor of cabin or toilet-room is below the level of water outside of vessel, the pump being in this case also necessary. The best pump water-closet, by the arrangement of its valves, takes water direct from the sea to flush it, without the use of any receiver, tank or cut-off of any description being necessary, allowing it to be placed at any point either above or below water-line, while the soil is discharged below the water. There being no danger of the vessel being flooded, while at the same time the working of the pump being so easy and simple that children may use it. The action of the pump being double, the up-stroke of lever flushing bowl and sucking soil out of bowl, while the down-stroke of lever forces soil into sea, and recharging pump with clean water.

Ship Shape. In neat order; in a proper, seamanlike manner.

Shipboard. To be *on shipboard* is to be within a vessel.

Shipping Articles. The agreement signed by the officers (excepting the captain) and crew of a vessel, setting forth the character and length of the voyage, wages to be paid, etc.

Shipping Commissioner. A person appointed by the circuit courts of the United States under authority of Congress to superintend the shipping and discharge of seamen engaged in merchant ships belonging to the United States and for the protection of seamen in various ways.

Ship's Bells. The manner of telling the time on board ship is by striking the bell. Eight bells indicate midnight, 4 A.M., 8 A.M., Noon, 4 P.M., and 8 P.M. Thus it will be seen that every even four hours after midnight brings 8 bells around. After *midnight* the first bell struck is 1, which stands for *half-past twelve; one o'clock* is represented by two bells; *half-past one* by 3 bells; *two o'clock* by 4 bells; *half-past two* by 5 bells; *three o'clock* by 6 bells; *half-past three* by 7 bells, and *four o'clock* by 8 bells. At *half-past four* 1 bell is struck, and so on, in the above order, until *eight o'clock* is made known by 8 bells again.

Ship's Business. What is known as *Ship's Business* relates to those documents known as charter parties, bills of lading, bills of health, manifests, insurance, clearance, entrance, protests, surveys, bottomry, average and bills of exchange.

Ship's Carpenter. (See CARPENTER.)

Ship's Husband. The ship's overseer; one who attends to the vessel's repairs and transacts her business, etc.

Ship's Papers. The ship's register, enrollment, charter party, clearance, bill of health, etc.

Ship's Protest. In case of damage happening during the voyage, or it being suspected to ship or cargo, the master should within twenty-four hours of his arrival in port cause a notary public, or in a foreign port the American consul, to note a protest against "wind and weather."

To extend a protest is to give the particulars of the voyage, the storms encountered, as entered in the log book, and assert that any damage that may have happened was caused by winds, bad weather, etc.

Ship's Routine. A round of duties. Carrying on the business of the vessel according to established rules.

Ship's Storekeeper. (See STOREKEEPER.)

Ship's Surgeon. (See SURGEON.)

Shiver. A vessel's sails are said to *shiver* when she is luffed so close that the wind is spilled out of them.

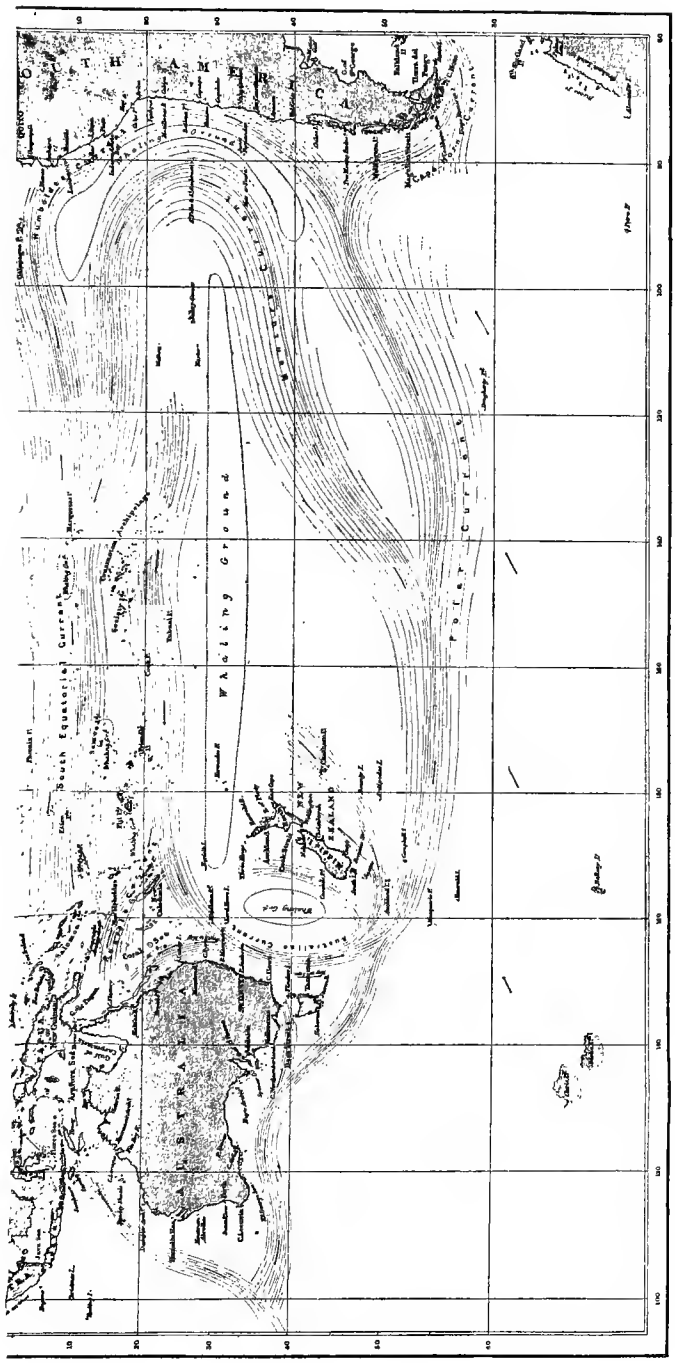
Shiver-my-timbers. An expression, like that of *Tarry-top-lights*, which is accredited by some novel writers to, but which is never used by, a true sailor.

Shoal. Shallow; a bank of mud, rock, or sand.

Shoe. A piece of wood upon which the heels of sheers rest; a piece of wood hollowed so as to allow the fluke point of an anchor to rest in it, and which prevents

CURRENT CHART OF THE SOUTHERN HEMISPHERE.

PACIFIC OCEAN.



the bill of the anchor from tearing the ship's sides when it is being hoisted or lowered.

Shoe Block. A block having two sheaves revolving at right angles to one another —one horizontal, the other perpendicular.

Shoot. A vessel *shoots ahead* of another when she passes her. *To shoot the sun* is to observe an angle of that luminary with the sextant, quadrant or octant.

Shoot Ahead. To advance. (See HEAD REACH.)

Shooting the Sun. A jocose remark in relation to measuring the sun's attitude with a quadrant or sextant.

Shore. A prop for supporting anything. *To shore* is to prop up. (See DOG SHORES.)

Short Board. A short length made on one tack.

Short Sea. A confused sea.

Short Splice. A certain kind of splice put in a rope that does not require to render through a block, as this splice, unlike the *long splice*, makes a bunch where the ropes are joined. It requires less length to make than the long splice, which is sometimes an important consideration.

Short Stay Peak. (See PEAK.)

Shorten Sail. To reef or furl some of the canvas.

Shot Line. The line shot over a vessel from the mortar by a life-saving crew.

Shoulder. The projecting part of a vessel about the water line.

Fore Shoulders. That portion of the shoulder just under the bows.

Shoulder Block. A block having a projection on one end so as to keep it in place.

Shoulder of Mutton Sail. A triangular boat sail.

Shove Off. An order given to the man in the bows of a boat to shove the same clear of the ship's side so that the crew may drop their oars into the water.

Show a Leg. An order to the crew to hurry.

Shroud Knot. A knot put in a shroud to rejoin it after parting. (See engraving.)

Shroud-laid Rope. A four-strand rope laid up right-handed.

Shroud Plates. (See CHAIN PLATES.)

Shrouds. Ropes of hemp or wire fitted over the mastheads and extending to the vessel's sides or to the rim of the tops, where they are set up by dead-eyes to support the masts sideways.

Sick Bay. A compartment on board ship used as a hospital for sick members of the crew.

Side. The outer part of the hull from the water line to the covering board.

Side Curtains. The canvas extending from the ridge ropes to the rail.

Side Ladder. Same as *accommodation ladder.*

Side Light Castles. Same as *bow lighthouses.*

Side Light Towers. (See SIDE LIGHT CASTLES.)

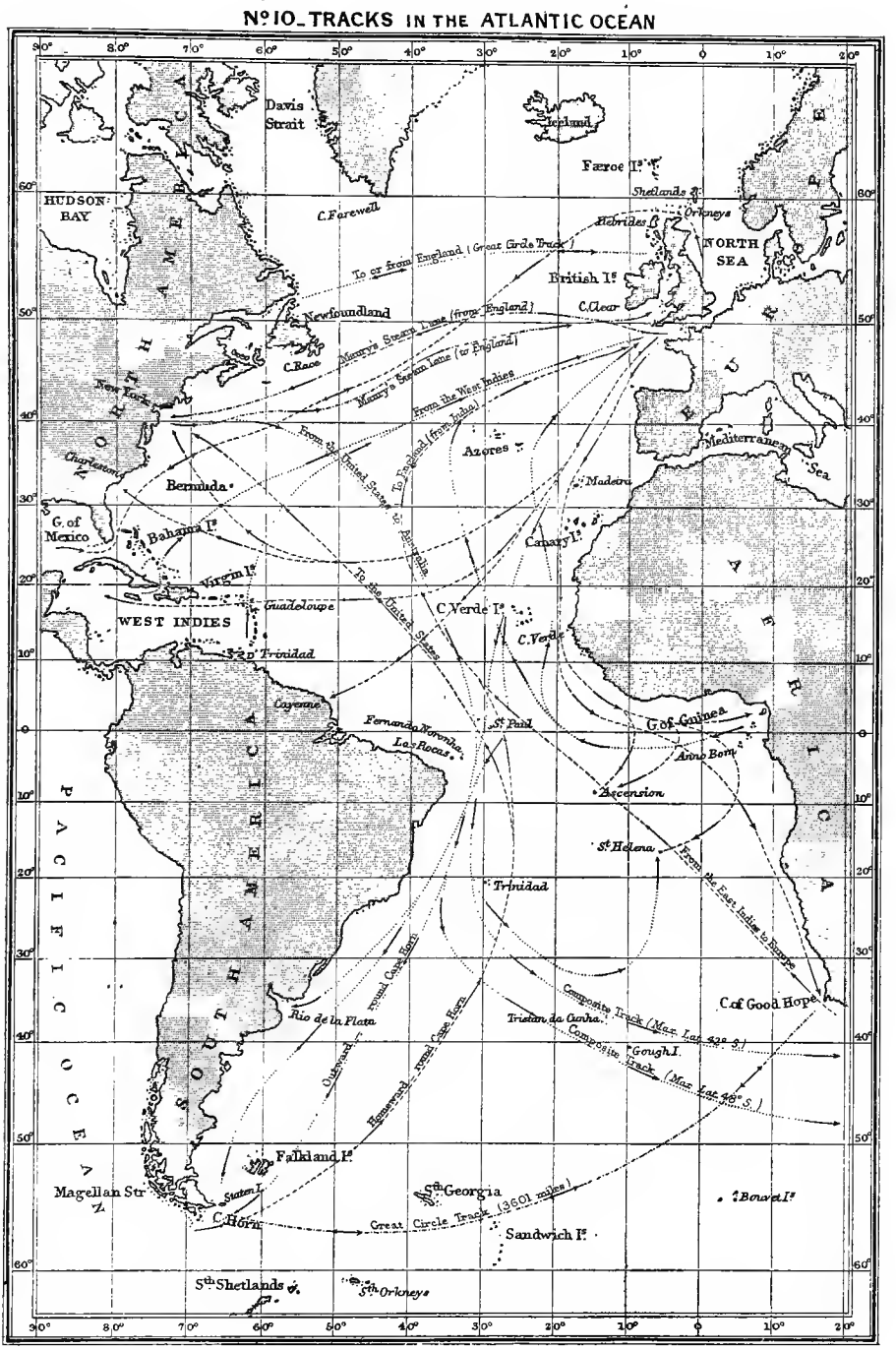
Side Lights. The red and green lights carried by vessels when under way at night. The green light is carried on the starboard side, and the red light on the port side, and they show respectively over ten points of the compass, namely, from right ahead to two points abaft the beam, and are of such a character as to be visible at least two miles.

Side Steps. Cleats of wood or iron on the sides of a vessel, used in conjunction with man ropes for ascending and descending the vessel's side.

Side Tackles. The tackles on the sides of the broadside carriages, and by which they are run out after the guns are loaded. (See TRAIN TACKLE.)

Signal Halliards. The halliards reeving through a dasher block on the end of the after-gaff, or through the hole in the trucks, or to any other place, and which are used for hoisting signals or flags.

Signal Letters. Certain letters awarded to documented vessels by the Bureau of Navigation, whereby the vessel may communicate her name to another vessel at sea, or to a shore station, by the employment of certain flags in the International Code, representing the *signal letters.*


No. 10. TRACKS IN THE ATLANTIC OCEAN
Davis Strait
Iceland
Faeroe Is.
Shetlands
Orkneys
Hebrides
NORTH SEA
HUDSON BAY
C. Farewell
To or from England (Great Circle Track)
British Is.
C. Clear
Newfoundland
C. Race
Maury's Steam Lane (from England)
Maury's Steam Lane (to England)
From the West Indies
From the United States to England (from India)
New York
Charleston
Bermuda
Azores
Madeira
Mediterranean Sea
G. of Mexico
Bahama Is.
Canary Is.
Virgin Is.
Guadeloupe
WEST INDIES
C. Verde Is.
C. Verde
To the United States
Trinidad
Cayenne
Fernando Noronha
Las Rocas
St. Paul
G. of Guinea
Ano Bom
Ascension
St. Helena
From the East Indies to Europe
Trinidad
Composite Track (Max. Lat. 42° S.)
C. of Good Hope
Rio de la Plata
Tristan da Cunha
Gough I.
Composite Track (Max. Lat. 46° S.)
Outward round Cape Horn
Homeward round Cape Horn
Falkland Is.
Magellan Str.
Staten I.
C. Horn
Sth. Georgia
Bouvet I.
Great Circle Track (3601 miles)
Sandwich Is.
Sth. Shetlands
Sth. Orkneys
ATLANTIC OCEAN
SOUTH AMERICA
NORTH AMERICA
EUROPE
AFRICA

Signal Light Fusees. A very convenient match, or small prismatic torch, which is manufactured in two colors—red and green—and employed principally on yachts for signaling purposes. Also known as *Bengalese matches.*

Silt. Mud; sediment.

Sing Out. To cry out loudly.

Single-banked. (See BANKED.)

Single Block. A block containing but one sheave.

Single Diamond Knot. An ornamental knot worked with the strands of a rope and used on man-ropes, etc. (See engraving.)

Single Sticker. A sloop or cutter.

Single Topgallant-sail. (See TOPGALLANT-SAIL.)

Single Topsail. (See TOPSAIL.)

Single up the lines. An order to the mate to get in the double parts of the mooring lines and allow only one part of each fast to connect the vessel with the dock or with some other vessel. This is done preparatory to pulling out in the stream or changing the berth.

Sink the Land. To sail away from the land until it sinks below the horizon.

Siren. An instrument for emitting an exceedingly shrill sound; used during fogs and in thick weather as a warning to mariners. It is blown by pumping air through it with a bellows.

Sister Block. A length of wood containing two sheaves, one over the other. The outside shell has a score between the two blocks for a seizing.

Sister Hooks. (See CLIP HOOKS.)

Sister Keelson. Timbers placed on the sides of the main keelson and bolted through it. This is often done in vessels to strengthen or *stiffen* them, as the term is.

Sister Ships. Vessels built from the same model.

Skeet. A long-handled scoop for drawing water from over the side.

Skeg. The after-part of the keel upon which the stern-post rests.

Skew. A roughly made boat.

Skids. Lengths of timber used for sliding anything up and down, on the same principle that a barrel is slid from a truck to the ground on cart rungs.

Skiff. A small rowboat.

Skin. The inside of a vessel's planking; that fold of canvas which is outside when the sail is furled.

Skipper. The usual title for the master of a small vessel. Also a title for Holland shipmasters.

Sky. (See WEATHER INDICATIONS.)

Sky Pilot. A sailor's name for a parson. (See HOLY JOE.)

Skylight. The wooden frames or sashes (working on hinges) containing glass windows, and placed over openings in the deck in order to give light and air below.

Skysail. The sail next above the royal. A *three-skysail-yard ship* carries fore, main and mizzen *skysails.*

Skysail Mast. (See SKYSAIL POLE.)

Skysail Pole. That part of the royal mast above the shoulder (and terminating at the truck) from which the royal rigging leads.

Skysail Yard. The yard next above the royal yard.

Skyscraper. When a skysail is triangular it takes the name of *skyscraper.*

Slabline. A line used for hauling up the foot of a course.

Slack. The opposite to taut. A vessel is said to be *slack-in-stays* when she goes around slowly in tacking. *To slack off* anything is to ease it up. *Slack water* refers to that state of the tide when it is stationary, just before it turns.

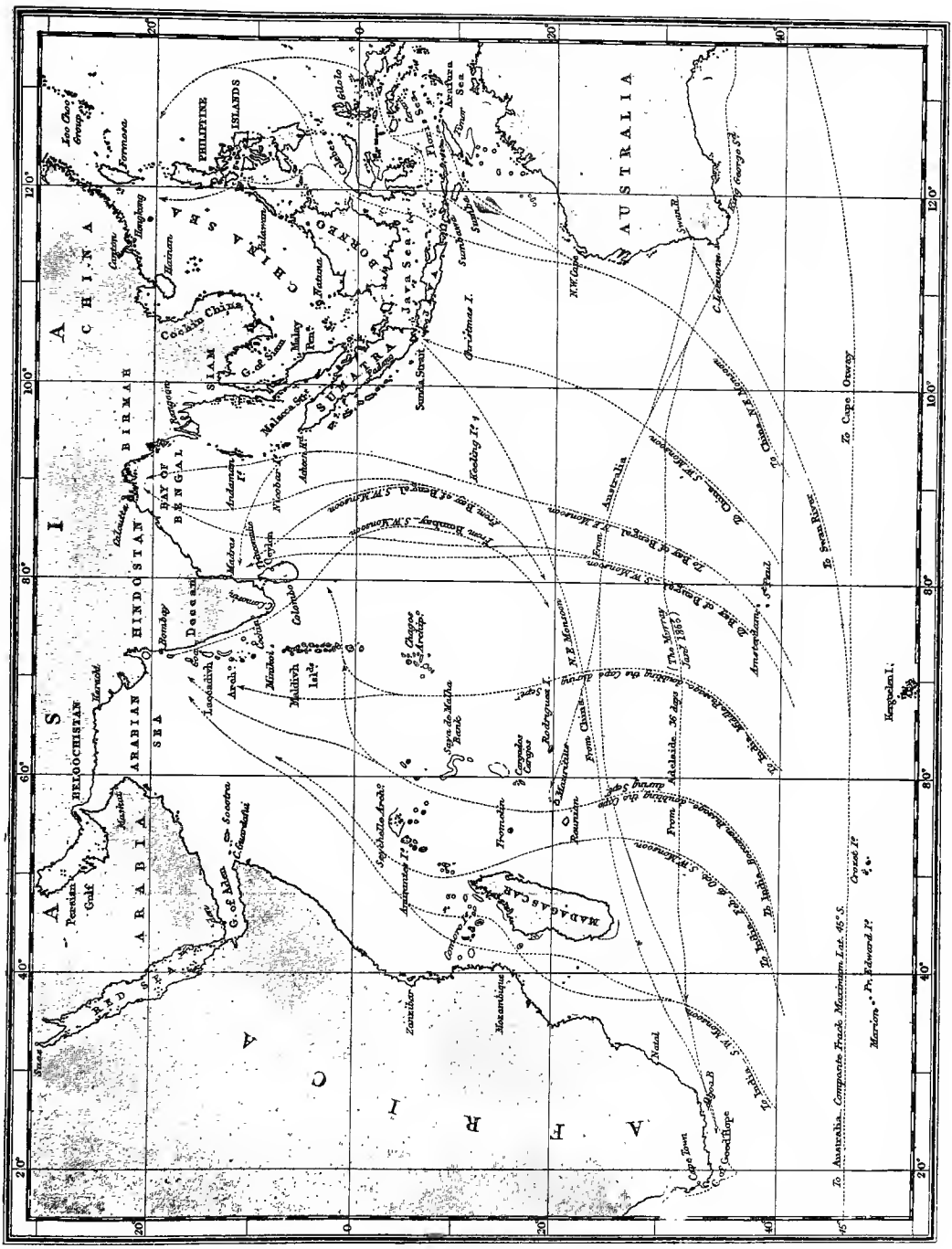
Slack Cloth. A certain quantity of canvas allowed to be gradually gathered up in sewing on the bolt rope of a sail, otherwise the rope by stretching in the wearing might occasion the sail to split.

Slack Water. The interval between tides when the water is stationary.

Slant of Wind. A favorable breeze.

Slave Ship. (See SLAVER.)

PASSAGES in the INDIAN OCEAN


ASIA
CHINA
Canton
Hong Kong
Hainan
Cochin China
SIAM
G. of Siam
Malay Pen.
BIRMAH
Tenasserim
Andaman Is.
Nicobar Is.
Adam's Pk.
Malacca Str.
SUMATRA
Sunda Strait
Java Sea
BORNEO
Celebes
Banda Sea
Timor Sea
Arafura Sea
PHILIPPINE ISLANDS
Formosa
Loo Choo Group
Christmas I.
Cocos Is.
Keeling Is.
BAY OF BENGAL
HINDOSTAN
Madras
Pondichery
Colombo
Deccan
Bombay
Maldive Isl.
Laccadive Isl.
Chagos Archip.
Sayd de Malha Bank
Rodriguez I.
Cargados Carajos
Mauritius
Bourbon
MADAGASCAR
Comoro Is.
Seychelle Arch.
Amirante Is.
Farquhar Is.
Aldabra Is.
Zanzibar
Mozambique
Natal
Cape Town
Good Hope
Algoa B.
AFRICA
ARABIA
Aden
Socotra
C. Guardafui
G. of Aden
Muscat
Karachi
BELOOCHISTAN
ARABIAN SEA
Persian Gulf
RED SEA
Suez
AUSTRALIA
N.W. Cape
C. Leeuwin
Swan R.
King George's Sd.
Sydney
Kangaroo I.
To Cape Otway
To Torres Strait
To Australia. Compute Track Maximum Lat. 45° S.
Marion
Pr. Edward I.
Crozet I.
From Bombay S.W. Monsoon
From Bombay N.E. Monsoon
From Madras S.W. Monsoon
From Madras N.E. Monsoon
From Calcutta S.W. Monsoon
From Calcutta N.E. Monsoon
From Australia
From Adelaide 36 days
From Chagos
From Mauritius
From Bourbon
From Seychelles
From Aden
From Red Sea
From Persian Gulf
From Cape Town
From Natal
From Madagascar
From Zanzibar
From Mozambique
From Amsterdam
From Sydney
From Swan R.
From Kangaroo I.
From Cape Leeuwin
From Cape Otway
From Torres Strait
From Marion
From Crozet I.
From Pr. Edward I.
From Good Hope
From Algoa B.
From Cape Town

Slaver. A vessel engaged in the slave trade; the term may also be correctly applied to a person engaged in the slave traffic.

Sleepers. The lowest tier of casks or barrels in a vessel's hold.

Slide. (See COMPANION.)

Sling. To suspend a cask or other article in ropes or chains. (See engravings of *cask-sling, barrel-sling* and *bale-sling.*)

Slings. The chain which connects the centre of a yard with the mast. Also a length of rope having the ends spliced together—known also as a strap.

Slip. *To slip the cable* is to unshackle it and let it run out.

Slip Knot. A knot that slips along a rope around which it is made.

Slip of the Wheel. The lost motion of the propeller. The difference shown between the distance run by log or observation and the distance made according to the number of revolutions shown by the propeller. Head-winds, head-seas and opposing currents are counted as *slip.*

Slip Rope. A rope arranged in such a manner that it may be let go suddenly.

Slippery Hitch. A hitch made by a landsman, or novice on board ship, which will not hold. Also a loop or half-bow knot tied in a rope after passing it around or through something which will not jamb, and which will untie by pulling the hanging end. (See engraving.)

Sloop. A vessel with one mast.

Slop Chest. The place in which the *slops* are kept on board ship.

Slops. Ready-made clothing and small stores, like knives, tobacco, etc., carried on deep-water ships and sold to the crew by the captain upon application.

Slue. To turn around.

Sluice Gates. The small iron gates or openings in the bulkheads of a vessel to allow the bilge water to circulate along the keelson; they are closed in the event of fire or upon springing a leak.

Slush. The grease skimmings of the cook's coppers or pots when salt pork and beef are boiled. *Slush* is employed to grease down a mast, etc., also used as lard in the galley cooking.

Slush Bucket. The tub in which the slush is kept.

Smack. A small fishing or trading vessel, sloop or cutter rigged.

Small Helm. A vessel takes a *small helm* when she is sensitive to it, requiring only a spoke or two to control the ship. Also an order given to the wheelsman cautioning him to be *gingerly* in putting the helm over to port or starboard.

Small Stuff. A term given to marline, spun yarn, houseline, etc.

Smiting Line. The line which breaks out a yarn-stopped sail.

Smoke Stack. The pipe on a steamship through which the smoke from the fire-room furnaces escapes. (See FUNNEL.)

Smooth. During ocean gales, when very high seas are running, it has been observed that every few minutes a kind of lull, called a *smooth,* takes place in relation to the sea, and that these lulls occur after about every third sea. Vessels intending to heave to after running in a gale wait for one of these *smooths,* and when it comes to them they put the helm down and come-to in a much easier and safer manner than by manœuvering the vessel so as to encounter the full force of the trough.

Snake. To confine two ropes after the manner of racking or nippering.

Snatch Block. A block containing one sheave, the shell having an opening in the side so that the bight of a rope may be passed into it; this obviates the necessity of reeving the end.

Snotter. A rope used for pulling off the lift and brace of a light yard when it is being sent down.

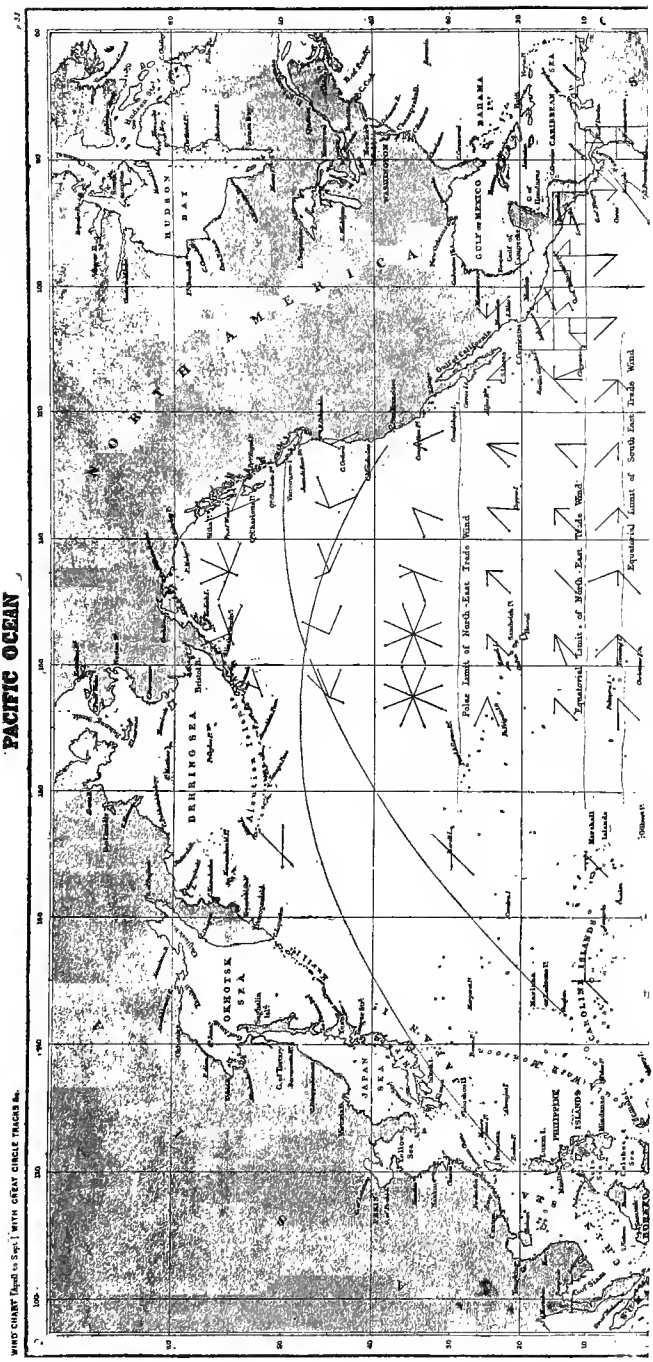
Snow. A two-masted vessel resembling a brig but having a boom mainsail set on a trysail mast.

Snub. To check anything suddenly, as the anchor chain when it is running out.

Snug Down. To reduce sail so as to be prepared for a gale.

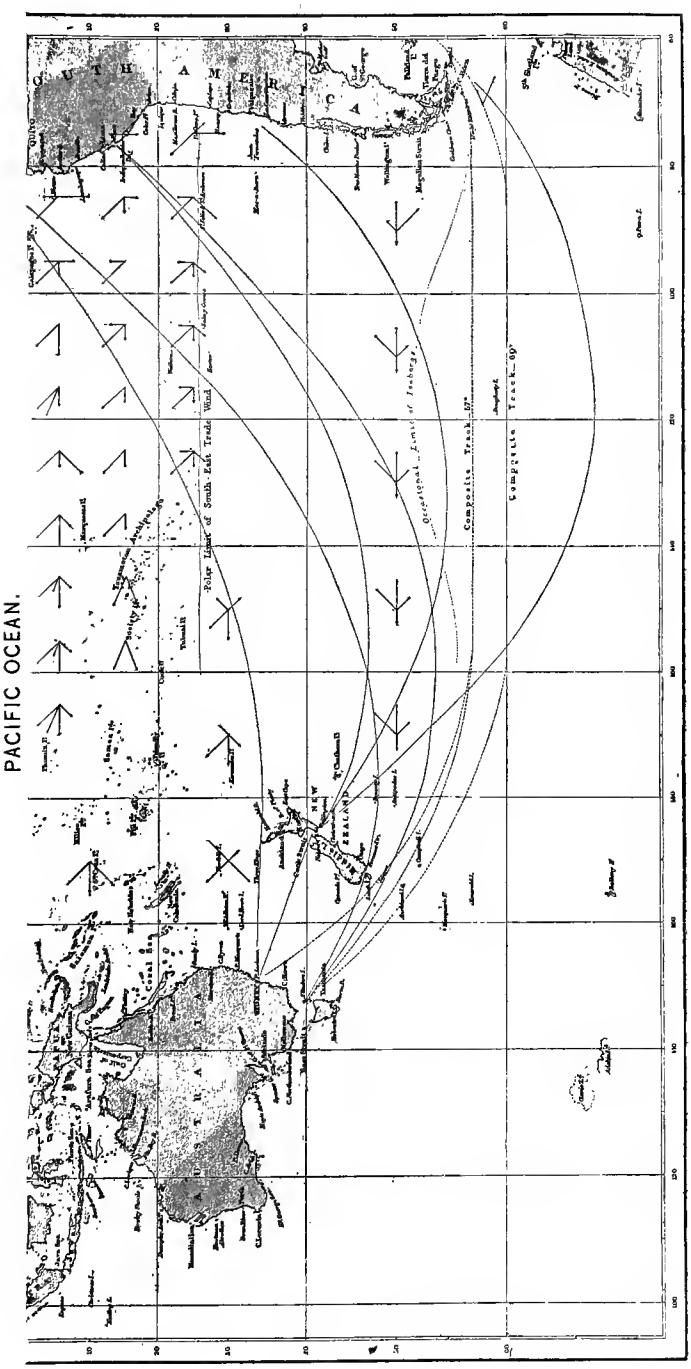
So! An exclamation signifying that anything is to be left just as it was when the word was used.

WIND CHART FROM APRIL TO SEPTEMBER—ALSO GREAT CIRCLE TRACKS IN THE NORTHERN HEMISPHERE.



Soft Bread. Fresh made raised bread.
Soft Tack. (See SOFT BREAD.)
Sole. The timber bolted on to the foot of a rudder in order to make it even with the false keel.
Sounding Line. The line attached to either the hand or deep-sea leads.
Sounding Rod. A rod used for ascertaining the depth of water in the ship's hold. It is marked in feet and inches.
South-wester. (Pronounced *sou'wester.*) A storm-hat made of rubber, or oiled or painted canvas, in shape much like a fireman's hat.
Span. A rope having both its ends made fast, to the bight of which a purchase is hooked. *The span of the rigging* is the distance from the dead-eye on one side of the vessel, up over the eyes of the rigging at the masthead, and down to the dead-eyes on the other side.
Spanish Burton. A purchase. (See BURTON; see engraving.)
Spanish Fox. This is made by untwisting a yarn, then laying it up again the contrary way.
Spanish Reef. When the yards are lowered on the cap; a knot tied in the head of a head sail.
Spanish Windlass. A wooden roller secured so as to revolve, and which is turned by hitching a marline spike used as a lever into the rope wound around it.
Spanker. The after fore-and-aft sail on a three-mast vessel. This sail was once called the *driver.*
Spanker Mast. The mast on which the spanker is set.
Spanking. A term employed in giving description to anything fine, large or satisfactory, as *a spanking breeze, a spanking ship,* etc.
Spar Buoy. A long spar floating perpendicularly, having one end anchored to the bottom.
Spar Composition. (See SPAR VARNISH.)
Spar Deck. (See DECK.)
Spar Varnish. A superior make of varnish, not affected by salt water, steam, soap, grease, or ammonia fumes; used as a coating for spars and all outside or exposed work, or any place where a varnish of extra durable qualities is required. This is sometimes called "spar composition."
Sparring Down. To seize oars or short lengths of light timber across the ratlines preparatory to rattling down.
Spars. A general term applied to masts, booms, gaffs and yards.
Speak. To communicate with a vessel either by voice or signal.
Speaking Trumpet. The hollow tube, flaring at one end, through which orders are issued by officers to the crew.
Spell. A period of time. *To spell* is to relieve another at any work upon which he is employed.
Spell ho! A cry employed either by an officer signifying that the men working are to be relieved, or made use of by such men as a request for relief.
Spencer. (See TRYSAIL.)
Spew. The seams of a vessel are said to *spew pitch* when from excessive heat the pitch melts and expands above the planks.
Spider. An iron crane used for keeping a block clear of anything.
Spider-band. The name sometimes given to the iron band just under the top, and to which the futtock-shrouds are secured.
Spile. (See PILE.)
Spill. To empty the wind out of a sail by luffing, or by bracing in the yards, or by hauling in or letting a boom go off, or by clewing up a sail.
Spilling Lines. Temporary ropes fitted to sail for the purpose of spilling the wind out of them.
Spindle. The perpendicular shaft or axle upon which the capstan revolves.
Spinnaker. A racing sail shaped like a jib, the open foot of which is extended along a light spar called a spinnaker boom. It is set on the opposite

WIND CHART FROM APRIL TO SEPTEMBER—ALSO GREAT CIRCLE TRACKS IN THE SOUTHERN HEMISPHERE.



side to the main boom when the vessel is sailing with the wind abaft the beam.

Spit Kit or Kid. A small wooden tub used as a spittoon.

Spitfire. A name given to the storm jib.

Splice. To join two ropes together, or to form a loop in the end of a rope. (See LONG SPLICE, SHORT SPLICE, EYE SPLICE.)

Splicing the Main Brace. Indulging in a glass of spirits. Sometimes called *topping the boom* and *taking an observation through a tumbler.*

Spoke. One of the handles of a steering wheel. (See KING SPOKE.)

Spoon-drift. Water blown from the tops of waves during a heavy gale.

Spoon Oars. Oars that are curved or concaved at the end of the blade, used for racing shells and other light boats.

Spray Board. A portable board extending above the gunwale of a boat and used for the purpose of keeping out flying water.

Spread Eagle. *To spread eagle a man* is to lash him in the shrouds with his arms and legs spread at angles of about 45° to his body.

Spreaders. On each bow of very sharp vessels a horizontal bar is rigged out to give more spread to the head sheets; on the same principle that the whiskers spread the jib-boom guys.

Spring. A hawser run out from any part of a ship to the shore, or to a buoy, to turn, or *spring* the vessel. (See SPRUNG.)

Spring a-butt. To start the end of a plank from its fastening.

Spring a-leak. To begin to leak.

Spring a-luff. To put the helm down so as to bring the vessel sufficiently close to the wind to shiver the sails.

Spring-stay. A horizontal stay from one lower-mast-head to another lower-mast-head. (See STAY.)

Spring Tides. The highest tides. *Spring-tides* occur every new and full moon.

Sprit. A staff used to hoist the peak of a small boomless and gaffless sail not provided with peak halliards. The upper end of the sprit rests in a small gromnet or becket, and the lower end in a snotter secured to and near the foot of the mast. (See engraving.)

Sprit Sail. A sail which is spread by a *sprit.*

Sprit-topsail. A topsail set flying from the deck, with the luff laced to a pole, called a *sprit;* but this sail does not project beyond the gaff end like a club topsail.

Spritsail Sheet Knot. A knot made by walling and crowing the six strands of the rope together, thus forming an eye. (See engraving.)

Spritsail Yard. A yard formerly used instead of whiskers, which was lashed across the bowsprit and used to spread the jib-boom-guys and flying jib-boom-guys. There was also a sail bent to it which was called a *sprit-sail,* and which was set under the bowsprit.

Spritsail Yarding a Shark. To thrust a two-pointed stick in a shark's mouth so that he cannot close it, and turning him adrift thus.

Sprung. Damaged in a variety of ways, such as warped, started, bent out of shape, etc. (See SPRING.)

Spun Yarn. Two or three rope yarns twisted together into a cord.

Spurling Line. A line connecting the tiller and tell-tale, and by which the latter is made to point parallel with the tiller for the benefit of the wheelsman.

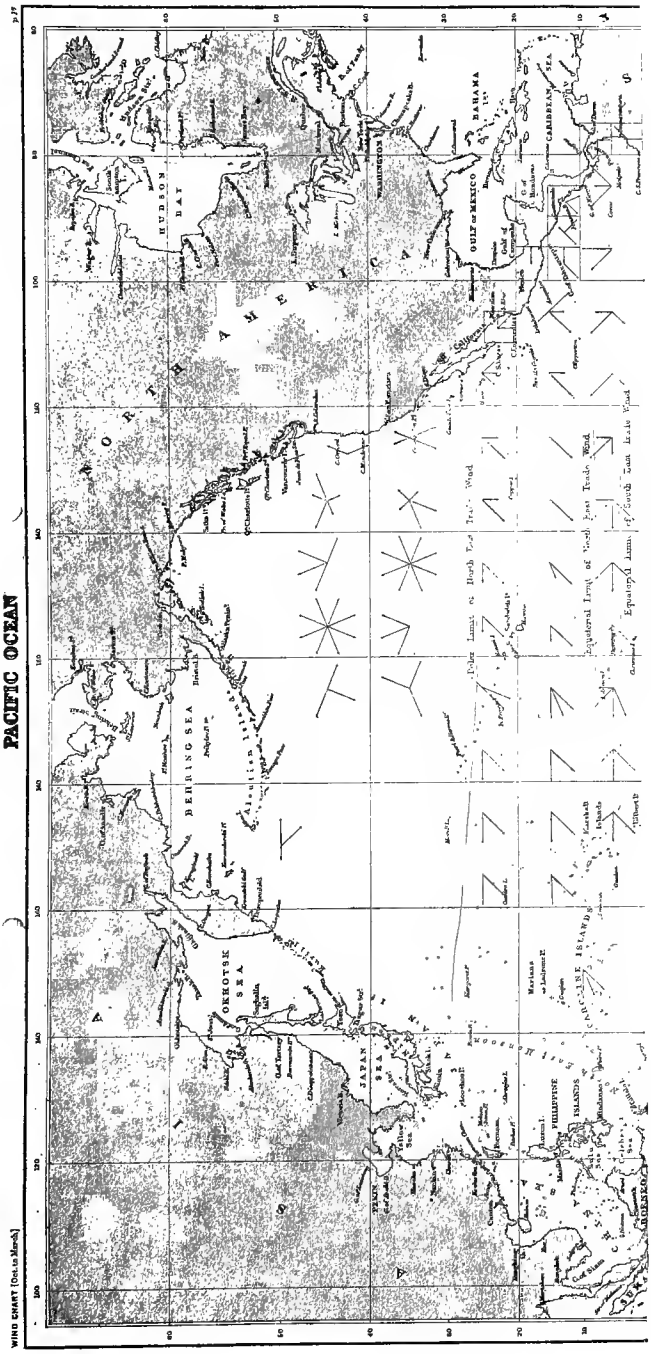
Spy Glass. A small telescope. An optical instrument by which distant objects are made more distinctly visible owing to the magnifying lens with which they are provided.

Squall. A sudden and violent gust of wind.

Square. Very long yards are said to be *square.* A sail is called *square on the head* when it is long on the head. *To square a yard* is to brace it so that it will be at right angles to the keel.

Square by the Braces. A yard is *square by the braces* when the latter are hauled on so that the yard is exactly at right angles to the keel.

WIND CHART FROM OCTOBER TO MARCH IN THE NORTHERN HEMISPHERE.



Square by the Lifts. A yard is *square by the lifts* when the latter are hauled on so as to make the yard perfectly horizontal.

Square in the Head. (See BLUFF-BOWED.)

Square Knot. (See FLAT KNOT.)

Square Marks. A winding of twine placed on the lifts and braces and which, when brought to a certain point, indicate that the yard is horizontal and at right angles to the keel.

Square-rigged. A vessel carrying yards on all her masts.

Square Sail. A temporary sail which is set on a yard hung just below the fore cross-trees of a schooner, or sloop, when the wind is abaft the beam. (See SAILS.)

Square-sterned. A vessel whose stern is almost perpendicular; no overhang.

Square the Ratlines. To adjust the ratlines so that they will be horizontal and parallel with each other.

Squilgees. A piece of flat board about fifteen inches long, one inch thick, and four inches wide, having a narrow length of projecting hard rubber fitted in a groove in the under edge; through a hole in the center of the flat of the board a handle is shipped, and the instrument is used for scraping the water from the decks by pushing the rubber edge along the surface of the planks.

St. Elmo's Light, or Fire. (See CORPOSANT.)

Stabber. A large awl used by sailmakers to pierce holes in canvas.

Staff. A light flag pole.

Stagger. A vessel is said to *stagger under a press of sail* when she has as much canvas set as she will bear.

Stake Boat. A boat flying a distinguishing flag or mark, anchored at a distance from the race committee's boat; between the two an imaginary line exists over which the vessels cross after the starting gun is fired.

Stanchions. Posts of wood or iron which support a vessel's beams, or the bulwark rail, and to which the bulwarks are secured.

Stand-by. An order given to the crew to attend, prepared and waiting for orders.

Stand On. To stand on is to hold the course.

Standing. The part of a rope or cable which is secured to something is known as the *standing part;* the part of a hook opposite to the point; the part of a tackle which is secured to the block.

Standing Backstays. Stays which set up abaft the shrouds on each side, and support the mast when the vessel is under sail.

Standing Bowsprit. A fixed bowsprit; one that does not run in and out.

Standing Gaff. (See RAILWAYS.)

Standing Gaff Topsail. The regular working topsail which hoists upon the topmasts by hoops, its foot being spread by the gaff.

Standing Rigging. Stays, shrouds, etc., which are secured permanently, and not hauled upon.

Starboard. The right hand side of a vessel when looking forward.

Starboard Tack. Having the starboard tack of a square-sail on board. Sailing with the wind blowing on the starboard side.

Starboard the Helm. To put the helm to starboard.

Starbowlines. A term given to the men of the starboard watch.

Start. *To start a sheet* is to slack it off a little. A term used in racing to signify the commencement of a race. To start a barrel is to open it. *To start a butt* is to have the end of a plank loosen itself from the side.

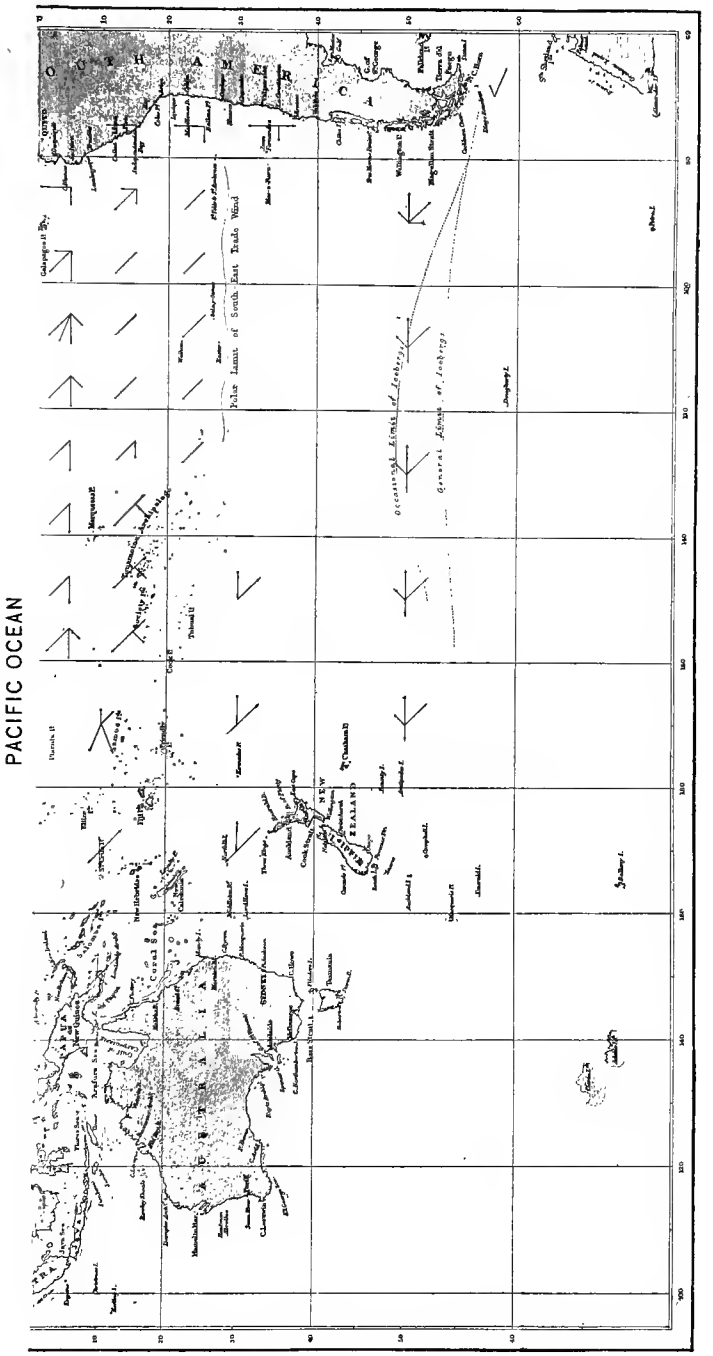
Start from Anchorage. Upon a given signal the vessels commence the race, starting from their anchorage.

State School Ship. (See STATE TRAINING SHIPS.)

State Training Ships. School ships fitted out under State authority and expense for the nautical education of young men—a branch of the public school system.

Station Bill. A written or printed form showing the respective stations for the crew for various evolutions.

WIND CHART FROM OCTOBER TO MARCH IN THE SOUTHERN HEMISPHERE.



Station Crew. The officers and men belonging to a particular station of the Life Saving Service.

Stationary Dry Dock. (See DOCK.)

Stations for Stays. An order to the crew to take stations for tacking the ship.

Stave. (See STOVE.)

Stay. *To stay a vessel* is to tack her; *to stay a mast* is to support it sideways, forward, and aft.

Stay-holes. Small holes worked in the luff of staysails to secure the hanks which fasten the sail to the stay.

Stay Peak. (See PEAK.)

Stays. Ropes of hemp or iron used for supporting masts. The fore-and-aft stays lead forward and comprise fore, foretopmast, jib, flying-jib, jib-topsail, inner-jib, outer-jib, main, main-topmast, middle, main-topgallant, main royal, mizzen, mizzen-topmast, mizzen-topgallant and mizzen-royal stays. Those stays which lead down to the vessel's sides are called *backstays*. (See BREAST, STANDING, SHIFTING, PREVENTER and BACKSTAYS.) A vessel is said to be *in stays* or *hove in stays* when she is tacking.

Staysails. Sails which hoist upon stays. The fore staysail is the first head sail forward the foremast; the main staysail goes between the fore and mainmasts; the mizzen staysail goes between the main and mizzen masts. There are also middle, topmast, topgallant and royal staysails. (See engravings.)

Steady. An order to the wheelsman for him to keep the vessel's head as it is.

Steamboat. A vessel without masts or sails, and propelled by a screw or paddle wheels. This class of vessel is confined as a rule to inland waters, such as rivers, harbors, sounds, gulfs, lakes and bays.

Steam Launch. A small boat propelled by steam and using coal for fuel. (See NAPTHA FUEL LAUNCH.)

Steam Lighter. A harbor cargo vessel propelled by steam. (See LIGHTER.)

Steam Siren. A siren blown by steam instead of a bellows.

Steam Steering Gear. A small engine found on board steamships for controlling the rudder when under way, and by which the tiller may be put from hard-a-port to hard-a-starboard in an instant.

Steam Whistle. The whistle forward the smoke-stack on a steam vessel, blown by steam, and used to signal courses; as a warning during fogs, etc.

Steer. To guide a vessel on her course by the movement of the helm.

Steerage. The lower deck of a passenger vessel, and on which the steerage passengers live.

Steerageway. When a vessel moves through the water with sufficient velocity to make her obedient to her helm.

Steering Bridge. The bridge on which the steering wheel is placed.

Steering Wheel. The wheel connected with the tiller, and by which the ship is steered.

Steeve. A bowsprit steeves in proportion as it is raised from the horizontal. A long spar having a block at one end, and used in stowing some kinds of cargo.

Stem. *To stem the tide* is to make headway against it. The perpendicular piece of timber at the extreme forward part of the ship which is scarphed into the keel. (See PART II.)

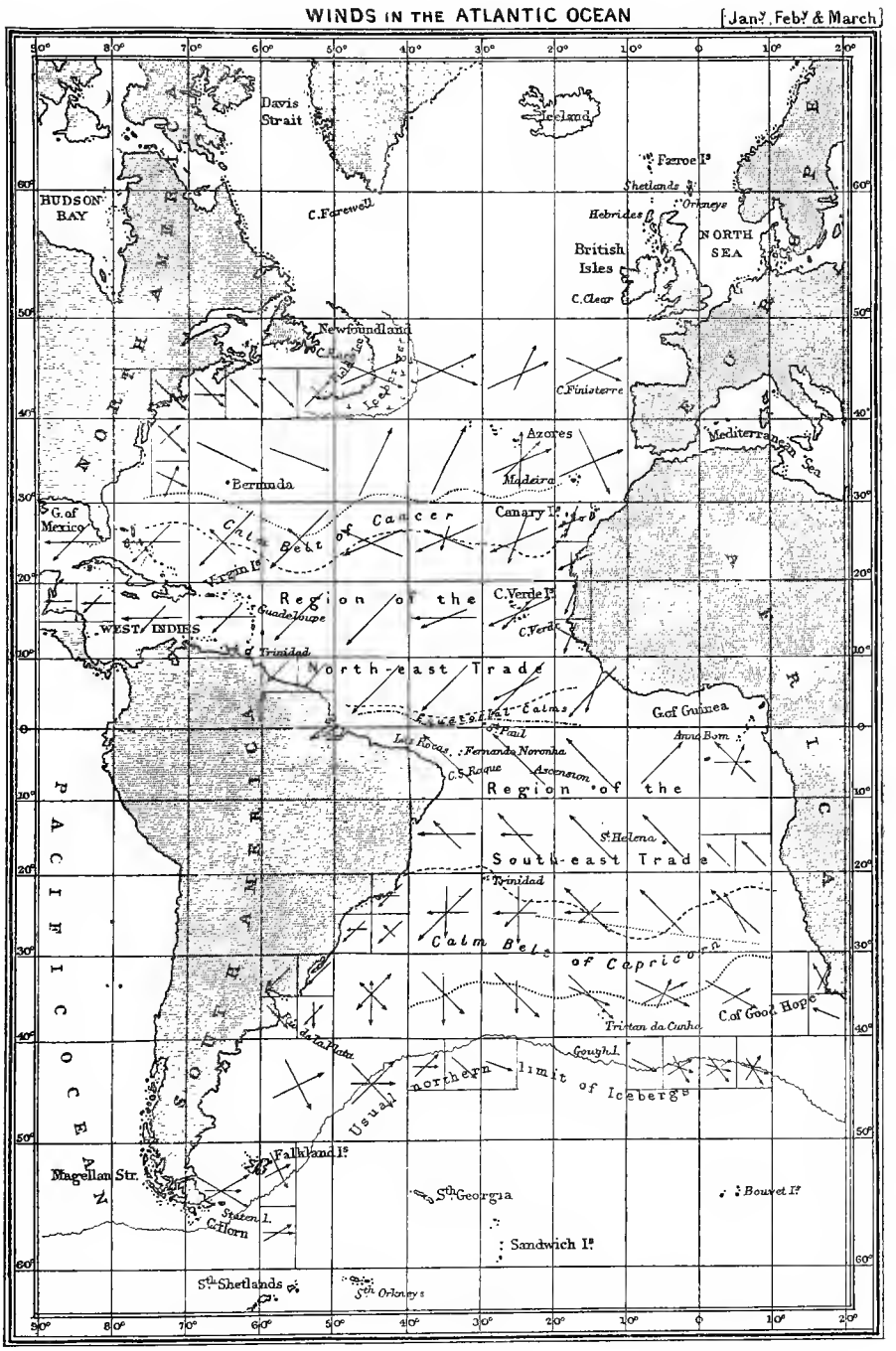
Stem Light. The light carried on top of the stem on all inland vessels, and which takes the place of the masthead light as carried by ocean steamers. The *stem light* is white in character, and shows from right ahead to two points abaft the beam on each side.

Stem the Tide. To sail against the tide with just about sufficient way on to overcome its velocity.

Step. *To step a mast* is to fix a lower mast in position. A framing of wood or iron on the main keelson into which the heel of a lowermast sets.

Stern. The after-part of the vessel.

Stern All. An order given to the crew of a boat to back her astern with their oars.


WINDS IN THE ATLANTIC OCEAN
[Jan.y, Feb.y & March]
Davis Strait
Iceland
Faroe Is
Shetlands
Orkneys
Hebrides
HUDSON BAY
C. Farewell
British Isles
NORTH SEA
C. Clear
Newfoundland
C. Finisterre
Azores
Mediterranean Sea
Bermuda
Madeira
G. of Mexico
Canary Is
Belt of Calms
Region of the
C. Verde Is
Virgin Is
Guadeloupe
WEST INDIES
Trinidad
North-east Trade
Calms
G. of Guinea
Fernando Noronha
Ascension
Anno Bom.
Region of the
St. Helena
South-east Trade
Trinidad
Calm Belt of Capricorn
C. of Good Hope
Tristan da Cunha
Rio de la Plata
Gough I.
Usual northern limit of Icebergs
Falkland Is
Magellan Str.
Sth Georgia
Bouvet Is
Sandwich Is
Sth Shetlands
Sth Orkneys

Stern Board. The motion of a vessel when she progresses backward—stern foremost.

Stern Chase. When one vessel follows directly after another, so that their masts are more or less in line.

Stern Chasers. Guns fired from the stern ports at the vessel astern.

Stern Davits. Davits projecting from the stern of the vessel for hanging a boat to.

Stern Ladder. A ladder hung over a vessel's stern for the use of the gig's crew when that boat hangs from stern davits.

Stern Line or Stern Fast. The rope leading over the stern of a vessel, and by which that part of her is moored.

Stern Port. A window in the stern of the vessel.

Stern Post. The perpendicular after-framing timber scarphed into the after-part of the keel and extending to the deck. The two extremes of a vessel's frame are the stem and stern post.

Stern Sheets. The space abaft the after thwart—a kind of cockpit in the boat in which the passengers sit.

Stevedore. A man who makes a profession of stowing ships' cargoes.

Steward. The caterer of the vessel, under whom are the cooks, flunkies, etc.

Stewardess. The woman who attends upon the lady passengers on board ship. The stewardess is under the orders of the steward.

Sticks. A name applied to masts.

Stiff. *A stiff breeze* is a strong breeze. The quality of a ship which permits her to carry a press of sail without heeling over much.

Stink Pots. Earthern jars containing gunpowder, rosin, pitch and hand-grenades, and used to throw on an enemy's deck. Upon striking the vessel the hand-grenades explode, setting fire to the inflammable compound, which spreads about. The *stink pot* probably originated with the Chinese, who used them long before they were known to Europeans. The term *stink pot* came from the offensive odor which arose when one of these pots broke, as the Chinese always charged theirs with assafœtida. The fetid stench which this gave cause to was at times so overpowering that the crew of an attacked vessel succumbed to an intense nausea, and fell a prey to the Chinese pirates alongside.

Stirrups. Ropes of short length having eyes spliced in one end, the other end being seized to the jackstay on the yard. They hang down and support the foot ropes which reeve through the eyes.

Stock. The horizontal crosspiece of an anchor. The stock may be either of wood or iron, and it is always placed at right angles to the arms.

Stockholm. (See TAR.)

Stocks. A series of blocks inclining toward the water, and on which the keel of a vessel is laid in ship building.

Stools. Small channels abaft the regular channels, and to the dead-eyes of which the backstays set up.

Stop. A fastening of small stuff used for securing a sail to a boom or gaff after it is furled; on a square sail they are called *gaskets*.

Stopper. A short length of rope, one end of which is secured convenient to a running rope (or cable) and employed for checking or regulating the motion of the latter by winding the stopper around it. There are various names applied to stoppers according to their use, namely, deck, laniard, dog, bitt, hatch, wing, ring, slip, check, lever, etc.

Stopper Bolts. Ring bolts in the deck to which the stoppers are secured.

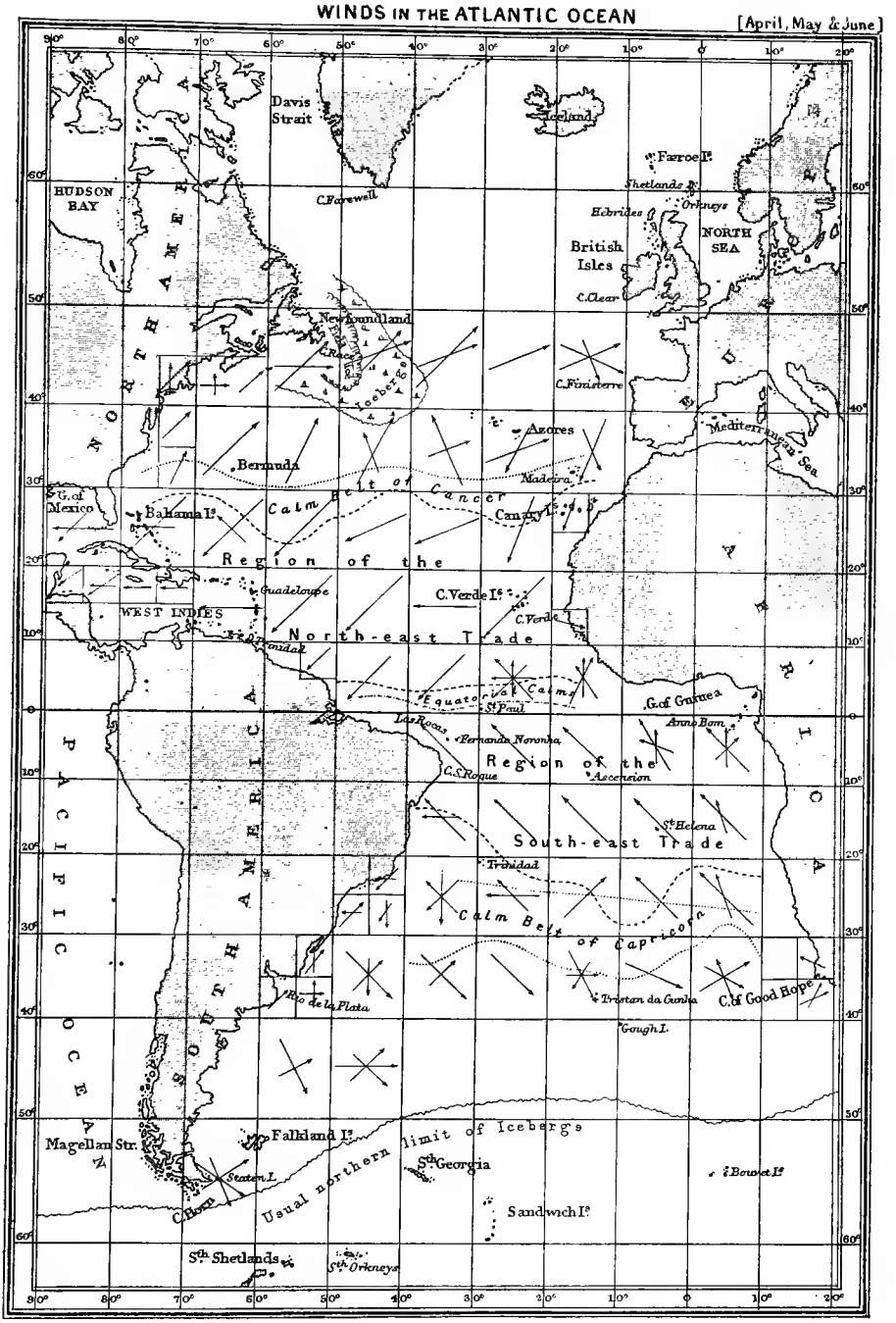
Stopper Knot. A double wall knot in the end of a deck stopper.

Storekeeper. The one on board steamships who has charge of the ship's stores in the way of rigging, blocks, paint, oils, sails, etc., etc.

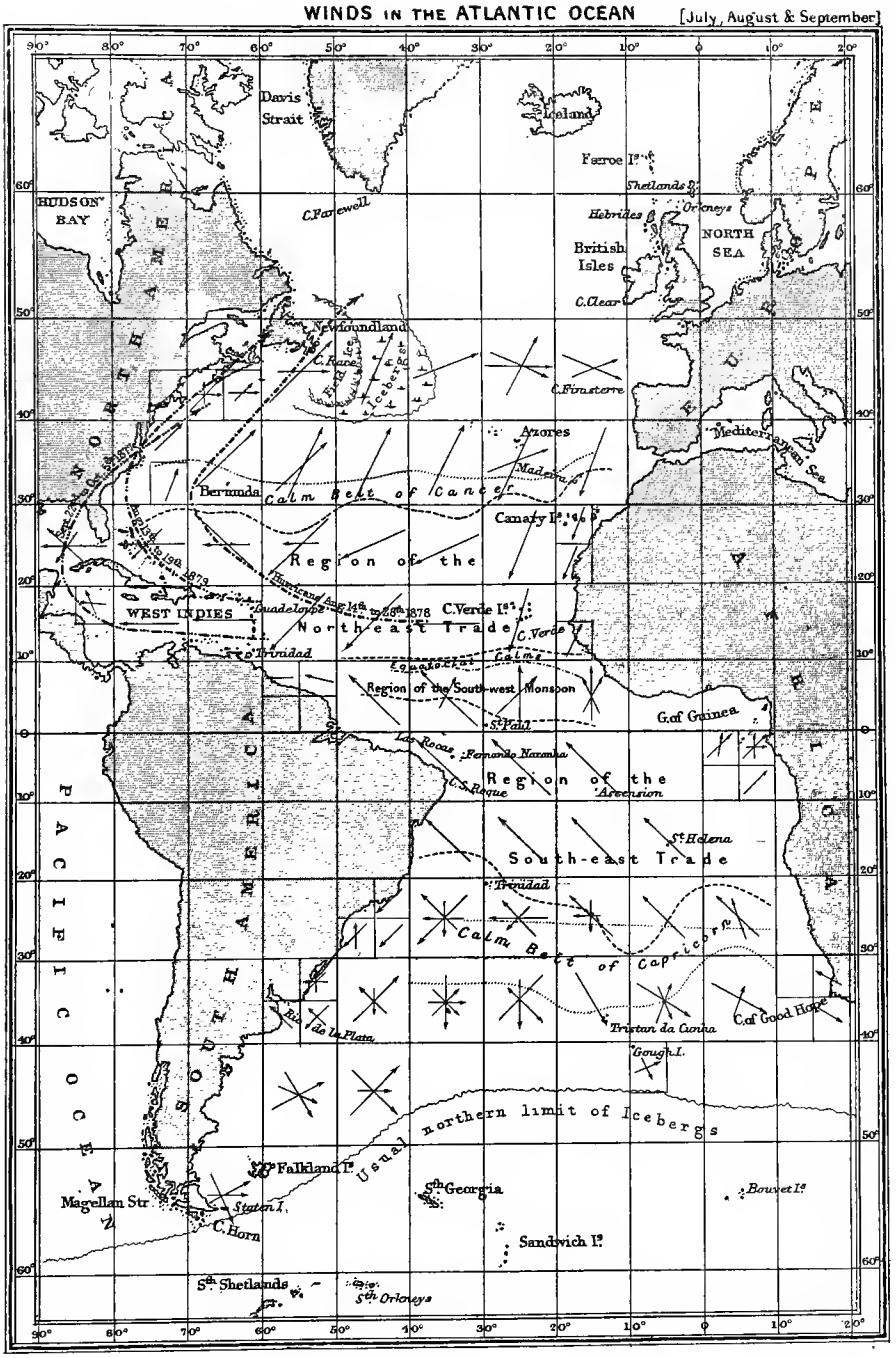
Storm Canvas. Small sails of heavy material used in place of the regular working sails during storms.

Storm Jib. A small jib of heavy canvas used in bad weather.

Storm Sails. (See STORM CANVAS.)


WINDS IN THE ATLANTIC OCEAN
[April, May & June]
Davis Strait
Iceland
Faroe I.
Shetlands
Orkneys
Hebrides
HUDSON BAY
C. Farewell
British Isles
NORTH SEA
C. Clear
NORTH AMERICA
Newfoundland
Icebergs
C. Finisterre
Azores
Mediterranean Sea
Bermuda
Madeira
Belt of Cancer
G. of Mexico
Bahama I.
Calm
Canary I.
Region of the
Guadeloupe
C. Verde I.
C. Verde
WEST INDIES
Trinidad
North-east Trade
Equatorial Calms
St. Paul
G. of Guinea
Las Rocas
Fernando Noronha
Ann Bom
C. S. Roque
Region of the
Ascension
St. Helena
South-east Trade
Trinidad
Calm Belt of Capricorn
PACIFIC OCEAN
SOUTH AMERICA
Rio de la Plata
Tristan da Cunha
C. of Good Hope
Gough I.
Falkland I.
Usual northern limit of Icebergs
Magellan Str.
Staten I.
C. Horn
St. Georgia
Bouvet I.
Sandwich I.
Sth. Shetlands
Sth. Orkneys

Storm Signals. (See CAUTIONARY SIGNALS.)
Stormy Petrel. (See MOTHER CAREY'S CHICKENS.)
Stove. A boat is *stove* when her hull is broke in.
Stow. To fix anything in place, as to *stow* the fenders away; *stow* the cargo, *stow* the anchor, etc.
Straining at her Cables. (See TUGGING AT HER ANCHORS.)
Strake. A plank running fore-and-aft.
Strand. Any number of rope yarns twisted together. A rope is *stranded* when one of the strands forming it is broken. A vessel is stranded when she is resting on the shore. A beach is also called *strand.*
Strap. A length of rope spliced together so as to form a ring, and used for various purposes, such as for slinging bales, for attaching a tackle to any object, etc. (See STROP.)
Streak. (See STRAKE.)
Stream a-buoy. To attach a buoy to an anchor by a length of rope and to drop it overboard previous to letting go the anchor.
Stream Anchor. An anchor about one-third the size of the bowers, and used for warping, club-hauling, etc.
Stream Cable. A cable belonging to a stream anchor, and which is of comparatively light weight.
Strengthening Pieces. Extra pieces of canvas sewed on the corners of sails, also at the reef cringles and along the luff.
Stretch Out. An order given to a boat's crew to bend to their oars with increased power.
Stretchers. Pieces of wood placed thwartships in a boat's bottom for the rowers to brace their feet against; pieces of wood placed thwartships in a boat to prevent the sides from being crushed in by ice, or from other causes.
Strike. To lower a yard, mast, sail, or colors; for a vessel to touch bottom.
Strip. To take the rigging off of a mast is to *strip* it.
Stroke. The sweep of an oar. The stroke oarsman pulls the after starboard oar.
Stroke Oar. The after oarsman who sets the stroke for the rest of the crew.
Strongback. (See DAVIT GUY.)
Strop. A binding of rope encircling and fitted into the score of a block, in one part of which an eye is formed by seizing a thimble in the drift, or spare part. Some blocks are iron bound. (See STRAP.)
Struck. (See STRIKE.)
Studding Sails. (Pronounced *stun' sails.*) Light sails carried in moderate weather with a fair wind, and which are set outside of the square sails on booms rigged out through rings on the yards. There are lower, topmast, topgallant and royal *studding sails.*
Studding Sail Boom. The horizontal bar on which the stun' sail sets.
Studding Sail Brace. The rope leading from the outboard end of the studding sail boom to the side of the vessel.
Studding Sail Halliards. The ropes which hoist the stun' sails to the stun' sail booms. There are two sets, named respectively *inner* and *outer stun' sail halliards.*
Studding Sail Halliard Bend. The bend which secures the stun' sail halliards to the stun' sail yard.
Studding Sail Outhaul. The tack line of the lower stun' sail, which leads through a block on the end of the swinging boom.
Studding Sail Sheet. The line which secures the inner lower corner of a stun' sail.
Studding Sail Tack. The rope secured to the outer lower corner of a stun' sail. (See STUDDING SAIL OUTHAUL.)
Studding Sail Yard. The light spar to which the head of the stun' sail is lashed before the sail is sent aloft.
Submarine Boat. A small vessel constructed for use below the surface of the water.
Subsidy. A government grant of encouragement money to a line of vessels to assist their maintenance.


WINDS IN THE ATLANTIC OCEAN
[July, August & September]
Davis Strait
Iceland
Faroe Is.
Shetlands
Orkneys
Hebrides
British Isles
NORTH SEA
HUDSON BAY
C. Farewell
C. Clear
Newfoundland
C. Race
Icebergs
C. Finistere
Azores
Madeira
Mediterranean Sea
Bermuda
Calm Belt of Cancer
Canary Is.
Region of the
Northeast Trade
WEST INDIES
Guadeloupe
C. Verde Is.
C. Verde
Trinidad
Calms
Region of the South-west Monsoon
St. Paul
G. of Guinea
Los Rocas
Fernando Noronha
C. S. Roque
Region of the
Ascension
St. Helena
South-east Trade
Trinidad
Calm Belt of Capricorn
Tristan da Cunha
C. of Good Hope
Gough I.
R. de la Plata
Usual northern limit of Icebergs
Falkland Is.
Magellan Str.
Staten I.
C. Horn
St. Georgia
Bouvet Is.
Sandwich Is.
St. Shetlands
St. Orkneys
NORTH AMERICA
SOUTH AMERICA
PACIFIC OCEAN
EUROPE
AFRICA

Sued. The position of a vessel when high and dry on the shore.

Sundowner. A term applied to a shipmaster or mate who bullies the crew.

Super-cargo. An officer on a merchant vessel who is authorized to dispose of the ship's cargo for cash or barter, purchase cargoes, etc., and manage the ship's business.

Surf. A breaking sea on a shelving shore. (See BREAKERS.)

Surf Boat. A boat built specially for carrying passengers and cargo through the surf.

Surge. To surge a rope or cable is to slack it suddenly. A swelling wave.

Surgeon. The medical officer of the vessel, whose duty it is to look after the sanitary arrangements of the ship, inspect the food, distribute anti-scorbutics to the men if necessary, and care for any member on board in the event of sickness or accident. On some vessels the *surgeon* is also obliged to act as purser.

Surveying. In the event of putting into port with masts or bulwarks gone, or the vessel leaking, the master reports to the port authorities, also to his consul if in a foreign port, and after noting a protest calls for an examination upon his vessel and cargo in order that the damages may be appraised; and this examination is known as a *survey*. Two shipmasters or two other experienced persons are called to examine the rigging and hull and hatches, and in the event of damaged cargo, two merchants, acquainted with the kind of cargo carried, are called to examine and report whether the cargo was properly stowed and dunnaged. Upon receiving the report the master immediately extends his protest. Should the vessel be a steamer, and the machinery or boilers be injured, then a shipmaster and an engineer would be called. (See NAUTICAL SURVEYING.)

Swab. A rope mop used for cleaning the decks. A term applied to a worthless individual on board ship.

Swallow. The space or opening in a block which takes the rope before it passes over the sheave.

Swallow-tail. A flag having two pointed ends.

Swankie or Swanky. A drink made of vinegar, molasses and water, and much indulged in by sailors in tropical climates.

Sway Across. To let the yards fall to the horizontal after they have been sent aloft. (See CROSS YARDS.)

Sway Away. To pull; to hoist.

Sweated. When a sail is stretched so as to set as flat as possible it is said to be *sweated*. To *sweat* anything is to get it as taut as possible.

Sweeping. Dragging the bottom for anything lost. Forcing a vessel ahead by the use of long oars.

Sweeps. Long oars.

Swell. The roll of the sea. The following symbols are used to express the character of same: S, smooth; M, moderate; L, long; R, rough; C, cross; H, heavy; V H, very heavy.

Swift. *To swift the shrouds* is to bring two of them close together by a binding of rope.

Swifters. The forward shrouds of a lower mast on the port and starboard sides. There are fore, main and mizzen swifters. The lengths of rope employed for keeping the capstan bars in place are also known as swifters.

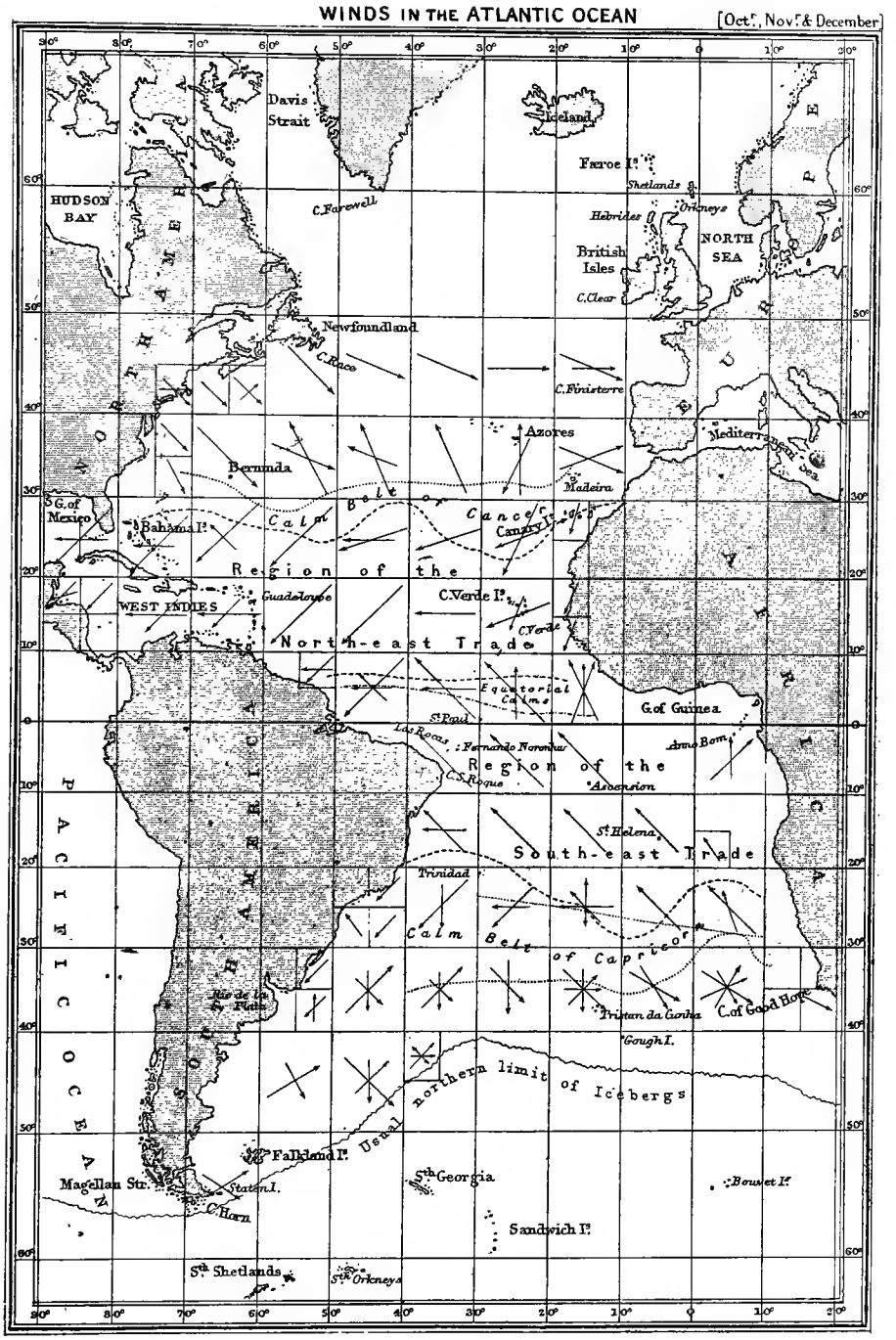
Swig. To bear off on the hauling part of a tackle when its end is made fast.

Swinging. Said of a vessel when she turns around under the influence of the wind or tide when at anchor.

Swinging the Ship. Turning the vessel around in adjusting her compasses.

Swinging Booms. (See BOAT BOOMS.)

Swivel. A metal link turning upon an axis, and used on cables to keep turns out. Also used on iron-bound blocks.


WINDS IN THE ATLANTIC OCEAN
[Oct.r, Nov.r & December]
Davis Strait
Iceland
Faroe Is.
Shetlands
Orkneys
Hebrides
HUDSON BAY
C. Farewell
British Isles
NORTH SEA
C. Clear
Newfoundland
C. Race
C. Finisterre
Azores
Mediterranean Sea
Bermuda
Madeira
G. of Mexico
Bahama Is.
Calm Belt of Cancer
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Region of the
WEST INDIES
Guadeloupe
C. Verde Is.
C. Verde
North-east Trade
Equatorial Calms
G. of Guinea
St. Paul
Las Rocas
Fernando Noronha
Arno Bom
C. S. Roque
Region of the
Ascension
St. Helena
South-east Trade
Trinidad
Calm Belt of Capricorn
Rio de la Plata
Tristan da Cunha
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Usual northern limit of Icebergs
Falkland Is.
Magellan Str.
Staten I.
C. Horn
Sth. Georgia
Bouvet I.
Sandwich Is.
Sth. Shetlands
Sth. Orkneys

T.

Tabling. The hem on the borders of sails to which the bolt rope is sewed. (See PART II.)

Tack. To go about; a vessel is on the *starboard tack* when the wind blows on the starboard side, and on the *port tack* when the wind blows on the port side; the tackle by which the clew of a course is hauled forward and down; the *tack line* or *tack pennant* of a fore-and-aft or gaff topsail is the rope that keeps down the tack of the sail, or the lower forward corner; the rope that keeps down the lower outer corner of a studding sail.

Tack Cringle. The iron ring spliced into a fore-and-aft sail at the junction of the luff and foot, but the iron shapes spliced into the lower corners of square sails.

Tack Earing. The length of rope passed through the tack cringles on a fore-and-aft sail, and used to keep the slack luff of the sail down to the boom after it has been reefed.

Tack Tricing Line. The line by which the tack of loose-footed fore-and-aft sails is triced up.

Tackle. (Pronounced *tay-cle.*) A purchase of ropes and blocks.

Taffrail. The rail around the stern of a vessel.

Tail. *A tail block* has a short length of rope hanging from the splicing around the block, and which takes the place of a hook; a vessel when at anchor *tails* up or down stream according as her stern tends—in opposition to heading.

Tail On. An order to lay hold of a rope and pull.

Tail Tackle. A watch tackle purchase having a tail to one of the blocks.

Take In. To furl the sails; to take in cargo; to take in water, etc.

Taken Aback. (See ABACK.)

Tank. An iron receptacle for containing fresh water.

Tank Ship. A vessel whose space between decks is occupied with iron tanks designed for the transportation of oil in bulk.

Tank Toggle. A short, heavy piece of wood placed inside of a heavy tank across the man-hole, and to which a strap is fixed and a block hooked when it is desired to lift the tank.

Tanned Sails. Sails that have been soaked in oak bark as a preventive against mildew.

Tar. The gum of pine trees. Stockholm and North Carolina tars are the best obtainable. *Tar* is used on standing rigging to protect it from the elements. A name given to a sailor.

Tarpaulin. Painted canvas used as a covering for hatches, etc. An old name for a sailor's headgear.

Tarry-top-lights. (See SHIVER-MY-TIMBERS.)

Taunt. Tall, high masts are sometimes referred to as *taunt masts.* A vessel is said to be *all-a-taunt-o* when she has all her masts and yards aloft, sail bent, and rigging in order.

Taut. Tight.

Tea Wagon. A name for the old East Indian tea ships.

Teeth. A term used in reference to a vessel's guns.

Telegraph. (See ENGINE ROOM TELEGRAPH.)

Telegraph Blocks. These are formed of a number of small sheaves in a narrow, lengthy shell, and used for the purpose of making signals.

Telescopic Funnel. (See FUNNEL.)

Tell-tale. An inverted dry card compass hung below deck from one of the beams so that the heading of the vessel may be known at any time without going on deck. (See TILLER TELL-TALE.)

Tend. (See TENDING.)

Tender. A vessel which accompanies another for the purpose of lending assistance, if necessary, to carry extra stores, coals, etc. (See CRANK.)

Tending. Watching a vessel when at anchor so as to cast her by the helm, also some sail if required, when the tide changes—this to prevent turns getting in the chain and the probable fouling of the anchor.

Tenon. The shoulder on the heel of a mast which fits into the step on the main keelson.

Testament. The small hand holy-stones used by seamen for cleaning the surface of unpainted woodwork. The wood is first wet, next sand sprinkled over it, then the stone is rubbed across the surface.

The Three L's of Navigation. Latitude, Lead and Lookout. (See L's of Navigation.)

Thick and Thin Block. A block having two sheaves, one thicker than the other, so as to accommodate different sizes of rope passing over them.

Thimble. An iron ring with a groove around its outer rim for a rope to fit in, so that it may be held in place when it is spliced either in the corner of a sail as a cringle or in the end of pendant. A thimble prevents chafing.

Thole Pins. Wooden pins, or metal sockets, fitting in holes bored in the gunwale of boats between which the oar rests when pulling. Thole pins form a rowlock for the oar. (See Rowlock.)

Thorough-foot. Said of a fall when one of the blocks is capsized through the parts; or the parts of the fall twisted by the turning round of one of the blocks.

Three-fold Block. A block of three sheaves.

Three-fold Purchase. A purchase made of two blocks, each containing three sheaves.

Throat. The inner end of a gaff where the throat block is hooked. (See Jaws.)

Throat Bolt. The metal eye-bolt in the throat of the gaff to which the lower throat halliard block is hooked.

Throat Brail. The rope which gathers a brailing sail up and into the throat of the gaff.

Throat Halliards. The halliards which hoist the inner end of the gaff, and the luff of a fore-and-aft sail, or that part of the sail which is against the mast.

Throat Seizing. A seizing which secures the end of a shroud or stay around a dead-eye, by making the end fast to its own standing part after it has been fitted around the score.

Through-bolt. A bolt which goes through the side or deck of a vessel, and is riveted inside.

Through Fastening. A bolt which passes through both planking and timber and is riveted inside.

Thrum. To sew the bight of *thrums* to a piece of canvas, the same being used to protect sails and rigging from chafe.

Thrums. Short strands of rope obtained by cutting old gear into lengths of several inches, then unlaying the strands.

Thumb Cleat. A small cleat on a yard arm to prevent the turns of the reef earing from slipping along the yard. Also the little metal crook on the martingale under which the stays lead and are held in place.

Thwarts. The seats extending across a boat and on which the rowers sit.

Thwartships. Same as *athwartships.*

Tidal Constants. (See Tide Table.)

Tide. The flow, and elevation, and depression of the water. What is known as *tiding up or down a river* is to allow a favorable tide to carry the vessel in the desired direction when, by reason of a calm, her sails are useless. As soon as the tide turns against the vessel the anchor is dropped until the next tide, when it is hove up and the former operations repeated. (See High Tide.)

Tide and Quarter Tide. (See Tide, Tide and Half-Tide.)

Tide Bench Marks. Permanent marks placed upon the stone facing of a basin, dry-dock, upon a sea wall, etc., and which record the height of the marks above mean low water.

Tide Current. The horizontal movement of the water in a channel which does not

change with the tide but continues to flow on sometimes two and three hours after the tide has turned.

Tide Day. What is known as the *tide day* is the interval between two successive arrivals of the tide wave at the same point. This interval is not regular, and the shortening and lengthening of the tide day is known as the *lagging* and *priming* of the tides.

Tide Establishment of the Port. It being of the utmost importance that the time of high water for harbors should be capable of ready solution, a standard for calculation is determined or based upon certain positions of the sun and moon, this standard being the time of high water at the full and change of the moon at a given point, and reckoned from apparent noon. This is known as the *establishment of the port.*

Tide Gate. A narrow opening through which the tide runs with great velocity.

Tide Gauges. An instrument for ascertaining the rise and fall of the tide.

Tide Pole. A pole marked in feet and inches and driven in the sand in shallow water, employed for ascertaining the rise and fall of the tide.

Tide Range. The difference between the height of high and low water.

Tide Rips. The agitation of the surface water caused by the tide passing swiftly over a shoal.

Tide-rode. A vessel is *tide-rode* when she rides to her anchor by the force of the tide independent of the wind.

Tide Tables. Yearly tide tables are published by the U. S. Coast Survey Office which give the computed times of high water for the most important ports of the United States, and *constants* to apply as directed to these times to obtain the hour of high water at neighboring places.

Tide, Tide and half-tide. In the open sea high water and low water succeed each other 6 hours and 12 minutes apart, and this is known as *a tide;* but in channels where the stream continues to flow up for 3 hours after it is high water it is said to make *a tide and half-tide,* and if it continues to flow up for only 1 hour and 30 minutes it is said to make *a tide and quarter-tide.*

Tide Wave. An immensely broad wave which more or less follows the movements of the sun and moon.

Tide-way. The part of a river or channel in which the tide ebbs and flows.

Tie. The single rope which is bent to a topsail yard in hoisting the spar, and which passes either through the sheave-hole in the mast or through a *tie-block* at the topmast head.

Tie-block. (See TIE.)

Tier. A row of barrels or casks in a vessel's hold. (See CABLE TIER.)

Tiller. The bar of iron or wood which fits into the forward side of the rudder head, and by turning which the rudder is moved around at different angles to the keel.

Tiller Head. That end of the tiller which is farthest from the rudder.

Tiller Ropes. Ropes or chains which lead from the tiller to the barrel of the steering wheel.

Tiller Tell-tale. A small arrow on top of the tiller box, connected with the barrel of the wheel, and which indicates the position of the tiller by its angle with the keel of the vessel.

Timber Heads. The ends of the timbers projecting above the deck, and used for belaying hawsers, etc.

Timber Hitch. This hitch is made by passing the end of a rope round a spar or timber head, then led up under and over the standing part, and passing a couple of turns round its own part. (See engraving.)

Timber Port. A small port in the bows of vessels carrying timber used to run the cargo out and in horizontally.

Timbers. Long, curved pieces of wood extending up from the keel on each side. They are known as the *ribs* of the vessel. The frame of a vessel is composed of the keel, stem, stern-post and ribs.

Time Allowance. The process of figures by which the advantage gained by a larger vessel over a smaller one is reduced to an equality, or an approximation thereto.

In other words, the larger vessel may go over the course in less time than the smaller vessel, yet if the time allowance to be subtracted from the latter's time reduces it to less than the time consumed by the larger vessel the smaller one wins the race.

Timenoguy. A rope stretched from one point to another for the purpose of preventing gear from fouling.

Toeing a Seam. To be compelled to stand without moving, the toes of the shoes against one of the deck seams.

Toeing Pitch. Same as *toeing a seam.*

Toggle. A pin of wood or metal employed for connecting two ropes. The pin slips through and across an eye called a *becket,* formed in the other rope. Bowlines are fastened to their bridles in this manner, and the method is also employed for securing ring-buoys so that they may be let go quickly in the event of a man going overboard. (See BECKET.)

Tompion. The wooden bung placed in the mouth of a cannon to exclude dampness and dust.

Tongue. The block of wood that is secured between the jaws of a gaff, and which slides that spar up and down the mast when the throat halliards are handed. This tongue works on a pin driven through the jaws from side to side, so that it can play fore-and-aft from the perpendicular to accommodate the angle assumed by the gaff when being raised.

Tonnage. The carrying capacity of a ship expressed in tons.

A ton of bulk is equal to 40 cubic feet.

A ton of weight is equal to 2,240 pounds.

The gross tonnage of a vessel is the cubical measurement or contents below decks.

The net tonnage of a vessel is the gross tonnage, minus the statutory deductions.

Tonnage Duty. A tax of so much per ton levied upon vessels by the customs authorities under certain conditions.

Top. The platform at the head of a lower mast, resting upon the trestle-trees, which in turn rest upon the hounds of the mast. The top is used to give spread to the topmast rigging, and to the rim of the structure the rigging is set up to dead-eyes.

To top a boom or yard is to elevate one end of it by the peak halliards and lift respectively.

Top Block. A large iron-bound block through which the top-rope reeves when sending up or down topmasts.

Topgallant Forecastle. The small deck built level with the rail at the extreme forward part of the vessel.

Topgallant Mast. The mast next above the topmast.

Topgallant Rail. A light rail built on top of the bulwark rail.

Topgallant Rigging. The shrouds and their ratlines belonging to the topgallant masts.

Topgallant Sail. The third sail above the deck on a man-o'-war, or where single topsails are carried, but the sail next above the upper topsail on a vessel carrying double topsails. Some large merchant vessels divide the topgallant sail in the same manner as the topsail, thus having double topgallant sails, named in the same way as the topsails—upper and lower.

Topgallant Shrouds. The shrouds on the topgallant masts.

Top-heavy. The upper part too weighty for the lower.

Top Hamper. All the spars, rigging, etc., above the deck.

Top Lining. An extra piece of canvas sewed on the after-surface of a square sail to take the chafe of the top-rim.

Topmast. The second mast above the deck, or the mast next above the lowermast. They are named according to their situation, as fore, main and mizzen topmasts.

Topmast Rigging. The shrouds and their ratlines belonging to the topmasts.

Topmast Shrouds. The shrouds on the topmasts.

Topsail. The second sail above the deck. Men-o'-war carry a large single topsail, but merchantmen carry double topsails, as they are much easier to handle with a

limited crew. A ship carries fore, main and mizzen topsails. The topsails are named respectively *upper* and *lower topsails.*

Topsail Halliard Bend. This is made by making two turns round the spar, then leading the end back round the standing part and underneath all the turns, bringing it round its own part and back again over the two other turns and underneath the inner turn. (See engraving.)

Topsail Schooner. A vessel carrying a square topsail on the fore-topmast, the mainmast being provided with a fore-and-aft mainsail and a gaff topsail. (See Two Topsail Schooner.)

Top Sawyer. A name given to the leading member of the crew who is in the advance when any work is going on.

Top Sides. The sides of a vessel from the water line to the bulwark rail.

Top Timbers. (See Part II.)

Topping. Raising one end of a spar higher than the other. To top the boom, etc.

Topping Lift. A purchase for topping a boom and sustaining the weight of the after-end of the same. (See Boom Topping Lift.)

Toss. An order to a boat's crew to lift the oars from the rowlock to a perpendicular position, then to lay them across the thwarts, the blades forward. It is an uninterrupted motion from first to last. A salute is also made by *tossing oars* from the rowlock to the perpendicular, and holding them so with the handle resting on the floor of the boat.

Tossing Oars. Oars not provided with trailing lines so that they can be lifted to the perpendicular.

Touch. *To touch a sail* is to luff until the leach shivers.

Touch and Trade. When a vessel licensed for fishing wishes to *touch and trade* at a foreign port she may obtain permission so to do, *for that voyage only,* from the chief customs officer in the port where she may be; *and she must not under penalty touch and trade without such permission.*

Tow. *To tow* is to draw a vessel, raft, spar, etc., through the water by means of a rope or chain.

Tow Line. The rope by which a vessel is towed.

Towage. Charges for towing.

Towing-boat Signal. The signal made for a towing boat is the ship's ensign in the main rigging a little above the deck.

Towing Lights. The white masthead lights carried in a vertical line by a steam vessel when towing another vessel, raft, etc.

Towing Post. A timber head to which towing hawsers are secured.

Track. *To track* a vessel is to tow her along by a hawser led to the shore. A vessel path across the waters.

Track Chart. A mariner's chart on which is traced the track of a ship from port to port, or from point to point. (See Charts.)

Trade Winds. A name applied to the currents of air within the tropics which blow from the northeastward in the northern hemisphere, and from the southeastward in the southern hemisphere. (See Charts.)

Trail. An order given in boat service for the crew to cease rowing and to throw their oars out of the rowlocks and let them trail alongside by the *trail ropes* which are made fast to the handle of the oar and secured inboard. This order takes the place of "Way Enough," used for tossing oars, and which is a signal for the crew to lift their oars out of the water and lay them down fore-and-aft on the thwarts with their blades forward. (See Out Oars.)

Trailing Oars. Oars fitted with trailing lines, and which are trailed alongside the boat when the crew are not pulling. (See Tossing Oars.)

Train Tackle. The tackle hooked to the rear of a broadside gun and by which it is run in, and by which it is also prevented from running out while loading it. The side-tackles run out the guns.

Transoms. The timbers extending across the stern-post, and to which they are bolted.

Transport. A vessel employed for carrying troops from one place to another, or for carrying munitions of war.

Traveler. An encircling iron ring which slides along a deck-horse or up and down a rope. (See HORSE.)

Traveler Iron. (See HORSE.)

Traverse. The several courses made by a vessel. To traverse a yard is to brace it in a fore-and-aft direction.

Traverse Board. An old-fashioned instrument for recording the course or several courses made by the vessel during a watch. It was a round board, with the points, half-points and quarter-points of the compass painted upon its rim. In each one of the points eight gimlet holes were bored, and into one of these, corresponding to the vessel's course, a peg was placed every half hour.

Traverse Table. (See PART III.)

Trawl Boat. A fishing boat.

Treacle. A name by which molasses is known on shipboard.

Treble Block. A block of three sheaves. Same as a three-fold block.

Tree-nails. Wooden pins used for bolting a plank to a timber.

Trend. The direction anything takes, as the *trend of the shore*, etc.

Trestle-trees. The two pieces of fore-and-aft horizontal timber resting on the hounds of the mast, and which support the cross-trees, and across which the fid of the mast above rests. (See CROSS-TREES.)

Triangular Course. A three-sided course laid out in yacht racing.

Triatic Stay. A wire or hemp rope secured at the head of a topmast of a fore-and-aft vessel, thence leading to the lowermast head of the mast next abaft, acting as a support to the topmast.

Trice. To haul anything up, as the heel of a studding-sail boom.

Tricing Line. A line by which anything is triced up.

Trick. The term given to the period of time which a man remains at the helm. The *trick* varies from two to four hours.

Trim. The way a vessel sits upon the water in relation to her water-line. A vessel is *trimmed by the head* when her water-line is nearer to, or more submerged forward than it is aft, and *trimmed by the stern* when the reverse of the above exists. A vessel is in *ballast-trim* when she has no cargo and only ballast on board. *To trim the sails* is to handle the braces of a square-sail and the sheet of a boom-sail so as to obtain the best results from the wind.

Trip. *To trip an anchor* is to lift it from the bottom. To trip a yard is to swing it from the horizontal to the perpendicular. A *trip* is also a passage made on a vessel from one place to another.

Tripping Line. A line used for tripping a yard. Also the rope by which a drag or sea-anchor is capsized.

Troop Ship A transport vessel.

Trough of the Sea. The hollow between two waves.

Truck. The piece of wood of circular shape placed at the extremity of the highest mast, and having small holes or sheaves in it for the signal halliards to reeve through.

Trunk Cabin. The name applied to a cabin half above and half below the upper deck.

Trunnels. (See TREE-NAILS.)

Trunnions. The projections on each side of a cannon which rest upon the gun-carriage and support the piece, permitting it to be elevated and depressed.

Truss. An iron fixture which holds the centre of a lower-yard to the mast.

Trysails. Fore-and-aft gaff-sails which are carried on the fore and main masts of a ship, hoisting on small masts (*trysail-masts*) abaft the lower mast. These sails are also known as *spencers*, while the fore-and-aft sail carried at the mizzen mast of a ship or bark is called a *spanker*. But all these sails are referred to as *trysails* when set during gales of wind, in order to lay the vessel to or to head-reach under them.

Tug. To exert spasmodic force upon anything. A small towing vessel.

Tugging at her Anchors. For a vessel to strain at her cables when at anchor in a storm, or when riding to a very strong tide.

Tumble Home. (See FALLING HOME.)

Tumbling Sea. A short, confused sea.

Turk's Head Knot. A fancy knot made in the upper end of man ropes, etc. (See engraving.)

Turn. To pass a rope or chain around a pin or bitts as a fastening for the former is known as *catching* or *taking a turn*. *To turn turtle*, to capsize. *To turn in*, to go to bed. *To turn out*, to get up. *To turn in a dead-eye*, to strop it with the end of a shroud. *Turn of the tide*, the change in the direction of its flow. *Turn ahead*, the slow forward movement of the propeller or paddle-wheels. *Turn the glass*, to capsize the sand-glass when heaving the log. *Turn up all hands*, to get all the crew on deck. *Turn-to*, to commence work.

Turn Buckle. A simple mechanical device of a thread and screw kept permanent on standing rigging for setting it up.

Turn Turtle. A vessel is said to *turn turtle* when she capsizes. (See TURN.)

Twice-laid Rope. Rope laid up from old yarns.

Twister. An exaggerated tale. (See YARN.)

Two Blocks. (See CHOCK-A-BLOCK.)

Two-fold Block. A block of two sheaves.

Two-fold Purchase. A purchase having two double blocks.

Two Half Hitches. Often used as a mooring hitch. It is made by passing the end of a rope around the standing part and bringing it up through its own bight, and then repeating the latter part. (See engraving.)

Two Topsail Schooner. A vessel carrying a square topsail both on the fore and main topmasts.

Tye. (See TIE.)

Tyers. Short lengths of rope used for tying up a sail. They take the place of gaskets.

U.

Unballast. To discharge the ballast out of a vessel.

Unbend. To cast adrift, or to untie.

Unbitt. To cast off the turns of a cable from the bitts.

Under Canvas. Same as *under sail*.

Under Current. A stream flowing beneath the surface water, which is either at rest or running in a contrary direction to the *under current*.

Under Foot. When the anchor is directly below the hawse pipe.

Under-manned. Short-handed.

Under-masted. Masts either too short or too slender for the vessel.

Under-run. To haul a small boat under a hawser stretched across her path by lifting up the rope.

Under Sail. Said of a vessel when she has sail set and is under way.

Under Steam. Moving through the water under the propelling power of the paddle wheels or screw.

Under the Lee. A vessel is under the lee of the land when she is close to a weather shore. A vessel is under the lee of another when the former is to leeward.

Under-tow. (See UNDER CURRENT.)

Under Way. Said of a vessel when she is making progress through the water, whether under sail or steam.

Underwriter. An insurer of vessels, freights and cargoes against the perils of the sea in accordance with a contract issued to the insured, which is known as a *policy of insurance*. (See MARINE INSURANCE.)

Unfurl. To cast loose a sail; to throw the gaskets off a sail.
Union. The inner upper corner of an ensign—the starry field in the American flag, the remainder of the flag is called the *fly*.
Union Down. The situation of an ensign when hoisted upside-down. This is a universal signal of distress.
Union Jack. A small flag flown at the bowsprit cap on a jack-staff. It contains only the union of the national ensign, and is set on Sundays and when dressing ship.
U. S. Local Inspectors. Officers appointed by the Secretary of the Treasury to examine and license all classes of American steam vessels, and to grant to capable captains, mates and engineers certificates of competency authorizing them to serve in their several capacities on board steam vessels.
Unmoor. To heave up one anchor, leaving the ship riding to the other.
Unreeve. To draw a rope out of a block, etc.
Unrig. To take the rigging off a vessel.
Unship. To remove anything from its place; to take anything apart.
Up Anchor. The order to weigh anchor.
Up and Down. Anything in a perpendicular position, as, *the yards are up and down the rigging.*
Up Boats. The order to hoist the boats to the davits.
Up Courses. The order to let go the tacks and sheets and haul up those sails.
Up Helm. (See HELM UP.)
Up Oars. An order given to the boat's crew by the coxswain, signifying that they are to lift their oars from the thwarts and hold them before them perpendicularly. The order "Up Oars" precedes that of "Let Fall."
Uphroe. (See EUPHROE.)
Upper Deck. (See DECK.)
Upper Topgallant Sail. (See TOPGALLANT SAIL.)
Upper Topsail. (See TOPSAIL.)
Upper Works. The sides of the vessel from the water-line to the covering board.
Uvrow. (See UPHROE.)

V.

Vane. A fly carried at the truck, made of bunting, which traverses on a spindle and shows the direction of the wind.
Vangs. Ropes for steadying a gaff, secured to the outer end of the spar and leading to the rail on each side.
Variables. Certain parts of the oceans where the winds are very inconstant.
Variation Chart. A chart on Mercator's projection on which the variation of the compass is represented by curved lines. (See engraving.)
'Vast. An abbreviation of *avast*, as *'vast heaving.*
Veer. To pay out chain or rope. When the wind changes against the sun (*i. e.*, contrary to the way the hands of a watch revolve—for example, when the wind changes from east to north it is said to veer. On board ship the wind *hauls* forward and *veers* aft.
Veer and Haul. To slack and haul alternately upon a rope.
Vessel. A general term for all classes of square and fore-and-aft rigged vehicles of navigation.
Viol. A large messenger once used in weighing anchor by the capstan.
Viol Block. A large single block used with a *viol.*
Voyage. A journey by water. *Outward voyage*, the passage of the vessel between her loading port and the place of her destination. *Homeward voyage*, the passage back. *Out and home*, the round voyage.
Voyal. (See VIOL.)

W.

Wack. A man is said to have his *wack* when he is provided with his share or portion of food out of the forecastle mess tub.

Waist. That part of the deck contained between the forecastle and quarter-deck.

Waist Anchor. (See SHEET ANCHOR.)

Waisters. Green hands; decrepit seamen.

Wake. The agitation of the water left astern of the vessel's course. The track over which the ship has passed.

Wales. Strong planks running fore-and-aft on a vessel's sides.

Wall Knot. A knot worked in the end of a rope. (See engraving.)

Wall Sided. Opposed to *flaring out* or *tumbling home.* Perpendicular sides.

Ward Room. The compartment in a man-o'-war or yacht in which the officers live.

Ware. (See WEAR.)

Warp. To change the position of a vessel by kedging, or by hauling her along by means of a hawser attached to some object. A *warp* is a light hawser.

Wash Boards. Lengths of thin plank fastened to and projecting above the gunwale of boats and small low-sided vessels to keep the spray out and increase the freeboard. A boat's row-locks are cut in the *wash boards.* These boards are also known as *wash strakes.*

Wash Strakes. (See WASH BOARDS.)

Waste. Cotton yarn used for cleaning purposes on shipboard.

Watch. There are seven watches on board ship during the 24 hours. They are named as follows: From midnight until 4 A.M., *mid-watch;* from 4 A.M. to 8 A.M., *morning-watch;* from 8 A.M. till noon, *forenoon-watch;* from noon till 4 P.M., *afternoon-watch;* from 4 P.M. till 6 P.M., *first dog-watch;* from 6 P.M. till 8 P.M., *second dog-watch;* from 8 P.M. till midnight, *first watch.* On a merchant ship the crew are mustered aft at 8 P.M. on the day of sailing, the men divided into the captain's and mate's watch, and the *first watch* set at that time, the *captain's watch,* remaining on deck while the other goes below. The captain always takes the first watch out and the mate the first watch home. The stewards and cooks are known as "idlers," and they stand no watch, The captain's watch is called the "starboard," and the mate's the "port" watch. If there is an uneven number of men in the forecastle, the odd man goes into the captain's watch by courtesy. Provided the vessel carries a second mate, the captain's watch is kept by him, so that the captain has no regular deck duty, but goes and comes as he pleases. The officer on watch is known as the "officer of the deck," and, while left in possession, his orders must be obeyed to the letter. He has full powers to alter the course of the ship to avoid danger, to make, or alter, or take in sail, etc. On an ocean passenger steamer one of the waiters is always on watch in the saloon, being stationed by the steward the same as the anchor-watch is set by the mate, so that they stand a certain number of hours each and then call their relief. The saloon-watch should report to the officer of the deck when each bell is struck. A floating buoy is said to *watch.* (See ANCHOR WATCH.)

Watch and Watch. The crew are said to get *watch and watch* when their service on deck and their leisure below is regularly alternated.

Watch Bill. A list of the crew showing the division of the watches.

Watch ho! Watch! The cry passed along from forward to aft by the men stationed along the bulwarks when heaving the deep-sea lead, signifying that the line is running out, and warning the man next aft to feel for the bottom.

Watch Tackle. A purchase formed of a double and single block, the single block being provided with a hook and the double block with a tail. Also known as a *jigger* and a *handy-billy.*

Water Ballast. Water carried in flat tanks in a vessel's hold to serve as ballast for the ship. When the vessel is loaded these tanks are emptied by being pumped out.

Water Boat. A boat for supplying vessels with fresh water, the same being con-

tained in a large tank in the boat's hold, and pumped into a vessel either by a hand or steam pump.

Water Borne. A ship is said to be *water borne* when there is just sufficient water to float her clear of the bottom.

Water Butt. A large cask for containing fresh water. (See SCUTTLE BUTT.)

Water Craft. Any kind of a vessel,

Water Dues. (See FOUNTAIN DUES.)

Water-laid Rope. A name sometimes applied to rope laid up left-handed.

Water Line. A horizontal line painted around the vessel's hull to mark her proper trim in loading.

Water Logged. When a vessel is filled with water yet afloat owing to the buoyant nature of her cargo, she is said to be *water logged.*

Water Sail. Also known as a *save-all.* It is seldom used in these days. It was a kind of studding sail set under the swinging boom.

Water Tank. (See TANK.)

Water Tight. The opposite to leaky.

Water Ways. (See PART II.)

Waterspout. A vertical column of water having a gyratory motion, and moving along the surface of the sea, being uninfluenced by any wind that may be blowing. It is eccentric in its movements, and often emits a loud roaring as it rushes along. Waterspouts often form during dead calms, and are of the same nature with the tornado. At the commencement of a waterspout a cloud protrudes downward, and elongates in the form of an inverted cone, and meets the cloudlike mass or cone rising from the water Vessels use every means possible to get out of the track of these terrific engines, a meeting with which would send the ship to the bottom. A gun directed toward one and fired with a heavy charge of powder will often break and disperse it. (See engravings.)

Way. A vessel is said to have *way* on her when she moves through the water.

Way Enough. An order given to a boat's crew signifying that they are to cease rowing, and to take their oars out of the water and lay them down in the boats fore-and-aft the thwarts, the blades of the oars forward.

Ways. The timbers on which a vessel slides into the water in being launched.

Hauled up on the ways means to cradle a vessel on the ways, then by mechanical means haul ways and vessel up an inclined plane until out of water. These ways are sometimes termed *marine railways.* (See DRY DOCK.)

Wear. To put the helm up and bring the vessel around on the other tack by changing the wind across the stern. This is done in a heavy sea when *tacking* is not advisable owing to the danger of missing stays and the accompanying chance of getting sternboard on the vessel.

Wear and Tear. Loss by accident and damage by use to hull, spars, rigging, sails, etc.

Weather. That point of the compass from which the wind blows.

Weather Bitt. To take an additional turn around the windlass end or the bitts with the cable.

Weather Bound. Detained in harbor owing to the unfavorable conditions of the weather.

Weather-eye. To keep one's *weather-eye open* is to be on the alert

Weather Gage. A vessel is said to have the *weather gage* of another when the latter is to leeward.

Weather Helm. A vessel carries a *weather helm* when her tendency is to come up into the wind, requiring the wheelsman to put the tiller up.

Weather Indications. *Clear weather* prophesies are, rosy sky at sunset, gray morning sky, low dawn, delicate clouds, dew, fog.

Wet Weather is foretold by an Indian-red morning sky, pale-yellow sky, small, inky-looking clouds.

Wind is indicated by a red morning sky, hard-edged, oily-looking clouds, gloomy blue sky, copper-colored sky.

Moderate winds and possible calms are expected with soft-looking or delicate clouds, quiet tints or colors, dew and fog.

Weather Lurch. A sudden roll to windward.
Weather Roll. The inclination of the vessel's deck to windward.
Weather Shore. The shore to windward.
Weather Side. The windward side; the side the wind blows on.
Weather Signals. (See CAUTIONARY SIGNALS.)
Weatherly Ship. A vessel that works well to windward and makes little leeway.
Weather Tide. The tide which sets against the lee side of the vessel and carries her to windward.
Wedding Knot. A crossed seizing placed between two eyes.
Wedge Fid. A two-part, wedge-shaped fid.
Weed the Rigging. To clear the rigging of bits of rope, yarn, ravelings, etc.
Weigh. *To weigh the anchor* is to lift it from the bottom.
Well. The enclosure around the pumps, from the hold up to the deck, to preserve the former from injury by coming in contact with cargo, etc. The enclosed space in the holds of fishing vessels to preserve the catch alive until a market can be reached. An exclamation signifying that the crew are to cease hauling, etc.; that they are to leave things as they are. (See CISTERN.)
Wet Docks. Specially constructed basins for facilitating the loading and discharging of vessels. At high tide vessels are admitted into *wet docks* through a gate, which is closed again before the tide falls much, and by these means the water in these basins is kept at a uniform depth, and the vessels moored therein are not exposed to the dangers of open roadsteads, tides, etc. The finest and most extensive system of *wet docks* in the world is to be seen in England.
Wet Nurse. (See NURSE.)
Whale Boat. A boat from 20 to 40 feet long, with a beam equal to about one-fifth of its length. It is a most excellent sea boat, being sharp at each end, and a medium-size one is often used as a gig.
Whaler. A vessel employed in the whale fishery.
Wharf. A landing place built by the side of, or extending into the water, at which ships load and unload.
Wharf Rats. Street arabs and river thieves who infest wharves, sometimes living on platforms beneath the flooring.
Wharfinger. One who has charge of a wharf.
Wheel. The instrument for steering a vessel, being connected with a barrel around which the tiller ropes go.
Wheel Chains. Chains used in place of the rope for connecting the steering wheel and the tiller.
Wheel House. The house on deck containing the wheel, connecting with the tiller, and by which the vessel is steered.
Wheel Rods. Lengths of straight rod along the water ways that take the place of a part of the wheel rope or chain.
Wheel Rope. A rope connecting the steering wheel and the tiller.
Whelps. Pieces of iron bolted to wooden windlass barrels so as to prevent the chain cable from cutting into the wood.
Wherry. A small rowing boat. Also a small sailing boat used for fishing.
Whip. A purchase formed of one single block with a small rope rove through it. To prevent the end of a rope from fagging by seizing it around with twine. *A double whip* has two single blocks.
Whip and Runner. A whip, the block of which is spliced into a pendant. One end of the whip is made fast, the bight rove through the pendant block, and the other end the hauling part.
Whip-upon-Whip. One whip applied to the fall of another.
Whipping. The binding of twine placed around the end of a rope to keep it from fraying.
Whiskers. Projecting spars or irons from the bowsprit for the purpose of giving more spread to the jib-boom guys.
Whistling Buoy. A whistle placed on a buoy, and which is sounded automatically by the rising and falling motion of the buoy, communicated from the waves.

White Caps. The froth on the crest of waves caused by the wind, and indicating that the breeze will increase. Also known as *horses' manes.*

White Lead Putty. A putty made of white lead and whiting, and used for filling the deck seams on yachts. (See RED LEAD PUTTY.)

White Water. Water over a shallow bottom given a light appearance by the reflection of the white sand.

Whole-sail-breeze. A wind which will allow a vessel to carry all sail.

Wide Berth. When a vessel keeps at a considerable distance from an object she is said to give it a wide berth.

Wild. A vessel is said to *steer wild* when she yaws a great deal.

Winch. A horizontal barrel turned by a crank. *A mast winch* is on the deck just in front of the mast and is used for hoisting yards and gaffs when making sail. (See engraving.)

Wind. Air in motion. There are several numerals given to describe the force of winds, namely: 0, calm; 1, light air; 2, light breeze; 3, gentle breeze; 4, moderate breeze; 5, fresh breeze; 6, strong breeze; 7, moderate gale; 8, fresh gale; 9, strong gale; 10, whole gale, 11, storm; 12, hurricane.

Wind a Ship. To change a vessel's position by bringing her head where her stern was.

Wind Bound. Being prevented from sailing by a head-wind.

Wind Rode. The situation of a ship when she rides to the wind independent of the current or tide.

Wind-sail. A long funnel-shape canvas leading below through one of the hatches, kept spread by wooden hoops, and used for sending fresh air below decks. An opening in its upper part, or head, admits the air which is gathered by two large canvas-flaps or ears, standing out on each side, and trimmed by bowlines. The windsail hoists by halliards, and is slued around as often as necessary to face the wind.

Wind the Call. The boatswain is said to *wind his call* when he blows it. The first word is pronounced the same as the first word in the sentence "*wind the clock.*"

Windlass. The machine by which an anchor is weighed. (See engraving; see CAPSTAN.)

Windlass Bitts. The upright supports for the barrel of the windlass. These uprights are also known by the names of *carrick-heads, carrick-bitts,* and *windlass heads.*

Windlass Capstan. A combination of a windlass and capstan, in which the windlass moves the spindle of the capstan by gearing.

Wind's Eye. The exact point from which the wind blows.

Windward. The point or direction from which the wind blows.

Windward Tide. A tide that sets to windward. (See WEATHER TIDE.)

Wing. The part of the hold next the side.

Wing and Wing. Said of a fore-and-aft vessel when she is sailing with her booms out on opposite sides.

Wingers. The casks or barrels which are stowed in the wings.

Wire Rigging. Standing rigging of wire-rope, which has almost entirely taken the place of hemp standing rigging.

With the Sun. A rope laid up from right to left is said to be *laid up with the sun.* When the wind shifts around the compass in the same way that the hands of a watch revolve (from north to south by the way of east) it is said to *shift with the sun.* The sun is supposed to move from right to left. (See AGAINST THE SUN.)

Withe. (See WYTHE.)

Woodlock. A block of wood bolted to the rudder-stock underneath one of the pintles so as to prevent the rudder from unshipping.

Woolding. The winding of rope around a spar after it has been fished.

Work to Windward. To make progress against the wind.

Working a Ship. Handling the yards and sails and rudder.

Working Jib. The regular jib—one of the head-sails. (See JIB.)

Working Sails. All the regular sails of a vessel excepting such as are rigged specially in light breezes. Under the latter head would be studding sails for a ship, and club-topsails and balloon-sails for fore-and-aft vessels.

Working Topsail. Known also as the *standing* and the *gaff-topsail*, in distinction to the sprit or club-topsails which are hoisted from the deck and set flying.

Working Up. To make spun yarn, etc., out of the strands of old rigging. Also to keep a man constantly at work at dirty or needless jobs as a punishment. (See RIDING DOWN.)

Worm. Filling up the lays of a rope with spiral windings of small stuff (called *worming*), so as to make a flush surface.

Wreck. Destruction of a vessel in part or whole.

Wreckage. Spars, cordage, sails, cargo, etc., belonging to a wrecked vessel.

Wrecker. The term may be defined in two ways. One who seeks to draw vessels ashore by false lights, for the purpose of plunder. One legitimately employed in raising sunken vessels and saving their cargoes.

Wring. To strain anything unduly or to twist out of shape. *To wring a mast* is to buckle it by setting the shrouds up too taut.

Wythe. An iron ring fitted to the end of a boom as a cap, through which a spar is rigged out.

Y.

Yacht. A vessel used for pleasure, or a vessel of state.

Yacht Plumbing. (See SHIP PLUMBING.)

Yard. A spar suspended horizontally to the forward side of a mast, and to which the head of a square-sail is bent. Yards also spread the foot of the sail next above. They are hoisted by *halliards*, turned by *braces*, and supported by *lifts*. The middle of the yard is called the *slings*, the ends of the yard the *yard-arms*, and between the slings and yard-arms the *quarters*. Lower yards are hung in a *truss*, and the upper yards confined to the mast by *parrels*. There are lower-yards, topsail-yards, topgallant-yards, royal-yards, and skysail-yards. (See DOUBLE TOPSAILS, DOUBLE TOPGALLANTS.)

Yard A-box. A yard is *a-box* when its sail is aback.

Yard Arm. (See ARM.)

Yard-arm and Yard-arm. Said of vessels when they are lying alongside of one another so that their yard arms touch.

Yard Rope. The rope used in sending up and down yards.

Yard Tackle. A heavy tackle hooked into a strop on lower yards, and used for hoisting great weights.

Yarn. A tale. *To spin a yarn* is to relate a story. (See ROPE YARN, TWISTER.)

Yaw. A vessel *yaws* when, from indifferent steering, or a heavy sea running under the quarter, she makes a crooked track through the water.

Yawl. A small fishing vessel. A cutter with an additional fore-and-aft sail set on a mizzen or jigger-mast in the stern. (See engraving.)

Yellow-belly. A term applied by seamen to a Portuguese or a mulatto.

Yellow Jack. The yellow quarantine flag flown by a vessel having contagious disease on board.

Yellow Metal. A cheap composition used for sheathing a vessel in place of copper.

Yeoman. A ship's storekeeper. (See STOREKEEPER.)

Yoke. A horizontal piece of wood or metal placed across the head of a boat's rudder, to each end of which a *yoke-line* is secured, and by which the boat is steered.

Yoke Lines. Short lengths of rope fastened to the yoke, and by pulling which the rudder is turned.

Young Gentlemen. A general term for midshipmen, both in the navy and merchant service.

PART II.

DICTIONARY OF SHIPBUILDING TERMS.

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A.

Afloat. Borne up by, or floating in, the water.

After-body. That part of a ship's body abaft the midships or dead-flat. This term is more particularly used in expressing the *figure* or *shape* of that part of the ship.

After-timbers. All those timbers abaft the *midships* or *dead-flat.*

Air Funnel. A cavity framed between the sides of some timbers to admit fresh air into the ship and convey the foul air out of it.

Amidships. In midships, or in the middle of the ship, either with regard to her length or breadth. Hence that timber or frame which has the greatest breadth and capacity in the ship is denominated the *midship bend.*

Anchor-lining. The short pieces of plank, or of board, fastened to the sides of the ship or to stanchions under the fore-channel to prevent the bill of the anchor from wounding the ship's side when fishing the anchor.

To Anchor Stock. To work planks in a manner resembling the stocks of anchors, by fashioning them in a tapering form from the middle and working or fixing them over each other so that the broad or middle part of one plank shall be immediately above or below the butts or ends of two others. This method, as it occasions a great consumption of wood, is only used where particular strength is required, as in the *spirkettings* under ports, etc.

An-end. The position of any mast, etc., when erected perpendicularly on the deck. The topmasts are said to be *an-end* when they are hoisted up to their usual stations. This is also a common phrase for expressing the driving of anything in the direction of its length, as to force one plank, etc., to meet the butt of another.

Angle of Incidence. The angle made with the line of direction by an impinging body at the point of impact; as that formed by the direction of the wind upon the sails or of the water upon the rudder of a ship.

Angle of Safety. The angle reckoned in degrees which marks the limit in at vessel's rolling. Should she roll beyond the limit she would upset. This angle varies according to the vessel. An instrument called the *clinometer* records the angles made in the rolling of a ship.

Apron. A kind of false or inner stem, fayed on the aftside of the stem, from the head down to the dead-wood, in order to strengthen it. It is immediately above the foremost end of the keel, and conforms exactly to the shape of the stem, so that the convexity of one applied to the concavity of the other forms one solid piece, which adds strength to the stem and more firmly connects it with the keel.

Arch of the Cove. An elliptical moulding sprung over the cove at the lower part of the taffrail.

B.

Back of the Post. The after-face of the stern post.

Backstay Stool. A short piece of broad plank, bolted edgeways to the ship's side, in the range of the channels, to project and for the security of the dead-eyes and chains for the backstays. Sometimes the channels are left long enough to answer the purpose.

Back-sweep. (See FRAMES.)

Balance Frames. Those *frames* or bends of timber, of the same capacity or area, which are equally distant from the centre of gravity. (See FRAMES.)

Battens. In general, light scantlings of wood. In ship-building, long, narrow laths of fir, their ends corresponding and fitted into each other with mortice and tenon, used in setting fair the sheer-lines on a ship. They are painted black in order to be the more conspicuous. Battens used on the mold-loft floor are narrow laths, of which some are accurately graduated and marked with feet, inches and quarters for setting off distances. Battens for gratings are narrow, thin laths of oak.

Beams. The substantial pieces of timber which stretch across the ship from side to side to support the decks and keep the ship together by means of the *knees*, etc., their ends being lodged on the clamps, keeping the ship to her breadth.

Beam Arm, or Fork Beam, is a curved piece of timber, nearly of the depth of the beam, scarphed, tabled and bolted for additional security to the sides of beams athwart large openings in the decks, as the main hatchway and the mast-rooms.

Breast Beams are those beams at the forepart of the quarter deck and poop, and afterpart of the forecastle. They are sided larger than the rest, as they have an ornamental rail in the front, formed from the solid, and a rabbet one inch broader than its depth, which must be sufficient to bury the deals of the deck, and one inch above for a spurn-water. To prevent splitting the beam in the rabbet the nails of the deck should be crossed, or so placed, alternately, as to form a sort of zigzag line.

Half-Beams are short beams introduced to support the deck where there is no framing, as in those places where the beams are kept asunder by hatchways, ladder-ways, etc. They are let down on the clamp at the side, and near midships, into fore-and-aft carlings. On some decks they are abaft the mizzen-mast, generally of fir, let into the side tier of carlings.

The Midship Beam is the longest beam of the ship, lodged in the midship-frame or between the widest frame of timbers.

Bearding. The diminishing of the edge or surface of a piece of timber, etc., from a given line, as on the dead-wood, clamps, plank-sheers, fife-rails, etc.

Bearding-line. A curved line occasioned by bearding the dead-wood to the form of the body; the former being sided sufficiently, this line is carried high enough to prevent the heels of timbers from running to a sharp edge, and forms a rabbet for the timbers to step on; hence it is often called the *stepping-line*.

Bed. A solid framing of timber to receive and to support the mortar in a bomb vessel.

Beetle. A large mallet used by caulkers for driving in their reeming irons to open the seams in order for caulking.

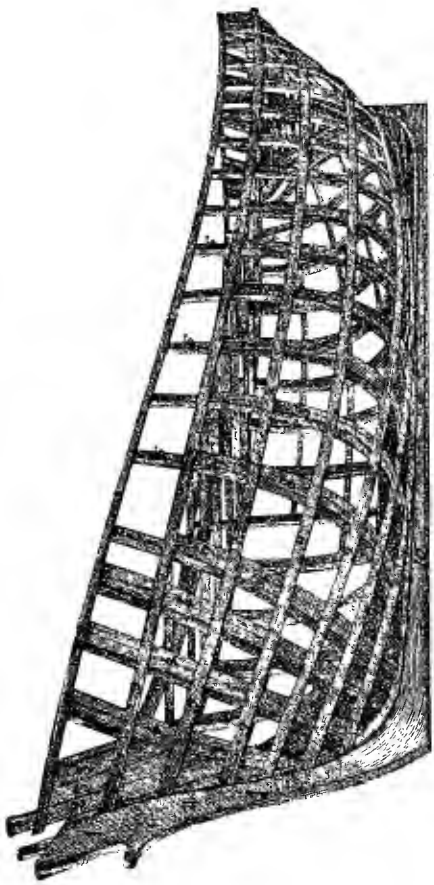
Belly. The inside or hollow part of compass or curved timber, the outside of which is called the *back*.

Bell-top. A term applied to the top of a quarter galley when the upper stool is hollowed away, or made like a rim, to give more height, as in the quarter galleries of small vessels, and the stool of the upper finishing comes home to the side, to complete overhead.

Bend-mould, in whole moulding. A mould made to form the futtocks in the square body, assisted by the rising-square, and floor-hollow.

Bends. The frames or ribs that form the ship's body from the keel to the top of the side at any particular station. They are first put together on the ground. That at

FORE-FRAMING OF A WOODEN VESSEL.



1. *Stem*
2. *Knight-heads*
3. *Hawse-timbers*
4. *Cant-timbers*
5. *Main-rail*
6. *Bulwark Stanchions*
7. *Top-timbers*
8. *Frames*
9. *Planks*
10. *Keel*

the broadest part of the ship is denominated the *midship-bend* or *dead-flat.* The foreparts of the wales are commonly called *bends.*

Between-decks. The space contained between any two decks of a ship.

Between Perpendiculars. The length on deck from the forepart of the stem to the afterpart of the stern post.

Bevel. A well-known instrument, composed of a stock and a movable tongne, for taking of angles on wood, etc., by shipwrights, called *bevelings.*

Beveling-board. A piece of deal on which the bevelings or angles of the tim bers, etc., are described.

Bevelings. The windings or angles of the timbers, etc., a term applied to any deviation from a square or right angle. Of beveling there are two sorts, denominated *standing bevelings* and *under bevelings.* By the former is meant an obtuse angle, or that which is *without a square;* and by the latter is understood an acute angle, or that which is *within a square.*

Bilge. That part of a ship's floor, on either side of the keel, which has more of a horizontal than of a perpendicular direction, and on which the ship would rest if laid on the ground; or, more particularly, those projecting parts of the bottom which are opposite to the heads of the floor-timbers amidships, on each side of the keel.

Bilge Trees, or Bilge Pieces, or Bilge Keels. The pieces of timber fastened under the bilge of boats or other vessels to keep them upright when on shore, or to prevent their falling to leeward when sailing.

Bilgeways. A square bed of timber placed under the bilge of the ship to support her while launching.

Bindings. The iron links which surround the *dead-eyes.*

Binding-strakes. Two strakes of oak plank, worked all the way fore-and-aft upon the beams of each deck, within one strake of the coamings of the main hatchway, in order to strengthen the deck, as that strake and the midship strakes are cut off by the pumps, etc.

Bins. A sort of large chests, or erections in store-rooms, in which the stores are deposited. They are generally 3 or 4 feet deep and nearly of the same breadth.

Birth-up. A term generally used for working up a topside or bulkhead with board or thin plank.

Black Strake. A broad strake, which is parallel to and worked upon the upper edge of the wales in order to strengthen the ship. It derives its name from being paid with pitch, and is the boundary for the painting of the topsides. Ships having no ports near the wales have generally two black strakes.

Blocks, for Building the Ship Upon, are those solid pieces of oak timber fixed under the ship's keel upon the groundways.

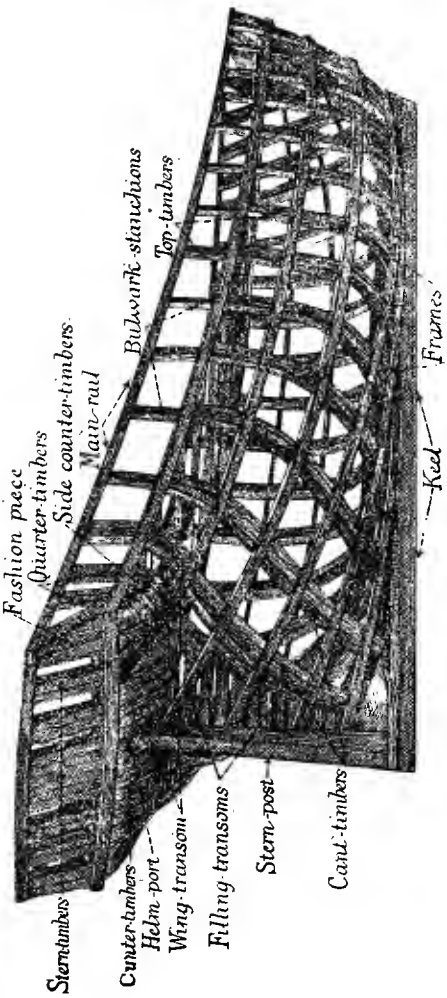
Board. Timber sawed to a less thickness than plank; all broad stuff of, or under, one inch and a half in thickness.

Bodies. The figure of a ship, abstractedly considered, is supposed to be divided into different parts, or figures, to each of which is given the appellation of *body.* Hence, we have the terms *fore body, after body, cant bodies,* and *square body.* Thus the *fore body* is the figure, or imaginary figure, of that part of the ship afore the midships, or dead-flat, as seen from ahead. The *after body,* in like manner, is the figure of that part of the ship abaft the midships, or dead-flat, as seen from astern. The *cant bodies* are distinguished into *fore* and *after,* and signify the figure of that part of a ship's body, or timbers, as seen from either side, which form the shape forward and aft, and whose planes makes obtuse angles with the midship line of the ship; those in the fore cant-body being inclined to the stem, as those in the after one are to the stern-post. The *square body* comprehends all the timbers whose areas or planes are perpendicular to the keel, and square with the middle line of the ship; which is all that portion of a ship between the cant bodies.

Bollard Timbers. (See KNIGHT HEADS.)

Bolsters. Pieces of oak timber fayed to the curvature of the bow, under the hawse-holes, and down upon the upper or lower cheek, to prevent the cable from rubbing against the cheek.

AFTER-FRAMING OF A WOODEN VESSEL.



Bolsters, for the Anchor Lining, are solid pieces of oak, bolted to the ship's side, at the fore-part of the fore-chains, on which the stanchions are fixed that receive the anchor lining. The fore end of the bolster should extend two feet or more before the lining, for the convenience of a man standing to assist in fishing the anchor.

Bolsters for Sheets, Tacks, etc., are small pieces of fir, or oak, fayed under the gunwale, etc., with the outer surface rounded to prevent the sheets and other rigging from chafing.

Bolts. Cylindrical or square pins of iron or copper, of various forms, for fastening and securing the different parts of the ship, the guns, etc. The figure of those for fastening the timbers, planks, hooks, knees, crutches, and other articles of a similar nature, is cylindrical, and their sizes are adapted to the respective objects which they are intended to secure. They have round or sancer heads, according to the purposes for which they may be intended; and the points are fore-locked or clinched on rings to prevent their drawing. Those for bolting the frames or beams together are generally square.

Bottom. All that part of a ship or vessel that is below the wales. Hence, we use the epithet *sharp-bottomed* for vessels intended for quick sailing, and *full-bottomed* for such as are designed to carry large cargoes.

Bow. The circular part of the ship forward, terminated at the rabbet of the stem.

Braces. Straps of iron, copper or mixed metals, secured with bolts and screws in the stern-post and bottom planks. In their after-ends are holes to receive the pintles by which the rudder is hung.

Breadth. A term more particularly applied to some essential dimensions of the extent of a ship or vessel athwartships, as the *breadth-extreme*, and the *breadth-moulded*, which are two of the principal dimensions given in the building of the ship. The *extreme breadth* is the extent of the midships, or dead-flat, with the thickness of the bottom plank included. The *breadth-moulded* is the same extent, without the thickness of the plank.

Breadth-line. A curved line of the ship lengthwise, intersecting the timbers at their respective broadest parts.

Break. The sudden termination or rise in the decks of some merchant ships, where the aft, and sometimes the fore, part of the deck is kept up to give more height between decks, as likewise at the drifts.

Breast-hooks. Large pieces of compass timber fixed within and athwart the bows of the ship, of which they are the principal security, and through which they are well bolted. There is generally one between each deck, and three or four below the lower deck, fayed upon the plank. Those below are placed square to the shape of the ship at their respective places. The breast-hooks that receive the ends of the deck-planks are also called *deck-hooks*, and are fayed close home to the timbers in the direction of the decks.

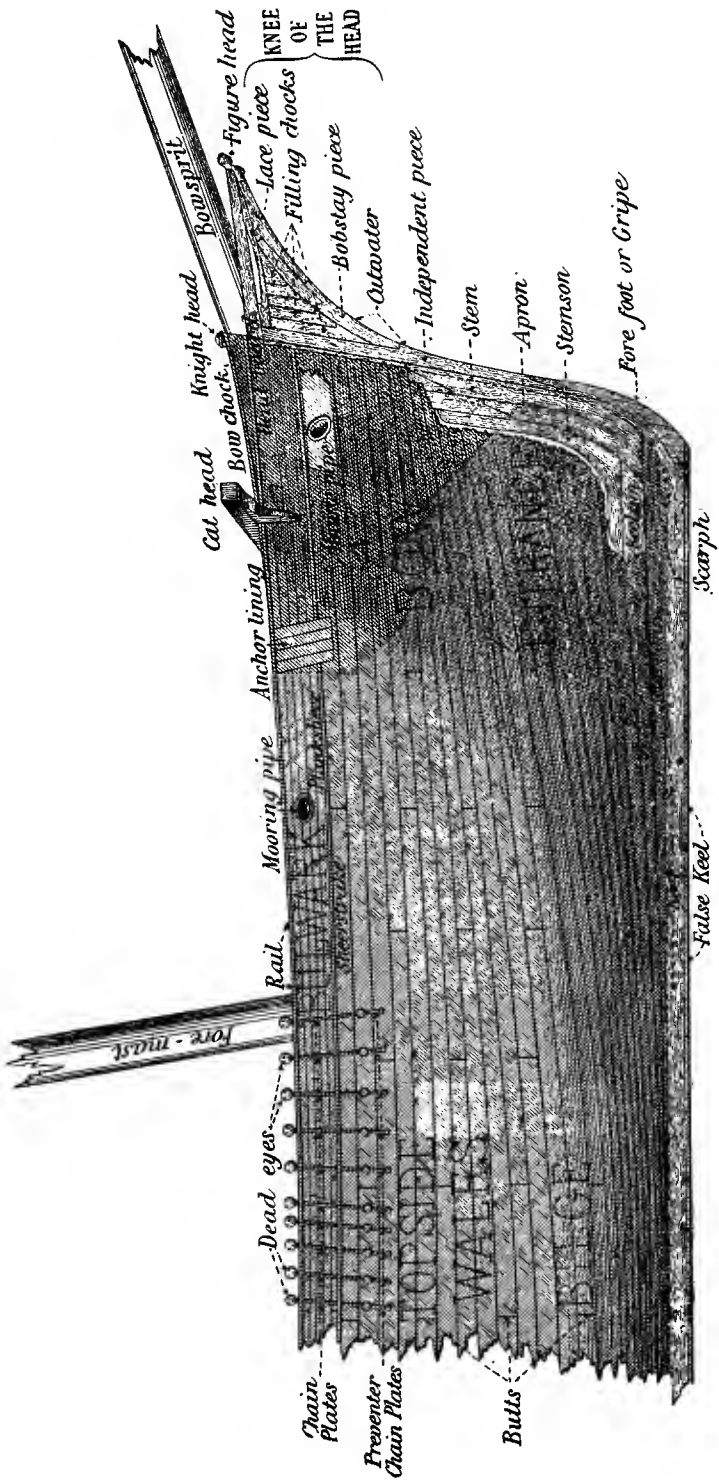
Broken-backed or Hogged. The condition of a ship when the sheer has departed from the regular and pleasing curve with which it was originally built. This is often occasioned by the improper situation of the centre of gravity, when so posted as not to counterbalance the effort of the water in sustaining the ship, or by a great strain, or from the weakness of construction. The latter is the most common circumstance, particularly in some clipper ships, owing partly to their great length, sharpness of floor, or general want of strength in the junction of the component parts.

Bum-kin, or, more properly, **Boom-kin.** A projecting piece of oak or fir on each bow of a ship, fayed down upon the false rail, or rail of the head, with its heel cleated against the knight-head in large, and the bow in small ships. It is secured outward by an iron rod or rope lashing, which confines it downward to the knee or bow, and is used for the purpose of hauling down the fore-tack of the fore-sail.

Burthen. The weight or measure that any ship will carry or contain when fit for sea.

Butt. The joints of the planks endwise; also the opening between the ends of the planks when worked for caulking. Where caulking is not used, the butts are rabbeted, and must fay close.

FORE-BODY OF A WOODEN VESSEL.



Buttock. That rounding of the body abaft bounded by the fashion-pieces; and, at the upper part, by the wing transom.

Buttock-lines. (On the sheer draught.) Curves, lengthwise, representing the ship as cut in vertical sections.

C.

Camber. Hollow or arching upwards. The decks are said to be *cambered* when their height increases toward the middle, from stem to stern, in the direction of the ship's length.

Camel. A machine for lifting ships over a bank or shoal, originally invented by the celebrated De Witt, for the purpose of conveying large vessels from Amsterdam over the Pampus. They were introduced into Russia by Peter the Great, who obtained the model when he worked in Holland as a common shipwright, and are now used at St. Petersburgh for lifting ships of war built there over the bar of the harbor. A camel is composed of two separate parts, whose outsides are perpendicular, and insides concave, shaped so as to embrace the hull of a ship on both sides. Each part has a small cabin, with sixteen pumps and ten plugs, and contains twenty men. They are braced to the underpart of the ship by means of cables, and entirely enclose its sides and bottom. Being then towed to the bar, the plugs are opened and the water admitted until the camel sinks with the ship, and runs aground. Then, the water being pumped out, the camel rises, lifts up the vessel, and the whole is towed over the bar. This machine can raise the ship eleven feet, or, in other words, make it draw eleven feet less water.

Cant. A term signifying the inclination that anything has from a square or perpendicular.

Cant-ribbands are those ribbands that do not lie in a horizontal or level direction, or square from the middle line, but nearly square from the timbers, as the diagonal ribbands. (See RIBBANDS.)

Cant Timbers, are those timbers afore and abaft whose planes are not square with, or perpendicular to, the middle-line of the ship.

Caps. Square pieces of oak, laid upon the upper blocks on which the ship is built, to receive the keel. They should be of the most freely-grained oak, that they may be easily split out when the false keel is to be placed beneath. The depth of them may be a few inches more than the thickness of the false keel, that it may be set up close to the main keel by slices, etc.

Cap Scuttle. A framing composed of coamings and head ledges, raised above the deck, with a flat or top which shuts closely over into a rabbet.

Carlings. Long pieces of timber, above four inches square, which lie fore-and-aft, in tiers, from beam to beam, into which their ends are scored. They receive the ends of the ledges for framing the decks. The carlings by the side of, and for the support of the mast, which receive the framing round the mast, called the partners, are much larger than the rest, and are named the *mast carlings*. Besides these there are others, as the *pump carlings*, which go next without the mast carlings, and between which the pumps pass into the well; and also the fire-hearth carlings, that let up under the beam on which the galley stands, with pillars underneath, and chocks upon it, fayed up to the ledges for support.

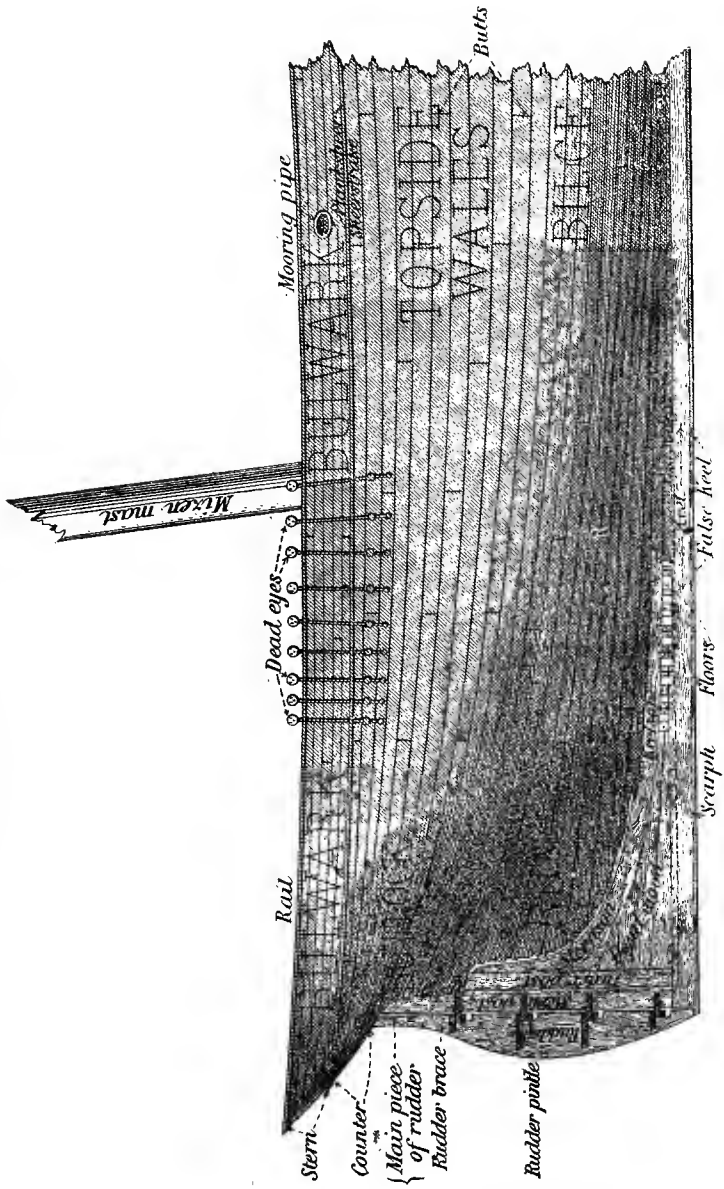
Carvel Work. A term applied to cutters and boats, signifying that the seams of the bottom-planking are square, and to be tight by caulking as those of ships. It is opposed to the phrase *clincher-built*, which see.

Caulking. Forcing oakum into the seams and between the butts of the plank, etc., with iron instruments, in order to prevent the water penetrating into the ship.

Ceiling or Foot-waling. The inside planks of the bottom of the ship.

Centre of Cavity, or of Displacement. The centre of that part of the

AFTER-BODY OF A WOODEN VESSEL.



ship's body which is immersed in the water, and which is also the centre of the vertical force that the water exerts to support the vessel.

Centre of Gravity. That point about which all the parts of a body do, in any situation, exactly balance each other. Hence, 1. If a body be suspended by this point as the centre of motion it will remain at rest in any position indifferently. 2. If a body be suspended in any other point, it can rest only in two positions, viz.: when the centre of gravity is exactly above or below the point of suspension. 3. When the centre of gravity is supported the whole body is kept from falling. 4. Because this point has a constant tendency to descend to the centre of the earth, therefore—5. When the point is at liberty to descend, the whole body must also descend, either by sliding, rolling or tumbling over.

Centre of Motion. That point of a body which remains at rest whilst all the other parts are in motion about it; and this is the same, in bodies of one uniform density throughout, as the centre of gravity.

Centre of Oscillation. That point in the axis or line of suspension of a vibrating body, or system of bodies, in which, if the whole matter or weight be collected, the vibrations will still be performed in the same time, and with the same angular velocity, as before.

Centre of Percussion, in a moving body, is that point where the percussion or stroke is the greatest, and in which the whole percutient force of the body is supposed to be collected. PERCUSSION is the impression a body makes in falling or striking upon another, or the shock of bodies in motion striking against each other. It is either direct or oblique; *direct* when the impulse is given in a line perpendicular to the point of contact; and *oblique* when it is given in a line oblique to the point of contact.

Centre of Resistance to a Fluid. That point in a plane to which, if a contrary force be applied, it shall just sustain the resistance.

Chain or Chains. The links of iron which are connected to the binding that surround the dead-eyes of the channels. They are secured to the ship's side by a bolt through the toe-link called a *chain-bolt.*

Chain-bolt. A large bolt to secure the chains of the dead-eyes, for the purpose of securing the masts by the shrouds.

Chain Plates. Thick iron plates, sometimes used, which are bolted to the ship's sides, instead of chains to the dead-eyes, as above.

Chamfering. Taking off the sharp edge from timber or plank, or cutting the edge or end of any thing bevel or aslope.

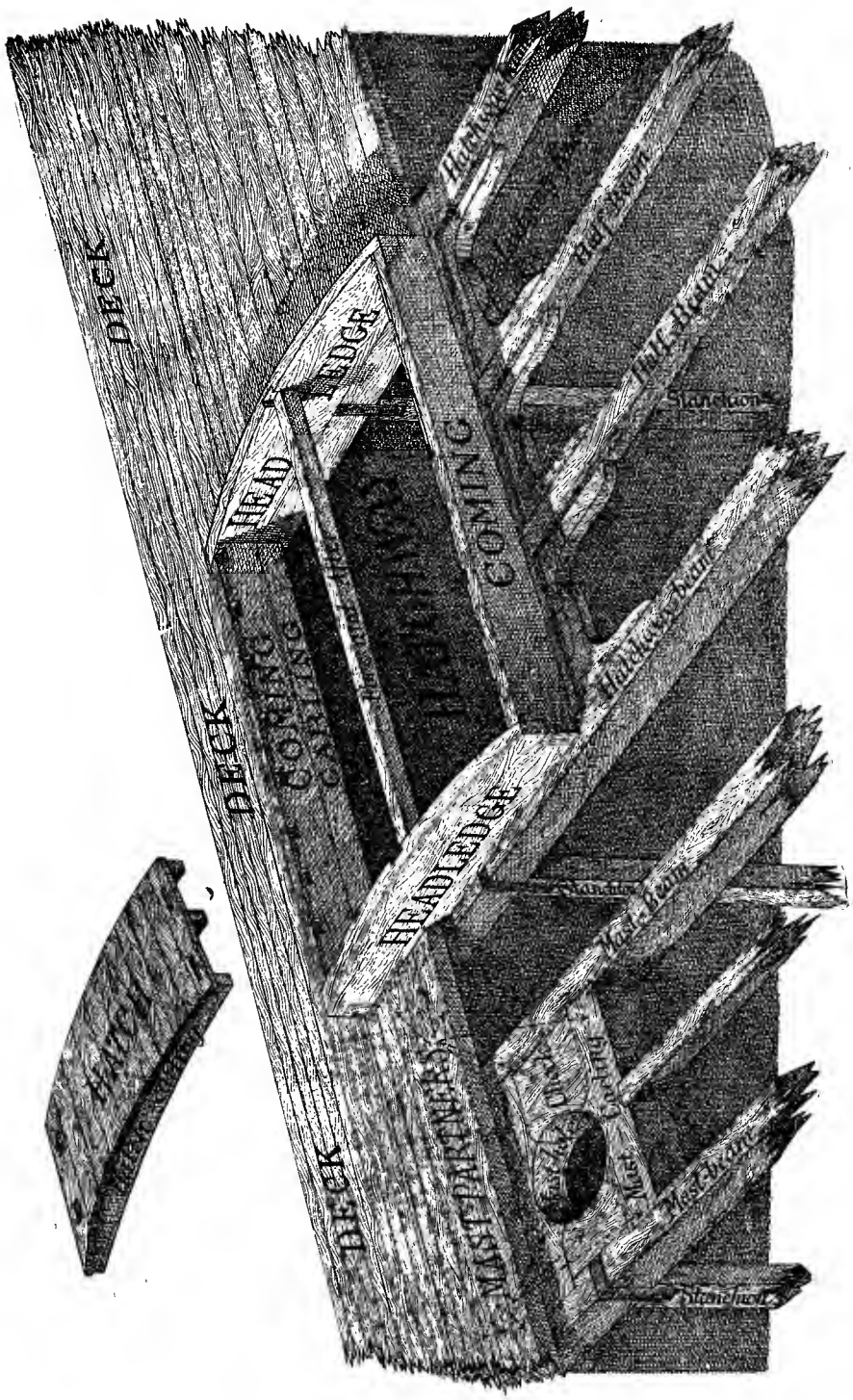
Channels. The broad projection or assemblage of planks fayed and bolted to the ship's sides for the purpose of spreading the shrouds with a greater angle to the dead-eyes. They should therefore be placed either above or below the upper deck ports, as may be most convenient. But it is to be observed that, if placed too high, they strain the sides too much; and if placed too low the shrouds cannot be made to clear the ports without difficulty. Their disposition will therefore depend on that particular which will produce the greatest advantage. They should fay to the sides only where the bolts come through, having an open space of about two inches in the rest of their length to admit a free current of air and a passage for wet and dirt, in order to prevent the sides from rotting.

Channel Wales. Three or four thick strakes, worked between the upper and lower deck ports in two-decked ships, and between the upper and middle deck ports in three-decked ships, for the purpose of strengthening the topside. They should be placed in the best manner for receiving the chain and preventer bolts, the fastenings of the deck-knees, etc.

Cheeks. Knees of oak timber which support the knee of the head, and which they also ornament by their shape and mouldings. They form the basis of the head and connect the whole to the bows, through which, and the knee, they are bolted.

Chestrees. Pieces of oak timber fayed and bolted to the topsides, one on each side abaft the fore channels, with a sheave fitted in the upper part for the convenience of hauling home the main tack.

HATCHWAY, MAST-PARTNERS, ETC.



Chine. That part of the waterways which is left the thickest and above the deck-plank. It is bearded back that the lower seam of spirketting may be more conveniently caulked, and is gouged hollow in front to form a water-course.

To Chinse. To caulk slightly with a knife or chisel those seams or openings that will not bear the force required for caulking in a more proper manner.

Clamps. Those substantial strakes worked withinside the ship upon which the ends of the beams are placed.

Clean. A term generally used to express the acuteness or sharpness of a ship's body; as when a ship is formed very acute or sharp forward and the same aft she is said to be *clean* both forward and aft.

Clincher-built. A term applied to the construction of some vessels and boats when the planks of the bottom are so disposed that the lower edge of every plank overlays the next under it, and the fastenings go through and clinch or turn upon the timbers. It is opposed to the term *carvel-work.*

Clinching or Clenching. Spreading the point of the bolt upon a ring, etc., by beating it with a hammer in order to prevent its drawing.

Coaking. Uniting pieces of spar by means of tubular projections formed by cutting away the solid of one piece into a hollow, so as to make a projection on the other, in such a manner that they may correctly fit, the butts preventing the pieces from drawing asunder.

Coaks are fitted into the beams and knees of vessels to prevent their drawing.

Coamings. The raised borders of oak about the edge of the hatches and scuttles which prevent water from flowing down from off the deck. Their inside upper edge has a rabbet to receive the gratings.

Companion. In ships of war the framing and sash lights upon the quarter-deck or poop through which the light passes to the commander's apartments. In merchant ships it is the birthing or hood round the ladder-way leading to the master's cabin, and in small ships is chiefly for the purpose of keeping the sea from beating down.

Compass Timbers. Such as are curved or arched.

Conversion. The art of lining and moulding timber, plank, etc., with the least possible waste.

Coping. Turning the ends of iron lodging-knees so as they may hook into the beams.

Counter. A part of the stern, the *lower counter* being that arched part of the stern immediately above the wing transom. Above the lower counter is the *second counter*, the upper part of which is the under part of the lights or windows. The counters are parted by their rails, as the lower counter springs from the tuck-rail, and is terminated on the upper part by the lower counter rail. From the upper part of the latter springs the upper or second counter, its upper part terminating in the upper counter rail, which is immediately under the lights.

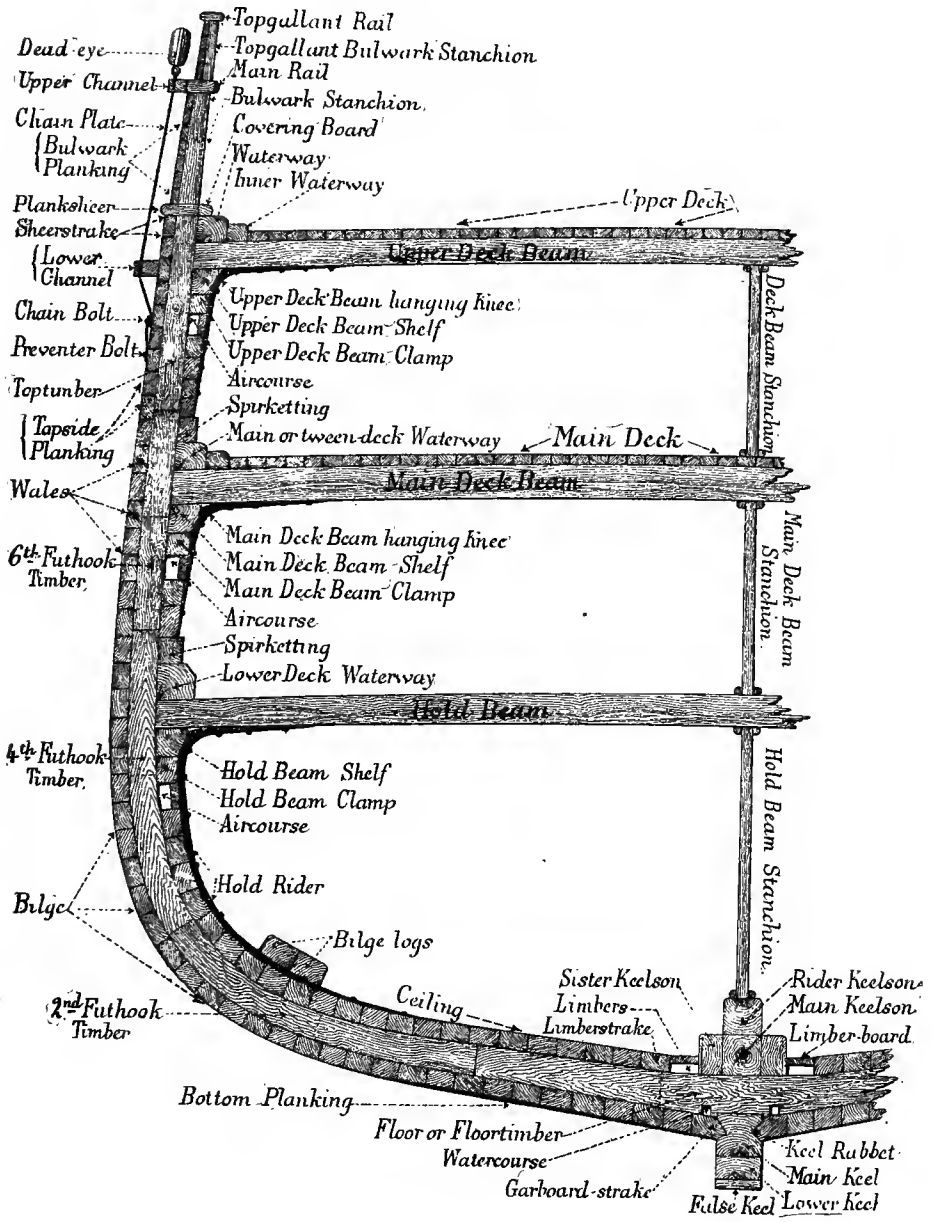
Counter-sunk. The hollows in iron plates, etc., which are excavated by an instrument called a counter-sunk bitt to receive the heads of screws or nails so that they may be flush or even with the surface.

Counter-timbers. The right-aft timbers which form the stern. The longest run up and form the lights, while the shorter only run up to the under part of them, and help to strengthen the counter. The side counter timbers are mostly formed of two pieces scarphed together in consequence of their peculiar shape, as they not only form the right-aft figure of the stern, but partake of the shape of the topside also.

Cove. The arch moulding sunk in at the foot or lower part of the taffarel.

Crab. A sort of little capstan, formed of a kind of wooden pillar, whose lower end works in a socket whilst the middle traverses or turns round in partners which clip it in a circle. In its upper end are two holes to receive bars, which act as levers, and by which it is turned round and serves as a capstan for raising of weights, etc. By a machine of this kind, so simple in its construction, may be hove up the frame timbers, etc., of vessels when building. For this purpose it is placed between two floor timbers, while the partners which clip it in the middle may be of four or five-inch plank fastened on the same floors. A block is fastened beneath in the slip, with a central

MIDSHIP SECTION OF A WOODEN VESSEL.



hole for its lower end to work in. Besides the crab here described there is another sort which is shorter and portable. The latter is fitted in a frame composed of cheeks, across which are the partners, and at the bottom a little platform to receive the spindle.

Cradle. A strong frame of timber, etc., placed under the bottom of a ship in order to conduct her steadily in her ways till she is safely launched into water sufficient to float her.

Crank. A term applied to ships built too deep in proportion to their breadth, and from which they are in danger of over-setting.

Croaky. A term applied to plank when it curves or compasses much in short lengths.

Cross Chocks. Pieces of timber fayed across the dead-wood amidships to make good the deficiency of the heels of the lower futtocks.

Cross Pauls. Pieces of timber that keep a vessel together while in frame.

Cross Piece. A piece of timber connecting two bitts.

Cross Spales. Deals or fir plank nailed in a temporary manner to the frames of the ship at a certain height, and by which the frames are kept to their proper breadths until the deck-knees are fastened. The main and top-timber breadths are the heights mostly taken for spalling the frames, but the height of the ports is much better; yet this may be thought too high if the ship is long in building.

Crutches, or Clutches. The crooked timbers fayed and bolted upon the foot-waling abaft for the security of the heels of the half-timbers. Also stanchions of iron or wood whose upper parts are forked to receive rails, spare masts, yards, etc.

Cup. A solid piece of cast iron, let into the step of the capstan, and in which the iron spindle at the heel of the capstan works. (See CAPSTAN.)

Cutting-down Line. The elliptical curve line forming the upperside of the floor-timbers at the middle line. Also, the line that forms the upper part of the knee of the head above the cheeks. The cutting-down line is represented as limiting the depth of every floor timber at the middle line, and also the height of the upper part of the dead-wood afore and abaft.

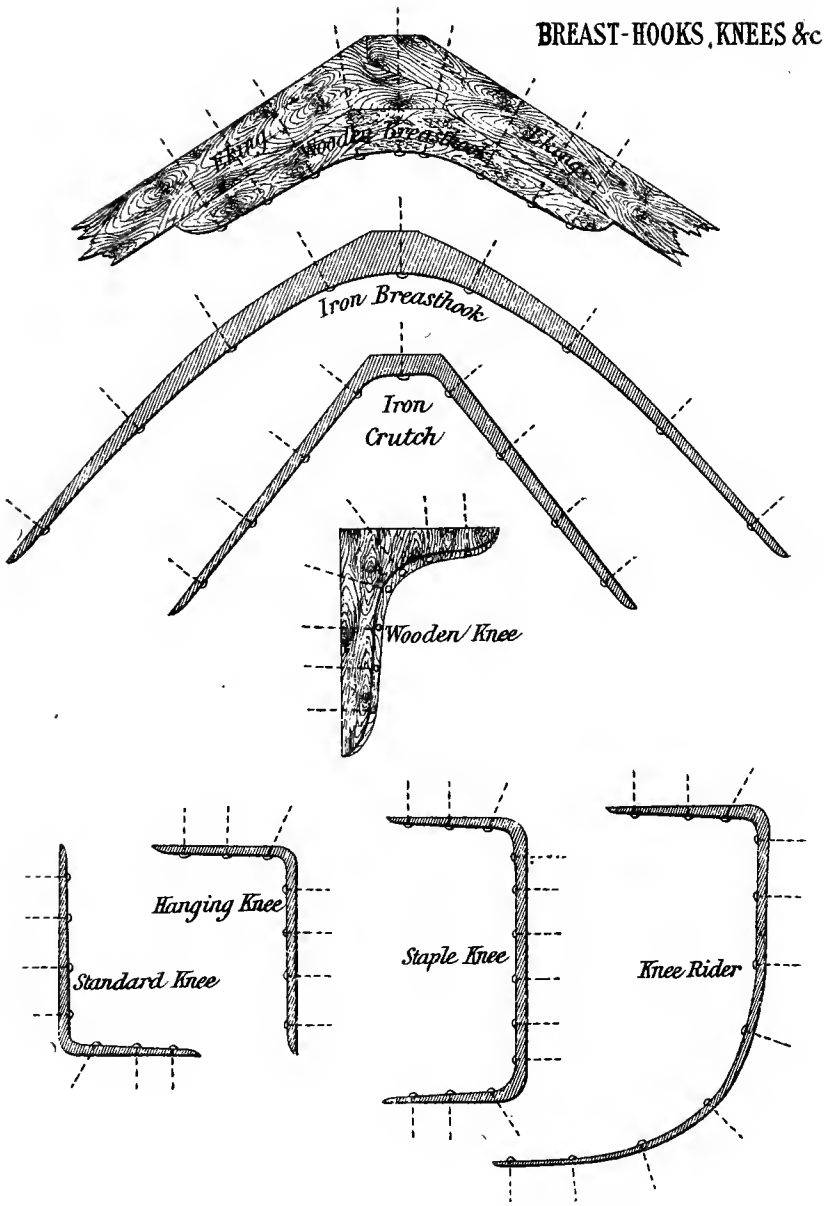
D.

Dagger. A piece of timber that faces on to the poppets of the bilgeways, and crosses them diagonally, to keep them together. The plank that secures the heads of the poppets is called the *dagger plank.* The word *dagger* seems to apply to anything that stands diagonally or aslant.

Dagger Knees. Knees to supply the place of hanging knees. Their side arms are brought up aslant or nearly to the underside of the beams adjoining. They are chiefly used to the lower deck beams of merchant ships, in order to preserve as much stowage in the hold as possible. Any strait-hanging knees not perpendicular to the side of the beam are in general termed *dagger knees.*

Dead-flat. A name given to that timber or frame which has the greatest breadth and capacity in the ship, and which is generally called the *midship bend.* In those ships where there are several frames or timbers of equal breadth or capacity that which is in the middle should be always considered as *dead-flat,* and distinguished as such by this character +. The timbers before the dead-flat are marked A, B, C, etc., in order; and those abaft dead-flat by the figures 1, 2, 3, etc. The timbers adjacent to dead-flat, and of the same dimensions nearly, are distinguished by the characters (A) (B), etc., and (1) (2), etc.

Dead-rising, or Rising Line of the Floor. Those parts of the floor or bottom throughout the ship's length where the sweep or curve at the head of the floor timber is terminated or inflects to join the keel. Hence, although the rising of the


BREAST-HOOKS, KNEES &c
Iron Breasthook
Iron Crutch
Wooden Knee
Hanging Knee
Standard Knee
Staple Knee
Knee Rider

floor at the midship-flat is but a few inches above the keel at that place, its height forward and aft increases according to the sharpness of form in the body. Therefore, the rising of the floor in the *sheer plan* is a curved line drawn at the height of the ends of the floor timbers, and limited at the main frame or dead-flat by the death-rising, appearing in flat ships nearly parallel to the keel for some timbers afore and abaft the midship frame, for which reason these timbers are called *flats;* but in sharp ships it rises gradually from the main frame, and ends on the stem and post.

Dead-water. The eddy water which the ship draws after her at her seat or line of flotation in the water, particularly close aft. To this particular great attention should be paid in the construction of a vessel, especially in those with square tucks; for such being carried too low in the water will be attended with great eddies or much *dead-water.* Vessels with a round buttock have but little or no dead-water, because, by the rounding or arching of such vessels abaft, the water more easily recovers its state of rest.

Dead-wood. That part of the basis of a ship's body forward and aft which is formed by solid pieces of timber scarphed together lengthwise on the keel. These should be sufficiently broad to admit of a stepping or rabbet for the heels of the timbers, that the latter may not be continued downwards to sharp edges; and they should be sufficiently high to seat the floors. Afore and abaft the floors the dead-wood is continued to the cutting down line for the purpose of securing the heels of the cant-timbers.

Depth in the Hold. The height between the floor and the lower deck. This is one of the principal dimensions given for the construction of a ship. It varies according to the height at which the guns are required to be carried from the water, or according to the trade for which a vessel is designed.

Diagonal Line. A line cutting the body-plan diagonally from the timbers to the middle line. It is square with, or perpendicular to, the shape of the timbers, or nearly so, till it meets the middle line.

Diagonal Ribband. A narrow plank, made to a line formed on the half-breadth plan, by taking the intersections of the diagonal line with the timbers in the body-plan to where it cuts the middle line in its direction, and applying it to their respective stations on the half-breadth-plan, which forms a curve to which the ribband is made as far as the cant-body extends, and the square frame adjoining.

Dog. An iron implement used by shipwrights, having a fang at one or sometimes at each end, to be driven into any piece for supporting it while hewing, etc. Another sort has a fang in one end and an eye in the other in which a rope may be fastened and used to haul anything along.

Dog Shore. A shore particularly used in launching.

Doubling. Planking of ships' bottoms twice. It is sometimes done to new ships when the original planking is thought to be too thin; and in repairs it strengthens the ship without driving out the former fastenings.

Doweling. A method of coaking by letting pieces into the solid, or uniting pieces together by tenons.

Draught. The drawing or design of the ship upon paper, describing the different parts, and from which the ship is to be built. It is mostly drawn by a scale of one-quarter of an inch to a foot, so divided or graduated that the dimensions may be taken to one inch.

Draught of Water. The depth of water a ship displaces when she is afloat.

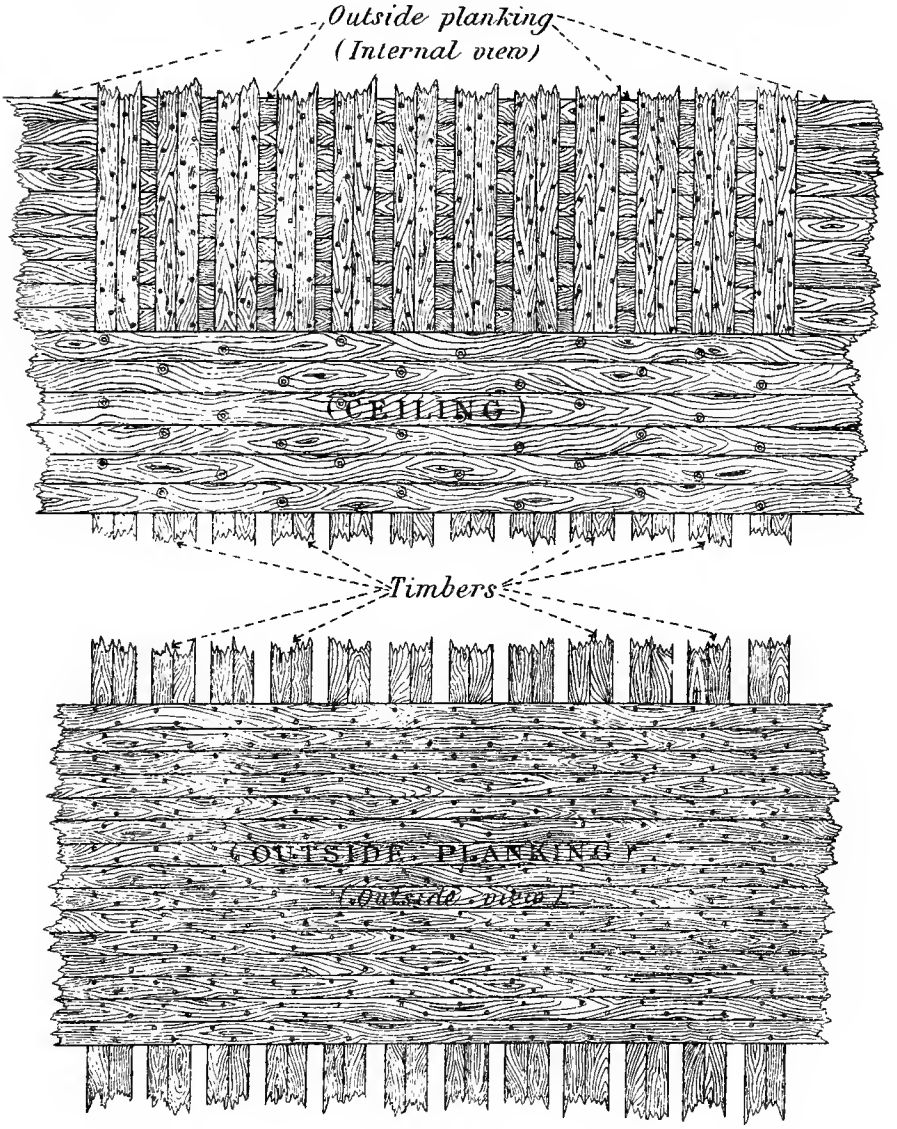
Drifts. Those pieces in the sheer draught where the rails are cut off.

Driver. The foremost spur on the bilgeways, the heel of which is fayed to the fore-side of the foremost poppet, and cleated on the bilgeways, and the sides of it stand fore-and-aft. It is now seldom used.

Drumhead. The head of a capstan, formed of semi-circular pieces of elm, which, framed together, form the circle into which the capstan bars are fixed.

Druxey. A state of decay in timber with white spungy veins, the most deceptive of any defect.

VIEW OF OUTSIDE PLANKING, TIMBERS AND CEILING.



E.

Edging of Plank. Sawing or hewing it narrower.

Ekeing. Making good a deficiency in the length of any piece by scarphing or butting, as at the end of deck-hooks, cheeks or knees. The *ekeing* at the lower part of the supporter under the cathead is only to continue the shape and fashion of that part, being of no other service. We make this remark because if the supporter were stopped short without an ekeing it would be the better, as it causes the side to rot; and it commonly appears fair to the eye in but one direction. The *ekeing* is also the piece of carved work under the lower part of the quarter-piece at the aft-part of the quarter gallery.

Elevation. The orthographic draught, or perpendicular plan of a ship, whereon the heights and lengths are expressed. It is called by shipwrights the *sheer-draught.*

Entrance. A term applied to the forepart of the ship under the load-water line—as, "She has a fine entrance," etc.

Even Keel. A ship is said to be on an even keel when she draws the quantity of water abaft as forwards; also when she has no list, and is not inclined by the head or stern.

F.

Face Pieces. Pieces of wood wrought on the fore-part of the knee of the head.

Facing. Rabbeting one piece of timber into another in order to strengthen it.

Fair. A term to denote the evenness or regularity of a curve or line.

Falling Home, or, **Tumbling Home.** The inclination which the topside has within from a perpendicular.

False-keel. A second keel, composed of elm plank or thick stuff, fastened in a slight manner under the main keel to prevent it from being rubbed. Its advantages also are that if the ship should strike the ground the false keel will give way, and thus the main keel will be saved; and it will be the means of causing the ship to hold the wind better.

False-post. A piece tabled on to the after-part of the heel of the main part of the stern-post. It is to assist the conversion and preserve the main-post should the ship tail aground.

False-rail. A rail fayed down upon the upper side of the main or upper rail of the head. It is to strengthen the head-rail, and forms the seat of ease at the after end next the bow.

Fashion Pieces. The timbers so-called from their fashioning the after-part of the ship in the plane of projection by terminating the breadth and forming the shape of the stern. They are united to the ends of the transoms and to the dead-wood.

Fay. To join one piece so close to another that there shall be no perceptible space between them.

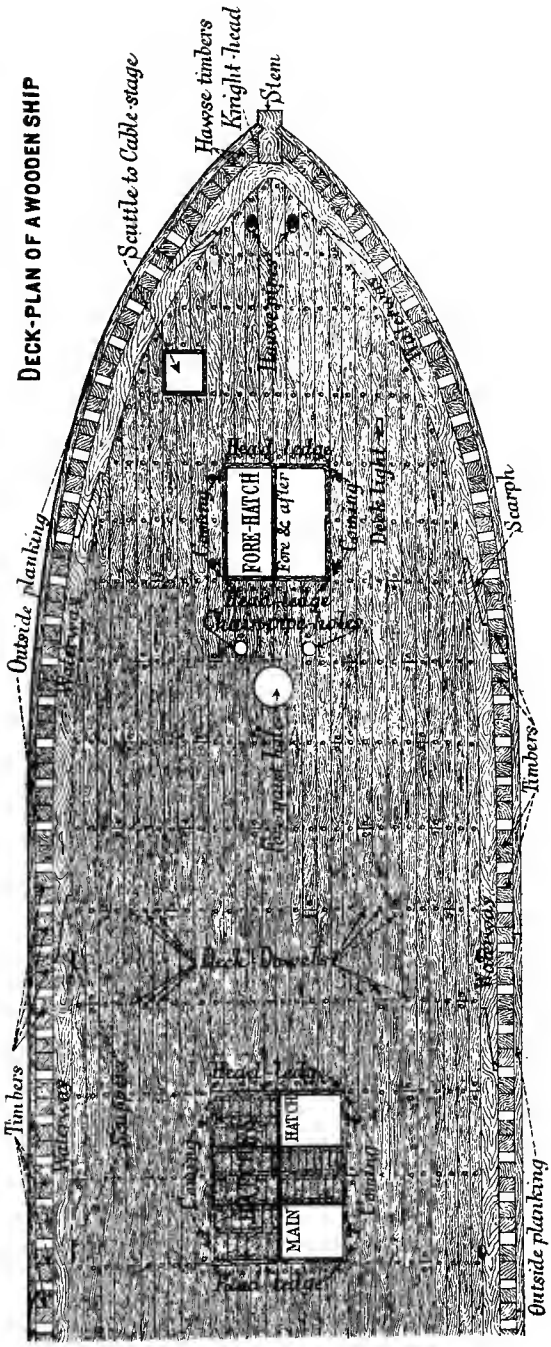
Filling-timbers. The intermediate timbers between the frames that are gotten up into their places singly after the frames are ribbanded and shored.

Finishing. Carved ornaments of the quarter galley below the second counter and above the upper lights.

Flairing. The reverse of *falling* or *tumbling home.* As this can be only in the forepart of the ship, it is said that the ship has a *flaring bow* when the topside falls outward from a perpendicular. Its uses are to shorten the cathead and yet keep the anchor clear of the bow. It also prevents the sea from breaking in upon the forecastle.

Flats. A name given to the timbers amidships that have no beveling, and are similar to dead-flat, which is distinguished by this character ×. (See DEAD-FLAT.)

Floor. The bottom of a ship, or all that part on each side of the keel which


DECK-PLAN OF A WOODEN SHIP
Scuttle to Cable-stage
Hawse timbers
Knight-head
Stem
Hawse-pipes
Bitt-posts
Head-ledge
FORE-HATCH
Fore & after
Coaming
Coaming
Deck-light
Scarph
Outside planking
Waterway
Chain-pipe holes
Timbers
Fore-mast hole
Deck-Dowels
Waterway
Timbers
Waterway
Scuppers
Head-ledge
HATCH
Coaming
Coaming
MAIN
Foot-ledge
Outside planking

approaches nearer to a horizontal than a perpendicular direction, and whereon the ship rests when aground.

Floors, or Floor Timbers. The timbers that are fixed athwart the keel, and upon which the whole frame is erected. They generally extend as far forward as the foremast, and as far aft as the after square timber, and sometimes one or two cant-floors are added.

Flush. With a continued even surface; as *a flush deck*, which is a deck upon one continued line, without interruption, from fore-to-aft.

Foot Wailing. The inside planks or lining of a vessel over the floor timbers.

Fore Body. That part of the ship's body afore the midships or dead-flat. (See BODIES.) This term is more particularly used in expressing the *figure* or *shape* of that part of the ship.

Forecastle. That portion of the spar deck which is forward of the after fore shroud.

Fore-foot. The foremost piece of the keel.

Fore-lock. A thin circular wedge of iron used to retain a bolt in its place by being thrust through a mortise hole at the point of the bolt. It is sometimes turned or twisted round the bolt to prevent its drawing.

Fore Peek. Close forward under the lower deck.

Frames. The bends of timber which form the body of the ship, each of which is composed of one *floor-timber*, two or three *futtocks*, and a *top-timber* on each side; which, being united together, form the frame. Of these frames, or bends, that which encloses the greatest space is called the *midship* or *main frame* or *bend*. The arms of the floor-timber form a very obtuse angle; and in the other frames this angle decreases or gradually becomes sharper fore-and-aft with the middle line of the ship. Those floors which form the acute angles afore and abaft are called the *rising floors*. A frame of timbers is commonly formed by arches of circles called *sweeps*, of which there are generally five. 1st. The *floor sweep*, which is limited by a line in the body plan perpendicular to the plane of elevation, a little above the keel; and the height of this line above the keel is called the *dead rising*. The upper part of this arch forms the head of the floor-timber. 2d. The *lower breadth sweep*, the centre of which is in the line representing the lower height of breadth. 3d. The *reconciling sweep*. This sweep joins the two former without intersecting either, and makes a fair curve from the lower height of breadth to the rising line. If a straight line be drawn from the upper edge of the keel to touch the back of the floor sweep, the form of the midship frame below the lower height of breadth will be obtained. 4th. The *upper breadth sweep*, the centre of which is in the line representing the upper height of breadth of the timber. This sweep described upwards forms the lower part of the top-timber. 5th. The *top-timber sweep*, or *back sweep*, is that which forms the hollow of the top-timber. This hollow is, however, very often formed by a mould, so placed as to touch the upper breadth sweep and pass through the point limiting the half-breadth of the top-timber.

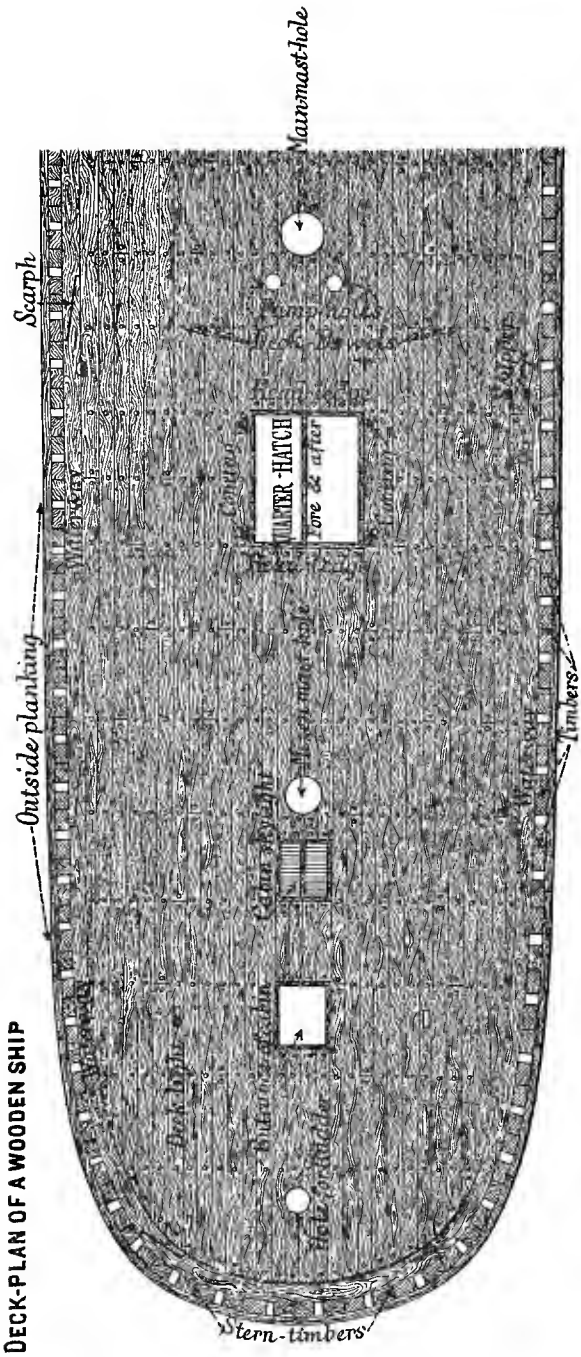
Frame Timbers. The various timbers that compose a frame bend, as the floor-timber, the first, second, third and fourth futtocks, and top-timber, which are united by a proper shift to each other, and bolted through each shift. They are often kept open for the advantage of the air, and fillings fayed between them in wake of the bolts. Some ships are composed of frames only, and are supposed to be of equal strength with others of larger scantling.

Futtocks. The separate pieces of timber of which the frame timbers are composed. They are named according to their situation, that nearest the keel being called the first futtock, the next above the second futtock, etc.

G.

Garboard Strake. That strake of the bottom which is wrought next the keel and rabbets therein.

Gripe. A piece of elm timber that completes the lower part of the knee of the head



DECK-PLAN OF A WOODEN SHIP

and makes a finish with the fore-foot. It bolts to the stem, and is further secured by two plates of copper in the form of a horse-shoe, and therefrom called by that name.

Groundways. Large pieces of timber, generally defective, which are laid upon piles driven in the ground, across the dock or slip, in order to make a good foundation to lay the blocks on upon which the ship is to rest.

Gudgeons. The braces on the stern post on which the rudder hangs.

Gunwale. That horizontal plank which covers the heads of the timbers between the main and fore-drifts.

H.

Half-timbers. The short timbers in the cant bodies which are answerable to the lower futtocks in the square body.

Hanging-knee. Those knees against the sides whose arms hang vertically or perpendicular.

Harpins. Pieces of oak, similar to ribbands, but trimmed and beveled to the shape of the body of the ship, and holding the fore-and-aft cant bodies together until the ship is planked. But this term is mostly applicable to those at the bow; hence arises the phrase, "lean and full harpin," as the ship at this part is more or less acute.

Head. The upper end of anything, but more particularly applied to all the work fitted afore the stem, as the figure, the knee rails, etc. A "scroll head" signifies that there is no carved or ornamental figure at the head, but that the termination is formed and finished off by a *volute*, or scroll turning outwards. A "fiddle head" signifies a similar kind of finish, but with the scroll turning aft or inwards.

Head-ledges. The 'thwartship pieces which frame the hatchways and ladderways.

Head-rails. Those rails in the head which extend from the back of the figure to the cathead and bows, which are not only ornamental to the frame but useful to that part of the ship.

Heel. The lower end of a tree, timber, etc. A ship is also said to *heel* when she is not upright but inclines under a side pressure.

Helm Port Transom. A piece of timber placed across the lower counter inside at the height of the helm port, and bolted through every timber for the security of that part.

Hogging. (See BROKEN-BACKED.) A ship is said to *hog* when the middle part of her keel and bottom are so strained as to curve or arch upwards. This term is therefore opposed to *sagging*, which, applied in a similar manner, means, by a different sort of strain, to curve downwards.

Hold. That part of the ship below the lower deck, between the bulkheads, which is reserved for the stowage of ballast, water and provisions in ships of war, and for that of the cargo in merchant vessels.

Hooding Ends. Those ends of the planks which bury in the rabbets of the stem and stern post.

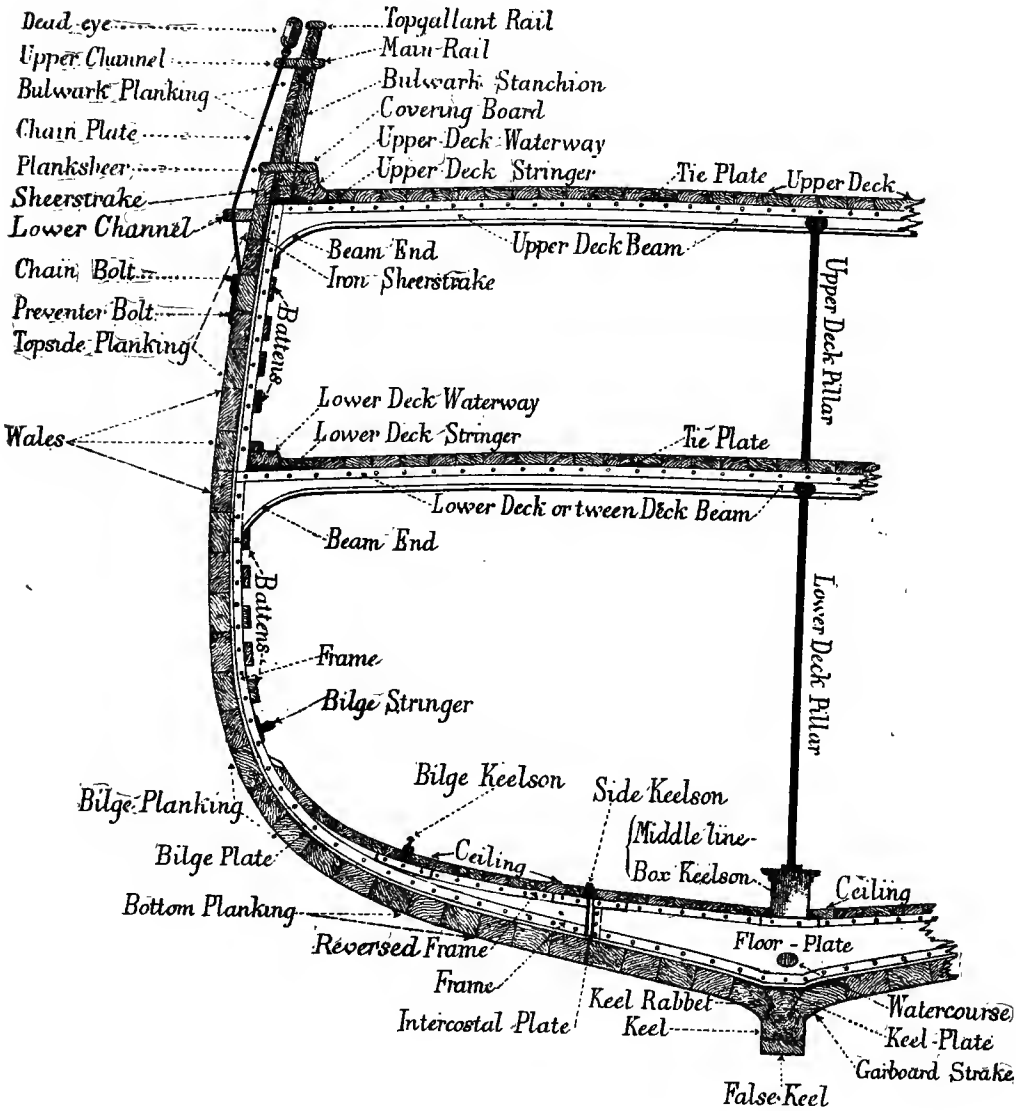
Hook and Butt. The scarphing or laying the ends of timbers over each other.

Horse-iron. An iron fixed in a handle, and used with a beetle by caulkers, to *horse-up* or harden in the oakum.

Horse-shoes. Large straps of iron or copper shaped like a horse-shoe and let into the stem and gripe on opposite sides, through which they are bolted together to secure the gripe to the stem.

Hull. The whole frame or body of a ship, exclusive of the masts, yards, sails and rigging.

MIDSHIP SECTION OF A COMPOSITE VESSEL.



I.

In-and-out. A term sometimes used for the scantling of the timbers the moulding way, but more particularly applied to those bolts in the knees, riders, etc., which are driven through the ship's sides, or athwarthships, and therefore called *in-and-out bolts.*

Inner Post. A piece of oak timber, brought on and fayed to the foreside of the main stern-post, for the purpose of seating the transoms upon it. It is a great security to the ends of the planks, as the main post is seldom sufficiently afore the rabbet for that purpose, and is also a great strengthener to that part of the ship.

K.

Keel. The main and lower timber of a ship, extending longitudinally from the stem to the stern-post. It is formed of several pieces, which are scarphed together endways, and form the basis of the whole structure. Of course it is usually the first thing laid down upon the blocks for the construction of the ship.

Keelson, or, more commonly, **Kelson.** The timber, formed of long square pieces of oak, fixed within the ship exactly over the keel (and which may, therefore, be considered as the counterpart of the latter) for binding and strengthening the lower part of the ship, for which purpose it is fitted to, and laid upon, the middle of the floor timbers and bolted through the floors and keel.

Knees. The crooked pieces of oak timber by which the ends of the beams are secured to the sides of the ship. Of these such as are fayed vertically to the sides are called *hanging-knees,* and such as are fixed parallel to, or with the hang of, the deck, are called *lodging-knees.*

Knee of the Head. The large flat timber fayed edgeways upon the fore-part of the stem. It is formed by an assemblage of pieces of oak coaked or tabled together edgewise, by reason of its breadth, and it projects the length of the head. Its fore-part should form a handsome serpentine line, or inflected curve. The principal pieces are named the *mainpiece* and *lacing.*

Knight Heads, or Bollard Timbers. The timbers next the stem on each side, and continued high enough to form a support for the bowsprit.

L.

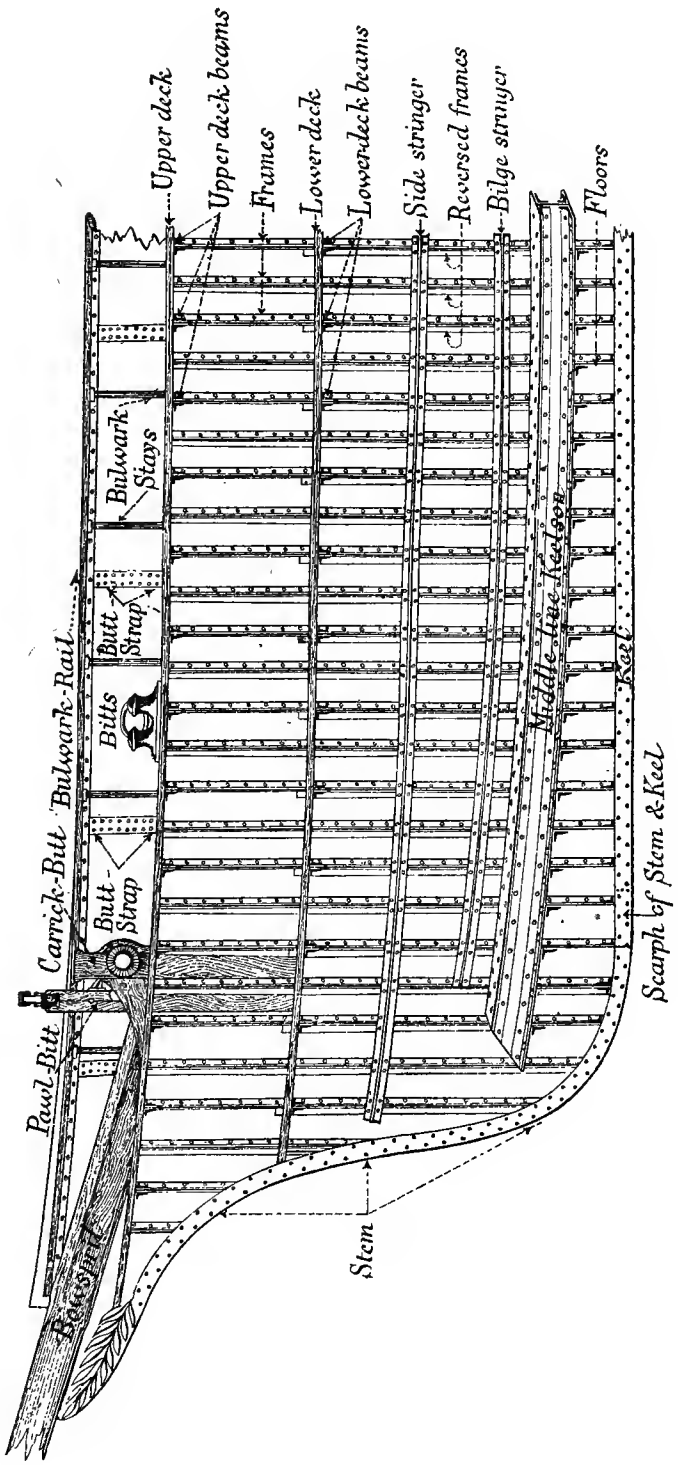
Laborsome. Subject to *labor,* or to pitch and roll violently in a heavy sea, by which the masts, and even the hull, may be endangered. For, by a series of heavy rolls the rigging becomes loosened, and the masts at the same time may strain upon the shrouds with an effort which they will be unable to resist, to which may be added that the continual agitation of the vessel loosens her joints and makes her extremely leaky.

Lacing. 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.

Lap-over or Upon. The mast carlings are said to *lap upon* the beams by reason of their great depth, and head-ledges at the ends *lap over* the coamings.

Lap-sided. A term expressive of the condition of a vessel when she will not swim upright, owing to her sides being unequal.

FORE-FRAMING OF AN IRON SAILING VESSEL.



Lateral Resistance. The resistance of the water against the sides of a vessel in a direction perpendicular to her length.

Launching-planks. A set of planks mostly used to form the platform on each side of the ship, whereon the bilgeways slide for the purpose of launching.

Laying-off, or Laying-down. The act of delineating the various parts of the ship to its true size upon the mould-loft floor, from the draft given for the purpose of making the moulds.

Ledges. Oak or fir scantling used in framing the decks, which are let into the carlings athwartships. The ledges for gratings are similar, but arch or round up agreeably to the head-ledges.

Lengthening. The operation of separating a ship athwartships and adding a certain portion to her length. It is performed by clearing or driving out all the fastenings in wake of the butts of those planks which may be retained, and the others are cut through. The after-end is then drawn apart to a limited distance equal to the additional length proposed. The keel is then made good, the floors crossed, and a sufficient number of timbers raised to fill the vacancy produced by the separation. The kelson is then replaced to give good shift to the new scarphs of the keel, and as many beams as may be necessary are placed across the ship in the new interval, and the planks on the outside are placed with a proper shift. The clamps and footwaling within the ship are then supplied, the beams kneed, and the ship completed in all respects as before.

Let-in. To fix or fit one timber or plank into another, as the ends of carlings into the beams, and the beams into the clamps, vacancies being made in each to receive the other.

Level Lines. Lines determining the shape of a ship's body horizontally, or square from the middle line of the ship.

Limber Passage. A passage or channel formed throughout the whole length of the floor, on each side of the keelson, for giving water a free communication to the pumps. It is formed by the *limber-strake* on each side, a thick strake wrought next the keelson, from the upper side of which the depth in the hold is always taken. This strake is kept at about eleven inches from the keelson, and forms the passage fore-and-aft which admits the water with a fair run to the pump-well. The upper part of the limber passage is formed by the *limber boards*, which are made to keep out all dirt and other obstructions. These boards are composed of short pieces of oak plank, one edge of which is fitted by a rabbet into the limber-strake, and the other edge beveled with a descent against the keelson. They are fitted in short pieces for the convenience of taking up any one or more readily in order to clear away any obstruction in the passage. When the limber boards are fitted care should be taken to have the butts in those places where the bulkheads come, as there will be then no difficulty in taking those up which come near the bulkheads. A hole is bored in the middle of each butt to admit the end of a crow for prizing it up when required. To prevent the boards from being displaced, each should be marked with a line corresponding with one on the limber-strake.

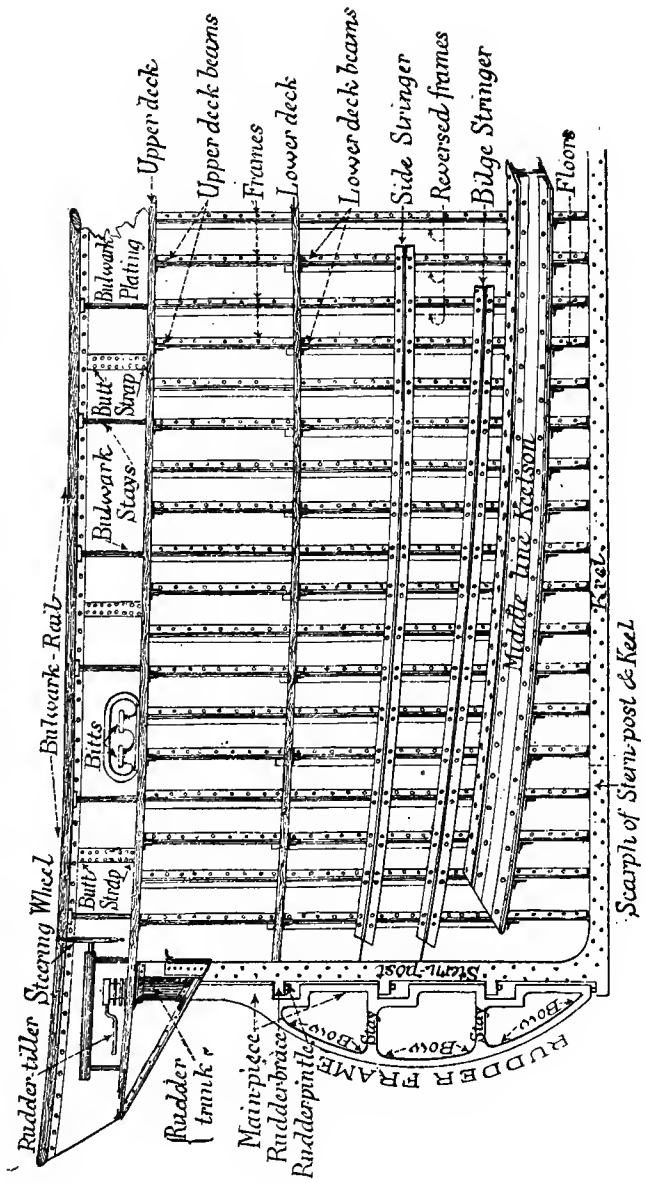
Limber Holes are square grooves cut through the underside of the floor-timber, about nine inches from the side of the keel on each side, through which water may run toward the pumps in the whole length of the floors. This precaution is requisite in merchant ships only, where small quantities of water, by the heeling of the ship, may come through the ceiling and damage the cargo. It is for this reason that the lower futtocks of merchant ships are cut off short of the keel.

Lips of Scarphs. The substance left at the ends which would otherwise become sharp and be liable to split; and in other cases could not bear caulking as the scarphs of the keel, stem, etc.

Loof. That part of a vessel where the planks begin to bend as they approach the stern.

Long Timbers. Timbers in the cant bodies, reaching from the dead-wood to the head of the second futtock.

AFTER-FRAMING OF AN IRON SAILING VESSEL.



M.

Main Breadth. The broadest part of the ship at any particular timber or frame, which is distinguished on the sheer-draught by the upper and lower heights of breadth lines.

Main Wales. The lower wales, which are generally placed on the lower breadth, and so that the main deck knee-bolts may come into them.

Manger. An apartment extending athwart the ship immediately within the hawse-holes. It serves as a fence to interrupt the passage of water which may come in at the hawse-holes, or from the cable when heaving in; and the water thus prevented from running aft is returned into the sea by the manger scuppers, which are larger than the other scuppers on that account.

Mauls. Large hammers used for driving treenails, having a steel face at one end and a point or pen drawn out at the other. Double-headed mauls have a steel face at each end, of the same size, and are used for driving of bolts, etc.

Meta-centre. That point in a ship above which the centre of gravity must by no means be placed; because if it were the vessel would be liable to overset. The *meta-centre*, which has also been called the *shifting-centre*, depends upon the situation of the centre of cavity; for it is that point where a vertical line drawn from the centre of cavity cuts a line passing through the centre of gravity, and being perpendicular to the keel.

Middle Line. A line dividing the ship exactly in the middle. In the horizontal or half-breadth plan, it is a right line bisecting the ship from the stem to the stern-post; and, in the plane of projection, or body plan, it is a perpendicular line bisecting the ship from the keel to the height of the top of the side.

Momenta, or **Moments.** The plural of *momentum*.

Momentum of a heavy body, or of any extent considered as a heavy body, is the product of the weight multiplied by the distance of its centre of gravity from a certain point, assumed at pleasure, which is called the centre of momentum, or from a line which is called the axis of the momentum.

Mortise. A hole or hollow made of a certain size and depth in a piece of timber, etc., in order to receive the end of another piece with a tenon fitted exactly to fill it.

Moulds. Pieces of deal or board made to the shape of the lines on the mould loft floor, as the timbers, harpins, ribbands, etc., for the purpose of cutting out the different pieces of timber, etc., for the ship. Also the thin, flexible pieces of pear-tree or box used in constructing the draughts and plans of ship, which are made in various shapes, viz., to the segments of circles from one foot to 22 feet radius, increasing six inches on each edge, and numerous elliptical curves, with other figures.

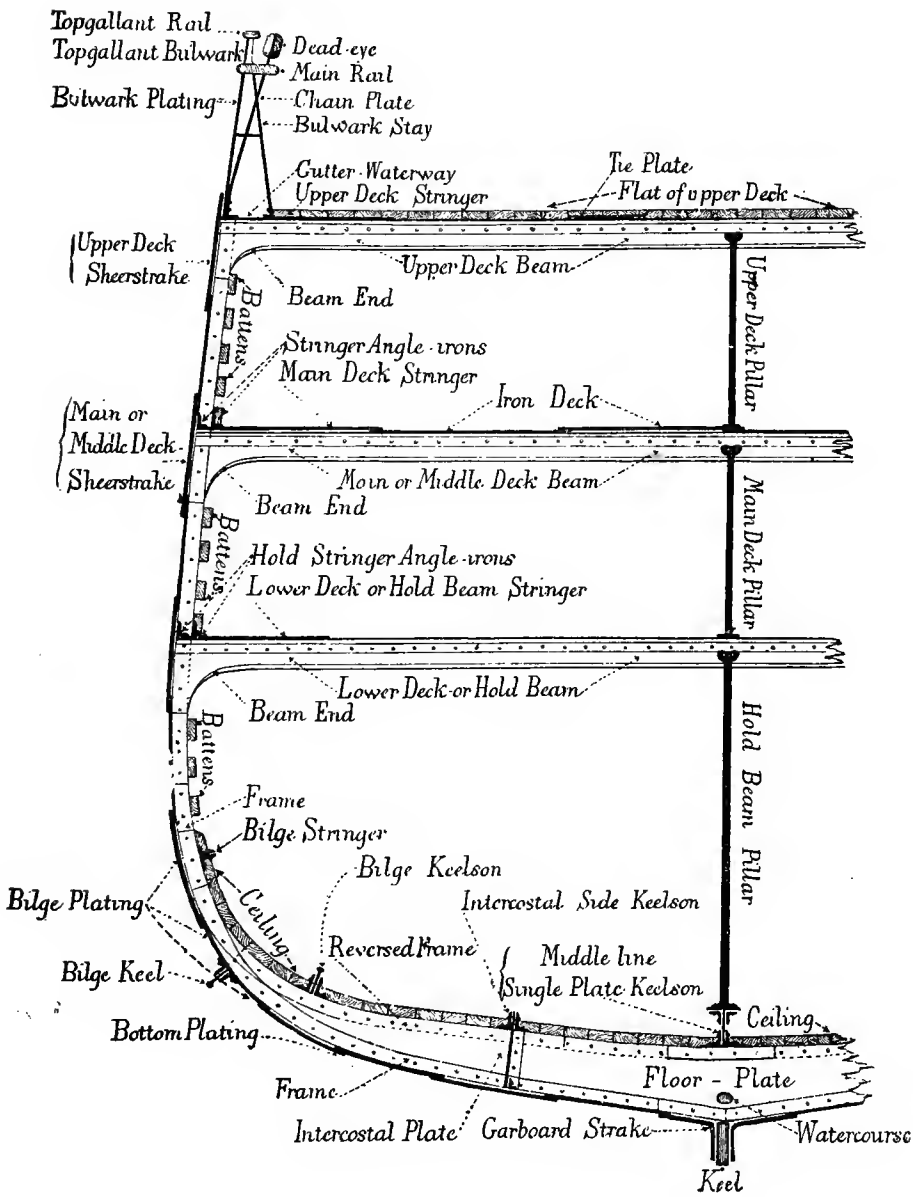
Moulded. Cut to the mould. Also the size or bigness of the timbers that way the mould is laid. (See SIDED.)

Munions. The pieces that are placed up and down to divide the panels in framed bulkheads.

N.

Nails. Iron pins of various descriptions for fastening board, plank, or iron work, viz., *deck nails*, or *spike nails*, which are from 4 inches and a half to 12 inches long, have snug heads, and are used for fastening planks and the flat of the decks. *Weight nails* are similar to deck nails, but not so fine, have square heads, and are used for fastening cleats, etc. *Ribband nails* are similar to weight nails, with this difference, that they have large round heads, so as to be more easily drawn. They are used for fastening the ribbands, etc. *Clamp nails* are short stout nails, with large heads, for fastening

MIDSHIP SECTION OF AN IRON SAILING VESSEL.



iron clamps. *Port nails*, double and single, are similar to clamp nails, and used for fastening iron-work. *Rudder nails* are also similar, but used chiefly for fastening the pintles and braces. *Filling nails* (obsolete) are generally of cast-iron, and driven very thick in the bottom planks instead of copper sheathing. *Sheathing nails* (obsolete) are used to fasten wood sheathing on the ship's bottom to preserve the plank and prevent the filling nails from tearing it too much. *Nails of sorts* are 4, 6, 8, 10, 24, 30 and 40 penny nails, all of different lengths, and used for nailing board, etc. *Scupper nails* are short nails, with very broad heads, used to nail the flaps of the scuppers. *Lead nails* are small round-headed nails for nailing of lead. *Flat nails* are small sharp-pointed nails, with flat, thin heads, for nailing the scarphs of moulds. *Sheathing nails* for nailing copper sheathing are of metal, cast in moulds, about one inch and a quarter long; the heads are flat on the upper side and counter-sunk below; the upper side is polished to obviate the adhesion of weeds. *Boat nails*, used by boat-builders, are of various lengths, generally rose-headed, square at the points, and made both of copper and iron.

O.

Oakum. Old rope, untwisted and loosened like hemp, in order to be used in caulking.

Over-launch. To run the butt of one plank to a certain distance beyond the next but above or beneath it, in order to make stronger work.

P

Palletting. A slight platform, made above the bottom of the magazine, to keep the powder from moisture.

Palls. Stout pieces of iron, so placed near a capstan or windlass as to prevent a recoil, which would overpower the men at the bars when heaving.

Partners. Those pieces of thin plank, etc., fitted into a rabbet in the mast or capstan-carlings for the purpose of wedging the mast and steadying the capstan. Also any plank that is thick, or above the rest of the deck, for the purpose of steadying whatever passes through the deck, as the pumps, bowsprit, etc.

Pay. To lay on a coat of tar, etc., with a mop or brush in order to preserve the wood and keep out water. When one or more pieces are scarphed together, as the beams, etc., the inside of the scarphs are payed with tar as a preservative; and the seams, after they are caulked, are payed with pitch to keep the water from the oakum, etc.

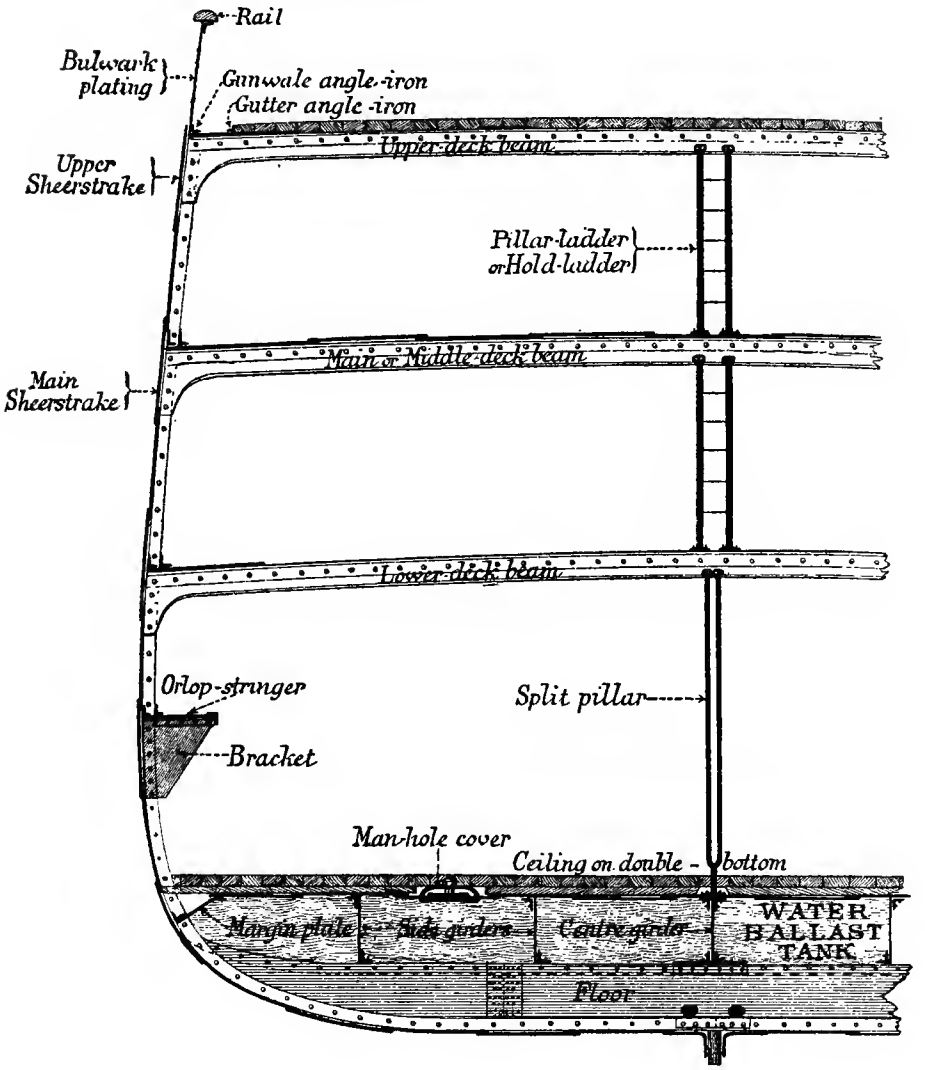
Pink. A ship with a very narrow round stern; whence all vessels, however small, having their sterns fashioned in this manner, are said to be *pink-sterned.*

Pintles. Straps of mixed metal, or of iron, fastened on the rudder, in the same manner as the braces on the stern post, having a stout pin or hook at the ends, with the points downwards to enter in and rest upon the braces on which the rudder traverses or turns, as upon hinges, from side to side. Sometimes one or two are shorter than the rest, and work in a socket brace, whereby the rudder turns easier. The latter are called *dumb-pintles.* Some are bushed.

Pitch. Tar, boiled to a harder and more tenacious substance.

Pitching. The inclination or vibration of the ship lengthwise about her centre of gravity; or the motion by which she plunges her head and after-part alternately into the hollow of the sea. This is a very dangerous motion, and when considerable, not only retards the ship's way, but endangers the mast, and strains the vessel.

VESSEL WITH DOUBLE-BOTTOM ON TOP OF ORDINARY FLOORS



Planking. Covering the outside of the timbers with plank sometimes quaintly called *skinning,* the plank being the outer coating, when the vessel is not sheathed.

Plank-sheers, or Plank-sheer. The pieces of plank laid horizontally over the timber-heads of the quarter-deck and forecastle, for the purpose of covering the top of the side, hence sometimes called *covering-boards.*

Point-velique. That point where, in a direct course, the centre of effort of all the sails should be found.

Poppets. Those pieces (mostly fir) which are fixed perpendicularly between the ship's bottom and the bilgeways, at the fore and aftermost parts of the ship, to support her in launching.

Pump. The machine, fitted in the wells of ships, to draw water out of the hold.

Pump Cisterns. Cisterns fixed over the heads of the pumps, to receive the water until it is conveyed through the sides of the ship by the pump-dales.

Pump-dales. Pipes fitted to the cisterns, to convey the water from them through the ship's sides.

Q.

Quarter-galleries. The projections from the quarters abaft, fitted with sashes and ballusters, and intended both for convenience, and ornament to the aft part of the ship.

Quick Work. That part of a vessel's sides which is above the chain-wales and decks—so called in ship-building. Also the term applied to that part of a vessel that is under water when she is laden.

Quicken. To give anything a greater curve. For instance, "*to quicken the sheer*" is to shorten the radius by which the curve is struck. This term is therefore opposed to *straightening the sheer.*

R.

Rabbet. A joint made by a groove, or channel, in a piece of timber cut for the purpose of receiving and securing the edge or ends of the planks, as the planks of the bottom into the keel, stem, or stern post, or the edge of one plank into another.

Rag-bolt. A sort of bolt having its point jagged or barbed to make it hold the more securely.

Rake. The overhanging of the stem or stern beyond a perpendicular with the keel, or any part or thing that forms an obtuse angle with the horizon.

Ram-line. A small rope or line sometimes used for the purpose of forming the sheer or hang of the decks, for setting the beams fair, etc.

Rasing. The act of marking by a mould on a piece of timber; or any marks made by a tool called a *rasing-knife.*

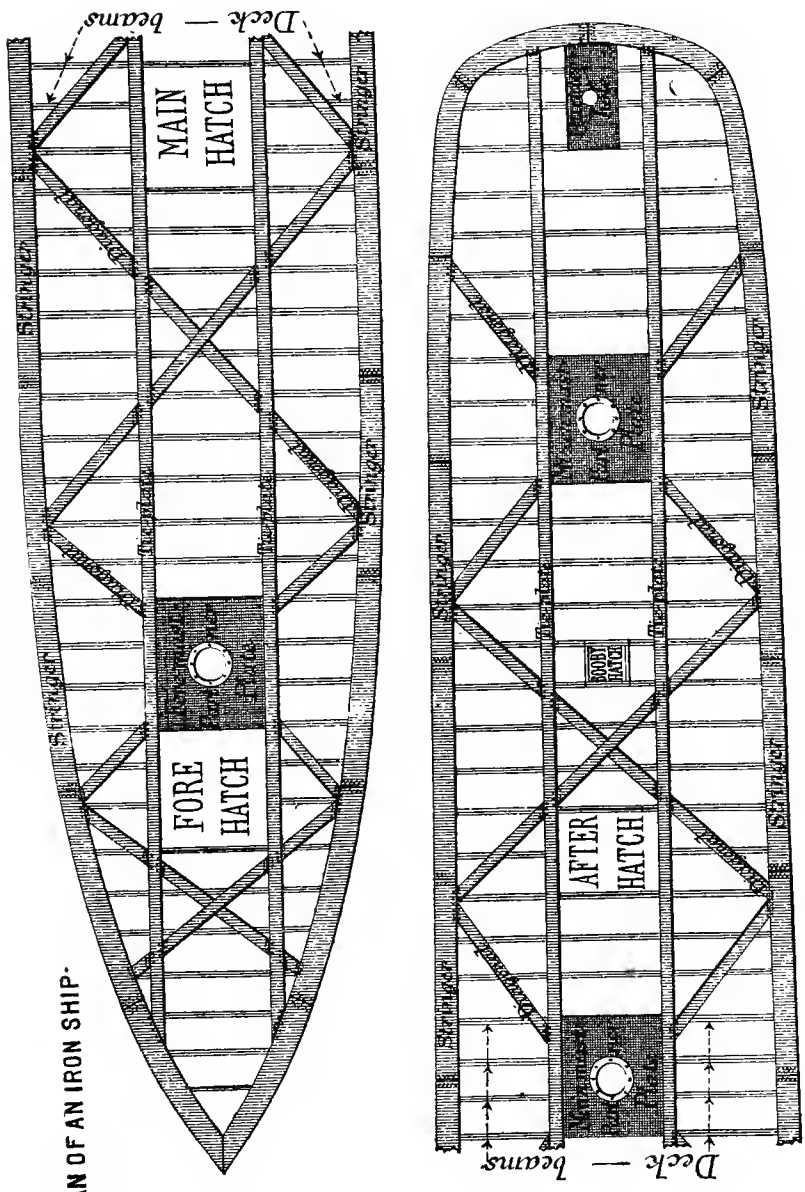
Reconcile. To make one piece of work answer fair with the moulding or shape of the adjoining piece; and, more particularly, in the reversion of curves.

Reeming. A term used by caulkers for opening the seams of the planks, that the oakum may be more readily admitted.

Reeming-irons. The large irons used by caulkers in opening the seams.

Rends. Large open splits or shakes in timbers; particularly in plank, occasioned by its being exposed to the wind or sun, etc.

Ribbands. The longitudinal pieces of fir, about five inches square, nailed to the timbers of the square body (those of the same description in the cant body being



DECK-PLAN OF AN IRON SHIP.

shaped by a mould and called *harpins*) to keep the body of the ship together, and in its proper shape, until the plank is brought on. The shores are placed beneath them. They are removed entirely when the planking comes on. The difference between the *cant ribbands* and *square* or *horizontal ribbands* is, that the latter are only ideal, and used in laying-off.

Ribband-lines. The same with diagonal lines.

Rising. A term derived from the shape of a ship's bottom in general, which gradually narrows or becomes sharper towards the stem and the stern-post. On this account it is that the floor, towards the extremities of the ship, is raised or lifted above the keel; otherwise, the ship would be so very acute as not to be provided from timber with sufficient strength in the middle, or cutting-down. The floor timbers forward and abaft, with regard to their general form and arrangement, are therefore gradually lifted or raised upon a solid body of wood called the *dead* or *rising wood*, which must, of course, have more or less rising as the body of the ship assumes more or less fullness or capacity. (See DEAD-RISING.)

Riders. Interior timbers placed occasionally opposite to the principal ones, to which they are bolted, reaching from the keelson to the beams of the lower deck.

Rising of Boats is a narrow strake of board fastened within side to support the thwarts.

Rising Floors. The floors forward and abaft, which, on account of the rising of the body, are the most difficult to be obtained, as they must be deeper in the throat or at the cutting-down to preserve strength.

Rising-line. An elliptical line, drawn on the plan of elevation, to determine the sweep of the floor-heads throughout the ship's length, which accordingly ascertains the shape of the bottom with regard to its being full or sharp.

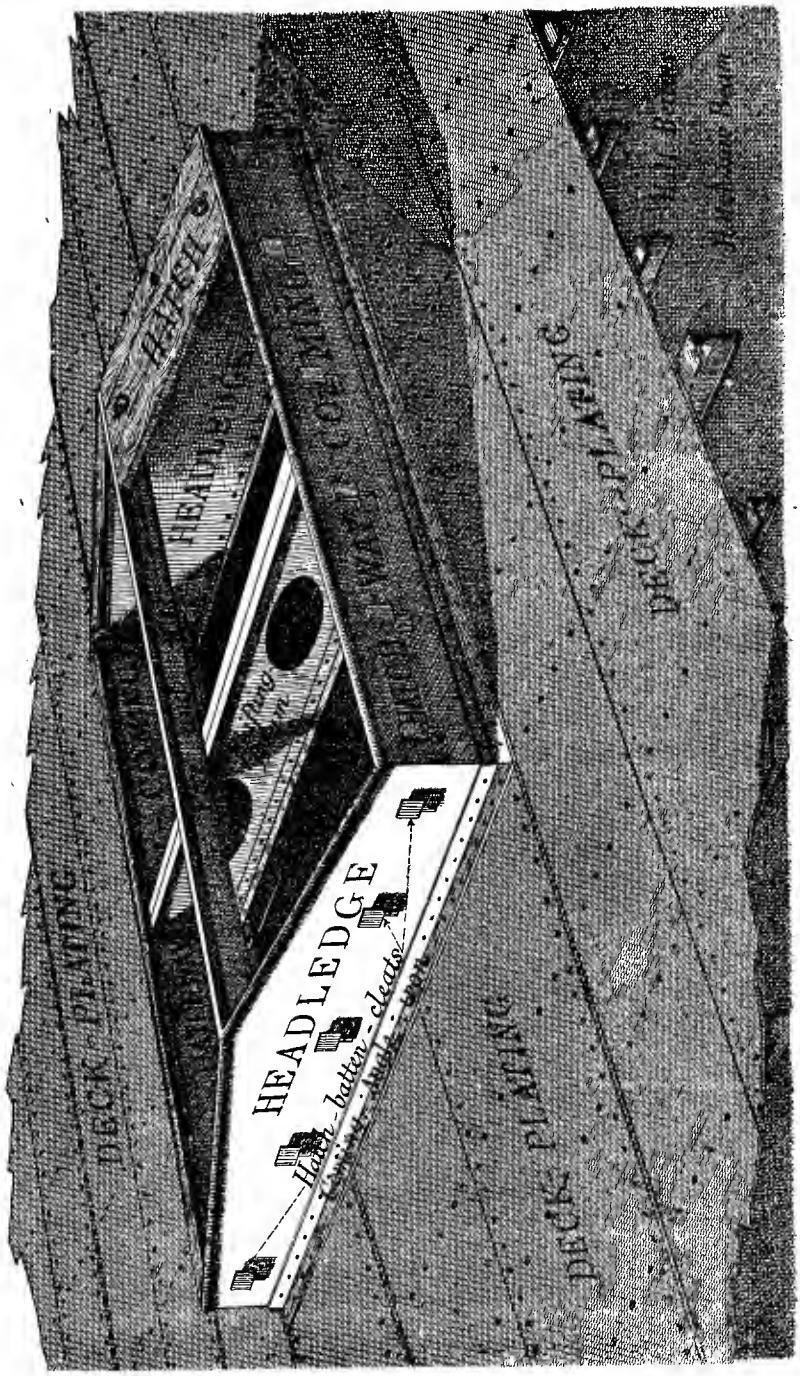
Rolling. That motion by which a ship vibrates from side to side. Rolling is therefore a sort of revolution about an imaginary axis passing through the centre of gravity of the ship; so that the nearer the centre of gravity is to the keel, the more violent will be the roll, because the centre about which the vibrations are made is placed so low in the bottom, that the resistance made by the keel to the volume of water which it displaces in rolling, bears very little proportion to the force of the vibration above the centre of gravity, the radius of which extends as high as the mast-heads. But, if the centre of gravity is placed higher above the keel, the radius of the vibration will not only be diminished, but such an additional force to oppose the motion of rolling will be communicated to that part of the ship's bottom as may contribute to diminish this movement considerably. It may be observed that, with respect to the formation of a ship's body, that shape which approaches nearest to a circle is the most liable to roll; as it is evident that, if this be agitated in the water, it will have nothing to restrain it; because the rolling or rotation about its centre displaces no more water than when it remains upright; and, hence, it becomes necessary to increase the depth of the keel, the rising of the floors, and the dead-wood afore and abaft.

Room and Space. The distance from the moulding edge of one timber to the moulding edge of the next timber, which is always equal to the breadth of two timbers, and two to four inches more. The room and space of all ships that have ports should be so disposed that the scantling of the timber on each side of the lower ports, and the size of the ports fore-and-aft, may be equal to the distance of two rooms and spaces.

Rough-tree Rails. In men-of-war the broad plank running fore-and-aft covering the heads of the top timbers, thus forming the bottom of the hammock netting. In merchant vessels the rails along the waist and quarters, nearly breast high, to prevent persons from falling overboard. This term originated from the practice in merchant vessels of carrying their rough or spare gear in crutch irons along their waist.

Rudder-chocks. Large pieces of fir, to fay or fill up the excavation on the side of the rudder in the rudder hole; so that the helm being in midships the rudder may be fixed, and supposing the tiller broke another might thus be replaced.

Run. The narrowing of the ship abaft, as of the floor towards the stern-post, where it



HATCHWAY, PART OF AN IRON DECK ETC.

becomes no broader than the post itself. This term is also used to signify the running or drawing of a line on the ship, or mould loft floor, as "to *run* the wale line," or deck line, etc.

Rung Heads. The upper ends of the floor timbers.

S.

Scantling. The dimensions given for the timbers, planks, etc. Likewise all quartering under five inches square, which is termed *scantling;* all above that size is called *carling.*

Scarphing. The letting of one piece of timber or plank into another with a lap, in such a manner that both may appear as one solid and even surface, as keel-pieces, stem-pieces, clamps, etc.

Scuppers. Lead pipes let through the ship's side to convey the water from the decks.

Seams. The openings between the edges of the planks when wrought.

Seasoning. A term applied to a ship kept standing a certain time after she is completely framed and dubbed out for planking, which should never be less than six months when circumstances will permit. *Seasoned plank or timber* is such as has been cut down and sawn out one season at least, particularly when thoroughly dry and not liable to shrink.

Seating. That part of the floor which fays on the dead-wood; and of a transom which lays against the post.

Sending, or 'Scending. The act of pitching violently into the hollows or intervals of the waves.

Setting, or Setting-to. The act of making the planks, etc., fay close to the timbers by driving wedges between the plank, etc., and a wrain-staff. Hence we say, "Set or set away," meaning to exert more strength. The power or engine used for the purpose of setting is called a *sett,* and is composed of two ring-bolts and a wrain-staff, cleats and lashings.

Shaken, or Shaky. A natural defect in plank or timber when it is full of splits or clefts, and will not bear fastening or caulking.

Sheathing. A thin sort of doubling, or casing, of fir-board or sheet copper, and sometimes of both, over the ship's bottom, to protect the planks from worms, etc. Tar and hair, or brown paper dipped in tar and oil, is laid between the sheathing and the bottom.

Sheer. The longitudinal curve or hanging of a ship's side in a fore-and-aft direction.

Sheer-draught. The plan of elevation of a ship whereon is described the outboard works, as the wales, sheer-rails, ports, drifts, head, quarters, post, and stem, etc., the hang of each deck inside, the height of the water lines, etc.

Sheer-strake. The strake or strakes wrought in the topside, of which the upper edge is wrought well with the top-timber line, or top of the side, and the lower edge kept well with the upper part of the upper deck ports in midships, so as to be continued whole all fore-and-aft and not cut by the ports. It forms the chief strength of the upper part of the topside, and is therefore always worked thicker than the other strakes, and scarphed with hook and butt between the drifts.

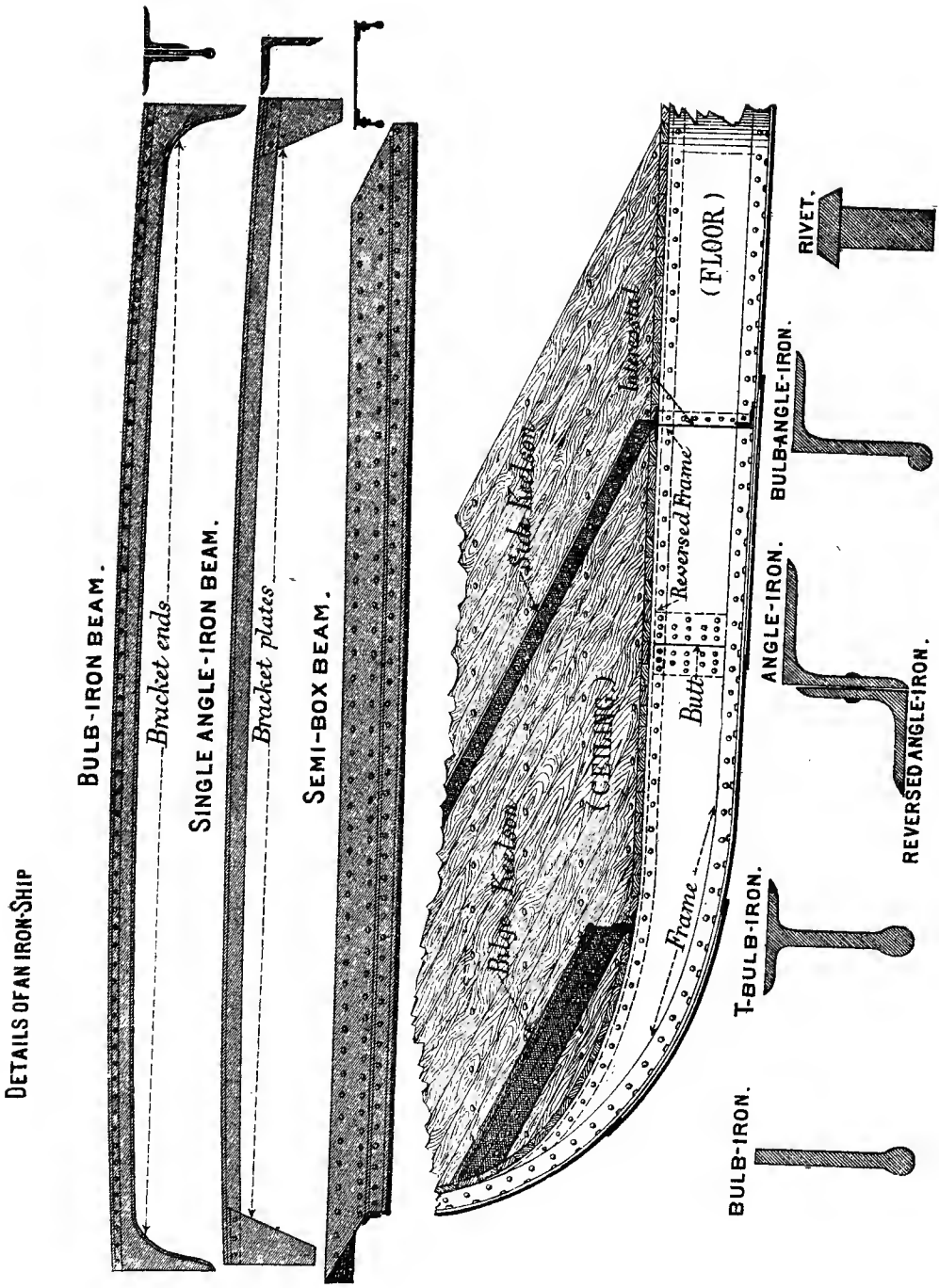
Siding, or Sided. The size or dimensions of timber the contrary way to the moulding or moulded side.

Sirmarks. The different places marked upon the moulds where the respective bevelings are to be applied, as the *lower sirmark, floor sirmark,* etc.

Slabs. Pieces of wood fitted between the whelps.

Sleepers. The knees that connect the transoms to the after-timbers of the ship's quarters.

Sliding Planks. Are the planks upon which the bilgeways slide in launching.


DETAILS OF AN IRON-SHIP
BULB-IRON BEAM.
Bracket ends.
SINGLE ANGLE-IRON BEAM.
Bracket plates.
SEMI-BOX BEAM.
Side Keelson
Bilge Keelson
(CEILING)
Intercostal
(FLOOR)
Reversed Frame
Butt
Frame
RIVET.
BULBANGLE-IRON.
ANGLE-IRON.
REVERSED ANGLE-IRON.
T-BULB-IRON.
BULB-IRON.

Slip. The foundation laid for the purpose of building the ship upon, and launching her.

Snape. To hance or bevel the end of anything so as to fay upon an inclined plane.

Snying. A term applied to planks when their edges round or curve upwards. The great sny occasioned in full bows or buttocks is only to be prevented by introducing steelers.

Specific Gravity. The comparative difference in the weight or gravity of two bodies of equal bulk; hence called, also, relative or comparative gravity, because we judge of it by comparing one body with another.

A TABLE OF SPECIFIC GRAVITIES.

Lead	11,325	Ebony	1,177	Rain Water	1,000
Fine Copper	9,000	Pitch	1,150	Oak	925
Gun Metal	8,784	Rosin	1,100	Ash	800
Fine Brass	8,350	Mahogany	1,063	Beech	700
Iron from	7,827 to 7,645	Box Wood	1,030	Elm	600
Cast Iron	7,425	Sea Water	1,030	Fir	548
Sand	1,520	Tar	1,015	Cork	240
Lignum Vitæ	1,327	River Water	1,009	Common Air	1,232

These numbers being the weight of a cubic foot, or 1,728 cubic inches, of each of the bodies in avoirdupois ounces; by proportion the quantity in any other weight, or the weight of any other quantity, may be readily known.

For Example.—Reqnired the contents of an irregular piece of oak, which weighs 76 pounds, or 1,216 ounces.

	Sp. gr. oz.	wt. oz.		cub. in.	cub. in.	
Here as	925	1,216	: :	1,728 :	2,271	= 1 ft. 543 inches cubic, the contents.

Spirketting. A thick strake, or strakes, wrought withinside upon the ends of the beams or waterways. In ships that have ports the spirketting reaches from the waterways to the upper side of the lower sill, which is generally of two strakes, wrought anchor-stock fashion; in this case the planks should always be such as will work as broad as possible, admitting the butts to be about six inches broad.

Sponson. The spaces forward and abaft the paddle-boxes on steamboats. *Sponson beam.* The beam which projects from a steamboat's side and forms the shape of the paddle-boxes. *Sponson rim.* The whale in the steamboat's side upon which the paddle-beam rests and is supported.

Spurs. Pieces of timber fixed on the bilge-ways, their upper ends being bolted to the vessel's sides above the water. Also curved pieces of timber serving as half-beams to support the decks where the whole beams cannot be placed.

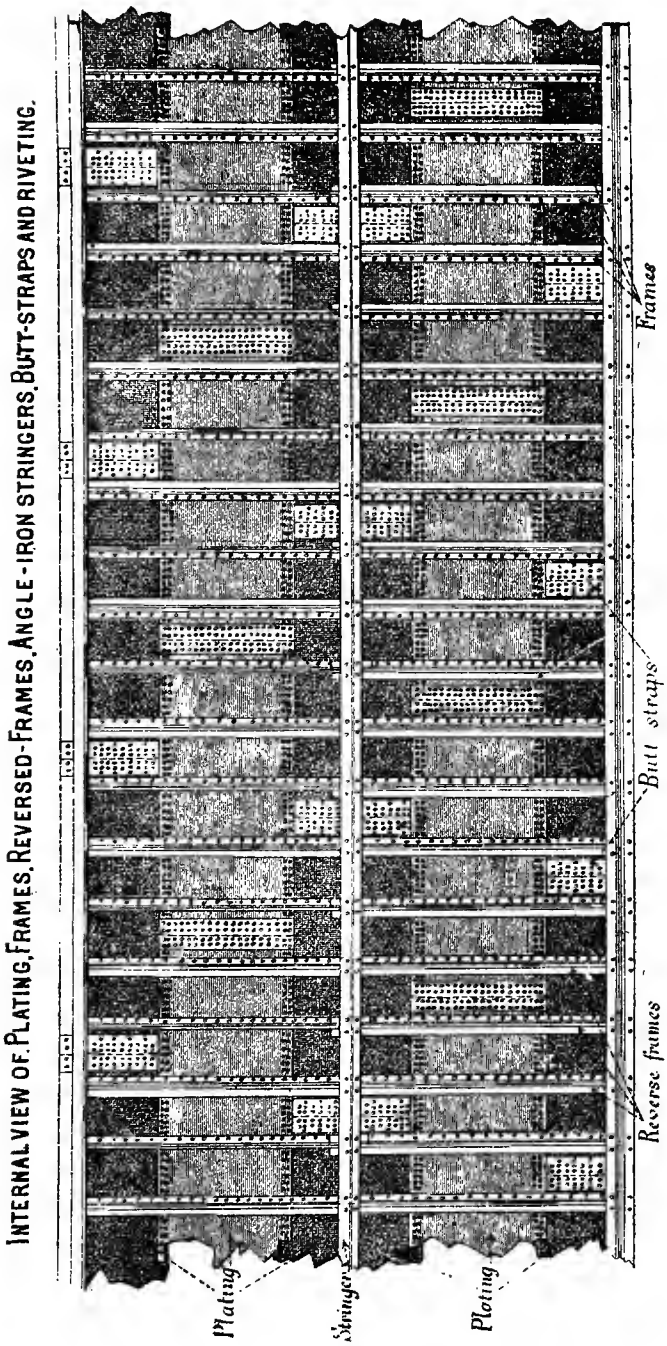
Spur Shoes. Large pieces of timber that come abaft the pump-well.

Square Body. The figure which comprehends all the timbers whose areas or planes are perpendicular to the keel, which is all that portion of a ship between the cant-bodies. (See BODIES.)

Square Timbers. The timbers which stand square with, or perpendicular to, the keel.

Square Tuck. A name given to the after part of a ship's bottom when terminated in the same direction, up and down, as the wing transom, and the plank of the bottom end in a rabbet at the foreside of the fashion-piece; whereas ships with a buttock are round or circular, and the planks of the bottom end upon the wing-transom.

Stability. That quality which enables a ship to keep herself steadily in the water, without rolling or pitching. Stability, in the construction of a ship, is only to be ac-



INTERNAL VIEW OF PLATING, FRAMES, REVERSED-FRAMES, ANGLE-IRON STRINGERS, BUTT-STRAPS AND RIVETING.

quired by fixing the centre of gravity at a certain distance below the meta-centre, because the stability of the vessel increases with the altitude of the meta-centre above the centre of gravity. But when the meta-centre coincides with the centre of gravity the vessel has no tendency whatever to remove out of the situation into which it may be put. Thus, if the vessel be inclined either to the starboard or larboard side, it will remain in that position till a new force is impressed upon it; in this case, therefore, the vessel would not be able to carry sail, and is, consequently, unfit for the purposes of navigation. If the meta-centre falls below the common centre of gravity, the vessel will immediately overset.

Standard. An inverted knee placed above the deck instead of beneath it, as a *bitt-standard*, etc.

Stanchions. Upright parts of wood or iron placed so as to support the beams of a vessel. Also upright pieces of timber placed at intervals along the sides of a vessel, to support the bulwarks and rail, and reaching down to the bends, by the side of the timbers to which they are bolted. Also any fixed upright support.

Steeler. A name given to the foremost or aftermost plank, in a strake which drops short of the stem and stern-post, and of which the end or butt nearest the rabbet is worked very narrow, and well forward or aft. Their use is to take out the snying edge occasioned by a full bow or sudden circular buttock.

Stem. The main timber at the fore part of the ship, formed, by the combination of several pieces, into a circular shape, and erected vertically to receive the ends of the bow-planks, which are united to it by means of a rabbet. Its lower end scarphs or boxes into the keel, through which the rabbet is also carried, and the bottom unites in the same manner.

Stemson. A piece of compass timber, wrought on the aft part of the apron within-inside, the lower end of which scarphs into the keelson. Its upper end is continued as high as the middle or upper deck, and its use is to succor the scarphs of the apron, as that does those of the stem.

Steps of the Masts. The steps into which the heels of the masts are fixed, are large pieces of timber. Those for the main and fore masts are fixed across the keelson, and that for the mizzen mast upon the lower deck beams. The holes or mortises into which the masts step, should have sufficient wood on each side to accord in strength with the tenon left at the heel of the mast, and the hole should be cut rather less than the tenon, as an allowance for shrinking.

Steps for the Ship's Side. The pieces of quartering, with mouldings, nailed to the sides amidship, about nine inches asunder, from the wale upwards, for the convenience of persons getting on board.

Stern Frame. The strong frame of timber, composed of the sternpost, transoms and fashion-pieces, which form the basis of the whole stern.

Stern-post. The principal piece of timber in the stern frame on which the rudder is hung, and to which the transoms are bolted. It therefore terminates the ship below the wing-transom, and its lower end is tenoned into the keel.

Steving. The elevation of a ship's cathead or bowsprit; or the angle which either makes with the horizon, generally called *steere*.

Stopping-up. The poppets, timber, etc., used to fill up the vacancy between the upper side of the bilgeways and the ship's bottom, for supporting her when launching.

Stopwater. A treenail through the stern and keel at their joining; also through the joining of the stern-post and keel.

Straight of Breadth. The space before and abaft dead-flat, in which the ship is the same uniform breadth, or of the same breadth as at × or dead-flat. (See DEAD-FLAT.)

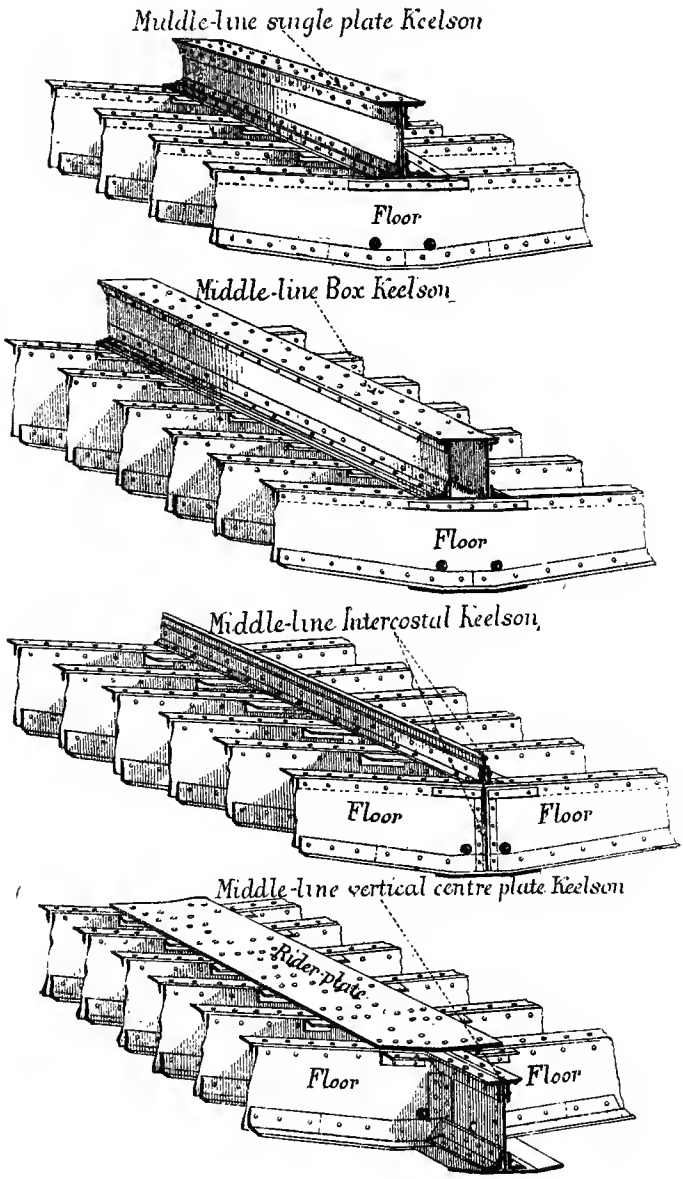
Strake. One breadth of plank wrought from one end of the ship to the other, either within or without board.

Stringers. Strakes of plank round the inside of a vessel close to the under side of the beams.

Supporters. The knee timbers under the cat-heads.

Syphering. Lapping the edges of planks over each other for a bulkhead.

DIFFERENT KEELSONS



T.

Tabling. Letting one piece of timber into another by alternate scores of projections from the middle, so that it cannot be drawn asunder either lengthwise or sidewise.

Taffarel, or Taff-rail. The upper part of the ship's stern, usually ornamented with carved work or mouldings, the ends of which unite to the quarter-pieces.

Tasting of Plank or Timber. Chipping it with an adze, or boring it with a small auger, for the purpose of ascertaining its quality or defects.

Teach. A term applied to the direction that any line, etc., seems to point out.—Thus we say, "Let the line or mould *teach fair* to such a spot, raise," etc.

Tenon. The square part at the end of one piece of timber diminished so as to fix in a hole of another piece, called a mortise, for joining or fastening the two pieces together.

Thickstuff. A name for sided timber exceeding four inches, but not being more than twelve inches, in thickness.

Throat. The inside of knee timber at the middle or turn of the arms. Also the midship part of the floor timbers.

Top and Butt. A method of working English plank so as to make good conversion. As the plank runs very narrow at the top clear of sap, this is done by disposing the top end of every plank within six feet of the butt end of the plank above or below it, letting every plank work as broad as it will hold clear of sap, by which method only can every other seam produce a fair edge.

Topgallant Forecastle. The small deck built level with the rail at the forward part of the ship.

Topside. A name given to all that part of a ship's side above the main-wales.

Top-timbers. The timbers which form the topside. The first general tier which reach the top are called the long top-timbers, and those below are called the short top-timbers. (See FRAMES.)

Top Timber Line. The curve limiting the height of the sheer at the given breadth of the top-timbers.

Touch. The broadest part of a plank worked top and butt, which place is six feet from the butt end. Or, the middle of a plank worked anchor-stock fashion. Also the sudden angles of the stern-timbers at the counters, etc.

Trail-boards. A term for the carved work, between the cheeks, at the heel of the figure.

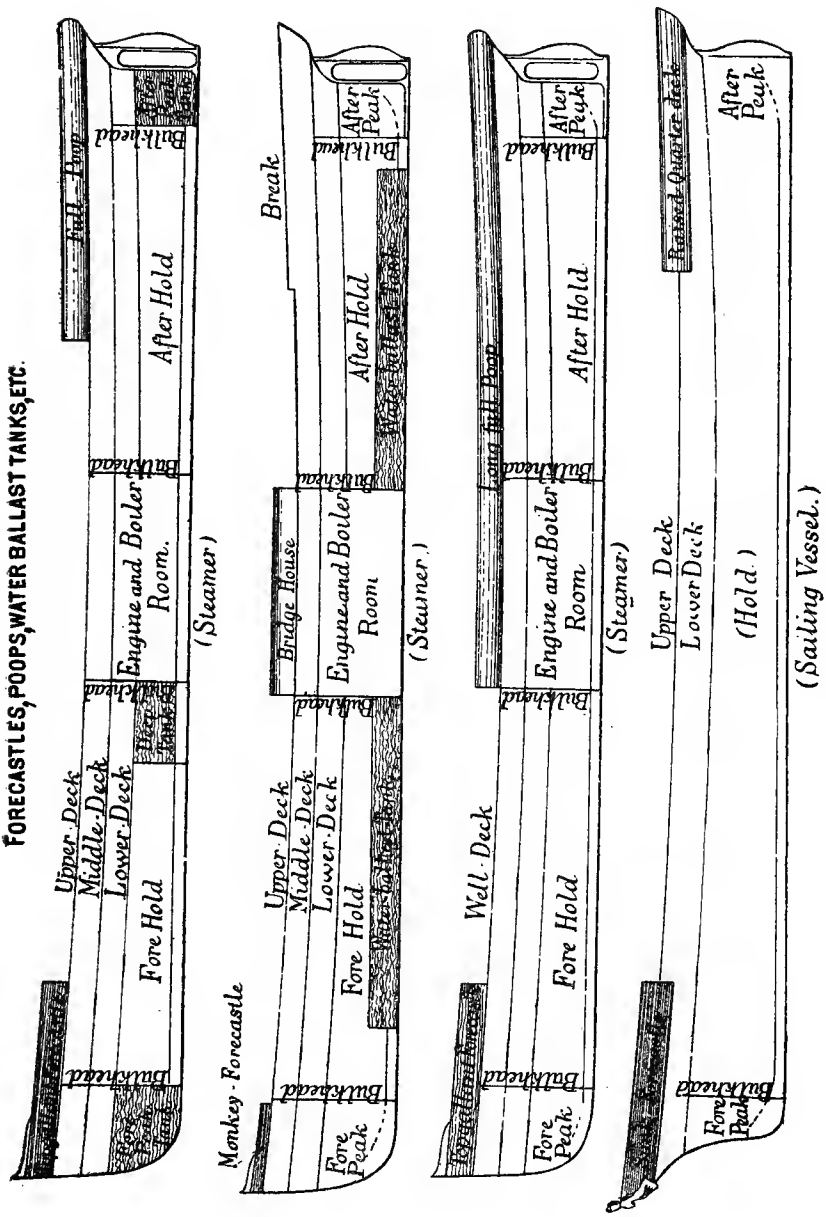
Transoms. The thwartship timbers which are bolted to the stern-post in order to form the buttock; and of which the curves, forming the *round aft*, are represented on horizontal or half-breadth plan of the ship.

Tread of the Keel. The whole length of the keel upon a straight line.

Treenails. Cylindrical oak pins driven through the planks and timbers of a vessel to fasten or connect them together. These certainly make the best fastening when driven quite through and caulked or wedged inside. They should be made of the very best oak, cut near the butt, and perfectly dry or well seasoned.

Tuck. The aft part of the ship where the ends of the planks of the bottom are terminated by the tuck-rail, and all below the wing-transom when it partakes of the figure of the wing-transom as far as the fashion-pieces. (See SQUARE TUCK.)

Tuck-rail. The rail which is wrought well with the upper side of the wing-transom, and forms a rabbet for the purpose of caulking the butt ends of the planks of the bottom.


FORECASTLES, POOPS, WATER BALLAST TANKS, ETC.
Upper Deck
Middle Deck
Lower Deck
Fore Hold
Bulkhead
Engine and Boiler Room.
After Hold
(Steamer)
Monkey Forecastle
Break
Bridge House
Water Ballast Tanks
Fore Peak
After Peak
Well Deck
Long Full Poop
Raised Quarter deck
Upper Deck
Lower Deck
(Hold.)
(Sailing Vessel.)

W.

Wall-sided. A term applied to the topsides of the ship when the main breadth is continued very low down and very high up, so that the topsides appear straight and upright like a wall.

Wash-board. A shifting strake along the topsides of a small vessel, used occasionally to keep out the sea.

Water Lines, or Lines of Flotation. Those horizontal lines supposed to be described by the surface of the water on the bottom of a ship, and which are exhibited at certain depths, upon the sheer-draught. Of these the most particular are those denominated the *light water line* and the *load water line;* the former, namely, the light water line, being that line which shows the depression of the ship's body in the water when light or unladen, as when first launched; and the latter, which exhibits the same when laden with her guns and ballast or cargo. In the half-breadth plan these lines are curves limiting the half-breadth of the ship at the height of the corresponding lines in the sheer plan.

Water Ways. The edge of the deck next the timbers, which is wrought thicker than the rest of the deck, and so hollowed to the thickness of the deck as to form a gutter or channel for the water to run through to the scuppers.

Whole Moulded. A term applied to the bodies of those ships which are so constructed that one mould made to the midship bend, with the addition of a floor hollow, will mould all the timbers, below the main breadth, in the square body.

Wings. The places next the side upon the orlop, usually parted off in ships of war, that the carpenter and his crew may have access round the ship in time of action, to plug up shot-holes, etc.

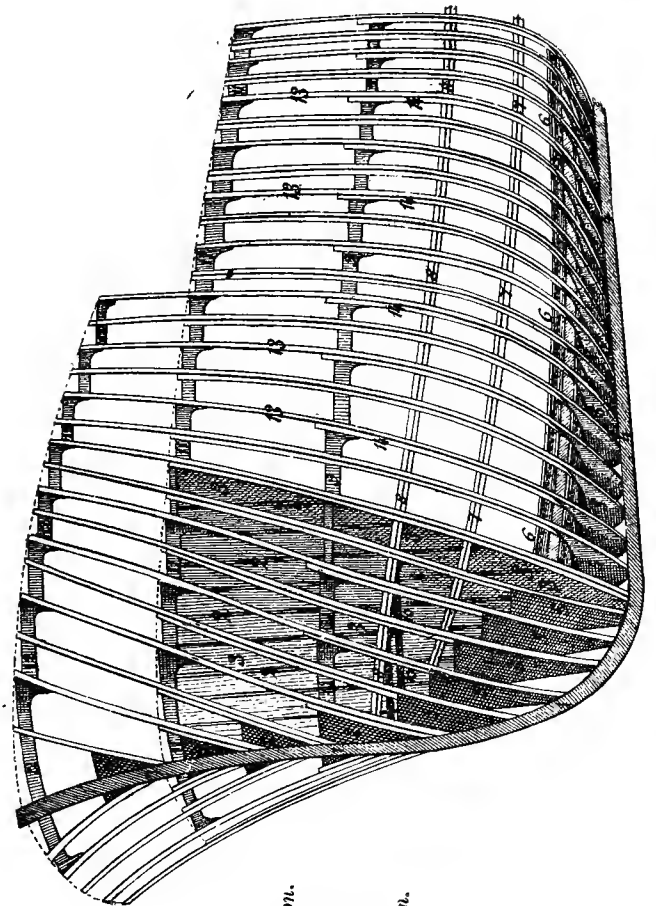
Wing-transom. The uppermost transom in the stern frame, upon which the heels of the counter timbers are let in and rest. It is by some called the main transom.

Wood-lock. A piece of elm or oak, closely fitted and sheathed with copper, in the throating or score of the pintle, near the load water line; so that when the rudder is hung and the wood-lock nailed in its place it cannot rise, because the latter butts against the under side of the brace and butt of the score.

Wrain Bolts. Ring bolts, used when planking, with two or more forelock holes in the end for taking in the sett, as the plank, etc., works nearer the timbers.

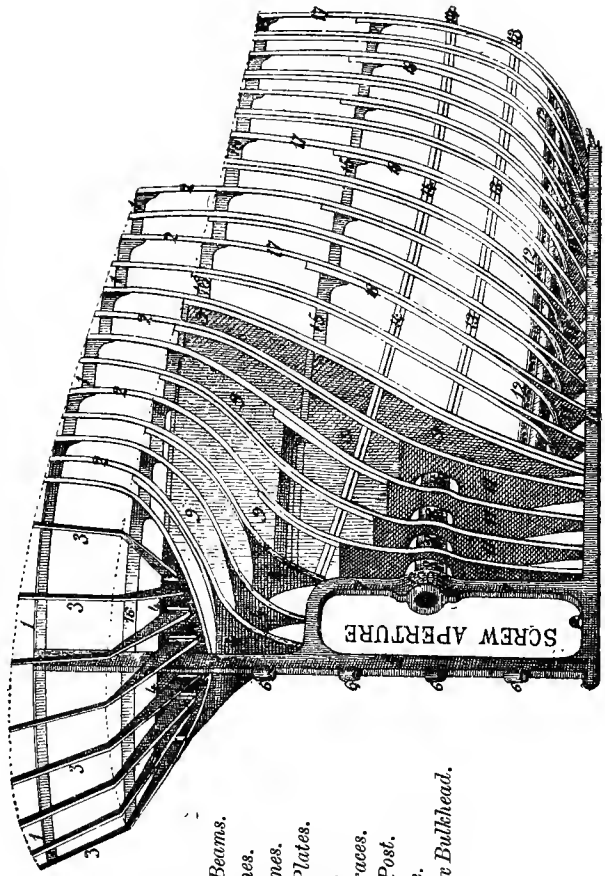
Wrain Stave. A sort of stout billet of tough wood, tapered at the ends so as to go into the ring of the wrain bolt to make the setts necessary for bringing to the planks or thick-stuff to the timbers.

FORE-FRAMING OF AN IRON STEAMER.



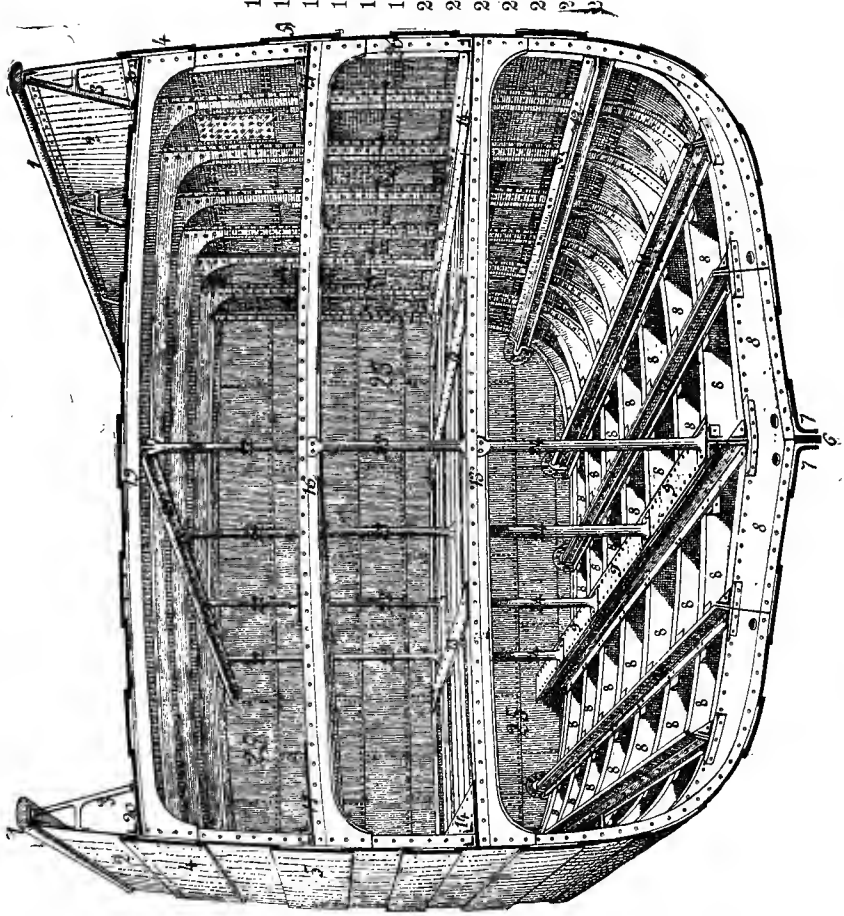
1. *Stem.*
2. *Bulkhead Angle-iron.*
3. *Collision Bulkhead.*
4. *Keel.*
5. *Floors.*
6. *Middle-line Keelson.*
7. *Bilge-Stringer.*
8. *Side Stringer.*
9. *Lower-deck Beams.*
10. *Panting Beams.*
11. *Upper-deck Beams.*
12. *Forecastle-deck Beams.*
13. *Frames.*
14. *Reversed Frames.*

AFTER-FRAMING OF AN IRON STEAMER.



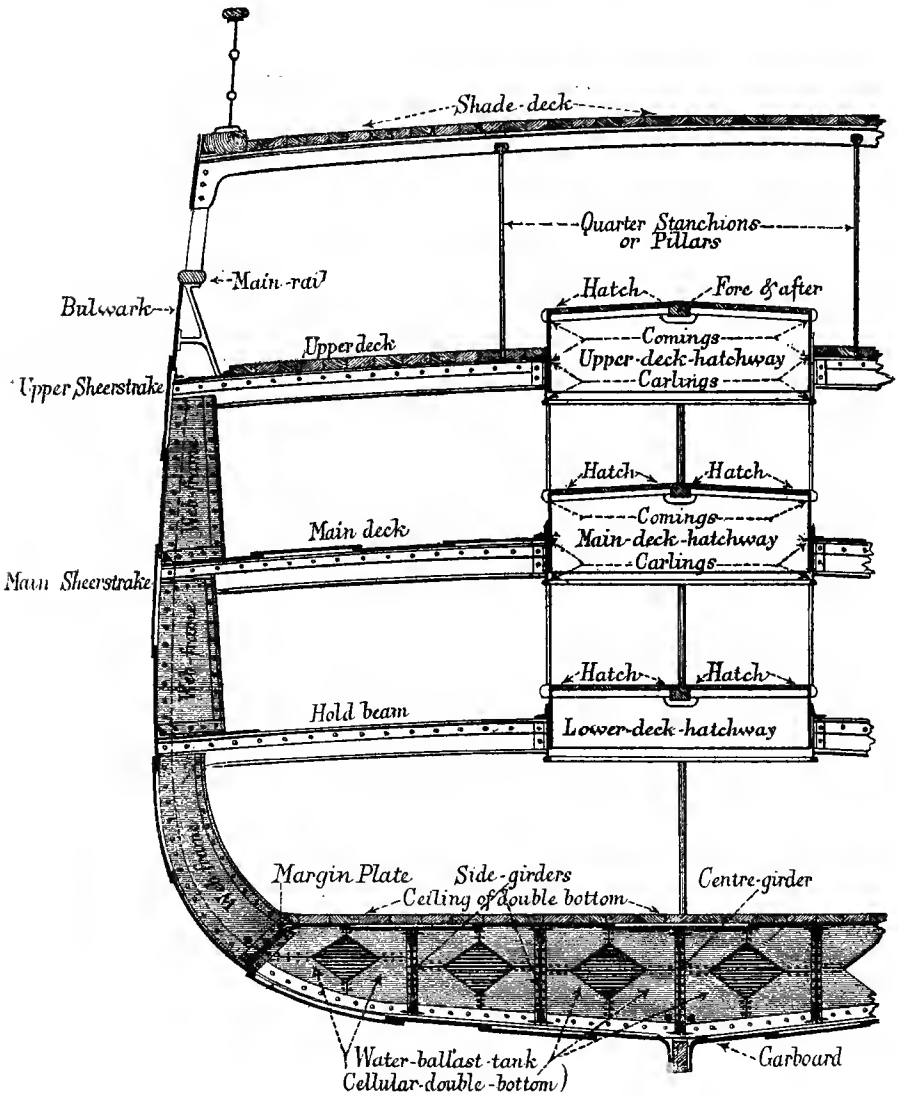
1. *Poop-deck Beams.*
2. *Poop Frames.*
3. *Stern Frames.*
4. *Transom Plates.*
5. *Stern Post.*
6. *Rudder Braces.*
7. *Propeller Post.*
8. *Stern Tube.*
9. *Stuffing-box Bulkhead.*
10. *Keel.*
11. *Floors.*
12. *Middle-line Keelson.*
13. *Bilge Stringer.*
14. *Side Stringer.*
15. *Lower-deck Beams.*
16. *Upper-deck Beams.*
17. *Frames.*
18. *Reversed Frames.*

INSIDE VIEW OF MIDSHIP BODY OF A STEAMER.

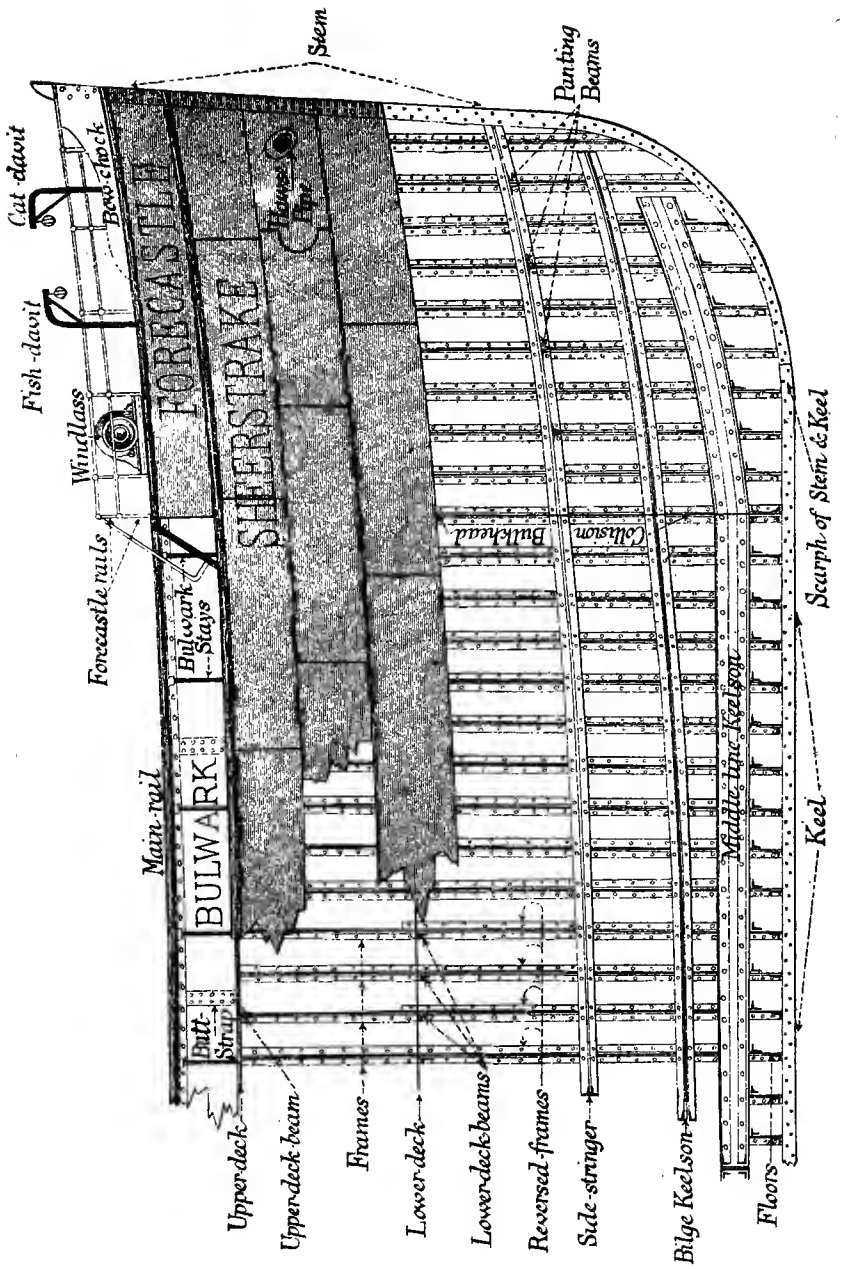


1. *Bulwark Rails.*
2. *Bulwark Plating.*
3. *Bulwark Stays.*
4. *Upper Sheerstrakes.*
5. *Main Sheerstrakes.*
6. *Keel.*
7. *Garboard Strakes.*
8. *Floors.*
9. *Middle-line Keelson.*
10. *Side Keelsons.*
11. *Bilge Keelsons.*
12. *Bilge Stringer.*
13. *Lower-deck Beam.*
14. *Lower-deck Stringers.*
15. *Lower-deck Tie-plates.*
16. *Main-deck Beam.*
17. *Main-deck Stringer.*
18. *Main-deck Tie-plates.*
19. *Upper-deck Beam.*
20. *Upper-deck Stringers.*
21. *Central Stringer.*
22. *Upper-deck Pillars.*
23. *Main-deck Pillars.*
24. *Hold Pillars.*
25. *Bulkhead.*
26. *Frames.*

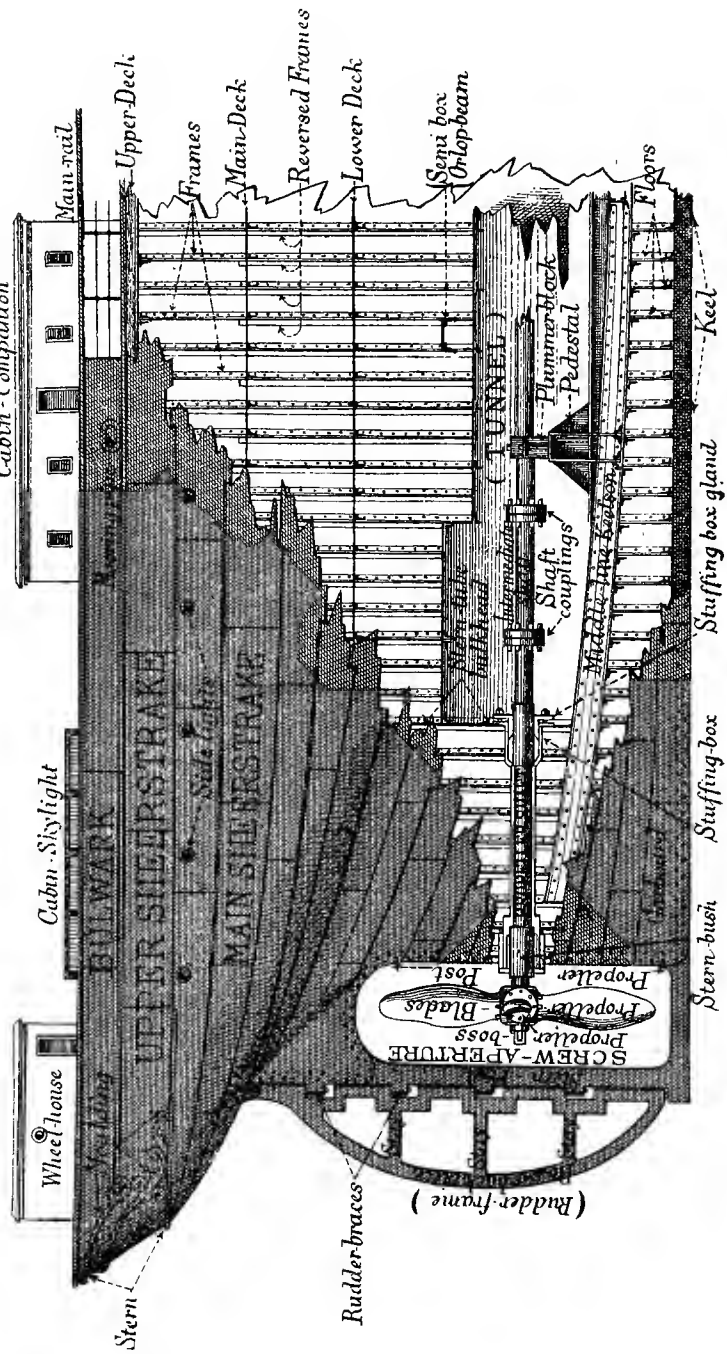
MIDSHIP SECTION OF A STEAMER WITH SHADE-DECK, DOUBLE-BOTTOM, ETC.



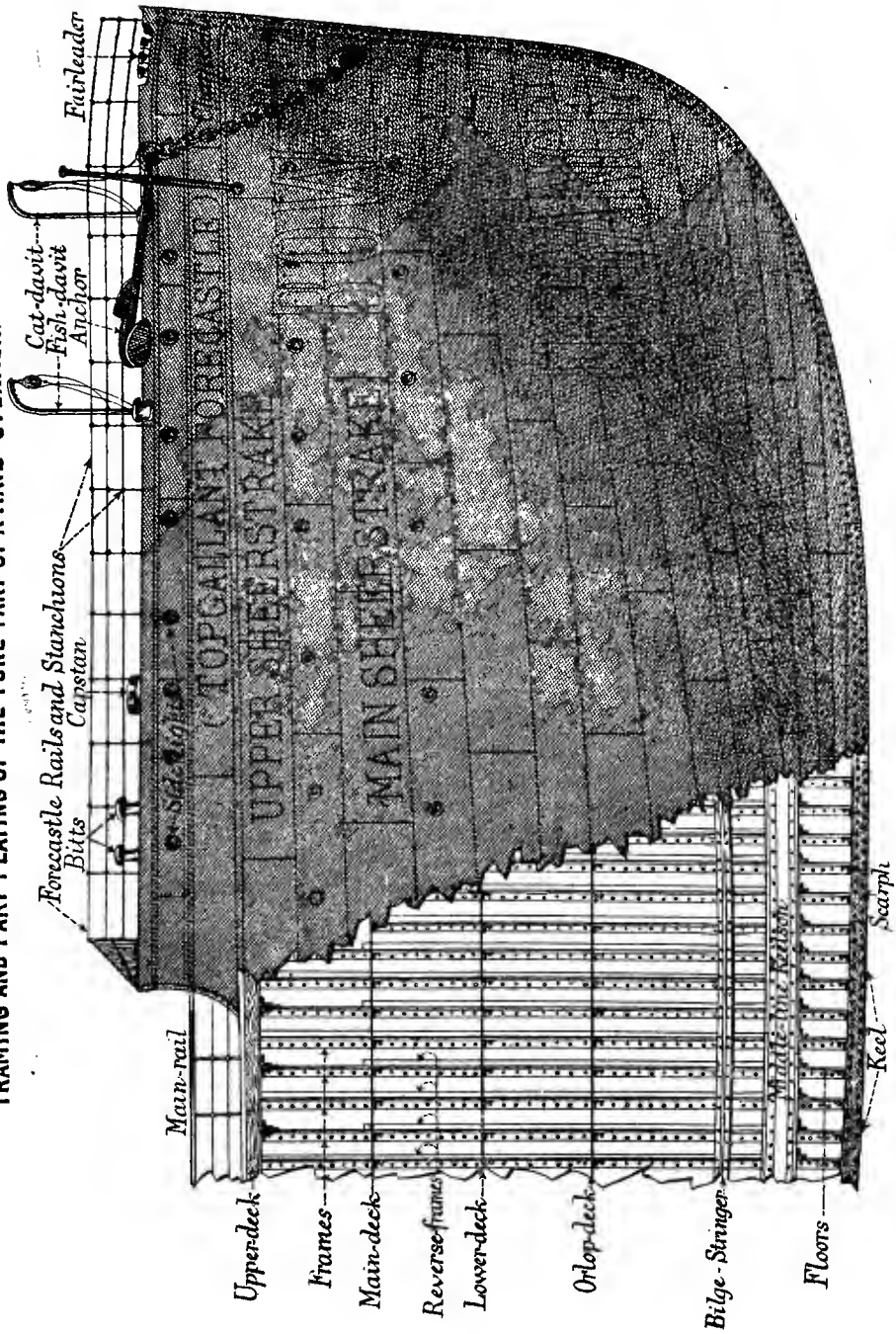
FRAMING AND PART PLATING OF THE FORE PART OF A TWO DECKED STEAMER.

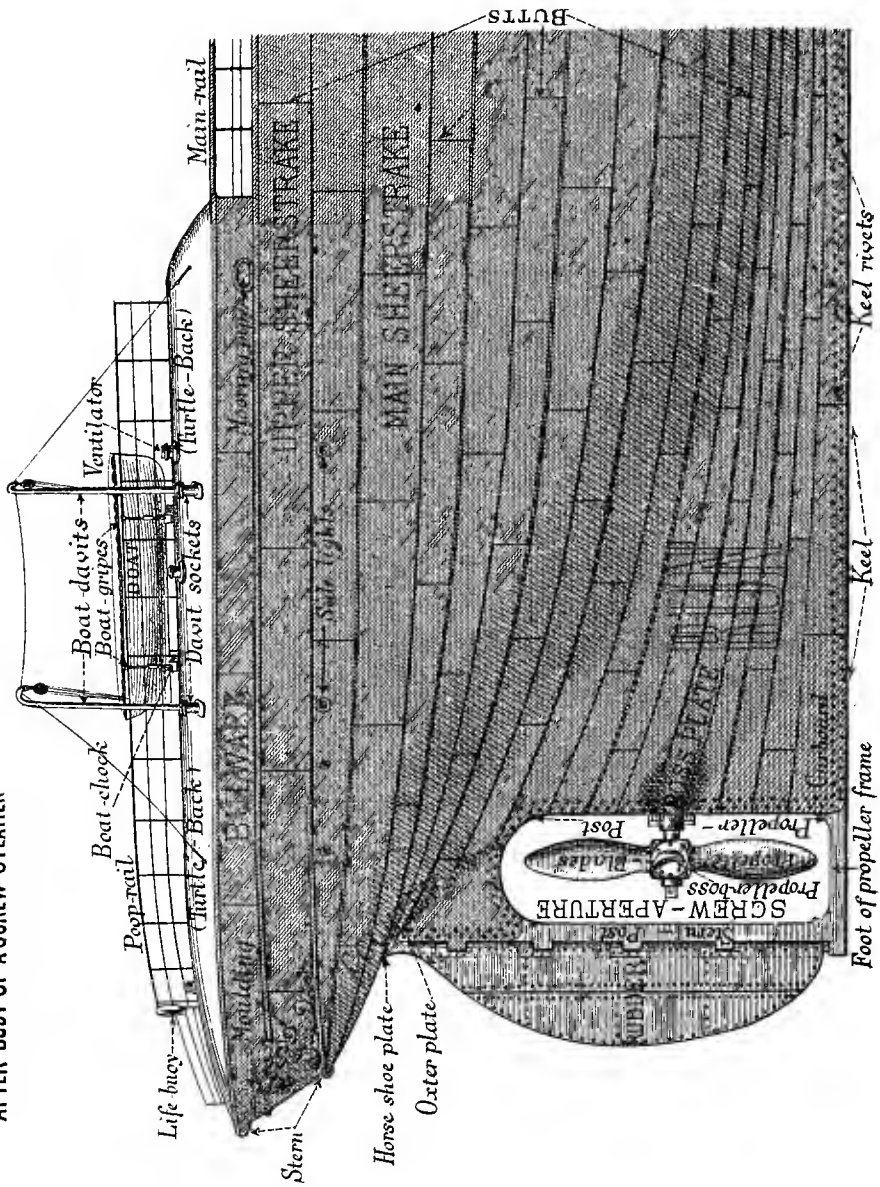


AFTER-BODY OF A SCREW-STEAMER, SHOWING PART IN SECTION



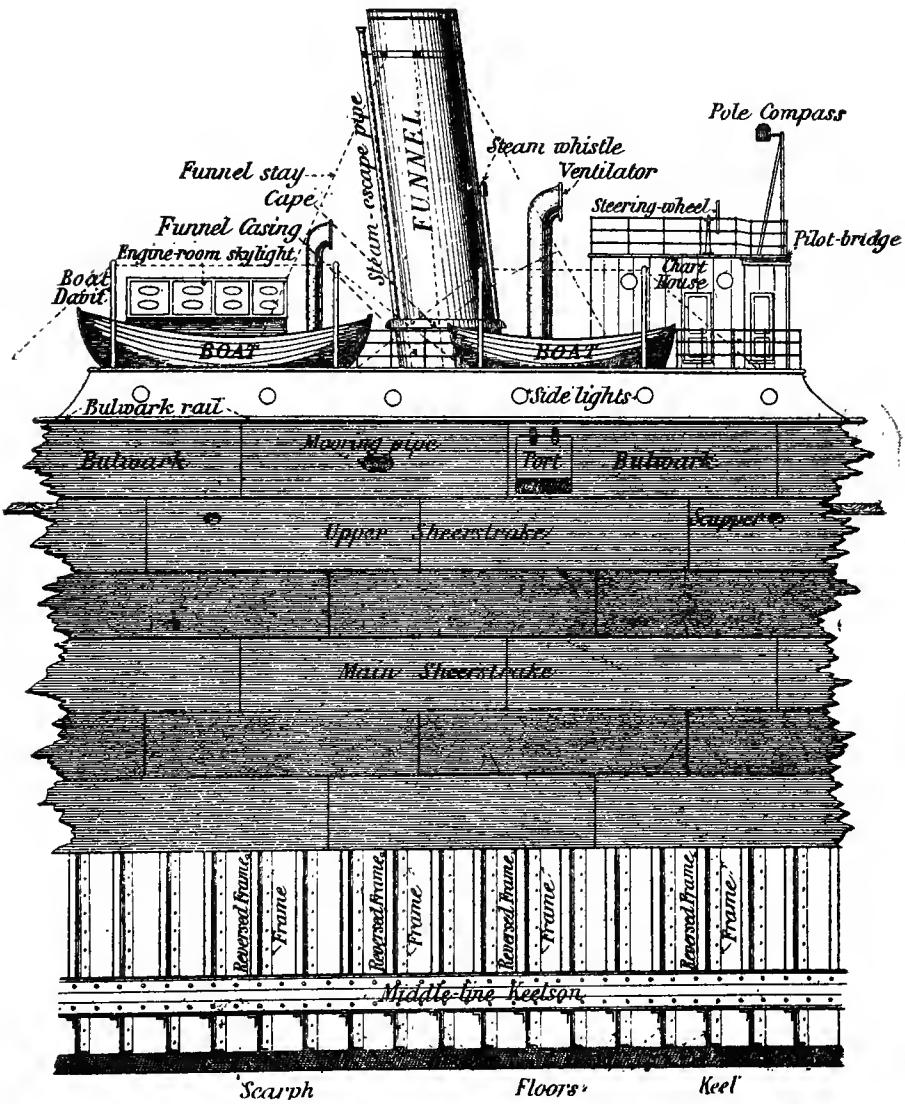
FRAMING AND PART PLATING OF THE FORE PART OF A MAIL-STEAMER.

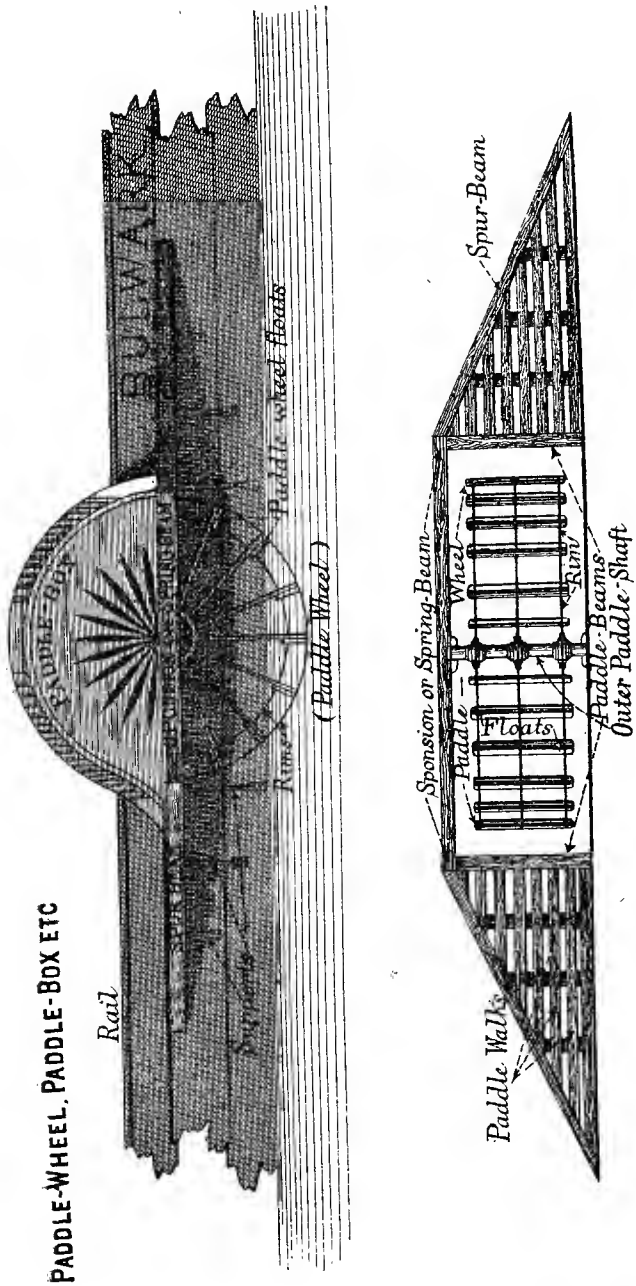




AFTER-BODY OF A SCREW-STEAMER

MIDSHIP PORTION OF AN IRON SCREW STEAMER.





PADDLE-WHEEL, PADDLE-BOX ETC

PART III.

DICTIONARY OF NAVIGATION TERMS.

PART III.

DICTIONARY OF NAVIGATION TERMS.

A.

Aberration. Owing to the motion of the earth, combined with the motion of light, there is an apparent displacement of the stars, termed *aberration.*

Above the Pole. When the north star is in that part of its orbit so as to be intercepted between the observer and the pole, it is said to be *above the pole.*

Abstract Log. An abridgment of the contents of the log book.

Acceleration. The increase of velocity in a moving body.

Adjustment. To regulate a compass with magnets, or to regulate the mirrors of a sextant, etc., for use, is to *adjust* them.

Aerolites. Bodies revolving about the sun like the planets, and which the earth encounters in the way of fire-balls, and small solid bodies, composed principally of iron.

Age of the Moon. The elapsed time since the last conjunction.

Alidade. An instrument for taking bearings, composed of two revolving arms around a circular brass plate marked in imitation of a compass card. The *alidade* is screwed to the top of the binnacle, and set to the ship's course, in conformity to the sensitive compass beneath. (See engraving.)

Almanac. The *nautical almanac* is a calendar of the days and months of the year in which is tabulated the declinations of the sun, moon, stars and planets, right ascensions, times of transits, equation of time, etc., etc.

Altitude. The angular value of a heavenly body above the horizon as measured on a reflecting quadrant, etc.

Altitude Motion. An instrument is said to "*move in altitude*" when it turns on a horizontal axis.

A. M. Altitude. An altitude of the sun measured before noon.

Amplitude. The bearing (never in excess of 90°) of a heavenly body at rising or setting, calculated in degrees from the east or west point. *Magnetic Amplitude* is the observed bearing of the body by compass. *True Amplitude* is the geographical bearing of the body calculated for its declination and the parallel of observation, and found tabulated in works on navigation.

Amplitude Tables. Tables found in works on navigation giving the true bearing of heavenly bodies at rising and setting, calculated for various declinations and parallels.

Anemometer. An instrument for measuring the velocity of the wind.

Aneroid Barometer. An instrument for registering the variation of atmospheric pressure. In construction it is an air-tight box of thin metallic plates, the compression

being resisted by an internal spring. A system of levers connected with the spring causes an index pointer to revolve on the dial face. (See engraving.)

Angles. The divergence of two lines starting from the same point.

Angular Distance. Measured by an angle, as the *angular distance* of a star from the moon.

Annual Variation. The variation of the compass constantly fluctuates, and the aggregate change for a twelve-month is called *annual variation.*

Annular Eclipse. When the apparent diameter of the moon is less than that of the sun, so that a ring of light surrounds the former while central.

Antarctic. The regions near the South Pole of the earth.

Antarctic Circle. That parallel distant 23° 28′ from the South Pole.

Antarctic Pole. The South Pole of the earth.

Anti-Trades. Also known as *return trades.* Counter currents in the upper regions of the atmosphere, flowing from the equator toward the poles.

Apparent Time. That shown by the sun, estimating the *apparent* noon to commence at the passage of his centre over the meridian of any place.

Apogee. That point of the moon's orbit which is at the greatest distance from the earth—opposed to *perigee.*

Arc. A part of a circle.

Arctic. The regions near the North Pole of the earth.

Arctic Circle. That parallel distant 23° 28′ from the North Pole.

Artificial Horizon. A trough of quicksilver having a roof of glass, and used for measuring altitudes on shore of heavenly bodies. (See engraving.)

Astronomical Clock. A pendulum timepiece of great accuracy regulated to sidereal time. (See CLOCK.)

Astronomical Day. This begins at noon of the civil day, and the hours are numbered from one to twenty-four—the letters A.M. and P.M. never being employed.

Astronomical Time. The time between two successive transits of the sun centre over the same meridian. The civil day begins twelve hours before the astronomical day, and the rule for transforming civil time into astronomical time is as follows: If the civil time is A.M., take one from the date and add twelve to the hours; if the civil time is P.M., take away the designation P.M. and the answer will be the astronomical time.

Astronomy. The science which treats of the heavenly bodies.

Atlas. A book of maps or charts.

Augmentation. Increase.

Augmentation of the moon is the apparent increase of the moon's diameter.

Aurora Australis. The Southern lights. A luminous phenomenon attributed to electrical origin.

Aurora Borealis. The Northern lights.

Autumnal Equinox. The period when the sun crosses the equator on its way into southern declinations.

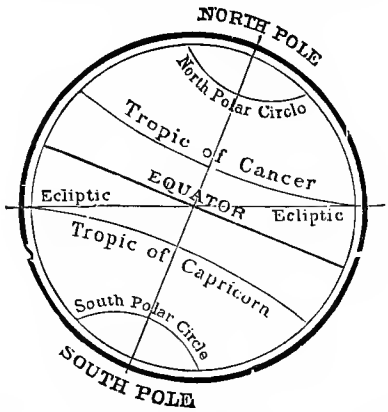
Axis. An imaginary line passing through the centre of a body, and on which it is considered to revolve.

Axis of Collimation. Also known as *line of collimation.* The axial line of a telescope; also an imaginary line passing through the optical centre of an object glass and the intersection of the focus cross-wires.

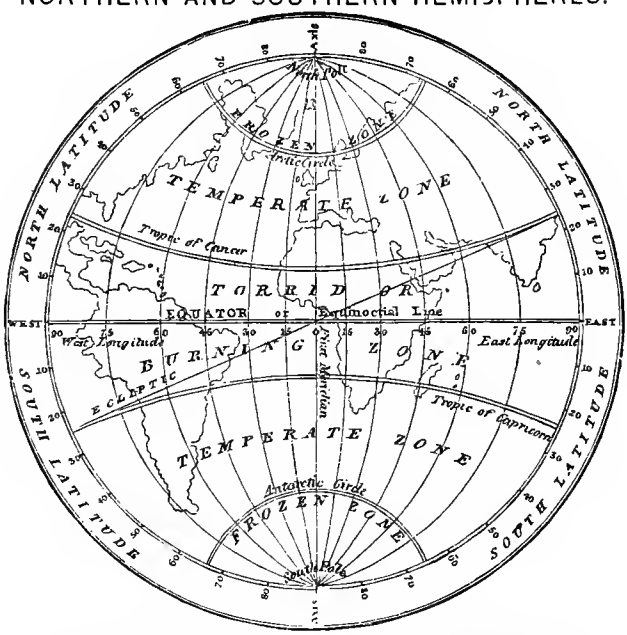
Azimuth. The bearing (never in excess of 180°) of a heavenly body calculated in degrees from the north or south point. *Magnetic azimuth* is the observed bearing of the body by compass. *True amplitude* is the geographical bearing of the body calculated for its declination, the hour and the parallel of observation, and found tabulated in special works on navigation.

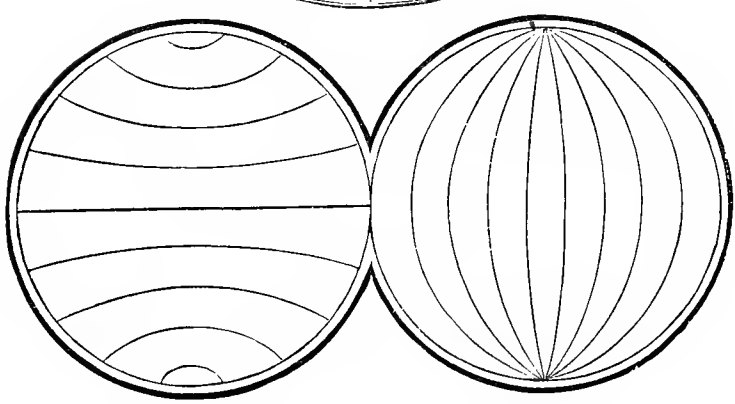
Azimuth Attachment. A handy little instrument composed of two upright sight arms, for centering in a "boss" in the middle of a compass glass. The limbs are revolved when taking bearings. The binnacle hood must be removed in order to use the attachment. (See engraving.)

EARTH'S INCLINATION—23° 28′.



NORTHERN AND SOUTHERN HEMISPHERES.





PARALLELS. MERIDIANS.

Azimuth Circle. A great circle passing through the zenith and nadir; a vertical circle.

Azimuth Compass. A compass provided with revolving sight arms, and specially adapted for taking bearings. (See engraving.)

Azimuth Diagram. A diagram designed by one Godfray, which gives, without calculation, the true azimuth, the necessary data being the declination, apparent time, and the latitude of the observer.

Azimuth Motion. An instrument is said to "*move in azimuth*" when it turns on a vertical axis.

Azimuth Tables. Published tables giving the true bearing of the sun, calculated for various declinations, parallels and time.

B.

Back Observation. An altitude measured on a *back observation quadrant*, which requires the observer to turn his back to the body observed. The instrument is an ordinary quadrant with the addition of a second horizon glass below the regular one, and the former one is looked into while measuring the altitude—the instrument being held backwards, so that the observer faces the mirror, and pulls the sliding limb towards him. This instrument is used for measuring the altitude of a heavenly body from its farthest horizon by throwing it across the observer's zenith. This process is only employed when the intervention of the land does not admit of a regular *fore observation*.

Barometer. An instrument which records the weight or pressure of the atmosphere. The mercurial barometer consists of a glass tube 34 inches long, closed at the top, and exhausted of air. The lower end of the tube is immersed in a cup of mercury (quicksilver), which the pressure of the atmosphere causes to rise in the tube, on one side of which, on the frame, a graduated scale is found, embracing the range of oscillations. (See ANEROID BAROMETER.)

Base Line. The geometrical plane; the base on which the triangulation is founded; the lowest side of a figure, as that of a cone, etc.

Beam Compass. A drawing instrument used in surveying.

Bearing. The direction of one thing from another by the points of the compass.

Bearing of Storm Centre. Eight points to the *right* of the wind's eye in the northern hemisphere, but eight points to the *left* of the wind's eye in the southern hemisphere, according to the Circular theory, but about ten points by the Indraught theory.

Below the Pole. When the north star is in that part of its orbit so that the pole is intercepted between the observer and the star it is said to be *below the pole*.

Belt. A zone, as the *belt of calms;* a girdle.

Belt of Calms. The area contained between the limits of the south-east and north-east trade winds near the equator.

Bench Mark. Fixed points for reference left on a line of survey, indicating a series of levels at different elevations.

Binnacle. A case in which the compass is enclosed.

Binnacle Hood. The dome of the binnacle.

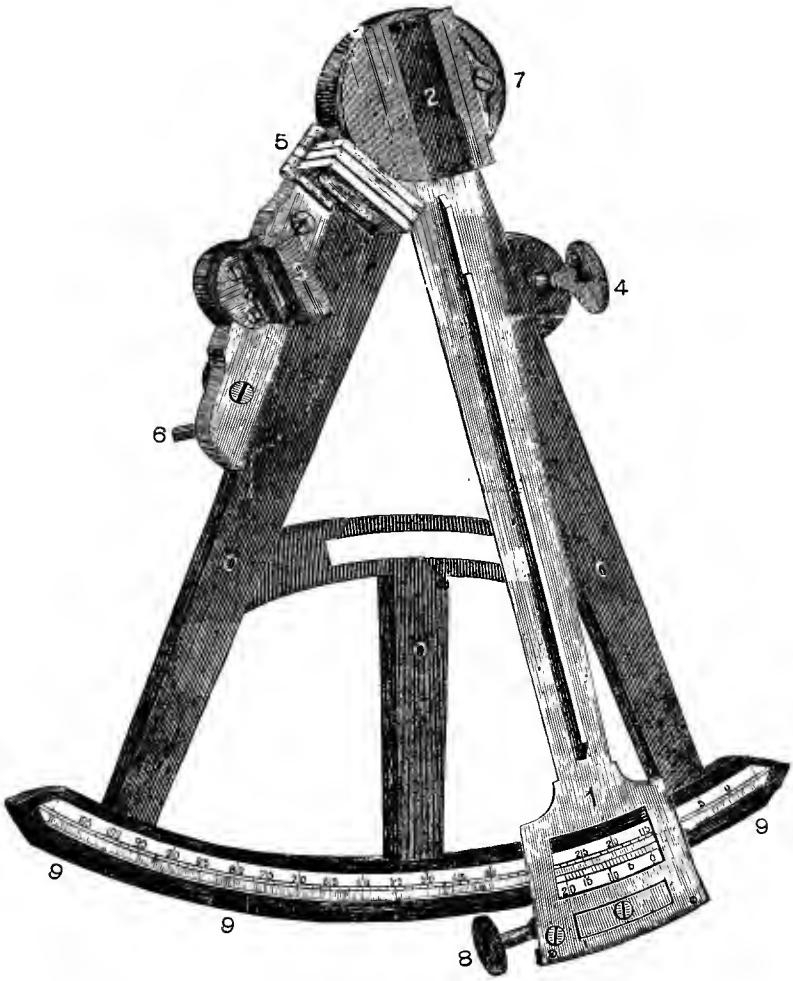
Binoculars. A double, or as it is sometimes termed, *a two-barreled telescope*.

Bora. A short-lived but violent wind experienced in the northern part of the Adriatic Sea.

Bowditch. Nathaniel Bowditch, LL.D., F.R.S., a celebrated mathematician, astronomer, navigator and shipmaster; born in Salem, Mass., in 1773; died 1838; published in 1800 the first edition of the great work which bears his name.

Box Gauge. A device for recording the height of tides, consisting of a long, vertical

THE QUADRANT OF REFLECTION.



1. *Sliding Limb.*
2. *Mirror.*
3. *Horizon Glass.*
4. *Sight Vane.*
5. *Shade Glasses.*
6. *Adjusting Screw.*
7. *Adjusting Screw on Mirror.*
8. *Index Tangent Screw.*
9. *Arc.*
0. *Frame.*

The vernier is set on the sliding limb against the arc of the instrument.

box, closed at the bottom, and having a sufficient number of small gimlet holes near the lower part to allow access of water, so that a copper float with a graduated rod contained within the box may be moved up and down with the tide.

Boxing the Compass. Rehearsing the thirty-two points of the compass in order, commencing at north, and going around the circle by the way of east, or with the hands of a watch.

Bridge Compass. The steering compass on the bridge of a steamship.

Broken-backed Transit. A prismatic instrument, being a combination of zenith telescope and transit.

Buoyage. Floating beacons for the guidance of vessels. (See PART I.)

C.

Cardinal Points. The four *cardinal points* of the horizon, or of the compass, are the North, South, East and West. The *inter-cardinals* are the North-east, South-east, South-west and North-west.

Cardinal Winds. Winds blowing from any one of the cardinal points, such as a North, South, East or a West wind.

Celestial. Opposed to *terrestrial.* The heavens.

Celestial Body. The sun, moon, stars and planets.

Celestial Concave. The heavens. The terrestrial sphere is *convex,* while the sphere of the heavens *appears* to the observer on the earth's surface as *concave.*

Celestial Equator. The imaginary great line in the heavens over the earth's equator, from which the declination (latitude) of heavenly bodies is reckoned as high as 90° north and south.

Celestial Latitude. The *declination* of a heavenly body, or its distance north and south of the celestial equator.

Celestial Longitude. The term sometimes applied to the *right ascension* of a heavenly body, which is reckoned from the first point of Aries eastward from 0° to 360°, or from 0 hour to 24 hours.

Change of Rate. The retard or acceleration in the running of a chronometer in relation to the *rate* previously calculated.

Change of Tide. The turn of the tide.

Charles's Wain. The seven stars of the "Dipper."

Chart. A hydrographic or marine map; a delineation of coasts, shoals, isles, rocks, soundings, etc.

Chart of the Inclination. Shows the dip of the magnetic needle for various localities on the earth's surface.

Chorographic Chart. Delineates a particular country.

Coast Survey Chart. Delineations of the coast as issued by the United States Coast Survey Office at Washington.

General Chart. A map on a small scale, covering a large extent of coast line and ocean.

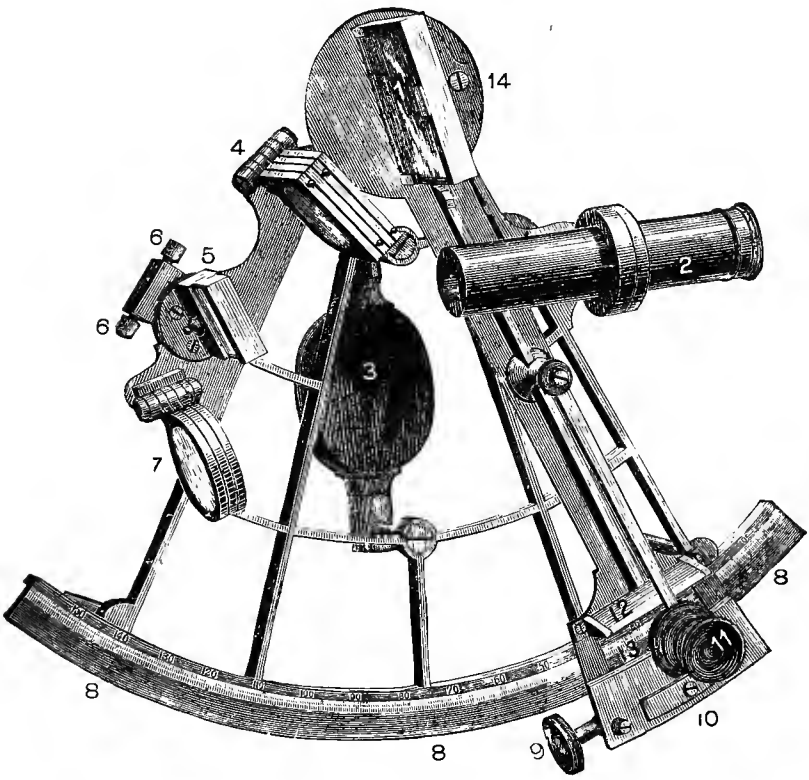
Great Circle Charts. Special charts constructed on the central or gnomonic projection, in which all great circles are represented as straight lines. These answer the same purpose for great circle sailing that Mercator's chart answers for rhumb sailing.

Harbor Chart. Also known as a *Harbor Plan.* A map of a particular harbor, on a large scale, for the convenience of seamen, giving the lights, buoys, soundings, courses, leading marks, etc. The parallels and meridians are, as a rule, not shown.

Heliographic Chart. A chart representing the sun, and the *spots* on his surface.

Hydrographic Charts. Charts published by the Hydrographic Office in Washington, which office is under the jurisdiction of the Bureau of Navigation. These charts delineate the navigable waters of the world, land, rocks, shoals, depths, currents, tides, latitudes, longitudes, etc.

THE SEXTANT OF REFLECTION.



1. *Mirror.*
2. *Telescope.*
3. *Handle.*
4. *Shade Glasses.*
5. *Horizon Glass.*
6. *Adjusting Screws.*
7 *Back Shade Glasses.*
8. *Arc.*
9. *Index Tangent Screw.*
10. *Sliding Limb.*
11. *Reading Glass.*
12. *Vernier Shade.*
13. *Vernier.*
14. *Mirror Adjusting Screw.*

Magnetic Chart. (See VARIATION CHART.)

Mercator's Chart. A style of chart invented by Gerard Kauffman, better known as Mercator, on which the parallels and meridians are all straight parallel lines, but only the meridians are equi-distant; the distance between the parallels increases from the equator toward either pole in the same proportion as the degrees of longitude decrease on the globe, this projection being constructed by the aid of the table of meridional parts.

Ocean Charts. Maps representing the entire area of one of the five oceans of the world—Atlantic, Pacific, Indian, Arctic and Antarctic.

Physical Charts. Maps delineating the currents and drifts of the ocean, prevailing winds, ice limits, etc.

Plane Chart. A map representing the meridians as parallel, and on which no allowance is made for the spherical figure of the earth.

Polar Charts. Maps of the regions about the poles of the earth.

Selenographic Chart. A chart representing the moon, and the *spots* on her surface.

Skeleton Chart. Also known as a *Track Chart.* Blank sheets on Mercator's projection for plotting the track of a vessel.

Telegraphic Chart. A chart on which the line of a telegraph-cable is shown.

Topographic Chart A delineation of an area of country.

Track Chart. (See SKELETON CHART.)

True Chart. A map representing geographical bearings and directions without reference to the variation of the compass.

Variation Chart. A chart on Mercator's projection representing the variation of the compass by curved lines. *Variation Charts of the World* may be obtained from any nautical dealer.

Chart Compass. The diagram compass (either true or magnetic) printed on charts.

Chart Sailing. Shaping the course of the ship from point to point, and finding the distance contained between them, by aid of the parallel rules and dividers.

Chauvenet's Equal Altitudes. A process for finding the time.

Chronometer. A marine timepiece of superior construction and accuracy.

Chronometer Comparison. The operation of determining the error of a chronometer by means of time-balls, observatory clocks, or by the employment of an artificial horizon sight.

Chronometer Error. The *aggregate* amount of time the chronometer is either in advance of or behind the mean time of the Greenwich or other meridian which the instrument represents.

Chronometer Rate. The *daily* loss or gain in time of a chronometer in comparison with the mean time of the meridian which the instrument represents.

Circle. A ring; a circumference; the line that bounds a circle; a round body; a globe.

Altitude Circles. Great circles upon which altitudes of heavenly bodies are measured.

Astronomical Circle. An instrument of reflection for measuring angles, the limb being a complete circle.

Circles of Azimuth. Great circles passing through the poles of the horizon.

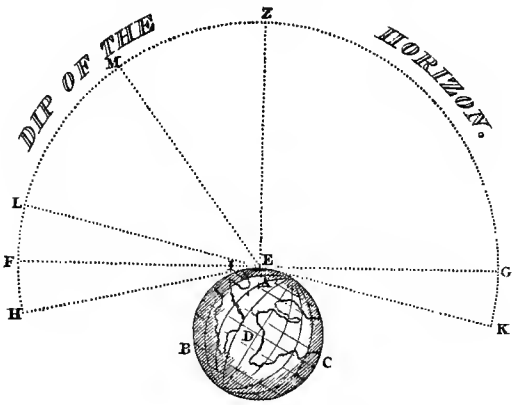
Circle of a Sphere. A circle whose plane passes through a sphere and is bounded by its surface. When the plane of the circle passes through the *centre* of the sphere it is called *a great circle;* but in all other cases it is known as *a small circle.*

Circle of Illumination. One-half of the earth's surface is illuminated by the sun when the other half is in the shadow, and the great circle which marks the boundary of light and darkness is termed the *circle of illumination.*

Circles of Longitude. Great circles passing through the poles of the ecliptic.

Circle of Perpetual Occultation. The circum-polar stars included within this circle *never rise.*

Circle of Perpetual Apparition. The circum-polar stars included within this circle *never set.*



Z. *Zenith.*

A B C. *Vertical section of the earth.*

A E. *Height of observer's eye above earth's surface.*

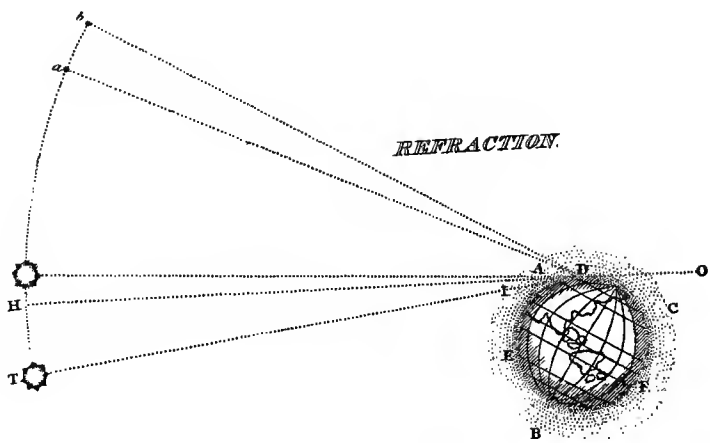
F E G. *Parallel to the tangent to the surface at* A, *representing the true horizon.*

E I H. *Represents the apparent horizon.*

F E H. *Dip of the horizon.*

M. *Object to be observed by throwing image to apparent horizon at* H.

M E H. *Observed altitude, which is greater than the angle* M E F *by the quantity of the angle* F E H.



FIRST CONSIDERATION.

A B C, D E F. *Atmosphere surrounding the earth.*

D. *Observer.*

a. Star.

D *a. The line the star would be observed on if there was no refraction.*

D *b. The line the star is observed on owing to refraction.*

SECOND CONSIDERATION.

T. *Sun below the horizon.*

T I. *A ray of light proceeding from* T, *comes in a right line to* I, *and is there turned out of its rectilinear course, and is so bent down towards the eye of the observer at* D *that the sun appears in the direction of the refracted ray above* H.

When a body is in the zenith there is no refraction, the rays of light entering the atmosphere in straight lines.

Circle of Reflection. An instrument for measuring the angular distance of the moon from the sun or a star, and much superior for this purpose to a sextant.

Circle of Right Ascension. Great circles passing through the poles of the equinoctial.

Declination Circles. The great circles upon which declinations are measured.

Diurnal Circle. A heavenly body is said to describe a *diurnal circle* owing to the apparent daily revolution of the celestial sphere.

Hour Circle. The great circle of the celestial sphere passing through the poles of the heavens and perpendicular to the equinoctial.

Latitude Circles. Great circles perpendicular to the plane of the ecliptic, upon which latitudes are measured.

Polar Circle. The small circles of the terrestrial sphere parallel to the equator. They are 23° 28′ from the poles; the northern is termed the *Arctic circle*, and the southern the *Antarctic circle.*

Vertical Circle. A great circle passing through the zenith.

Circum-Meridian Altitude. An altitude of a heavenly body when it is near the meridian—either A.M. or P.M.

Circumnavigate. To sail round.

To circumnavigate the globe is to sail entirely around the world.

Circum-polar. Near the pole.

Cirro-cumulus. Commonly known as "mackerel" sky and "sheep in a meadow" sky, owing to the rounded woolly patches.

Cirro-stratus. Long layers of cloud, thinner at the edges than in the centre.

Cirrus. The highest and least dense of cloud formation; it is of many varieties in relation to shape and extent.

Civil Time. The civil day commences at midnight and comprises 24 hours, which are divided into two equal parts—the first 12 (from midnight to noon) being named A.M., and the last 12 (noon to midnight) named P.M.

Clamp Screw. The screw on the back of the sliding limb of an instrument of reflection by which the limb is rendered immovable when desired.

Clinometer. An instrument for showing the *roll* of a vessel when suspended in a thwartships line. When it is suspended in a fore-and-aft line it will record the *pitch* of the vessel.

Clock. A machine composed of a combination of wheels, which are moved either by weights or by a spring, and which measures time, indicating the same by hour, minute, and second hands moving around the dial, or face of the instrument, on which numerals are painted.

Astronomical Clock. A pendulum clock of superior workmanship and great accuracy. It shows sidereal (star) time, and when the first point of Aries is on the meridian it indicates 0h. 0m. 0s.

Mean Solar Clock. A timepiece which shows mean solar or civil time.

Sidereal Clock. An astronomical clock.

Clock Stars. The bright or nautical stars employed by astronomers and navigators for determining latitude and longitude.

Cloud Classification. *Cirrus, cumulus, stratus, cirro-cumulus, cirro-stratus, cumulo-stratus,* and *cumulo-cirro-stratus,* or *nimbus.*

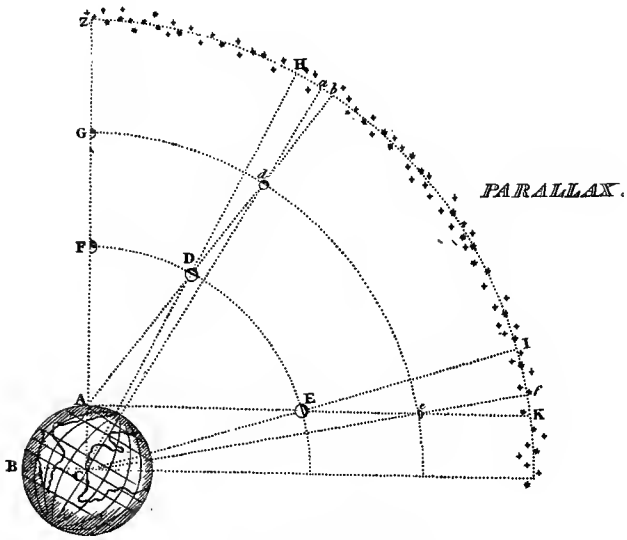
Cloud Scale. This extends from 0 to 10—the first indicating a clear sky and 5 a sky half-overcast, while 10 represents an entirely obscured sky.

Collimation. (See AXIS OF COLLIMATION.)

Comparison. *To observe a comparison* is to note the difference in time between two timepieces.

Compass. A magnetic needle alone, or a circular card having a magnetic needle secured across it, parallel to the north and south line, and suspended upon a sharp point so as to balance and to turn freely. The card is marked with the 32 points of the compass, and the north and south line of the card indicates the magnetic meridian.

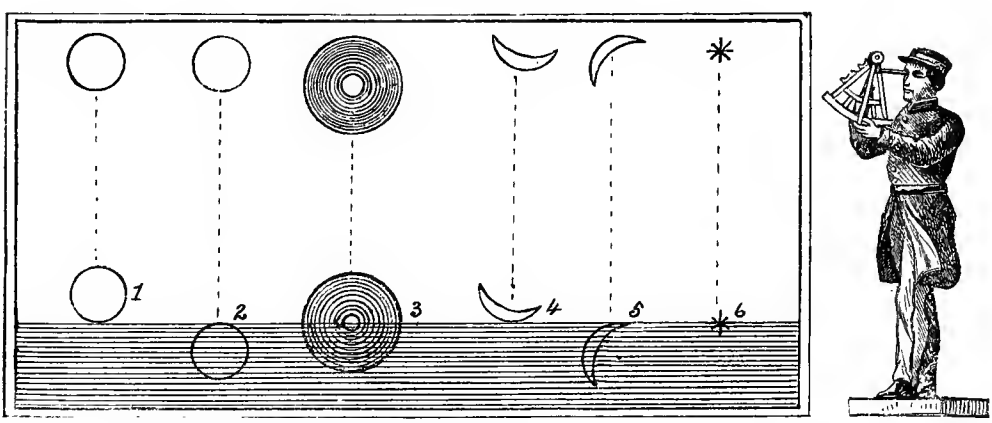
Compass Adjusting. The process of correcting the compass for deviation by the employment of artificial magnets.



A B C. *The Earth.* C. *The Earth's centre.* A. *The Observer.*
Z A K. *Vertical plane passing through* D, *the moon, or d, a planet.*
e d G E D F. *Circular arcs about* C *as a centre.* K Z. *Starry heavens.*

If at any time the moon be at D, she will be referred to the point H, by a spectator supposed to be placed at the centre of the earth, and this is called the *true place of the moon;* but the spectator at A will refer the moon to the place *b*, and this is called the *apparent place of the moon;* the difference H *b*, or the angle H D *b* = A D C, is called the *moon's parallax in altitude,* which is evidently greatest when the moon is in the horizon at E, being then equal to the arc K I. When the moon is at Z (the zenith) there will be no parallax, the body being observed on the same line from the centre of the earth as from the earth's surface.

SEMI-DIAMETER.



1. *Altitude of the sun's lower limb*—semi-diameter *added* gives central altitude.
2. *Altitude of the sun's upper limb*—semi-diameter *subtracted* gives central altitude.
3. *Altitude of the sun's middle*—semi-diameter not considered.
4. *Altitude of the moon's lower limb*—semi-diameter *added* gives central altitude.
5. *Altitude of the moon's upper limb*—semi-diameter *subtracted* gives central altitude
6. *Altitude of a star*—possesses no apparent diameter.

Compass Bearing. The direction of an object as indicated by a magnetic compass.

Compass Bowl. The hollow half-sphere in the top of the binnacle stand, and inside of which the compass is suspended by gimbals.

Compass Card. The painted circle, representing the 32 points of the compass, to which is fastened the magnetic needle.

Compass Corrections. The quantities in the way of points or degrees which must be applied to a course or bearing in order to obtain correct magnetic and true bearings.

Compass Course. The angle which the track of a vessel makes with the meridian as indicated by the ship's compass.

Compass Error. The deviation of the north point of the compass card from the magnetic meridian. (See RESIDUAL ERRORS.)

Compass Needle. The magnetized steel bar which indicates the magnetic meridian when freely suspended and not subject to counterbalancing magnetism.

Compass Point. One of the 32 divisions painted on the compass card.

Compass Rose. The diagram compass printed on charts.

Azimuth Compass. A compass provided with revolving sight vanes, and employed for taking bearings.

Bridge Compass. The compass situated on the bridge of a steamer.

Compensated Compass. A compass which has been corrected for deviation by the employment of magnets.

Crazy Compass. A compass is said to be *crazy* when the card refuses to indicate the magnetic meridian by flying around and around. This sometimes happens in a violent seaway, and at other times when the atmosphere is heavily charged with electricity.

Demagnetized Compass. A compass needle which has lost its magnetism is said to be *demagnetized.* Electrical disturbances have been known to effect this.

Dry Compass. A term applied to a compass which is enclosed in an *air* chamber instead of a liquid one.

Elevated Compass. Under this head come *masthead, pole,* and *tripod compasses.* Compasses are *elevated* in order to get them beyond the influence of the ship's iron, which, being magnetized by induction, seriously affects the pointing of the magnetic needle.

Liquid Compass. A term used in connection with a compass the card of which is enclosed in a chamber filled with thirty-five parts of alcohol and sixty-five parts of distilled water, the freezing point of the mixture being—10° Fahrenheit. Compasses used in Arctic explorations have their bowls filled with pure alcohol. The reason for not filling all compass bowls with an undiluted mixture is that the pure alcohol eats the paint on the card. Sometimes oil is used instead of alcohol.

Masthead Compass. As its name implies, a compass placed aloft in order to remove it from the influence of the iron in the ship's hull, deck fittings, machinery, etc.

Oil Compass. A liquid compass, the card of which floats about in oil instead of alcohol.

Pole Compass. A compass elevated above the deck on the end of a *pole,* access to it being had by means of a short ladder. It is sought by these means to remove it from the influence of the ship's iron.

Spirit Compass. A compass the card of which floats about in alcohol or oil.

Standard Compass. A compass situated above the deck so that deviation will be reduced to a minimum, and in a good position for observing bearings. It is by this compass that the ship is navigated.

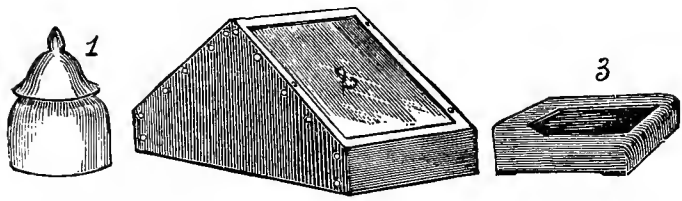
Steering Compass. The compass used by the wheelsman in steering the vessel. The vessel is put on her course by the standard compass, and the point against which at that time the lubber's mark stands on the *steering compass* is held by the wheelsman.

Tripod Compass. So named owing to the three-leg stand on which the compass is elevated. *A tripod compass* is, in other words, a *pole compass.*

Compensating Magnets. Artificial magnets placed near a compass for the purpose of correcting the deviation.

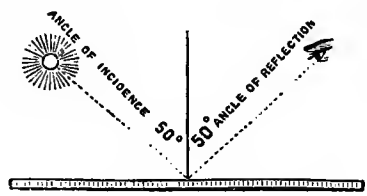
Coast Pilot. A pilot who conducts a vessel from one part of the coast to another; a book of pilotage directions.

THE ARTIFICIAL HORIZON.

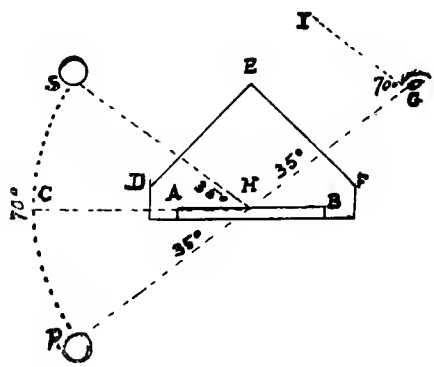


1. *Mercury bottle.* 2. *Cover for trough.* 3. *Trough for mercury.*

ANGLES OF REFLECTION AND INCIDENCE.



The Artificial horizon is based upon the well-known principle in Catoptrics that the *angle of reflection is equal to the angle of incidence;* in other words, if a ray of light strikes any plane reflecting surface at a definite angle it leaves it at the same angle; or it may be more fully illustrated as follows:



Let A B represent the surface of the quicksilver whose plane is continued to C; D E F the roof; S the sun whose altitude is required. The ray S H proceeding from the sun's lower limb to the surface of the quicksilver will be reflected thence to the eye in the direction H G, and from G continued to R; consequently the angle S H R is double the angle S H C, the angle of the sun's lower limb above the horizontal plane, so that if we suppose the angle S H R measured by a sextant to be 70° the altitude of the sun's lower limb will be 35°.

Complement. The complement of an altitude is the zenith distance, or what an altitude lacks of 90°.

Composite Sailing. A combination of parallel and great circle sailing.

Computation. To ascertain the ship's position by reckoning or calculation.

Conjunction. Heavenly bodies are in *conjunction* when they have the same longitude; that is, when they meet in the same point or place in the heavens.

Inferior Conjunction. When a planet is in *conjunction* on the side of the sun *nearest* the earth.

Superior Conjunction. When a planet is in *conjunction* on the side of the sun *farthest* from the earth.

What are known as *superior planets* have no *inferior conjunction.*

Constellation. A group of fixed stars, bearing the name of some animal or emblem, such as *the Great Bear, the Dipper*, etc.

Co-ordinates. A system of angles and lines, by the employment of which the position of any point may be determined with reference to a fixed point known as the *origin*, and an assumed direction known as the *axis.*

Co-ordinate Systems. There are two—the *polar* and *rectilinear.*

Copernican System. The true system of the universe, which represents the sun to be at rest in the centre, and the planets to move round it in ellipses.

Cosecant. (See LOGARITHMS.)

Cosine. (See LOGARITHMS.)

Cotangent. (See LOGARITHMS.)

Course. The angle which a ship's keel makes with the meridian when she is sailing.

Course Made Good. The bearing of the vessel from the point left.

Course Protractor. A graduated rule or half-circle employed in shaping the course.

Cross Bearings. Bearings of two or more objects observed from the same point. The intersection of these lines of bearing is the place of the observer. They are very valuable for locating the position of the vessel when on the coast.

Cross Observations. A method of regulating a watch at sea by observing *right* and *left* altitudes of heavenly bodies with a circle of reflection.

Cross Wires. The very fine wires placed in the focus of the object-glass of a telescope.

Culminate. A heavenly body is said to *culminate* when it crosses the meridian.

Upper Culmination. When a heavenly body crosses the meridian *above* the pole.

Lower Culmination. When a heavenly body crosses the meridian *below* the pole.

Cumulo-cirro-stratus. A mixed system of clouds. Also known as *Nimbus*, the rain cloud.

Cumulo-stratus. A blending of cumulus and stratus.

Cumulus. Known as the summer cloud. A species of cloud assuming more or less of a conical figure.

Current. A *current* may be defined as a progressive motion of the water of the sea at certain places.

Current Log. (See GROUND LOG.)

Current Sailing. When a vessel sails through a sea in which a current is experienced its effect will be to set the ship in the direction of its flow, and this is considered as an extra course, and the rate of the current the velocity of the vessel on such course, and this course and distance will be entered regularly in the traverse table.

Cycle. A revolution or round of time within which events recur in the same order.

Cycle of the Sun. Also known as the *solar cycle.* A period of 28 years, after which the same days of the week recur on the same days of the year.

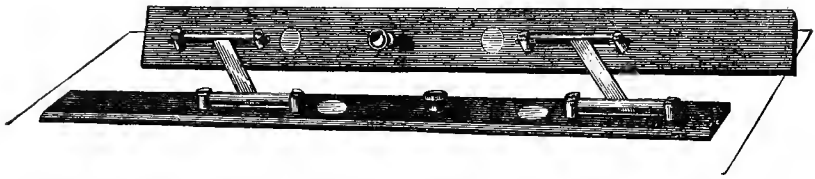
Cycle of the Moon. Also known as the *metonic cycle.* A period of 19 solar years, after which the new and full moons fall on the same days of the year as they did 19 years before. This is sometimes referred to as the *golden number.*

Cycle of Eclipses. A period of 6,586 days—the time of revolution of the moon's node.

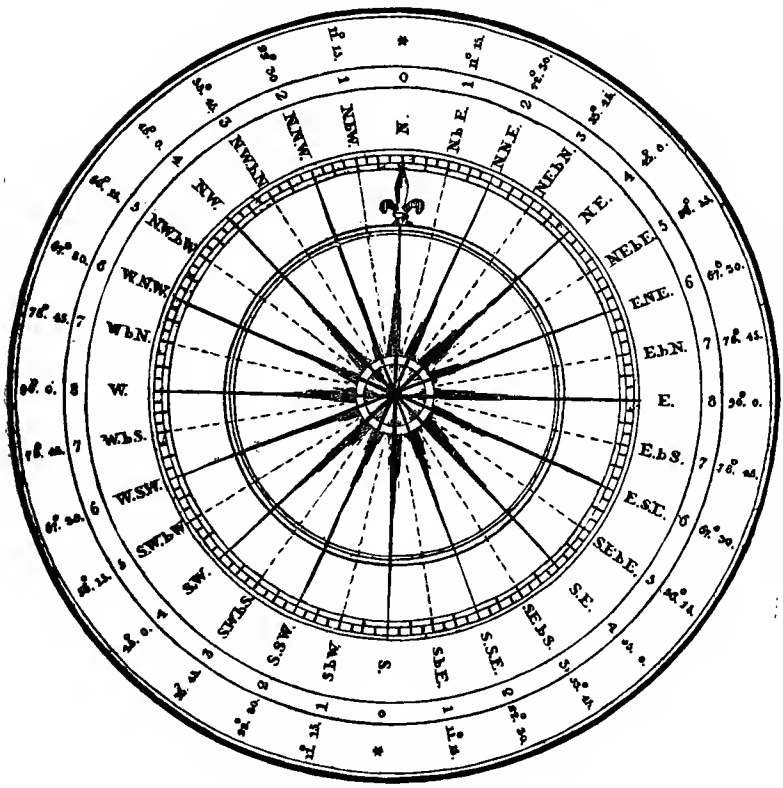
Cycloid. A curve traced out by any point in the plane of a circle rolled along a straight line.

Cyclone. A revolving wind advancing on a line.

SIGSBEE PATENT RULES.

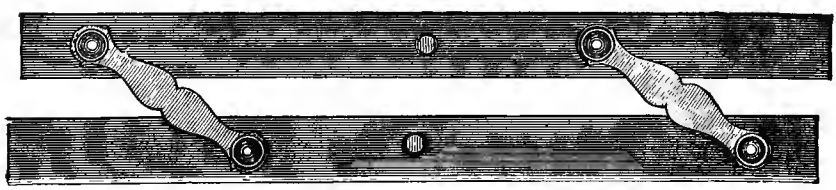


COURSE, POINT AND DEGREE COMPASS.



DIVIDERS.

COMMON PARALLEL RULES.



D.

Darks. Nights during which the moon does not shine.

David's Staff. An old-fashioned navigating instrument for measuring altitudes.

Day. The length of time occupied by a complete revolution of the earth on its axis. Some certain point is chosen to mark the commencement of the day, and, as this is arbitrary, we have several kinds of days and times to consider, owing to various selections.

Astronomical Day. The day commences at noon of the civil day and ends at noon —the hours being counted numerically from 0h. to 24h.

Civil Day. The civil day begins at midnight and ends at midnight, the 24 hours being divided into two equal parts—the twelve from midnight to noon being named A.M. (*before meridian*), and the twelve from noon to midnight named P.M. (*after meridian.*

Intercalary Day. A day inserted in the calendar in leap year.

Circumnavigators' Day. The day added to or subtracted from the date shown by the ship's log-book when the vessel crosses the meridian of 180° in sailing easterly and westerly respectively.

Lunar Day. The interval of time between two successive transits of the moon over the same meridian.

Nautical Day. An old-fashioned way of keeping time at sea. The day began at noon, and was 12 hours in advance of the civil day and 24 hours in advance of the astronomical day.

Sea Day. Same as *nautical day.*

Sidereal Day. The interval of time between two successive transits of a fixed star over the same meridian. Sometimes called a *star day.*

Solar Day. The interval of time between two successive transits of the sun's centre over the same meridian.

Day's Work. Calculating the ship's position by dead reckoning.

Dead Reckoning. Finding the true track which the ship has made and the distance thereon by correcting the courses sailed for leeway, variation and deviation, and entering them in a traverse table, and selecting from the nautical tables the difference of latitude and departure for same.

Declination. The angular distance of a heavenly body from the equinoctial, either north or south.

Degree. A degree is the 360th part of the circumference of a circle. Sixty minutes make one degree.

Depressed Pole. The pole below the observer's horizon.

Departure. The easting or westing made by a vessel. Parallel sailing is all *departure.* Also, *to take departure* is to determine the position of the ship after leaving port, and before the first course is set. Cross-bearings are generally employed for this.

Depression of the Horizon. (See DIP OF THE HORIZON.)

Deviation. The deflection of the compass needle from the magnetic meridian owing to the attraction of the ship's iron, or elements of magnetism in the cargo. It is named *easterly* or *westerly deviation,* according as the north point of the needle is drawn to the *eastward* or *westward* of the magnetic north

Deviation Table. A card showing the 32 points of the compass, and having marked opposite each the error on that particular point, and the compass course necessary to steer in order to make the true or magnetic course given by the chart.

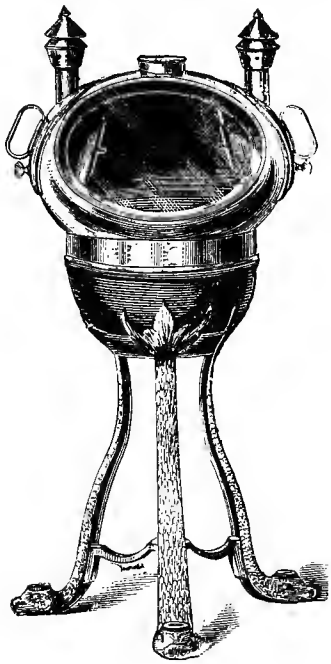
Diagram Compass. The figure of a compass printed on charts.

Diameter. The distance through the centre of any object.

Difference of Latitude. The arc of a meridian included between two parallels.

Difference of Longitude. The arc of the equator included between two meridians.

BINNACLE.



COMPASS CARD.

Dip. When a heavenly body disappears below the horizon it is said to *dip*. Also after a heavenly body has passed over the meridian it is said to *dip*.

Dip of the Horizon. Owing to the elevation of the eye of the observer above the surface of the earth the visible horizon is depressed below the sensible horizon, and this is known as the *dip of the horizon*.

Dip of the Needle. The angle formed with the horizontal by the dipping needle.

Dipping Needle. An instrument which shows the direction in a vertical plane of the magnetic force of the earth. The contrivance consists of a magnetic needle suspended at its centre of gravity so as to move freely in the plane of the magnetic meridian. A graduated circle surrounds the needle.

Dipper. The seven stars in the constellation of the Great Bear, and by means of which the location of the Pole Star is readily determined.

Dip Sector. An instrument for measuring the true dip of the horizon.

Disc. Also *disk*. The face of the sun, moon, or planet.

Diurnal. Relating to the day; performed in a day, as the *diurnal revolution of the sun*.

Diurnal Arc. That part of a circle which is described by a heavenly body from its rising to its setting.

Dividers. An instrument used in navigation for dividing lines, measuring distances on a chart, sweeping circles, etc.

Doldrums. Certain parts of the sea where calms prevail. They exist between the trade winds.

Domestic Navigation. Coastwise and inland sailing.

Double Altitudes. Twofold altitudes of a heavenly body employed in the solution of the same problem.

Double Star. Two stars apparently so close together that to the naked eye they appear to touch.

Douwe's Method. A short process of finding the latitude from two altitudes of the sun.

D. R. Capital letters representing the words *dead reckoning*.

Drift Lead. A hand-lead resting on the bottom when the vessel is at anchor, the fore-and-aft trend of the line telling whether or not the ship is dragging her anchor.

Dry Bulb. A name given to the ordinary thermometer. (See WET BULB.)

Dry Compass. (See COMPASS.)

Dumb Card. A piece of wood or other substance having the points of the compass painted thereon.

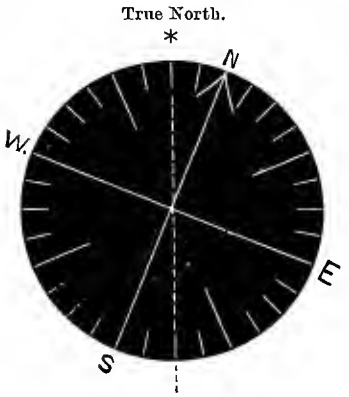
Dumb Telescope. The *line telescope* of an octant or sextant. This tube has no glasses, and is employed simply for guiding the eye to the horizon glass.

E.

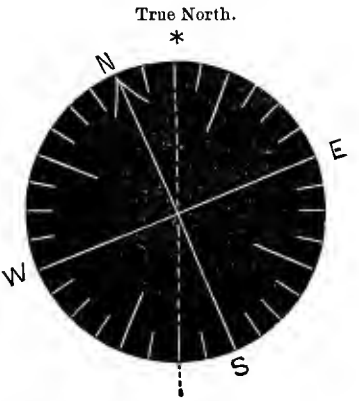
Eager. A sudden and violent flow of tide; the whole of the flood tide moving up a river in one or several successive waves.

Earth. The globe; the terrestrial sphere; in form an oblate spheroid; the third planet in order from the sun; equatorial diameter, 7,926 miles; polar diameter, 7,899 miles; surface, 150,000,000 square miles, of which 51,000,000 is water; moves round the sun in an ellipse in 365¼ days; least distance of the earth from the sun, 94,000,000 of miles; greatest distance, 96,000,000 of miles; velocity of the earth in its orbit, 19 miles per second; daily motion on its axis (velocity increasing from the pole), 1,440 feet per second at the equator; circumference at the equator, rather less than 25,000 miles; earth rotates on her axis in 23h. 56m. 4s.; inclination of the plane of the earth's equator to the plane of the ecliptic, about 23° 28′.

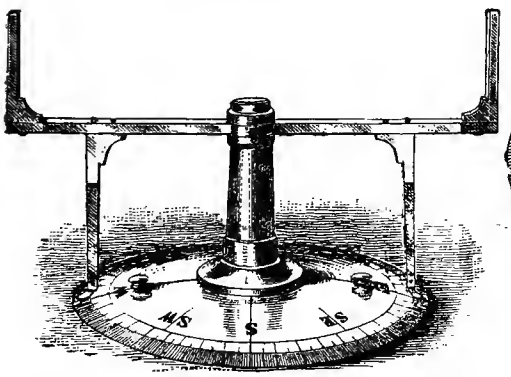
CARD SHOWING
EASTERLY VARIATION.



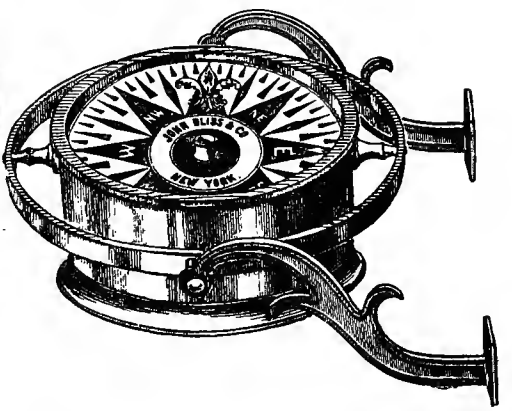
CARD SHOWING
WESTERLY VARIATION.



ALIDADE.

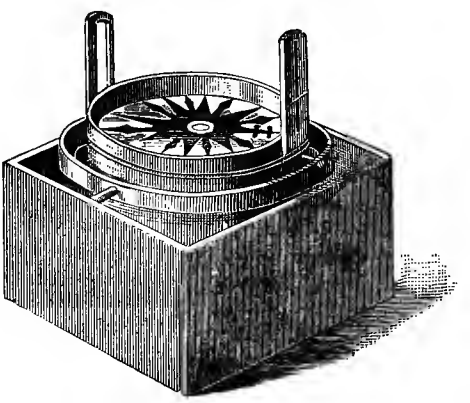


TRANSPARENT COMPASS.



AZIMUTH ATTACHMENT.

AZIMUTH COMPASS.



Earth's Inclination. (See EARTH.)

East. The cardinal point in that part of the horizon where the heavenly bodies rise.

Easterly Deviation. A compass has *easterly deviation* when the north point of the needle is inclined to the right of the magnetic north, owing to the influence of the ship's iron.

Easterly Variation. A compass has *easterly variation* when the north point of the needle is inclined to the right of the true north owing to the angle subtended by the true and magnetic meridians.

Ebb Tide. The reflux of the tide; the running out of the tide towards the sea; the receding of the waters of the sea.

Ecliptic. An imaginary great circle of the heavens or of the sphere, which represents the path described by the earth among the fixed stars in its annual revolution around the sun. The ecliptic intersects the equinoctial at an angle of about 23½°. The ecliptic is the apparent path of the sun about the earth.

Elevated Compass. (See COMPASS.)

Elevated Pole. The pole above the horizon of the observer.

Ellipse. An oval figure; the orbits of planets.

Epact. The difference in length between time as measured by the sun and time as measured by the moon.

Ephemeris. An astronomical almanac; a tabulated form assigning the place of heavenly bodies for various days and hours.

Epitome. An abridged work on navigation.

Equal Altitudes. Double altitudes of the sun—one taken before and the other after meridian, when the angular measurements above the horizon equal one another.

Equation. To make equal.

Equation of Time. The difference between apparent and mean time. Apparent noon sometimes takes place 16 m. 21 sec. before mean noon, and again 14 m. 28 sec. after. It disappears altogether four times in the year—about April 15, June 15, September 1, and December 24.

Equation of Equal Altitudes. In measuring equal altitudes of the sun the declination of that body changes in the interval between the two sights, and the time correction for the hour angle is termed the *equation of equal altitudes.*

Equator. That great circle of the earth the plane of which is perpendicular to the axis of the earth; the imaginary line encircling the earth which is equi-distant from the north and south poles; the dividing line between the northern and southern hemispheres.

Equatorial Current. The westerly flow of the sea near the equator.

Equatorial Circumference. (See EARTH.)

Equatorial Diameter. (See EARTH.)

Equatorial Sector. An instrument employed for ascertaining the difference in the declination and right ascension of two heavenly bodies.

Equatorial Telescope. A telescope mounted in such a manner that the observer is enabled to follow the stars in their movement across the heavens.

Equiangular Spiral. A rhumb line; a line cutting the meridians at a constant angle.

Equinoctial. The celestial equator.

Equinoctial Colure. The meridian passing through the equinoctial points.

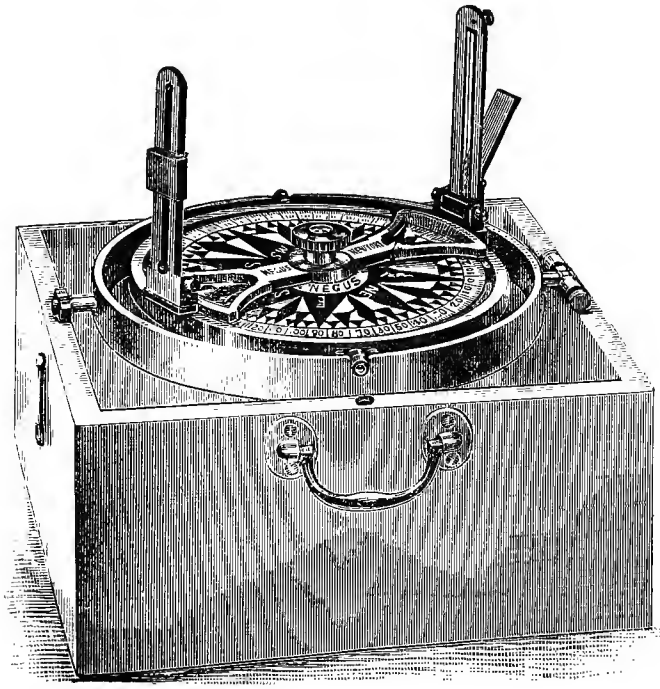
Equinoctial Gales. Storms occurring about the time the sun crosses the equator—about March 21 and September 20.

Equinoctial Points. The two opposite points in which the ecliptic and equinoctial intersect each other.

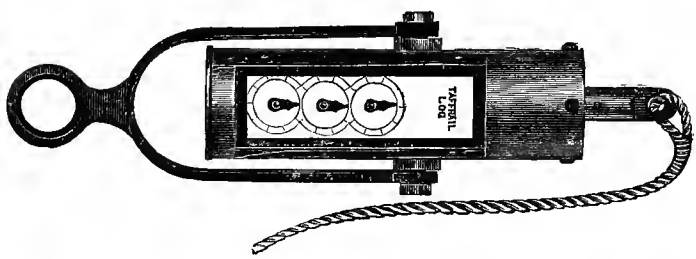
Establishment of the Port. It being of great importance to determine the time of high water for various ports, a *standard tide* is fixed upon, which is indicated by a relative position of the sun and moon, and from which the time of every tide may be deduced. This is known as the *establishment of the port.*

Etesian Winds. Winds that blow at stated times of the year.

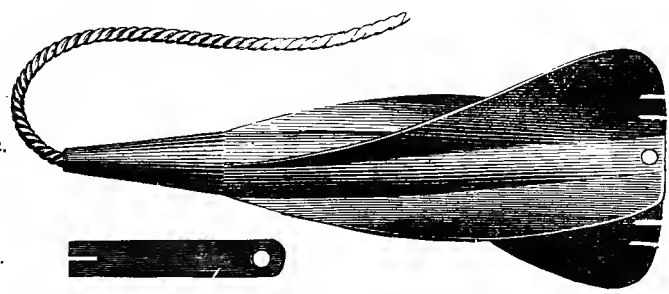
PELORUS.



AMERICAN TAFFRAIL LOG.



INDICATOR, or Register.



ROTATOR.

PITCH ADJUSTER.

F.

Fahrenheit. The inventor of the mercurial thermometer (a temperature measurer) was Gabriel Daniel Fahrenheit, who first made the instrument known in 1714.

Farewell. To take departure. (See DEPARTURE.)

Fathom. Six feet.

Field of View. The circular space in a telescope in which, when the instrument is in focus, objects are visible.

First Meridian. Same as *prime meridian.* A great circle selected as the starting point of longitude; the meridian which passes over the national observatory of a country is generally counted the *first* or *prime meridian.* The French adopt the meridian of Paris, the Spaniards that of San Fernando, the English that of Greenwich, the Russians that of St. Petersburg, the Americans that of Washington, etc.

First Point of Aries. The vernal equinoctial point; the first of the twelve signs which the sun enters at the vernal equinox. The commencement of this sign is called the *first point of Aries,* and it is the origin from which the right ascensions of heavenly bodies are reckoned upon the equator, and their longitudes upon the ecliptic.

First Point of Cancer. The summer solstitial point, which the sun enters about the 21st of June.

First Point of Capricorn. The winter solstitial point, which the sun enters about the 21st of December.

First Point of Libra. The autumnal equinoctial point, which the sun enters about the 22d of September.

Fixed Stars. Stars which appear to maintain their places with reference to one another.

Flood Mark. High water mark.

Flood Tide. The incoming tide; the rising tide.

Flower of the Winds. The old style of diagram compasses printed on charts, having a rose in the middle.

Flux. The coming in or the flow of the tide.

Focal Distance. Also known as *focal length.* The distance between the centre of a lens and its focus, or between the object-glass and the image.

Fore Observation. To face the body or object when measuring an altitude is known as taking a fore observation. (See BACK OBSERVATION.)

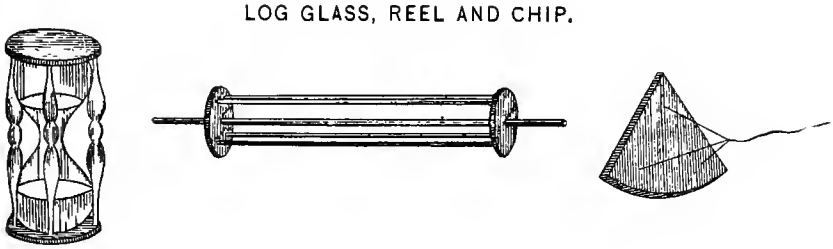
Frigid Zone. Owing to the obliquity of the ecliptic, the earth's surface is divided into *five zones,* namely, the *torrid,* situated between the parallels of 23° 28′ N. and 23° 28′ S.; the *temperate,* extending from the torrid zone to the parallel 66° 32′ north and south; the *frigid.* extending from the temperate zones to the poles.

Full Moon. When the whole illuminated face or disc of the moon is turned toward the earth.

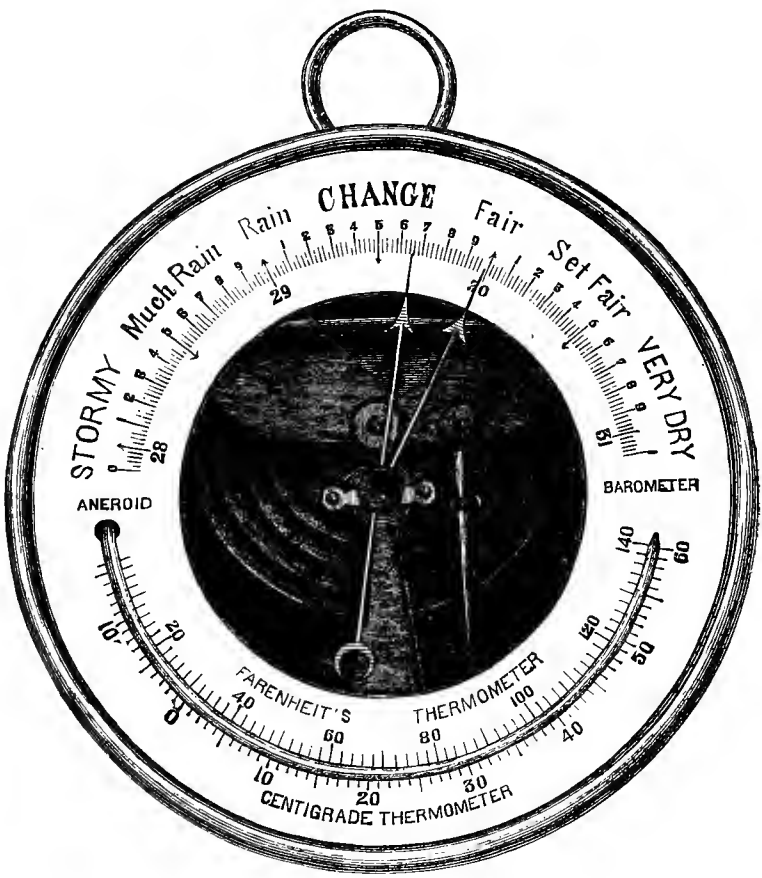
G.

Gained Day. A ship sailing *eastward* meets the sun in his daily course, and in the circumnavigation of the globe the sun will have crossed the ship's meridian once more often than if the vessel had remained stationary; so it is that an easterly circumnavigator *gains* a day. On the other hand, a ship sailing *westward* runs away from the sun in his daily course, and in the circumnavigation of the globe the sun will have crossed the ship's meridian once less often than if she had remained stationary. The date is altered by adding or subtracting one day of the month on crossing the meridian of 180°.

LOG GLASS, REEL AND CHIP.



ANEROID BAROMETER.



Galaxy. The milky way; the luminous band, composed of millions of stars, stretching across the sky.

Gale. When the word is used without any qualification it signifies a violent wind.

Geocentric. Referring to the earth; the motion or position of a heavenly body as viewed from the earth—opposed to *heliocentric.*

Geodesy. To divide; land surveying; the division of the earth's surface.

Geographical Mile. Also known as *nautical* and *sea* mile; the mean length of a minute of latitude; 6,082.66 feet.

Geographical Poles. The extremities of the earth's axis.

Geometry. A branch of mathematics which investigates the measurement of surfaces, solids, angles and lines; the science treating of the properties of magnitude.

Glass. A general name for the barometer, telescope and sand glass.

Godfrey's Chart. A great circle chart, constructed by one Godfrey, making simple the operation of laying down the great circle track.

Golden Number. The moon's cycle is a period of 19 solar years, and after that the new and full moon occurs the same day of the year as 19 years before. *The golden number* shows the years of the moon's cycle, reckoning from 1 to 19.

Graduated Arc. The scale on the arc of an instrument of reflection.

Graduated Rulers. The ordinary parallel ruler having one of its edges divided into degrees, and the other edge in points, half-points, and quarter-points. It facilitates the shaping of the ship's course, being independent of the diagram compasses.

Great Circle. *The arc of a great circle* is the true course between two places, and the length of the track is the shortest distance between them. When a *great circle track* is drawn on a Mercator's chart it represents a curve, except on north, south, east and west courses. A ship sailing on a *great circle* would be constantly changing the direction of her head, according to the curve represented on a Mercator's chart, while in reality she would sail in a direct line from place to place. This may be explained by stating that a Mercator's chart is distorted, and that which appears to be a *straight line* connecting two places (except when drawn N., S., E. and W.) is in reality a curve, and that the represented curve of a *great circle* is a straight line.

Great Circle Charts. Used by navigators for laying out *great circle* tracks. It is constructed on the *Central* or *Gnomonic* projection, all *great circles* appearing on it as straight lines.

Great Circle Sailing. The act of sailing upon an arc of the great circle.

Greenwich Date. The civil date for the meridian of Greenwich.

Greenwich Time. The civil time for Greenwich represented on board ship by the chronometer regulated to the mean time of that meridian.

Ground Log. This instrument consists of a lead made fast to the regular log-line and cast overboard, and is used in shoal water when the vessel is drifting under the influence of a tide or current—no objects being visible whereby to fix the ship's position. The angle made by the line will give the set of the vessel, and the rate will be measured by the seconds glass, as usual.

Gulf Stream. An Atlantic current. The trade winds blow the warm waters of the tropics into the Caribbean Sea and Gulf of Mexico, from whence they are poured out through the Straits of Florida, expanding as they flow to the northward from 40 to 300 miles, and following the curve of the United States coast.

Gunter's Chain. A chain employed in land surveying. It is 66 feet or four poles in length.

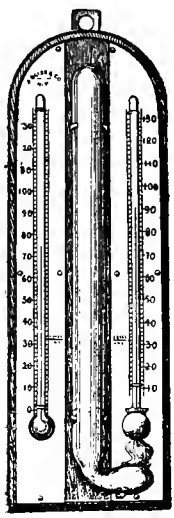
Gunter's Line. A scale on which numbers are laid down opposite their logarithms, and used for performing the operations of multiplication and division of numbers mechanically.

Gunter's Scale. A flat rule two feet in length, having marked on one side scales of equal parts, chords, tangents, sines, etc. On the other side are marked logarithms of these respective parts, and by the employment of which problems in navigation and surveying may be performed mechanically.

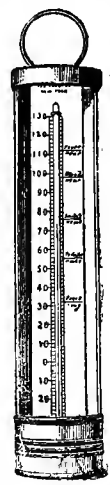
Gunter's Quadrant. An astronomical instrument for finding the hour of the day.

MERCURIAL BAROMETER.

HYGROMETER.



THERMOMETER.



H.

Half Tide. The middle of the tide.

Half Minute Glass. A sand-glass used in logging the ship.

Halley's Chart. A chart showing the variations of the compass by a series of curves.

Halo. A circle or bright ring about the sun or moon—in the first place termed *solar halo*, and in the latter *lunar halo*.

Hanging Compass. A tell-tale compass.

Heaving the Log. Determining the ship's rate of speed through the water by means of the log and line and seconds glass.

Heeling Deviation. The alteration of compass deviation owing to the vessel being off an even keel.

Heeling Error. Same as *heeling deviation.*

Height. The angle of a heavenly body above the horizon; the level of high water; the distance in feet from the hollow of a sea to the crest.

Heliocentric. In relation to the sun's centre.

Heliocentric Place. The point in which a planet would appear if viewed from the centre of the sun.

Heliometer. An instrument made use of for measuring the diameters of the sun, moon and planets.

Heliostat. An instrument which reflects the sun's rays by a mirror, and used in trigonometrical surveys. Also known as *Heliotrope.*

Heliotrope. (See HELIOSTAT.)

Hemisphere. Half of a globe; half of the heavens.

High Latitudes. Parallels far from the equator, and approaching the poles.

High Tide. The greatest elevation of the flood tide.

High Water. Same as *high tide.*

High Water Mark. The mark made on the shore by the tide at the point of its greatest height.

Horizon. The line of the blending of earth (or sea) and sky; the apparent meeting of the earth and heavens.

Apparent Horizon. (See *Visible Horizon.*)

Artificial Horizon. A reflector of quicksilver placed on shore and used for observing altitudes of the heavenly bodies.

Celestial Horizon. The great circle in which the planes of the *sensible* and *rational* horizons produced cut the celestial sphere.

Dip of the Horizon. The angle between the *visible* and *sensible* horizons.

Rational Horizon. An imaginary great circle, the plane of which passes through the earth's centre, the poles being the zenith and nadir, and which divides the globe into two equal parts—parallel with the *sensible horizon.*

Sea Horizon. The circle which bounds the view of the observer—the apparent mingling of sea and sky.

Sensible Horizon. A plane touching the earth at the point where the observer is situated, and which meets the celestial sphere in a circle.

Shore Horizon. When the sea horizon is hidden by the intervention of land, the beach line is known as the *shore horizon.*

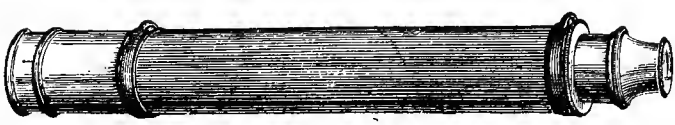
Visible Horizon. When the observer is elevated above the earth's surface by ordinary height of eye, or by standing on a vessel's deck, the limit of view is termed the *visible* or *apparent* horizon, and the angle between the *visible* and *sensible horizons* is called the *dip of the horizon.*

Horizon Glass. The small half-silvered and half-clear glass on the quadrant, octant and sextant.

Horizontal Parallax. The change of position which a body in the horizon, as seen from the *surface* of the earth, would assume if it was viewed frrom the *centre* of the earth.

MARINE BINOCULAR GLASSES.

SPYGLASS OR TELESCOPE.

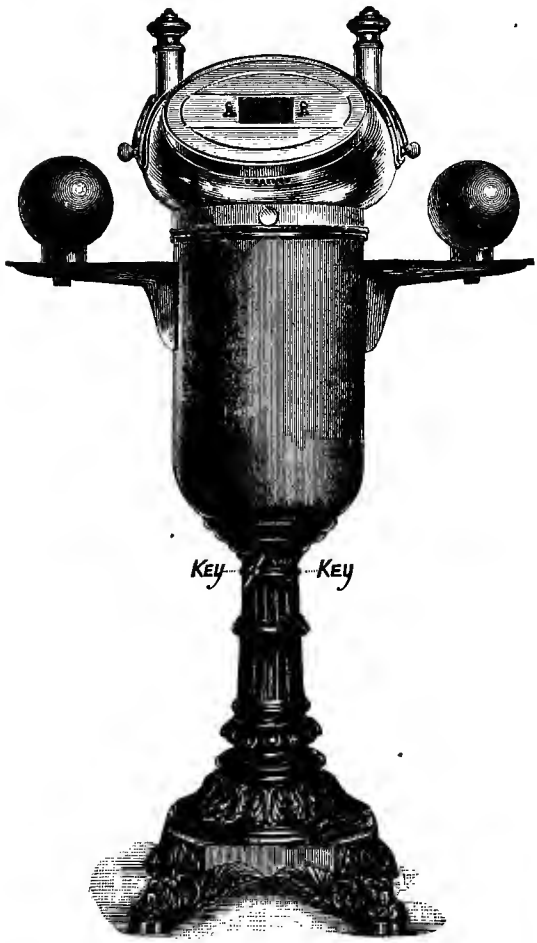


Horse Latitudes. A region of calms on the borders of the trade winds.
Hour. Sixty minutes of time; the twenty-fourth part of a day.
Hour Angle. The angular distance of a body east or west of the meridian; an angle at the poles included between different hour circles.
Hour Circle. A great circle of the celestial sphere passing through the two poles; it marks out all places having the same hour angle.
Hurricane Centre. The central calm space around which the winds revolve. (See BEARING OF STORM CENTRE.)
Hydrographic Chart. Charts which show sections of the navigable waters of the earth, and which describe the rocks, shoals, tides, currents, soundings, etc., to be met with in navigation, suggestions for making passages, etc.
Hydrography. Description of the navigable waters of the earth, rocks, shoals, tides, currents, soundings, etc.
Hygrometer. An instrument employed for measuring the amount of moisture in the atmosphere. Also known as a *wet bulb thermometer.*
Hypothenuse. The longest side of a right-angled triangle.

I.

Ice. (See PART I.)
Incidence. When light is reflected from a surface, as in the artificial horizon, the *angle of incidence* is equal to the angle of reflection. (See engraving.)
Inclination. (See EARTH'S INCLINATION.)
Index. A name given to the flat bar on a navigating instrument of reflection which has the mirror on one end and the vernier on the other. Also known as *sliding limb. Index* is also the integer part of a logarithm.
Index Correction. The adjustment of the index glass of the quadrant, octant or sextant, which consists of making the index glass perpendicular to the plane of the arc.
Index Error, When the horizon glass and index glass are parallel to one another, zero on the vernier should cut zero on the arc. If this is not effected, then a correction *(index error)* is to be applied to the reading of the altitude as follows: If 0 on the vernier is to the right hand of 0 on the arc, the correction will be *additive*, but if to the left hand it will be *subtracted.*
Index Glass. The mirror at the top of the index or sliding limb which reflects the image of the sun to the horizon glass.
Inequalities in Altitude, The *slight* error due to the expansion and contraction of the sextant frame from changes of temperature enters into the consideration of equal altitudes, but in practical work the difference is not sensible.
Inter-cardinals. The North-east, South-east, South-west and North-west points of the compass.
Interpolation. Finding the value of an element falling between two given values, as the reduction of the sun's declination for any hour previous to or after noon.
Instrumental Parallax. The error of an angle measured on a quadrant, octant or sextant, due to the horizon glass not being on the same horizontal plane with the index glass. This error is only perceptible when the object observed is near to, as when attempting to adjust the instrument by an object a short distance removed.
Iron-bound Coast. Shores composed of perpendicular rocks.
Intercalary Day. (See DAY.)
Internal Contact A transit of Mercury or Venus across the sun's disc.
Irradiation. Illumination; apparent enlargement of the diameter of heavenly bodies. This seldom exceeds 5″ in the case of the sun, so that for all practical purposes *irradiation* is never considered.

"NEGUS" COMPENSATING BINNACLE.



J.

Jacob's Staff. Also known as *Cross Staff.* A mathematical instrument used for taking altitudes.

Journal. The log-book is sometimes termed a *sea-journal.*

Julian. A reform of the calendar was introduced in Rome by Julius Cæsar, and adopted and used by all Christian countries until 1582, when it was reformed by Pope Gregory XIII.

Julian Epoch. The date of the commencement of the Julian calendar, January 1st, 46 years B. C.

Julian Period. A cycle of 7,980 years, dating from 4713 B. C.

Julian Year. The year, equal to 365¼ days, adopted in the Julian calendar.

K.

Kepler's Laws. This eminent astronomer, born in Würtemberg in the year 1571, determined the true laws of the motions of the planets around the sun. The *three laws* which he discovered, are:

First. The orbit of each planet is an ellipse having the sun in one focus.

Second. As the planet moves around the sun its radius-vector, or line joining it to the sun, passes over equal areas in equal times.

Third. The square of the time of revolution of each planet is proportional to the cube of its mean distance from the sun.

L.

Land Blink. A brightness in the atmosphere in the vicinity of land covered with snow.

Land Breeze. (See PART I.)

Landfall. (See PART I.)

Landmark. Any shore object which serves as a guide to vessels.

Latitude. The distance of a place on the earth's surface north or south of the equator; the angular distance from the equator measured on a meridian.

Celestial Latitude. The declination of a heavenly body; the angular distance of a heavenly body from the equinoctial, either north or south.

Difference of Latitude. The difference in degrees, minutes and seconds of arc between two parallels.

Geocentric Latitude. The distance of a heavenly body from the ecliptic, as viewed from the centre of the earth.

Heliocentric Latitude. The distance of a heavenly body from the ecliptic as seen from the centre of the sun.

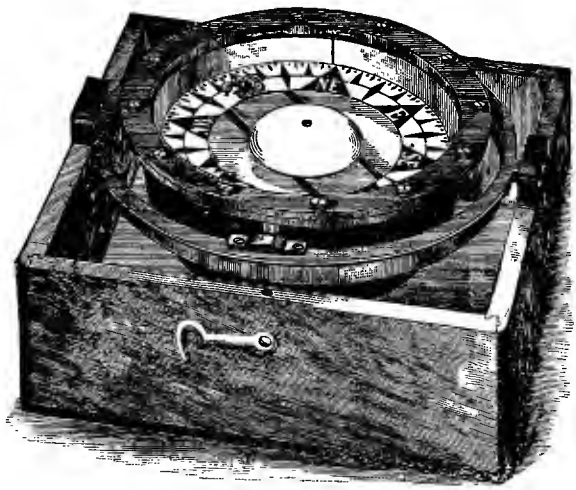
Terrestrial Latitude. Latitude measured from the equator, north and south, on the earth's surface.

Latitude by Account. The parallel of the vessel determined by dead reckoning.

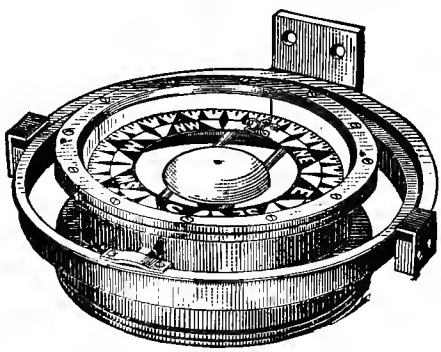
Latitude by Dead Reckoning. The parallel of the vessel determined by the employment of a traverse table. (See DEAD RECKONING.)

Latitude by Observation. The parallel of a vessel determined by an observation of a heavenly body.

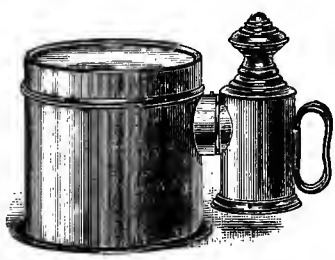
RITCHIE LIQUID COMPASS



RITCHIE DOUBLE CARD TRANSPARENT COMPASS.



BOAT BINNACLE IN BRASS.



Lead and Line. (See PART I.)

League. A measure of distance, varying in different countries, as follows: United States, France, England and Italy, 6,075 yards; Germany and Holland, 8,100 yards; Spain, 7,416 yards; Russia, 8,468 yards.

Lens. The magnifying glasses used in telescopes.

Level Error. The error of a transit instrument owing to the deviation of the axis from the horizontal.

Limiting Parallels. Those northern and southern parallels outside of which occultations of the stars or planets with the moon is not possible.

Line. A term used in relation to the equator.

Line of Chords. *The line of chords* upon the sector is used for protracting any angle when the limited size of the paper will not admit of an arc being drawn upon it with the radius of a common *line of chords.*

Line of Collimation. The line passing through the centre of the telescope of an astronomical instrument—the intersection of the cross-wires in the focus.

Line of Lines. Found upon Gunter's rule, and used to divide a given line into any number of equal parts.

Line of Nodes. That line which passes through the nodes of an orbit.

Line of No Variation. Two lines on the earth's surface extending from the magnetic north to the magnetic south pole; all places on which the magnetic and true meridians coincide. (See chart, page 149.)

Line of Polygons. Used to inscribe a regular polygon in a circle.

Line of Sines, Tangents and Secants. Scales of several radii.

Liquid Compass. (See COMPASS.)

Littrow's Method. A certain rule, named after the inventor, for determining the longitude by observation, employing circum-meridian altitudes.

Local Attraction. Magnetic elements outside the ship, affecting the pointing of the compass on board.

Local Time. The time confined or limited to a place; time calculated by the passage of the mean sun over the meridian.

Local Transit. The crossing or passage of a heavenly body over the meridian of the observer.

Log. An instrument used for measuring the rate of a vessel's speed through the water. There are many kinds, the most ancient being known as the "old-fashioned chip log," and the patent logs (working by a series of cog wheels) being known respectively as the "Bliss American Taffrail Log," the "Walker Taffrail Log," the "Massey Harpoon Log," the "Cherub Log," and the spring log, known as the "Clark Russell Log." (See engravings; CURRENT LOG and GROUND LOG.)

Log Board. (See PART I.)

Log Book. (See PART I.)

Log Chip. A flat piece of board in the shape of a quadrant—a part of the old-fashioned log.

Log Dial. The register of a taffrail log.

Log Glass. The sand-glass belonging to the chip log.

Logged. Recorded in the log-book.

Log Line. The line belonging to the chip log, or the line which connects the propeller of a taffrail log with the register.

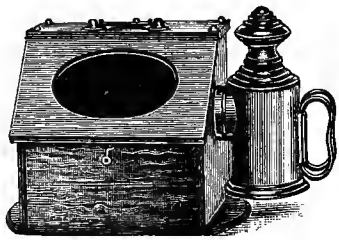
Log Reel. The reel on which the log-line is wound.

Log Ship. Same as *log chip.*

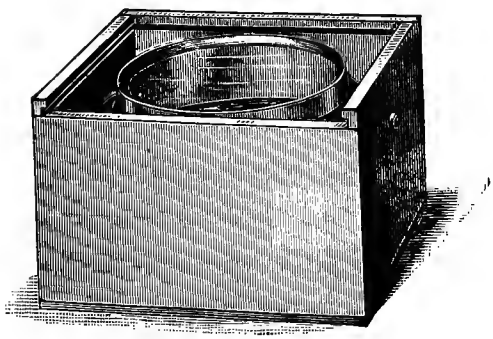
Log Slate. (See PART I.)

Logarithm. The exponent of the power to which a fixed number, called the base, must be raised to produce a certain other number. Logarithms were invented by Lord Napier, a Scottish baron. They abridge greatly the labor of trigonometrical calculation, multiplication, division, involution and evolution of natural numbers being performed respectively by the addition, subtraction, multiplication and division of the corresponding logarithms. Lord Napier's base is 2,71828, and the *common*, constructed by Prof. Henry Briggs, is 10.

BOAT BINNACLE IN MAHOGANY.



DRY COMPASS.



TELL-TALE COMPASS.

Logistic Logarithm. The logarithm of the number of seconds in an hour (3,600) diminished by the log of the number of seconds less than an hour.

Longitude. The distance, expressed in degrees, or hours, east or west of a given meridian.

Celestial Longitude. The distance of a heavenly body from the vernal equinox, reckoned on the ecliptic. *Celestial Longitude* is reckoned from the first point of Aries, eastward, from 0° to 360° and from 0 h. to 24 h.

Difference of Longitude. The difference in degrees, minutes and seconds of arc, or the difference in hours, minutes and seconds of time between two meridians.

Geocentric Longitude. The longitude of a heavenly body as viewed from the earth.

Heliocentric Longitude. The longitude of a heavenly body as viewed from the sun.

Terrestrial Longitude. The distance of any place on the earth's surface, east or west of a given meridian, expressed in arc or time.

Longitude by Account. The meridian of the ship determined by dead reckoning.

Longitude by Chronometer. The meridian of the ship determined by an altitude of a heavenly body and the corresponding time shown by the chronometer.

Longitude by Dead Reckoning. The meridian of the ship determined by the employment of a traverse table. (See DEAD RECKONING.)

Longitude by Equal Altitudes. The meridian of the vessel determined by observing equal altitudes of the sun—one before and the other after his meridian passage.

Longitude by Observation. The meridian of the vessel determined by an observation of a heavenly body.

Longitude in Arc. Longitude expressed in degrees, minutes and seconds of angular measure (° ′ ″).

Longitude in Time. Longitude expressed in hours, minutes and seconds of time (h. m. s.)

Lost Day. (See GAINED DAY.)

L's of Navigation. (See PART I.)

Low Latitudes. Parallels near the equator.

Low Tide. (See PART I.)

Lower Transit. The passage (transit) of the sun, moon, planets and stars over the meridian 180° *from the upper transit.*

Lubbers' Mark. Same as *Lubbers' Point.*

Lubbers' Point. (See PART I.)

Lunar. Pertaining to the moon.

Lunar Distance. The angular distance of the moon's centre from certain other heavenly bodies.

Lunar Inequality. The variation in the moon's motion.

Lunar Observation. An observation of the moon; the angular distance of the moon from another heavenly body, the altitudes of each, and the chronometer time of observation the data for calculating the longitude.

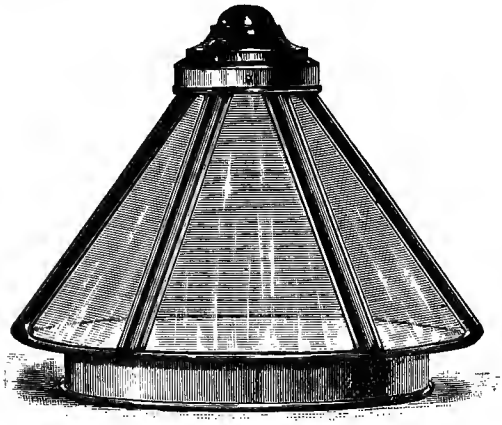
Lunation. The period between two successive new moons; the lunar month; the synodical period.

Luni-solar. Combining the revolutions of the sun and moon.

Luni-solar Period. The period after which the eclipses return in the same order—532 years.

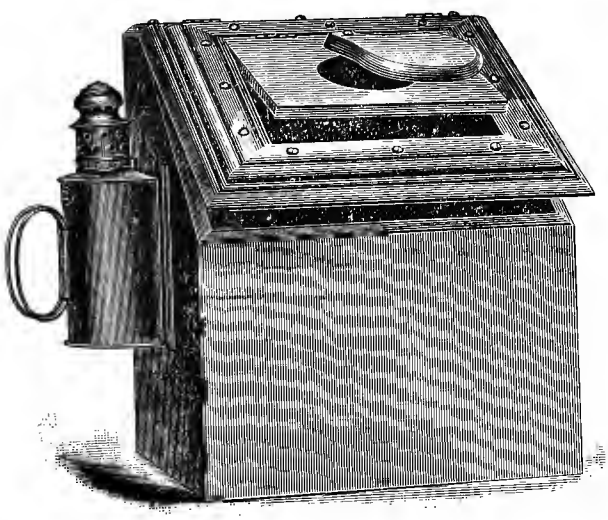
Luni-tidal Interval. The interval of time existing between the moon's transit and the next following high water.

"NEGUS" IMPROVED BINNACLE TOP.



POCKET COMPASS.

PILOT-HOUSE BINNACLE.



M.

Macrometer. A double reflecting instrument employed for measuring the distance of inaccessible objects.

Maculæ. Dark spots on the face of the sun.

Magellanic Clouds. Star clusters near the south pole of the heavens.

Magnet. A substance which attracts iron.

A natural magnet is an ore, generally of a gray color, and consisting principally of oxides of iron and a small portion of quartz and alumina.

An artificial magnet is a bar, such as a compass needle, or a mass of iron or steel, to which magnetic force has been imparted by direct contact with a magnetic body, such as an artificial magnet in the shape of a horse-shoe, or by a dynamo.

Magnetic Amplitude. The bearing by compass of a heavenly body at rising and setting from the east and west points of the heavens—thus we could say the sun's bearing at rising was east 10° north, etc.

Magnetic Azimuth. The bearing by compass of a heavenly body when above the horizon, from the north or south poles of the heavens—as, for example, the sun bore N. 85° east, etc.

Magnetic Axis. The direction of the polarization of the magnetic needle.

Magnetic Bearing. The bearing of an object by compass.

Magnetic Dip. The inclination towards the earth of one of the poles (points) of a magnetic needle.

Magnetic Equator. A line drawn through those points on the earth's surface where the magnetic dipping needle preserves a horizontal position. The magnetic equator is not the same as the earth's equator, but an irregular line running round the globe, not greatly distant from the earth's equator, which it crosses in two places, one near the west coast of Africa, and the other about the middle of the Pacific Ocean.

Magnetic Induction. The power possessed by a magnet of communicating its properties to a bar of steel in its near vicinity, though perhaps not touching it; what is known as *earth's induction* is the communication of magnetism from the earth to iron and steel bodies, such as the hulls of vessels, etc.

Magnetic Meridian. The direction assumed by a magnetic needle when suspended so as to turn freely, and removed from disturbing magnetic influences.

Magnetic Needle. A magnetic bar of steel balanced on a pivot so as to turn freely and settle in the magnetic meridian.

Magnetic Poles. Two places on the earth's surface, approximate to the north and south poles, where a dipping needle assumes a position perpendicular to the horizon. The *north magnetic pole* is situated in the latitude of about 70° north and the longitude of 97° west; the *south magnetic pole* in the latitude of about 70° south and the longitude of 145° east.

Magnetism. The power of magnetic attraction; the power of a magnet to attract iron.

Magnifying Telescope. A tube fitted with convex glasses or lens by which the apparent magnitude of an object seen through it is increased.

Magnitude. Comparative bulk or dimension; the stars are of the first, second, third, fourth, fifth, sixth and seventh magnitudes; stars smaller than the seventh magnitude cannot be seen with the naked eye, and are called telescopic stars.

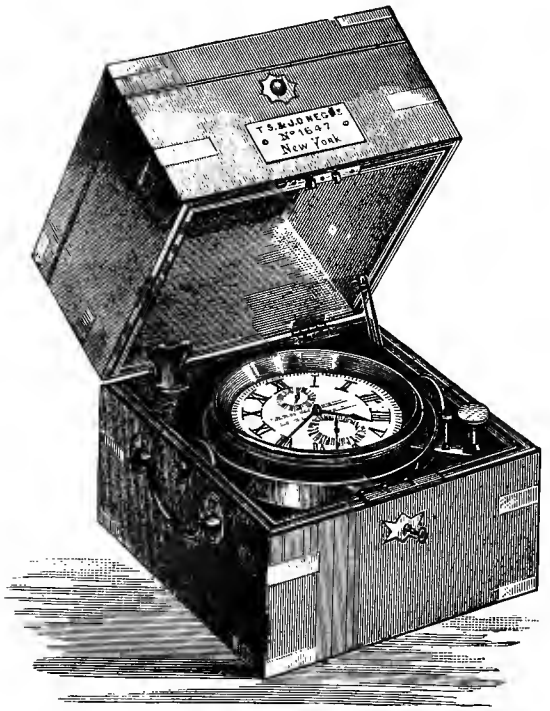
Making the Land. To sight the land from a distance when coming from seawards.

Malström. A whirlpool off the Norwegian coast caused by the tides.

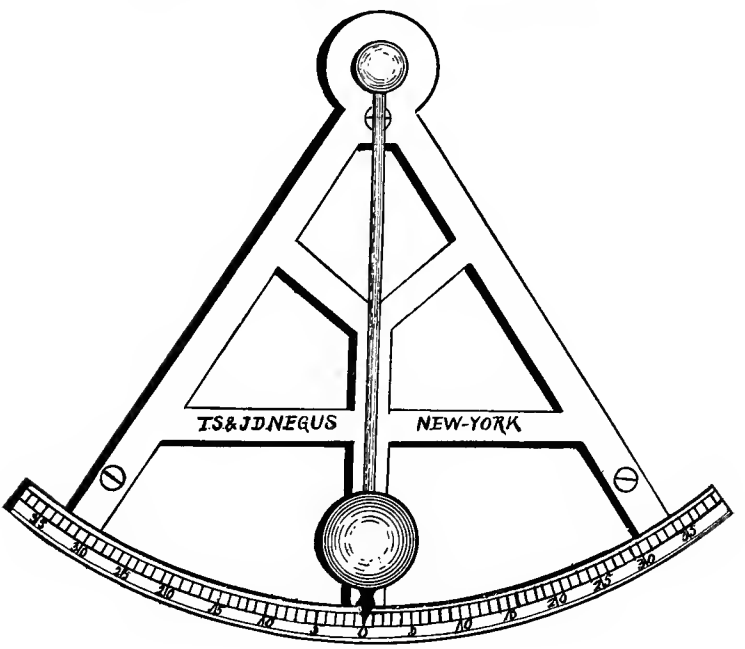
Mariner's Compass. A magnetic instrument used on board vessels which indicates the cardinals and the intermediate points; a pathfinder for the mariner across the trackless waste.

Maritime. Relating to the sea.

MARINE CHRONOMETER.



PENDULUM CLINOMETER.



Maritime Positions. The latitude and longitude of certain places on the sea-coast.

Marks and Deeps. (See PART I.)

Mean Low Water. The middle point between low water at the neap (low) and low water at the spring (high) tides.

Mean Noon. When the mean sun crosses the meridian.

Mean of the Altitudes. The average altitude obtained by dividing the aggregate of the observed altitudes by the figure representing the number of altitudes taken.

Mean of the Times. The average time, obtained by dividing the aggregate of the several times by the figure representing the number of times noted.

Mean Refraction. The refraction for various altitudes calculated for a barometer standing at 30 inches and a thermometer at 50°.

Mean Solar Time. Time measured by the motion of the mean sun. Clocks and chronometers represent *mean solar time.*

Mean Sun. An imaginary sun conceived to move uniformly in the equator, so as to give a value of 24 hours to the day. The *mean sun* is sometimes in advance of the true sun and sometimes behind it to the amount of about 16 minutes, and this deviation is known as the equation of time.

Mean Time. Same as *mean solar time.*

Mercator's Chart. (See CHART.)

Mercator's Projection. A portion of the sphere represented on a plane, both the meridians and parallels being straight lines parallel to one another, the length of the degrees of latitude increasing from the equator toward the poles in the same proportion in which that of the degrees of longitude is increased by making the meridians parallel.

Mercator's Sailing. To shape a course and find the distance between two points by employing the meridional parts of the two latitudes (also logarithms in some cases) instead of using a middle latitude, as in middle latitude sailing.

Mercurial Barometer. (See BAROMETER.)

Meridian. The highest point of the great circle which the sun describes from rising to setting, and which highest point it crosses at apparent noon; an imaginary great circle of the sphere which passes through the earth's axis and the observer's zenith; the highest point of anything.

First Meridian. The meridian from which longitude is reckoned, its choice being arbitrary.

Celestial Meridian. A great circle of the celestial sphere passing through the poles.

Prime Meridian. The same as *first meridian.*

Terrestrial Meridian. Same as *meridian line.*

Meridian Altitude. The altitude of a heavenly body when in the meridian—when it bears true north and south.

Meridian Line. A terrestrial meridian, or a meridian as drawn on the surface of the earth.

Meridian Observation. An altitude of the sun, moon or planets when on the meridian.

Meridian Passage. The passage of a heavenly body over the meridian.

Meridian Sailing. Sailing due north or south—opposed to parallel sailing.

Meridian Zenith Distance. The complement of the meridian altitude, or what that altitude lacks of 90°.

Meridional Difference of Latitude. The amount representing the same proportion to the difference of latitude that the difference of longitude represents to the departure.

Meridionally. In the direction of the meridian.

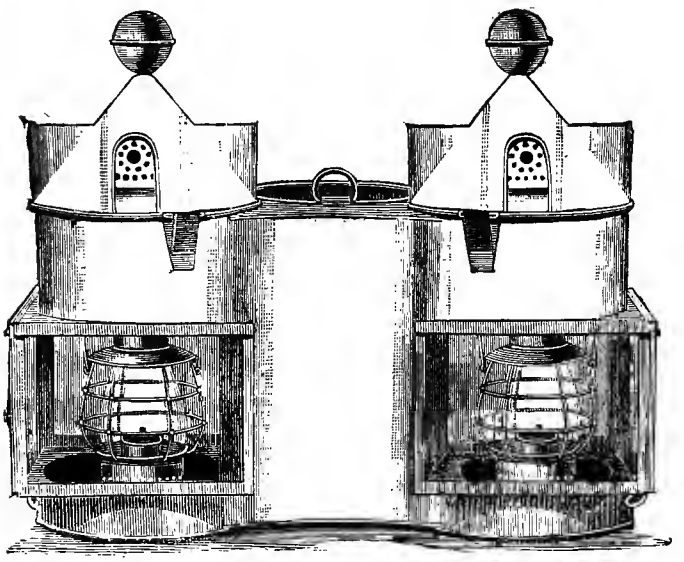
Meridional Parts. According to Mercator's system, parts of the projected meridian which correspond to each minute of latitude from the equator towards the poles.

Meridional Projection. A projection of a sphere, the plane of projection being parallel to the meridian.

Middle Latitude. The point situated midway on a north and south line between

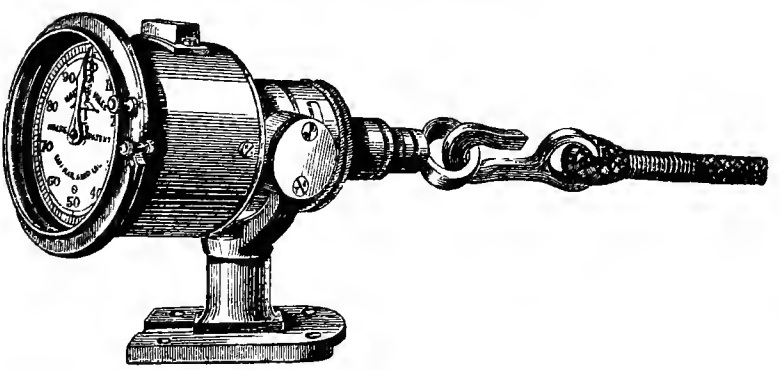
STERN OR POLE BOX LIGHT

FOR STEAMBOATS.



No. 145.

CHERUB TAFFRAIL LOG.



two parallels; *middle latitude* is half of the sum of two latitudes of the same name, but half of the difference of two latitudes of different names.

Middle Latitude Sailing. Shaping a course and finding the distance between two points by considering that the parallel to sail on is the mean between the latitude in and the one sought.

Mile. A measure of distance; the common mile is called a *statute* mile—5,280 feet; the *nautical, geographical* and *sea* mile is the mean length of a minute of latitude—6,082.66 feet; a nautical mile is termed a *knot.*

The Midnight Sun. In high northern and southern latitudes during the summer season of the year the sun does not set, and at 12 o'clock at night it crosses the meridian 180° (half circle) distant from the meridian which it crossed over at noon; hence the name, *the midnight sun.*

Minute. The sixtieth part of on hour and the sixtieth part of a degree; a mile of latitude is expressed as a minute of latitude.

Minute of Arc. A minute of angular measure; a minute division on the quadrant, octant, sextant, etc.

Mistrals. A northwest wind experienced in the Mediterranean Sea.

Moon. Diameter about 2,160 miles; mean distance from the earth, 238,800 miles; average velocity of revolution, 2,280 miles per hour; sidereal period of revolution, 27d. 7h. 43m.; mean apparent diameter, 32′.

Moon Culminating Star. A star coming to the meridian at the same time with the moon.

Moon's Age. Time elapsed since the last conjunction—given for every day of the month in the nautical almanac.

Moon's Apogee. The moon's greatest distance from the earth.

Moon's Perigee. The moon's least distance from the earth.

Moon's Transit. The moon's passage over the meridian.

Monsoons. Winds in the Indian Ocean which blow from the southwest from April to October, and from northeast from October to April.

Morning Star. The planet Venus when it rises before the sun; when it appears in the west just after sunset it is called the *evening star.*

Mountain Winds. The Pampero, which blows chiefly in the summer season from the Andes across the pampas of Buenos Ayres to the sea-coast. It is a dry, northwest wind, conveying large quantities of sand and dust, and extending at times to considerable distance seawards.

Multiple Star. Several stars appearing in close proximity to each other so as to form a cluster.

N.

Nadir. That point in the invisible heavens diametrically opposite to the zenith. The *Nadir* and *Zenith* are the two poles of the horizon.

Napier's Method. A diagram of a compass card exhibiting a combination of a curved line and a straight line, the deviation between which shows at once the amount of compass deviation for each point.

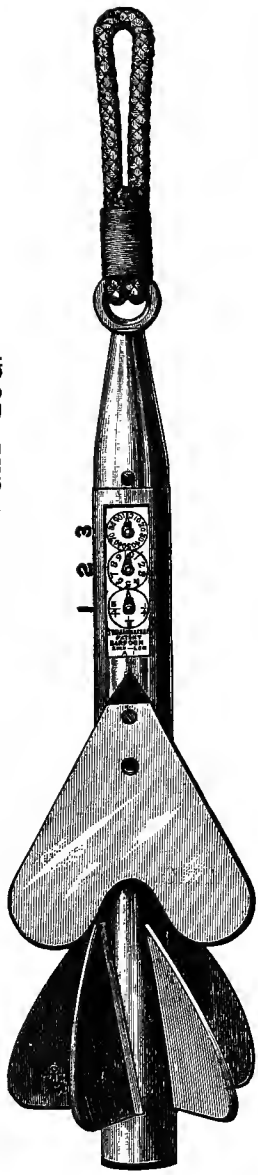
Nauropometer. An instrument used for ascertaining the ship's heel.

National Observatories. Astronomical stations situated in the capital cities of the different nations.

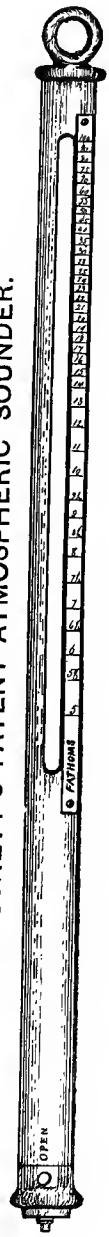
Natural. When the term *natural* is used in navigation it has reference to natural sines, tangents, etc., and natural numbers. Natural sines, tangents, etc., are sines, tangents, etc., taken in arc, whose radii are 1. Natural logarithms are those taken in a system whose modulus is 1.

Nautical. Marine; maritime; pertaining to ships; navigation, etc.

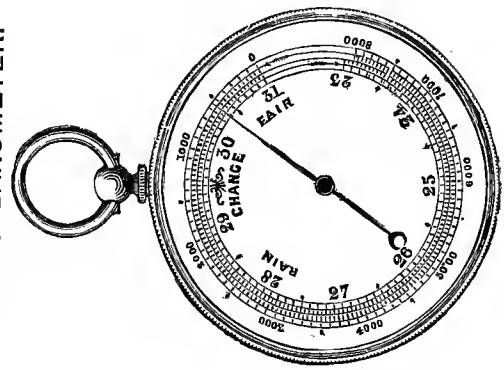
Nautical Almanac. (See ALMANAC.)



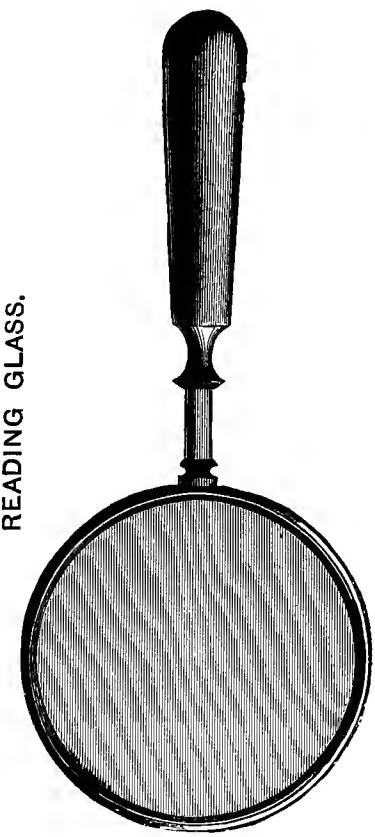
HARPOON OR SUBMERGED LOG.



BASSNETT'S PATENT ATMOSPHERIC SOUNDER.



POCKET BAROMETER.



READING GLASS.

Nautical Astronomy. That part of astronomy which is made use of in navigation.

Nautical Mile. (See MILE.)

Nautical Stars. Certain bright stars employed by navigators for determining the ship's position.

Nautical Tables. Tables computed for the solution of various navigation problems.

Navigation. The science of conducting a vessel from one port to another.

Neap Tides. The lowest tides in the month, occurring four or five days before the new and full moons—when the attractions of the sun and moon on the waters do not act in the same line.

Needle. The magnetized steel bar of the compass.

Neutral Points. In relation to the compass, the points of no semi-circular deviation.

New Moon. The moon is said to be *new* immediately after her conjunction with the sun—when she commences to increase.

Nimbus. A combination of cumulo-cirro-stratus; a system of clouds discharging rain, hail or snow: also known as the rain cloud.

Noah's Ark. Elliptically-parted clouds seen after a storm, and considered by seamen as a promise of fine weather to come.

Nocturnal. Pertaining to the night.

Nocturnal Arc. That part of a circle described by a heavenly body between its setting and rising.

Node. In geometry an oval figure formed by the intersection of one branch of a curve with another; in astronomy one of the two opposite points at which the orbit of a planet or comet intersects the plane of the ecliptic.

Ascending Node. The node which a planet, etc., crosses from south to north.

Descending Node. The node which a planet, etc., crosses from north to south.

Line of the Nodes. A straight line joining the two nodes.

Noon. Midday; 12 hours from midnight; when the sun is in the observer's meridian.

Apparent Noon. When the sun's centre is in the meridian.

Mean Noon. When the mean sun is in the meridian.

Sidereal Noon. When the first point of Aries comes to the meridian.

Northern Hemisphere. That part of the globe on the north side of the equator.

Nutation. A small and slow giratory motion of the earth's axis, producing a periodical fluctuation of the apparent obliquity of the ecliptic, and of the velocity of the regression of the equinoctial points.

O.

Object Glass. The lens in the large end of a telescope; the lens which is the first to receive the rays of light.

Observation. The act of measuring an altitude of a heavenly body.

Working an Observation. The process of calculating the latitude or longitude of the ship from the observed altitude.

Observed Altitude. The angular distance of a body measured on an instrument of reflection, such as a quadrant, etc.

Occultation. The eclipse of one heavenly body by another. The commencement of the *occultation* is known as the *immersion*, and the termination as the *emersion*.

Octant. A navigating instrument of reflection. An *octant* is really a metal-frame quadrant, and is divided so as to read to 15″ of arc.

Off Shore Tide. A tide setting from the shore.

Off Shore Wind. A wind blowing from the land.

Off Soundings. Water so deep that soundings cannot be obtained with the deep-sea lead and line, which is marked to 80 fathoms.

On Soundings. A depth of water capable of being measured with the deep-sea lead and line.

Opposition. When the longitude of a heavenly body is 180° from the sun (half the circumference) it is said to be in *opposition.*

Orbit. The imaginary line described by a planet round the sun, or a satellite round its primary.

P.

Parallax. The apparent angular variation in the position of a body as seen from two different points of view.

Parallax in Altitude. A term made use of in contradistinction to *horizontal parallax.*

Annular Parallax. The maximum value of the heliocentric parallax.

Binocular Parallax. The angular difference of an object as viewed by the eyes of the observer.

Diurnal or *Geocentric Parallax.* The difference between the place of a body as viewed at the same instant from the surface and from the centre of the earth. When viewed from the surface of the earth we have the *apparent* place, but could it be viewed from the centre of the earth we would have its *true place.* Thus the arc intercepted between the true and apparent places is the *diurnal* or *geocentric parallax,* which varies with the altitude of the body observed, being zero when the body is in the zenith, and having the greatest parallax when the body is 0°, or without altitude.

Heliocentric Parallax. The difference in the place of a body as seen from the earth and from the sun; the angle drawn from the body to the centre of the earth and the centre of the sun.

Horizontal Parallax. The maximum value of the geocentric parallax—when the body observed is in the horizon, hence the term. *Horizontal Parallax* varies with the latitude of the observer, having its greatest value at the equator.

Parallel Rulers. An instrument employed in navigation for shaping the ship's course on the chart. In construction it is two flat rules of ebony or gutta percha, connected by pivoted cross-pieces of brass so that the rules may be spread apart, yet still preserve their parallelism to each other.

Parallels. Lying in the same direction; all parts equally distant; small circles of the terrestrial sphere parallel to the equator; small circles of the celestial sphere parallel to the ecliptic.

Parallel Sailing. Sailing true east or west; sailing on a parallel of latitude.

Parhelia. Mock suns appearing at the same height above the horizon as the true sun, and connected with the same by a horizontal halo.

Par Line. The normal level of the barometer at a given place.

Passage. The crossing of a heavenly body over the meridian is also known as the meridian passage; the journey from one place to another by water.

Patamometer. An instrument employed for measuring the force of currents.

Patent Log. (See LOG.)

Pelorus. An instrument for taking bearings, on the principle of the alidade. (See engraving.)

Penumbra. In astronomy that portion of the shadow in an eclipse which is not entirely deprived of light.

Perigee. Near the earth; the point in the orbit of a heavenly body (particularly the moon) which is nearest the earth—opposed to *apogee.*

Perihelion. Near the sun; the point in the orbit of a heavenly body which is nearest the sun—opposed to *aphelion.*

Personal Equation. Difference in judgment, such as in measuring angles, etc., by different observers.

Personal Error. Same as *Personal Equation.*

Perturbations. Irregularities in motion of a heavenly body in its orbit.

Pilot Water. Certain limits within which the law obliges a vessel to pay pilotage fees.

Place. The point on the celestial sphere to which a heavenly body is referred by the observer.

Apparent Place. The point to which a body is referred by an observer on the earth's surface, viewing it through the earth's atmosphere.

Geocentric Place. The point to which a body would be referred were the observer at the earth's centre.

Heliocentric Place. The point to which a body would be referred were the observer at the sun's centre.

True Place. The point to which a body would be referred were the observer at the earth's centre viewing it through an atmosphere of uniform density.

Plane. A level surface. In astronomy *planes* are ideal, passing through certain points of the heavens—as, for instance, the *planes of the horizon, ecliptic, equator,* etc.

Plane Chart. A chart (Mercator's projection) so constructed that the parallels and meridians are represented by straight lines parallel to each other, and preserving the same distance from one another in all latitudes.

Plane Sailing. Calculating the position of the ship on the supposition that the surface of the earth is a plane.

Plane Scale. A rule used in navigation, on which are graduated chords, sines, tangents, secants, rhombs, etc.

Planet. An opaque celestial body which receives its light from the sun, and around which it revolves. The eight principal planets are the following, which are named in the order of their distances from the sun: Mercury (nearest to the sun), Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Near the sun is a small planet named Vulcan.

Inferior Planets. The planets whose orbits are within that of the earth—Vulcan, Mercury and Venus.

Minor Planets. A name given to the small planets collectively.

Primary Planets. Planets which revolve *only* about the sun.

Secondary Planets. Satellites which revolve *also* about their primaries.

Superior Planets. The planets whose orbits are without that of the earth—Mars, Jupiter, Saturn, Uranus and Neptune.

Planetarium. An astronomical machine which exhibits the relative motion and position of the planets.

Planetoid. One of the minor planets between Mars and Jupiter—an asteroid.

Planetule. A small planet.

Planisphere. A map of the stars.

Pleny Tide. A full tide.

Plotting. Delineating; marking down; to trace on a chart the courses sailed by a ship, in order to ascertain the position of the vessel—the simplest kind of dead reckoning.

P. M. Past meridian; the 12 hours of the day from noon to midnight.

P. M. Altitude. An altitude of a heavenly body measured in the P.M.; an afternoon observation.

Pocket. A bight in the land on a lee shore.

Pointers. The two stars in the Dipper (*Ursæ Majoris*) pointing to Polaris—the North Star.

Point. A certain place in the heavens; one of the 32 divisions of the compass card.

Autumnal Point. Where the sun descends towards the South Pole.

Equinoctial Points. Where the equator and ecliptic intersect.

Solstial Points. The highest and lowest points of the ecliptic.

Vernal Point. Where the sun ascends towards the North Pole.

Polar. Pertaining to the pole.

Polar Angle. The angle at the terrestrial pole formed by two meridians, and the angle at the celestial pole formed by two hour circles.

Polar Circles. The two parallels of latitude situated 23° 28′ from the poles of the earth. The northern is called the *Arctic* and the southern the *Antarctic circle.*

Polar Circumference. Rather less than 25,000 miles.

Polar Diameter. The earth's polar diameter is 7,899.1 miles—the polar compression being about 1-300 of the diameter.

Polar Distance. The complement of the declination; the angular distance from the elevated pole.

Polaris. The Pole Star, so-called on account of its being near the north pole of the heavens. Also known as the North Star.

Poles. The extremities of the earth's axis. (See MAGNETIC POLES.)

Pole Star. (See POLARIS.)

Position. The latitude and longitude of a ship calculated by dead reckoning, cross-bearings, etc., or by observations of the heavenly bodies.

Portable Micrometer Telescope. An instrument constructed on the divided object-glass principle, and used in marine surveying.

Portable Transit Instrument. A small telescope instrument used for the purpose of regulating chronometers on shore, for establishing secondary meridians, etc.

Precession of the Equinoxes. The slow shifting of the equinoxes toward the west, the annual rate being 50.″ This is caused by the earth's rotation on its axis, and the unequal action of the sun and moon on the equator. *Precession of the equinoxes* is so termed because the place of the equinox among the stars, at every subsequent moment, *precedes,* with reference to the diurnal motion, that which it occupied the moment before.

Prestel's Method. A rule sometimes made use of when working Sumner's method, so as to confine the ship to a limited portion of the line of bearing.

Primary Planets. (See PLANETS.)

Prime Meridian. First meridian; the starting point of longitude; the meridian from which longitude is reckoned east and west as high as 180°; the meridian established by a country from which to reckon longitude in laying out their charts. The French use the meridian of Paris as 0°; the English that of Greenwich; the Russians that of St. Petersburg; the Spaniards that of San Fernando; the Americans that of Washington, etc. The meridian passing through the national observatory of a country is selected as the *prime* or first meridian of that country. It is to be explained that a chronometer must be regulated to the meridian of the country whose chart is being used for navgating the ship. A ship having a chronometer set to Greenwich time must use English charts; a chronometer set to Paris time must have French charts, etc.

Prime Vertical. The vertical circle perpendicular to the meridian, and which passes through the east and west points of the horizon.

Primitive Plane. The plane upon which projections are to be made; the surface to be drawn upon.

Principal Plane. In spherical projections the plane upon which the different circles of the sphere are projected.

Prismatic Compass. An azimuth compass fitted with a prism glass, so that the bearing of an object can be read from the graduated card by reflection.

Projections. Delineations; maps; plans; representation.

Proportional Logarithms. These logarithms are employed in lunar observations for finding the mean time at Greenwich corresponding to the true distance of the moon from the sun or star.

Proportional Parts. A table for facilitating the process of interpolation in the employment of logarithms.

Protractor. An instrument employed in plotting for laying off angles.

Q.

Quadrant. A navigating instrument of reflection, reading to minutes, and graduated so as to measure angles up to 90° (See engraving.)

Quadrantal Deviation. The error caused by the difference of the induced magnetism in thwartships and fore-and-aft horizontal iron in the ship. This error is corrected by two iron balls attached one on each side of the binnacle bowl.

Quadrature. Said of the moon when that luminary is 90° from the sun—at one of the two points in her orbit equally distant from the opposition and conjunction.

R.

Radiant. A point from which rays of light or heat proceed; a point from which shooting stars diverge.

Radius. Half the diameter of a circle; distance from the centre to the circumference; the imaginary line joining the centre of the sun and the centre of a planet.

Radius Bar. A bar secured at one end so as to turn around on a pin, and guiding a movable body in an arc.

Radius Vector. The distance from the origin to the point.

Radix. A base; a root; 10 is the *radix* of the common system of logarithms.

Rapier's Method. A method of drawing the great circle track so as to find the course from one place to the other, and lay off both courses on the Mercator's chart; next to ascertain the *maximum separation in latitude*, and to draw through this point a line parallel to the rhumb line between the two places. These three points being determined, the track can be approximately drawn by hand.

Rate. The daily variation of a timepiece; to determine the running of a chronometer in respect to a variation from a standard; to ascertain the extent of gain or loss in respect to true time.

Gaining Rate. When the chronometer runs too fast.

Losing Rate. When the chronometer runs too slow.

Sea Rate. On arrival in port after a voyage it will generally be found that the accumulated error of the chronometer, according to the record kept by the navigator, and which is based upon the *shore rate* furnished by the chronometer-makers, does not represent the correct aggregate amount of the chronometer deviation; thus proving that the *daily rate* given the navigator before sailing was not maintained by the instrument at sea. Now, in order to ascertain the *sea rate*, subtract between the error on the day of sailing and the gross error, determined when the vessel reached port, and then divide the remainder by the number of days at sea, and the answer will be the *sea rate* of the chronometer.

Shore Rate. (See SEA RATE.)

Rating a Chronometer. No chronometer will run for any length of time without variation, consequently its deviation from true time is determined, and allowance made for it by the navigator in his calculations. This variation can be determined in a variety of ways—by comparing the chronometer with the clock of an observatory, by time balls, by transit instrument, and by the employment of the sextant and artificial horizon in a time sight. To determine the *rate*, find the error made on different days, and divide the aggregate by the specified number of days. The answer will be the *daily rate* of the chronometer.

Rational Horizon. (See HORIZON.)

Reading. To learn by observation; to discover by signs or characters.

Reading an Altitude. To observe the angular measure of an object as shown on the arc of an instrument of reflection.

Reading the Log. Observing the numerals indicated by the log hands, and which figures represent the number of miles sailed by the ship.

Reading the Time. Noting the hour, minute and second shown by a chronometer or other timepiece at a given instant.

Reciprocal Bearings. A process employed in compass adjusting. One observer is stationed on shore with a compass set up in a position free from magnetic disturbances, and from which an unobstructed view can be obtained of the standard compass (over which a conspicuous mark is placed) on board ship. As the ship's head is brought to each one of the 32 points of the compass, mutual bearings are taken simultaneously by the observers on shore and on board.

Reckoning. The ship's latitude and longitude, by determined observations of the heavenly bodies, and by calculating the distances sailed on the various courses made.

Rectangular Co-ordinates. A system of co-ordinates in which the axes are at right angles to each other.

Reduction. Changing the form of an expression without changing its value; to change hours, minutes and seconds into arc is called *reduction of time; reduction* of the elements in the nautical almanac is accomplished by interpolation or by proportional logarithms; *reduction to the meridian* consists of applying a calculated quantity in arc to the observed altitude, taken either in the A.M. or P.M., when working an ex-meridian sight, in order to ascertain the meridian altitude of the body for the place of observation.

Reflux. *The reflux of the tide* has reference to its running out—a state of *ebbing.*

Refraction. Astronomically considered, *refraction* is the change of direction assumed by rays of light passing through atmospheric mediums of varying densities. All the visible heavenly bodies, out of the zenith, are apparently elevated above their true place owing to refraction. The refracting power of the atmosphere changes according to the density—its temperature and moisture. As shown on page 263, when a heavenly body is in the zenith there is no refraction, the rays of light passing through the earth's atmosphere in direct lines; but the nearer the body is to the horizon the greater is the refraction. At the horizon refraction amounts to 33′ of arc; consequently, that being about 1′ more than the diameter of the sun or moon, those two bodies may actually be entirely below the horizon and yet appear slightly above it. The table of mean refractions considers the barometer to stand at 30 inches, and the temperature to be 50° F. *Terrestrial refraction* has reference to the apparent change in position assumed by a terrestrial object owing to the difference in density of various portions of the earth's atmosphere—the amount varying from $\frac{1}{7}$ to $\frac{1}{23}$ of the intercepted arc.

Repeating Circle. An astronomical instrument for reducing the error of imperfect graduation by repetition of the observation, reading it on different parts of the graduated limb, and striking the mean of the values found.

Residual Errors. When a compass is adjusted the deviation is compensated as much as possible by the employment of magnets, but the remaining amounts of error for the respective points are tabulated and given the name of *residual errors.*

Retard of the Tide. This is also known as the *age of the tide,* and has reference to the interval between the transit of the moon at which the tide originates and the making (appearance) of the tide.

Retrograde Motion. The motion of the planets among the stars is *eastward,* but when they arrive in the quarter of the heavens opposite the sun their motion is *westward,* and this latter motion is termed *retrograde*—motion contrary to the order of the signs.

Revolution. The course of a heavenly body round a centre; the interval of time occupied by a heavenly body in its consecutive return to the same meridian.

Sidereal Revolution. The time occupied by a planet in passing round the sun.

Synodic Revolution. When the earth, the planet and the sun come again in the same relative positions.

Revolving Storms. Also known as hurricanes, typhoons and cyclones. Currents of air within the limits of the storm disc moving in concentric circles around a centre of low pressure.

Rhumb. A vertical circle intersecting the horizon; the track of a ship which sails constantly toward the same point of the compass.

Rhumb Line. A line which cuts all the meridians which it crosses at the same angle, forming a spiral which approaches nearer and nearer to the pole but only reaches it after an infinite number of turns—this is also known as the *loxodromic curve;* a line prolonged from any point of the compass on a nautical chart.

Angle of the Rhumb. The angle at which the rhumb cuts the meridian.

Complement of the Rhumb. The angle made by the rhumb with the prime vertical.

Rhumb Sailing. The course of the ship, or the line shown on a chart which connects the place of departure with the place of destination.

Right Ascension. The distance of a heavenly body from the first point of Aries, considered in time eastward on the equinoctial, from 0h. (0°) to 24h. (360°). *Right ascension* and *declination* determine positions of the heavenly bodies on the celestial sphere.

Right Sailing. Sailing on one of the four cardinal points (N. S. E. W.)

Rigorous Method. Calculations performed according to exact principle; precise; accurate; allowing no abatement.

Rising. The coming into view of a heavenly body over the horizon line; the mounting of a body in the heavens. All heavenly bodies continue to rise until they cross the meridian, when they commence to *fall.*

Rough Log. The deck journal kept by the watch officers, the contents of which are copied daily into the *smooth log book.*

Rules of the Road. (See PART I.)

Running Survey. Taking bearings of various points on the shore line as the ship runs along the coast. The track of the ship is the base line, and the intersection of the bearings fixes the positions of the shore line; the position of the ship is determined by altitudes of the sun measured on the sea horizon. This method is by no means accurate, owing to leeway, currents, deviations in steering, etc., but is profitably employed when landing is impossible from various causes.

S.

Sailings. Under this head are classed *rhumb, great circle, plane* and *spherical sailings.*

Satellite. A secondary planet; the moon of a planet.

Sea Breeze. A wind blowing from the sea toward the land.

Sea Horizon. The circle at sea which bounds the observer's view; the blending of the waters with the sky.

Sea Log. The log-book kept at sea, in contradistinction to the *harbor-log,* which is kept in port.

Sea Rate. (See RATE.)

Secant. In trigonometry a line drawn from the centre of a circle through one end of an arc, and terminated by a tangent drawn through the other end.

Secondary Circle. A great circle of the sphere which passes through the poles of another.

Secondary Meridians. Meridians other than the first or prime meridians.

Secondary Planet. A planet which revolves around or attends another—in contradistinction to *primary.*

Second of Arc. Division of a minute; the sixtieth part of a minute of angular measure.

Second of Time. Division of a minute; the sixtieth part of a minute of time.

Sector. An astronomical instrument for determining the zenith distance of stars—sometimes referred to as *zenith sector;* an instrument for determining the difference in

declination and right ascension between two bodies whose distance is too great to be observed through a telescope with the aid of a micrometer.

Self-Registering Gauge. An apparatus, an adjunct to the box-gauge, so arranged that the rising and falling float carries a pencil with which it describes a curve upon paper wrapped about a cylinder, which revolves by clockwork.

Semicircular Deviation. Deviation caused by the magnetism of the ship and the induced magnetism of vertical iron, which changes with time and the latitude of the ship.

Semi-diameter. Half a diameter; the radius of a circle.

Semi-mensal Inequality. An inequality in the tides.

Sensible Horizon. A plane, tangent to the earth's surface at the place of the observer, and which extends to all sides until it is bounded by the sky.

Set. A heavenly body is said to *set* when it dips below the horizon line; *the set of a current* is the direction of its flow; *to set the course* is to bring the ship's head to the required direction in sailing.

Sextant. A navigating instrument of reflection used for measuring altitudes of heavenly bodies and vertical and horizontal angles of objects; its graduated arc is divided into equal parts, the angle possible to measure on the instrument ranging from 120° to 140°. (See engraving.) It is cut to 10″ (ten seconds) of arc.

Shaping the Course. Ascertaining by the employment of the parallel rules and the chart, or by middle latitude or Mercator's sailings, the bearing of the port of destination from the position of the ship.

Ship Pendulum. (See CLINOMETER.)

Ship's Position. The place (latitude and longitude) of the ship at sea is determined by observations of the heavenly bodies, or by dead reckoning, and when in sight of land by cross-bearings of two shore objects, or by one bearing and the depth of water, etc.

Ship Time. The solar time at the place of the ship—12 o'clock (noon) being made known by *eight bells* when the sun crosses the meridian.

Mean Time at Ship. The ship's time converted into *mean time* by applying to it the equation of time.

Shore Horizon. The waterline on the beach.

Sidereal. Relating to the stars.

Sidereal Clock. Astronomical clocks regulated to sidereal time are called *sidereal clocks.*

Sidereal Day. The interval of time between two successive transits of the star over the same meridian.

Sidereal Time. Time measured by the daily motion of the stars—by the daily motion of that point in the equator from which the true right ascension of the stars is counted, this point being the vernal equinox, and its hour angle is called *sidereal time.*

Sight. To observe the altitude or angular distance of a heavenly body.

Simoon. A hot, dry wind blowing from a desert.

Sine. A perpendicular line from one extremity of an arc to the diameter drawn through the other extremity.

Artificial Sines. Logarithms of the sines.

Line of Sines. A divided line on Gunter's scale.

Sine of an Angle. The sine of the arc which measures the angle.

Sine of Incidence. The sine of the angle of *incidence.*

Sine of Reflection. The sine of the angle of *reflection.*

Sine of Refraction. The sine of the angle of *refraction.*

Sine of the Complement. The cosine.

Versed Sine. Distance from the foot of the sine of an arc to the extremity of the arc, the distance being measured on the radius passing through that extremity.

Single Altitude. One observation of a heavenly body; one angular measurement.

Sliding Limb. The movable limb on an instrument of reflection, having the mirror or index glass on one end and the vernier on the other.

Slip of Wheel. The difference between the distance run by a steaming vessel and

the distance that would have been covered had the propeller acted upon a solid substance, instead of a fluid; in other words, the expression *slip of wheel* may be understood as *the lost motion of the propeller*. It is usual to allow a certain number of revolutions of the propeller or paddles to the mile, and at the end of a stated time the estimated distance run by the ship, according to the number of turns made, is compared with the distance run according to observation, or by the log, and the difference is expressed as a *per centum*, and entered in the log book as *slip of wheel*. The retardation by reason of head winds, opposing currents, and head seas are counted as *slip*.

Solar. Pertaining to the sun.

Solar Day. The interval of time between two successive transits of the sun over the same meridian.

Solar System. The sun and the various bodies that revolve round it.

Solar Time. Time measured by the sun. (See TIME.)

Solstices. The time of the year (June 21 and December 21) at which the sun is at his greatest distance from the equator, north and south respectively. The turning points in the sun's declination, known as the *summer* and *winter solstices*, according to the hemisphere of the observer.

Solstitial Colure. The hour circle passing through the solstitial points.

Solstitial Points. The first points of Cancer and Capricorn, or the points of the ecliptic at which the sun arrives at the time of the solstices.

Sounding. Ascertaining the depth of water by the hand or deep-sea lead and line, or by a sounding pole.

Sounding Machines. Contrivances for ascertaining the depth of water. There are various kinds in use, being known respectively as *Massey's*, *Walker's Harpoon*, *Ericsson's*, *Trowbridge's Electric*, *Sigsbee's* and *Sir William Thompson's Sounding Machines*.

Sounding Meter. A name sometimes applied to a sounding machine.

Sounding Pole. A pole marked in feet and inches, and used for sounding in shallow rivers.

Soundings. Any part of a coast or ocean where the depth of the water can be measured; also the act of measuring the depth of the water.

Off Soundings. Water that exceed 80 fathoms in depth.

On Soundings. Water that does not exceed 80 fathoms in depth.

Southern Cross. A brilliant constellation in the southern hemisphere, its principal stars forming a well-defined *cross*.

Southern Hemisphere. That half of the sphere which is south of the equator.

Speed Indicator. A patent log.

Sphere. In geography, a representation of the surface of the earth. In astronomy, the concave expanse of the heavens.

Spherical. In the form of a sphere; globular.

Spherical Sailings. Parallel, middle latitude, Mercator's and great circle sailings.

Spherical Triangle. A three-sided spherical polygon—a portion of the surface of a sphere bounded by the arcs of three great circles.

Spherical Trigonometry. That branch of trigonometry which explains the method of solving spherical triangles.

Spring Log. Also known as the *Clark Russell Log*. An instrument for measuring the velocity of a vessel, and consists of a spring on the principle of an ordinary spring weighing-scale. This has attached to it a line and chip, and the pressure exerted upon the latter when being towed indicates the vessel's speed.

Spring Tides. The highest tides, which occur at the time of the new and full moons; opposed to *neap tides*.

Spy Glass. Another name for the marine telescope.

Staff Gauge. A staff graduated upwards in feet and tenths, and so placed that its zero will lie below the lowest tides; an instrument for measuring the range of tides.

Standard Compass. A compass on board ship situated where it is least subject to deviation; the compass by which bearings are taken and the ship navigated.

Standard Time. Time shown by a clock, which is regulated to *mean solar time*, which see.

Stars. Apparently small luminous bodies visible in the heavens at night, which shine by their own light, and which to the observer maintain their places with reference to one another. About 6,000 may be seen with the naked eye in the whole heavens; and about 3,000 may be seen on a clear night when the moon is not shining. (See MAGNITUDE.)

Star Time. (See SIDEREAL TIME.)

Station Pointer. An instrument used in marine surveying, consisting of a graduated circle of brass having one fixed and two moveable arms radiating from its centre, the latter being set to any desired angles.

Statute Mile. 8 furlongs, 326 rods, 1,760 yards, or 5,280 feet.

Stellar. Relating to the stars.

Storm Track. The course of a storm; the path of a hurricane in its forward or progressive motion—not its circular or gyratory movement.

Stratus. The lowest of clouds, sometimes called the night cloud; an extended horizontal formation of clouds, the surface of which sometimes rests on the earth, forming mists and fogs.

Stream Current. An accumulation of the parts of a drift into a collective mass by the intervention of some obstacle; it then runs off by means of its own gravity, and takes the direction imposed on it.

Submarine Currents. Currents which do not correspond either in direction or velocity with those of the surface.

Submarine Navigation. The navigation of the waters below the surface by means of submarine vessels.

Submarine Telescope. A telescope for viewing objects below the surface water, consisting of two united tubes, one of them being thrust into the water, and the other arranged to throw light into it.

Sumner's Method. A process for finding the ship's longitude and place when the latitude is in doubt, by employing two assumed latitudes, one greater and the other less than the latitude by account; then, after the sun has changed its azimuth, observing another time sight and working it twice again, using the same two assumed latitudes as in the first workings. These four positions are marked on the chart and crossed with lines, the point of crossing indicating the position of the vessel at the time of the first sight.

Sun. The centre of the solar system and the source of light and heat; diameter, 885,000 miles; circumference, 2,780,000 miles; the sun rotates on its axis in 25d. 7h. 48m.; mean distance from the earth, 95,000,000 miles.

Sun Dog. A luminous spot sometimes seen near the sun.

Sun Time. (See SOLAR TIME.)

Sunrise. The appearance of the sun above the eastern horizon; the time of the sun's appearance in the morning.

Sunset. The time of the sun's descent below the western horizon in the evening.

Surface Current. The flowing of the surface water.

Surveying. Determining boundaries, extent and contour of a portion of the earth's surface, and delineating same on paper.

Swinging Ship. Turning the ship around to the 32 points of the compass and observing while on each point the bearing of some remote but well-defined object, for the purpose of adjusting the ship's compass.

Symbols. Characters used as abbreviations to represent the weather. Beaufort's weather notation is as follows:

b. Blue sky.
c. Clouds (detached).
d. Drizzling rain.
f. Foggy.
g. Gloomy.
h. Hail.
l. Lightning.
m. Misty.
o. Overcast.
p. Passing showers.

q. Squally.
r. Rainy.
s. Snow.
t. Thunder.
v. Ugly, threatening.
r. Visibility, clearness.
w. Wet, dew.

A bar (—) under any letter augments its signification, and a bar and a dot (⊸) indicates heavy and continuous weather of the kind denoted.

Wind is indicated by the following symbols:

0. Calm.
1. Light air.
2. Light breeze.
3. Gentle breeze.
4. Moderate breeze.
5. Fresh breeze.
6. Strong breeze.
7. Moderate gale.
8. Fresh gale.
9. Strong gale.
10. Whole gale.
11. Storm.
12. Hurricane.

Sea Swell is indicated as follows:

S. Smooth.
M. Moderate.
L. Long.
R. Rough.
C. Cross.
H. Heavy.
V. H. Very heavy.

Syzygy. In astronomy, the position of the moon, or planet, when it is in conjunction with, or in opposition to, the sun.

Syzygy Tide. The tide occurring on the afternoon of the day that the sun and moon are in *syzygy.*

Meridional Syzygy Tide. When the sun or moon is on the meridian at the taking place of the *syzygy.*

Line of Syzygies. The line connecting the centre of the earth and the moon when the moon is in conjunction with, or in opposition to, the sun.

T.

Taffrail Log. A patent log, the indicator of register of which fastens on the taffrail.

Taking Departure. Observing the bearing and distance of a light-house or a point of land (the latitude and longitude of which is known) from which to calculate the position of the vessel. This is done upon the commencement of the voyage, and before losing sight of the land.

Tangents. A right line which touches a curve at a single point.

Artificial Tangents. The same as *logarithmic tangents.*

Logarithmic Tangents. Logarithms of the tangents of arc.

Natural Tangents. Tangents of arc expressed by natural numbers.

Tangent Screw. The thumb-screw set at a tangent to the arc of a sextant, and which affords a means of gradual motion to the sliding limb after it has been clamped.

Telemeter. An instrument used in coast surveying, being a scale of equal parts painted upon a wooden rod, and used for determining the distance of objects whose lengths are known, from their apparent lengths as viewed between the wires of the telescope.

Telescope. An optical instrument which makes distant objects more visible by enlarging their images formed in the eye. (See MAGNIFYING TELESCOPE.)

Tell-tale. (See PART I.)

Temperature. As relating to the atmosphere, the degree of heat or cold.

Terrestrial. Relating to the earth.

Tertiary Meridians. Meridians connected with *secondaries* by carrying time in the most careful manner with all the corrections which can be devised.

Secondaries, or *Secondary Meridians*, are those connected with the prime meridian, directly or indirectly, by exchange of telegraphic time signals.

The Lead. (See LEAD AND LINE.)

The Line. (See LINE.)

The Midnight Sun. (See MIDNIGHT SUN.)

Theodolite. An instrument used in surveying for measuring angles in vertical and horizontal planes.

Theoretical Navigation. Navigation depending on or based upon theory; such as calculating the ship's position by observations of the heavenly bodies.

Thermometer. An instrument used for measuring degrees of heat and cold of water and air. It consists of a glass tube containing mercury or colored alcohol, and is secured against a graduated scale.

Deep Sea Thermometer. A thermometer so constructed as to resist the pressure of water at great depths, and to record the temperature of those waters.

Dry Bulb Thermometer. The ordinary thermometer for recording air temperatures.

Wet Bulb Thermometer. Also known as the *Hygrometer.* A thermometer having its bulb wrapped in thin absorbent muslin with a wick reaching from it into a small cup of water. This instrument measures the humidity of the air.

The Sailings. (See SAILINGS.)

Three L's of Navigation. (See PART I.)

Three Point Problem. A problem employed in surveying for determining a certain point when three signals are in view.

Tidal Constants. (See PART I.)

Tide. (See PART I.)

Age of Tide. (See RETARD OF TIDE.)

Change of Tide. (See CHANGE OF TIDE.)

Ebb Tide. (See EBB TIDE.)

Flood Tide. (See FLOOD TIDE.)

Height of Tide. (See TIDE RANGE.)

Inferior Tide. (See SUPERIOR TIDE.)

Lagging of the Tide. (See TIDE DAY, PART I.)

Neap Tides. (See NEAP TIDES.)

Priming of the Tide. (See TIDE DAY, PART I.)

Range of the Tide. (See TIDE RANGE, Part I.)

Retard of the Tide. (See RETARD OF THE TIDE.)

Spring Tides. (See SPRING TIDES.)

Superior Tide. That tide which takes place in the hemisphere having the moon *above* the horizon. *The inferior tide* is that tide which takes place simultaneously with the *superior tide*, but in the hemisphere having the moon *below* the horizon.

Syzygy Tide. (See SYZYGY TIDE.)

Tide and Half Tide. (See TIDE, TIDE AND HALF TIDE, PART I.)

Tide and Quarter Tide. (See PART I.)

Tide Bench. (See TIDE BENCH MARKS, PART I.)

Tide Current. (See PART I.)

Tide Day. (See PART I.)

Tide Establishment of the Port. (See PART I.)

Tide Gate. (See PART I.)

Tide Gauge. (See PART I.)

Tide Pole. (See PART I.)

Tide Mark. The horizontal line worn on the shore, on a sea-wall, etc., which indicates the limit of high water. (See TIDE BENCH.)

Tide Range. (See PART I.)

Tide Rips. (See PART I.)

Tide Tables. (See PART I.)

Tide Water. The water of the ocean which is alternately elevated and depressed by the influence of the moon and sun.

Tide Wave. (See PART I.)

Tide Way. (See PART I.)

True Tide. A tide setting in a regular direction—not thrown out of its course by the intervention of land, etc.

Vulgar Establishment of the Port. Rough determination of the *establishment of the port.*

Time. (See APPARENT, ASTRONOMICAL, CIVIL, GREENWICH, LOCAL, MEAN, MEAN-SOLAR, SHIP, SIDEREAL, SOLAR, STANDARD, STAR, and SUN TIME; also EQUATION OF TIME.)

Time Azimuth. An azimuth calculated from the latitude, declination and hour-angle.

Altitude Azimuth. An azimuth calculated from the altitude, latitude and declination.

Time Ball. A sphere caused to drop from the summit of a pole at a specified hour, in order to indicate exact mean time.

Time Courses. *To run time courses* is to consider the speed of the vessel, the course sailed, and the time run on such course. This is employed during fog when navigating in waters where it is necessary to change the course of the vessel occasionally in order to keep in the channel, to avoid certain dangers, etc.

Time Sight. An observation of a heavenly body for the purpose of ascertaining the longitude; the chronometer time of the horizon contact of the body being noted.

Top. (See TROUGHTON'S TOP.)

Topography. A delineation of the surface of a portion of the earth, showing natural objects, such as trees, rocks, etc.

Track Chart. (See CHART.)

Trade Winds. (See PART I.)

Transit. The passage of a heavenly body over the meridian. (See LOWER TRANSIT; UPPER TRANSIT.)

Transit Instrument. A telescope instrument for observing the passage of heavenly bodies over the meridian.

Traverse. (See PART I.)

Traverse Board. (See PART I.)

Traverse Sailing. To solve a problem in *traverse sailing* is to determine the vessel's latitude and longitude by dead reckoning, and the bearing and distance of the vessel from the point left. This is known as *working the traverse.*

Traverse Tables. Tables calculated by natural sines. These tables contain the difference of latitude and departure corresponding to distances up to 300 miles, for every quarter point of the compass, also for degrees, and are employed in the solution of right-angled triangles, which enter into the consideration of dead-reckoning.

Traverse Wind. A wind blowing directly into the harbor's mouth.

Triangle. A geometrical figure of three sides.

Triangulation. A term used in surveying, meaning the determination of the triangles into which the country is supposed to be divided.

Trigonometry. The science of measuring triangles.

Triple Star. Three stars so close together as to resemble a single star when viewed without the aid of a telescope.

Tropic of Cancer. The parallel north of the equator, the latitude of which is equal to the sun's greatest declination—23° 28′; the point which the sun passes over on the 21st of June.

Tropic of Capricorn. The parallel south of the equator, the latitude of which is equal to the sun's greatest declination—23° 28′; the point which the sun passes over on the 21st of December.

Troughton's Top. (See WHIRLER.)

True Amplitude. The geographical bearing of a heavenly body, calculated for its declination and the parallel of the observer.

True Azimuth. The geographical bearing of a heavenly body, calculated for its declination, the hour, and the parallel of observation, and found tabulated in special books on navigation.

True Bearing. The angle which the direction of an object makes with the meridian.

True Central Altitude. The altitude deduced from the observed altitude by correcting it for semi-diameter, dip, parallax, refraction, and instrumental error.

True Water. The depth of the water as measured from its mean surface.

Typhoon. A violent hurricane peculiar to the China Sea and Indian Ocean at the time of the change of the monsoons.

U.

Udometer. A rain gauge or measure.

Ultra-tropical. Beyond the tropics.

Ultra-zodiacal. Beyond the zodiac.

Under-bright. The bright streak often seen under clouds near the horizon.

Undercurrent. A current beneath the surface water, flowing in a contrary direction. The supposition is that an *undercurrent* in the Straits of Gibraltar carries the same amount of water into the Atlantic Ocean from the Mediterranean as the surface current carries from the Atlantic into the Mediterranean.

Upper Transit. The passage of a heavenly body across the meridian which is above the horizon—180° from the *lower transit.*

V.

Variables. (See PART I.)

Variable Winds. Inconstant winds.

Variation. Change; alteration.

In astronomy, a periodic irregularity in the motion of the moon owing to the disturbing action of the sun.

In magnetism, the declination of the magnetic needle from the true or geographical meridian; the angle which the magnetic meridian makes with the geographical meridian.

The variation of the magnetic needle is not constant. In 1663, in Paris, the compass needle pointed true north, previous to which year the variation had been easterly. From 1663 to 1814 the variation in Paris was westerly, increasing steadily until 1814, when it amounted to 22½° W, from which year it has steadily decreased, but is still westerly.

Vernal Equinoctial Point The first point of Aries.

Vernal Equinox. The 21st of March.

Vernier. The small graduated scale on the sliding limb of a sextant, etc., which subdivides the divisions of the arc.

Vertex. In astronomy, that point of the heavens which is situated perpendicularly above the observer.

Vertical Circles. Great circles of the sphere passing through the zenith and nadir of a place.

Vertical Line. A line in any plane which is perpendicular to the horizon.

Visible Horizon. (See HORIZON).

Vulgar Establishment of the Port. (See TIDE).

W.

Water Sky. A dark blue sky seen in the arctic seas, and which is caused by the reflection of deep water.

Weather. (See SYMBOLS.)

Weather Gall. A halo on the border of a distant cloud which is discharging rain—considered a forerunner of bad weather.

Weather Glass. The barometer.

Weather Gleam. A clear streak in the sky to windward, near the horizon, following stormy weather.

Weather Symbols. (See SYMBOLS.)

Westerly Variation. The angle between the geographical and magnetic meridians when the latter inclines to the left, or westward of the former, causing the north end of the compass needle to point to the westward of the true north.

Wet Bulb. (See THERMOMETER.)

Whirler. A spinning instrument like a top, used on shipboard as an artificial horizon.

Whirlwind. A violent wind having both a circular and a progressive motion.

Whole Gale. (See SYMBOLS.)

Wind Classification. Trades, Anti-trades, Land-breeze, Sea-breeze, Monsoons, Variable winds, Mountain-winds, Bora, Mistrals, and Puna winds.

Wind Gall. (See WEATHER GALL.)

Wind Gauge. (See ANEMOMETER.)

Wind Table. (See SYMBOLS.)

Working the Traverse. (See TRAVERSE SAILING.)

Z.

Zenith. That point in the celestial sphere which is situated vertically over the head of the observer, and distant 90° from every point of the horizon—opposed to *nadir*.

Zenith Distance. The angular distance of a heavenly body from the zenith—the complement of the altitude, or what an altitude lacks of being 90°.

Zenith Sector. An astronomical instrument used for exact observation of stars in or near the zenith.

Zero. The point at which the graduation of a sextant, etc., commences.

Zodiac. An imaginary zone in the heavens within which the sun, moon and larger planets appear to perform their annual revolutions.

Zone. A belt; a girdle. There are five zones: the *torrid zone*, which extends 23° 28′ on each side of the equator; the two *temperate zones*, which extend from 23° 28′ to 66° 32′, and the two *frigid zones*, which extend from 66° 32′ to the poles.

PART IV.

DICTIONARY OF ENGINEERING TERMS.

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DICTIONARY OF ENGINEERING TERMS.

A

Air Casing. The thin sheet-metal lining of the hole in the deck through which the smoke-pipe passes.

Air Chamber. A closed vessel communicating with the discharge side of a pump. Air is confined in it above the liquid, and by its elasticity equalizes the flow of the liquid.

Air Duct. A pipe leading air from the blower to the ash pit.

Air Gauge. An instrument attached to an air duct to register the pressure therein.

Air Pump. That pump which removes air and water of condensation from the condenser.

Ash Chute. A tube at the side of a vessel through which to deliver ashes overboard.

Ash Hoist Mechanism for lifting ashes out of the fire-room.

Ash Pan. A receptacle placed in the bottom of the ash pit in which to collect ashes.

Ash Pit. The space in a furnace below the grate bars.

Atmospheric Line. The line on an indicator diagram traced by the pencil-point when the connection between the interior of the cylinder and the instrument is closed.

Auxiliaries. Small engines, pumps and boilers that may operate independently of the main plant.

B.

Back Connection. A space in a boiler, back of the furnace, bounded on the forward side by the back tube sheet, provided to allow gases from the furnace to combine more thoroughly, and to give room to make repairs.

Back Pressure. The pressure in a steam cylinder which resists the movement of the piston during the time of exhaust.

Balanced Valve. A valve arranged so that the pressure tending to force it against its seat is wholly or in part counteracted.

Banked Fires. The burning fuel is heaped up in one part of the furnace, leaving the grate partly bare. The heap is then covered with coal or ashes that combustion may be almost entirely checked, while enough heat is furnished to keep the water hot in the boilers.

Beam. A vibrating lever through which power is transmitted from the cylinder to the crank.

Beam Centre. The cast iron framework of a built-up beam.

Beam Pillow Blocks. The bearings which support the beam.

Beam Strap. The wrought band about the beam centre.

Bearing. A support for a shaft journal, and in which it revolves or vibrates.

Main Bearing. That nearest to the crank.

Spring Bearing. Those supports between the engine and wheel which support the weight of and steady the shaft.

Stern Bearing. The long bearing built into the after-end of a screw vessel, and through which the shaft passes. It is arranged to support the after-end of the shaft, allow it to revolve freely, and prevent water leaking past it into the vessel.

Thrust Bearing. That one about a screw propeller shaft which is arranged to receive the pressure due to the revolving screw and transmit it to the hull of the vessel.

Bearing Bars or Bearers. Iron bars across the furnace supporting the ends of the grate bars.

Bed Plate. The foundation piece upon which an engine is erected.

Bilge Injection. The system of pipes and valves through which water from the bilge can be drawn into the condenser if desired.

Bilge Pump. One connected to draw water (which may collect) from the bottom of the vessel and deliver it overboard.

Binder. The cap of a bearing covering the journal.

Bleeder. Pipe and valves for leading steam from boiler or main steam pipe to condenser direct.

Blowers. Fans for moving air, either for ventilation or to aid furnace draft.

Blowing Off. Discharging dirty or super-salted water from a boiler.

Blow Pipes and Valves. These are surface and bottom. Those through which water and sediment are discharged from boiler.

Boiler. A closed vessel in which steam is generated from water. The various kinds of boilers come under the following heads:

Drop Flue Boiler. One in which the course of the gases is direct from the furnace through flues back to a connection, then down, returning towards the front through flues underneath the first series, thence into another connection and down and through a third series of flues to the smoke-box at the back end of boiler.

Fire Tube Boiler. The water circulates about the tubes and the fire through them.

Horizontal Return Tubular, or Flue, Externally Fired. Cylindrical in shape, containing small tubes reaching from end to end. The furnace is directly under the shell, the products of combustion passing along the bottom of shell to back end, thence returning through tubes or flues to the smoke-box.

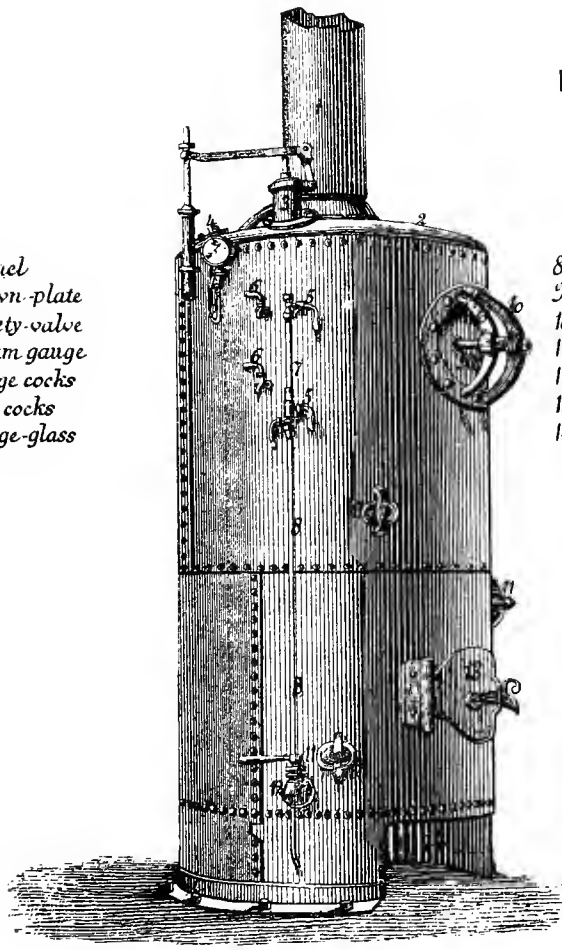
Horizontal Return Tubular, Internally Fired—"Scotch." Cylindrical in shape, containing one or more cylindrical furnace flues. From the furnace the gases pass back into a connection, thence return through tubes above the furnace to the smoke-box on front end.

Lobster Back. One in which the course of the gases is from the furnace into a low connection, and from thence into flues leading forward to another connection, returning over these flues and the furnace through other flues to a front connection, thence back through tubes to a middle connection and up to chimney.

Locomotive. Has an arched, flat-sided part called "wagon-top," containing one flat-sided furnace with arched crown, and built on to the back of it a cylindrical part called the "barrel." The gases pass from the furnace back through small tubes direct to smoke-box at back end.

Return Tubular; Leg; Flue and Return Tubular. Has an arched, flat-sided part called "wagon-top," containing one or more flat-sided furnaces with arched crowns; built on to the back of this is a cylindrical part called the "barrel." The gases pass out of the furnace through flues at the bottom of "barrel" to back connection, thence returning through small tubes over flues and furnaces to the smoke-box at front end.

DONKEY-BOILER



1. *Funnel*
2. *Crown-plate*
3. *Safety-valve*
4. *Steam gauge*
5. *Gauge cocks*
6. *Test cocks*
7. *Gauge-glass*
8. *Drain-pipe*
9. *Manhole-door*
10. *Dogs*
11. *Sludge hole doors*
12. *Blow-off cock*
13. *Furnace door*
14. *Ash-pit*

Upright Tubular. In shape a cylinder set on end. The furnace is at the lower end and the gases pass upward through tubes to the smoke-box at top.

Water Tube Boiler. The water circulates through the tubes, and the fire circulates about them on the outside.

Bore. The inside cylindrical surface of an engine cylinder. Any cylindrical hole that has been turned out with a tool.

Boss. A small projection from the body of a piece, the end of which is surfaced to form a seating; or it is metal added to thicken a plate about a hole.

Boxes. (See BRASSES.)

Brace. A rod whose ends are secured to two parts of a boiler-shell to resist internal pressure.

Heel Brace. One having the ends turned up at an angle with the brace, forming a foot through which the rivet passes.

Bracket. A stationary supporting arm. (See STRUT.)

Brasses. Technically, the brass wearing pieces about pins, in which they revolve or vibrate.

Breeching. The thin metal structure, attached to a boiler, leading the products of combustion from the tubes to the smoke-pipe.

Bridge. The metal in a valve seat separating the ports.

Bridgewall. A structure forming a wall at the back of the furnace grate.

Brine Cock. (See COCK.)

Bucket. The broad piece of plank or iron plate secured to the outer ends of the arms of a paddle wheel.

Bunker. Space enclosed in which to stow fuel.

Bush. An annular shell for lining, or reducing the diameter of a hole.

Butt Joint. A joint in boiler construction formed by bringing together the edges of two plates and holding them by a plate secured to both.

Butt Strap. A long, narrow plate laid lengthways over butt joint, and riveted to both sheets.

By Pass. An arrangement of pipes and valves whereby steam or water can be led out of its regular course past a given point and back to its course again.

C.

Calorimeter. The area of a group of openings in a boiler through which the products of combustion pass.

Caulking. With a special tool, driving a part of the edge of one sheet against the other sheet at a riveted joint to make the joint tight.

Centrifugal Pump. A pump which, in general, consists of a number of blades mounted on a shaft and revolving with it, one blade following another. The whole is enclosed in a circular case. The suction pipe leads to a hole in the centre of one or both sides of the case, and the discharge is through a nozzle at the circumference.

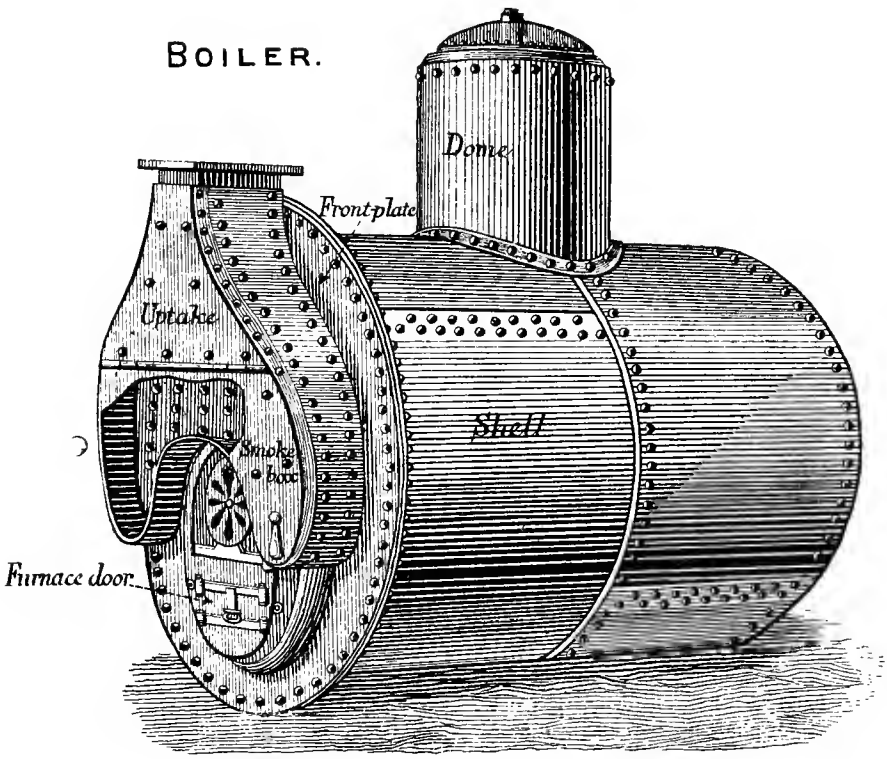
Channel Plate. The plate or frame in a channel way to which the foot valve is secured.

Channel Way. The passage leading water from the bottom of the condenser to the bottom of air pump.

Check Valve. A valve in a pipe which operates automatically, allowing a fluid to pass it in one direction only.

Chock. A solid piece used to support the weight of sliding parts, or to fill space between two or more pieces.

Circulator. An apparatus attached to a steam boiler by means of which the water is moved about in the boiler as soon as fires are started, equalizing the temperature of the water.


BOILER.
Dome
Front-plate
Uptake
Shell
Smoke box
Furnace door

Circulating Pump. That pump which supplies the condensing water to a surface condenser.

Circulating Water, or **Condensing Water.** That which is run through a surface condenser to absorb the heat from the exhaust steam.

Clearance. The least distance between piston and cylinder head when the piston is at one end of its stroke. Also, the volume in cylinder and passages between the piston at one end of its stroke and the under side of the valve covering that port. In general, the amount by which two pieces, to which the clearance is referred, are separated.

Coal Heaver. One of the engineer force whose duty it is to take the fuel from the coal bunkers and deposit it on the fireroom floor before the furnaces. Also known as a *coal passer*.

Coal Passer. (See COAL HEAVER.)

Cock. A contrivance for regulating the flow of fluids, the passage being through the movable part.

Brine Cock. A small cock attached to a boiler for drawing off samples of the water.

Gauge Cock, or *Try Cock.* A small cock inserted in a boiler-shell, at or near the water line, by which the height of the water within can be approximately determined.

Combustion Chamber. An enlarged space in a boiler, beyond the furnace, where the gases may combine more thoroughly as their velocity is reduced.

Compression. The result of confining a small portion of steam in a cylinder by closing the exhaust valve before the piston reaches the end of its stroke.

Compression Line. That line traced on an indicator diagram from the time the exhaust valve closes until either the steam valve opens or the piston reaches the end of its stroke.

Condenser. The closed vessel in which steam discharged from the engine cylinder is reduced to water by coming in direct or indirect contact with the cold injection water.

Jet Condenser. The water is brought in direct contact with the steam.

Surface Condenser. The water and steam are separated by thin metal, usually in shape of tubes.

Connecting Rod. The long rod, one end of which takes hold of the wrist-pin in cross-head and the other end takes the crank-pin.

Core Plug. A piece of metal screwed in to stop the holes left in hollow castings by the core supports, and through which the core sand is afterward removed.

Counter. A mechanism for registering the number of revolutions or strokes made by an engine.

Counter Bore. A bore of slightly increased diameter at each end of a cylinder bore.

Coupling. A device for securing together the adjacent ends of two pieces of shaft.

Crank. A lever attached to the end of a shaft. Rectilinear motion applied to its outer extremity causes it and the shaft to revolve.

Crank Disc. (See DISC CRANK.)

Crank Pin. The cylindrical pin near the outer end of a crank, whose axis is parallel to axis of shaft and a certain distance from it called the *throw*.

Crank Pit. The space in the engine-bed through which the crank revolves.

Crank Shaft. That part of the main shaft which is contained in the engine-bed and has the crank attached.

Cross-head. The sliding block attached to the exposed end of piston-rod.

Crowfoot. The end of a boiler brace divided and spread, forming feet, each secured to shell. Also the piece spanning a man or hand-hole which holds the plate in position.

Crown Sheet. The sheet forming the top of a furnace.

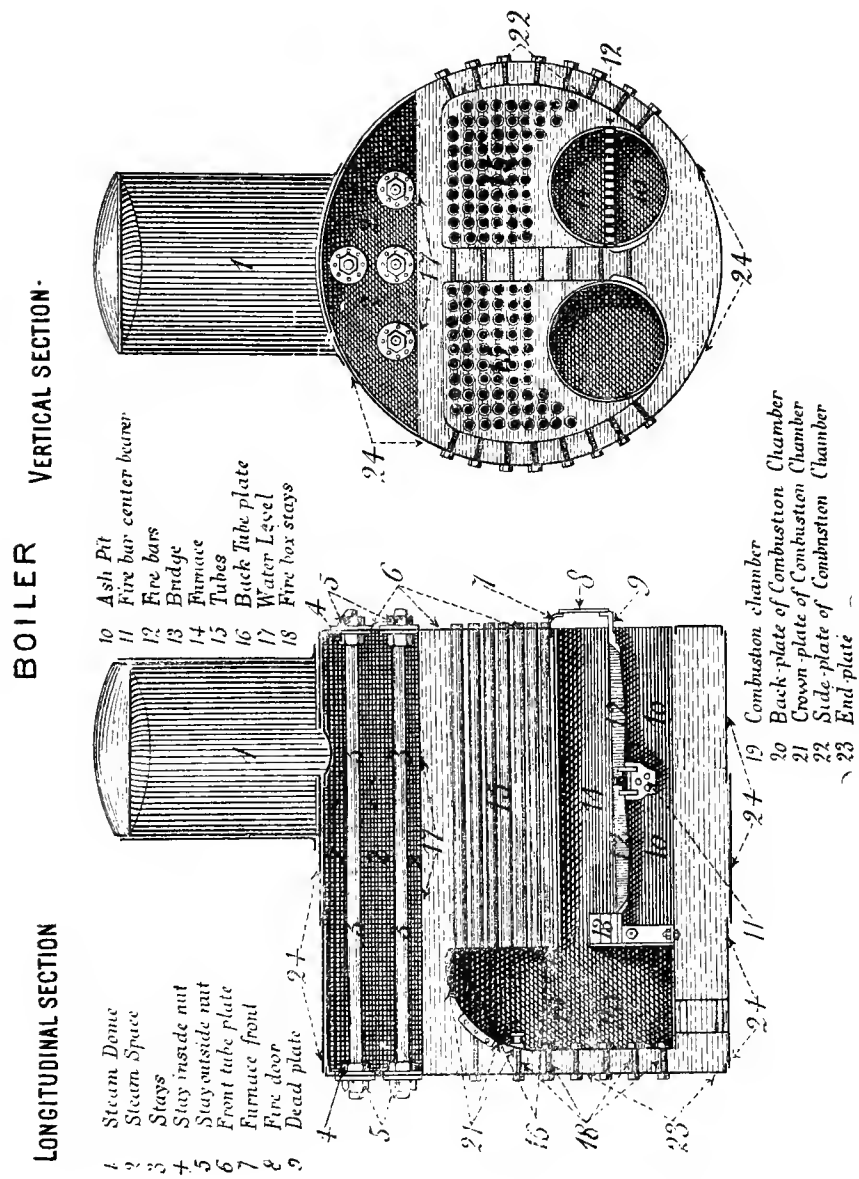
Cushion. The compressed steam in a cylinder, at or near the end of the stroke, which takes up gradually the momentum of the reciprocating parts.

Cut Off. The gear for stopping the admission of steam to the cylinder before the piston has reached the end of its stroke.

Cylinder. The vessel in which the steam is brought in contact with the piston to perform useful work.

Cylinder Cover. (See CYLINDER HEAD.)

Cylinder Head or **Bonnet.** The plate which closes the end of a cylinder.


BOILER
LONGITUDINAL SECTION
VERTICAL SECTION.
1 Steam Dome
2 Steam Space
3 Stays
4 Stay inside nut
5 Stay outside nut
6 Front tube plate
7 Furnace front
8 Fire door
9 Dead plate
10 Ash Pit
11 Fire bar center bearer
12 Fire bars
13 Bridge
14 Furnace
15 Tubes
16 Back Tube plate
17 Water Level
18 Fire box stays
19 Combustion chamber
20 Back-plate of Combustion Chamber
21 Crown-plate of Combustion Chamber
22 Side-plate of Combustion Chamber
23 End-plate
24 Shell plate

D.

Dash Pot. A small, cylindrical vessel, open at the top. It is fitted with a piston, to the spindle of which is attached some part that is periodically released to fall quickly. The momentum is taken up by air or liquid confined under the piston.

Dead Centre. The corresponding position of crank when the piston is at the end of its stroke.

Dead Plate. The flat plate at the mouth of a furnace.

Delivery Valve. The valve in a pump which prevents the fluid from returning to the pump cylinder after being discharged therefrom by the piston.

Disc Crank. A circular plate or wheel attached to the end of a shaft, and carrying crank-pin near its circumference.

Disc Valve. A flat, circular valve, one side of which covers a grated or annular opening. The valve moves in the direction of its axis.

Discharge Water. Circulating water as it leaves the condenser, having absorbed heat from the exhaust steam.

Donkey Boiler; Donkey Engine; Donkey Pump. Terms applied to the various auxiliaries. (See AUXILIARIES.)

Dome. (See STEAM DOME.)

Dowel. A small pin fast at one end in one of two adjacent pieces, and snugly fitting in a hole in the other. It prevents the two pieces sliding one on the other

Draft. The flow of air through a furnace.

Forced Draft. That created by supplying the furnace with air under pressure.

Natural Draft. That due to the difference in weight of the column of hot air in the chimney and an equal column of cold air outside.

Drag Link. A short link connecting the pins of two cranks attached to the adjacent ends of two shafts in line.

Drain Cocks. Attachments to pipes or vessels, through which fluids can be led to waste.

Drain Pipes. Same as above.

Drum. (See STEAM DRUM.)

Dry Pipe. A continuation inside of a boiler and above the water, of the main steam pipe.

E.

Eccentric. A circular disc or frame bored out and fitted on a shaft, the centres not being coincident. The circumference is the wearing surface. The distance between the centre of shaft and centre of eccentric is called the *throw*, or *eccentricity*.

Eccentric Rod. The rod connecting the eccentric strap with the other part of the valve gear.

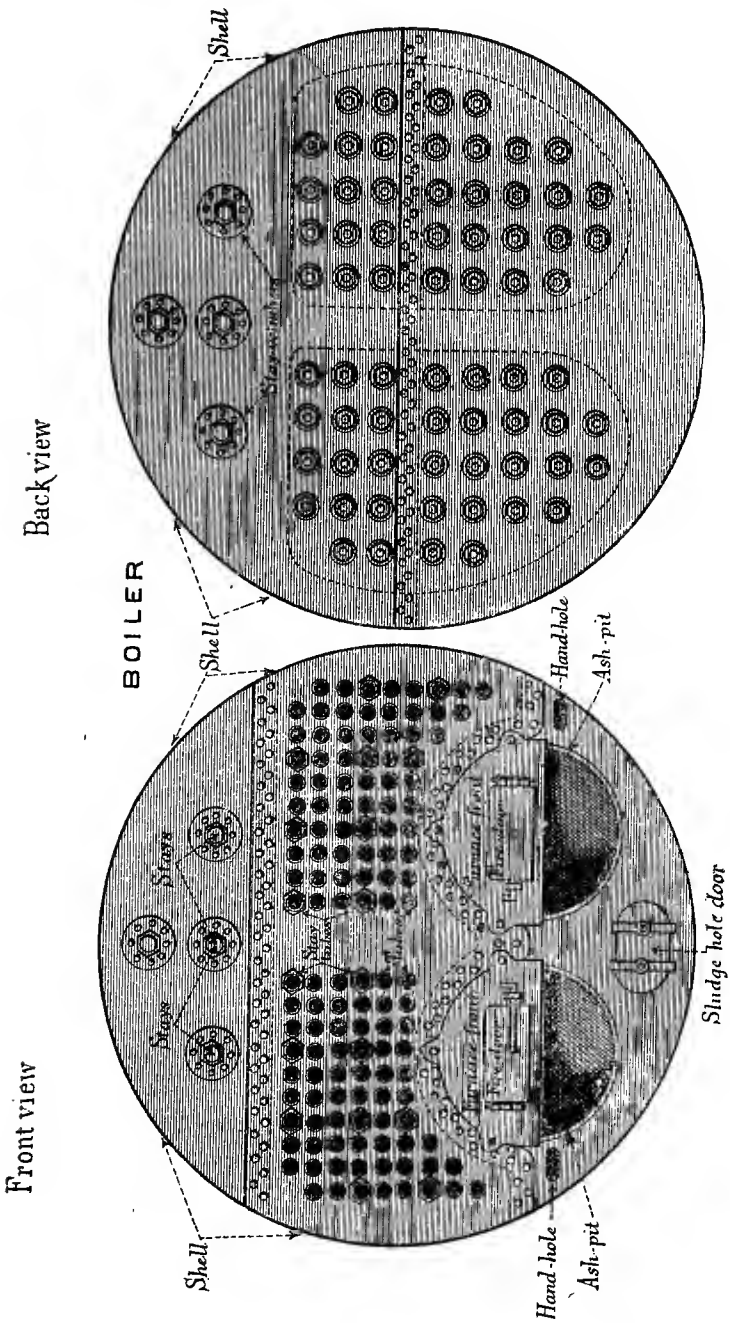
Eccentric Strap. The band which encircles the circumference of an eccentric and in which it revolves.

Engine. The mechanism by means of which part of the energy stored in steam is converted into useful work. The various kinds of engines come under the following heads:

Atmospheric. One stroke is caused by the steam, and the return stroke by the pressure of the atmosphere made effective by condensing the steam under the piston after it has performed its work.

Back Acting. The crank is between the cross-head and cylinder.

Beam. (See WALKING BEAM or WORKING BEAM.)


Front view
Back view
BOILER
Shell
Shell
Shell
Stays
Stays
Stay-washers
Stay-washers
Furnace front
Furnace front
Fire-door
Fire-door
Hand-hole
Hand-hole
Ash-pit
Ash-pit
Sludge hole door

Compound. The steam, after doing work in one cylinder, is discharged into another of larger diameter, and thence to the condenser.

Condensing The exhaust steam is discharged into a condenser.

Direct Acting. When the crosshead is between the cylinder and crank.

Double. When steam is used in two cylinders and the power is exerted on the same shaft, each cylinder receiving the same initial pressure.

Grasshopper. A side-lever engine, the beams of which are pivoted at one end, and the connecting rods take hold of the beams near their middle points.

High Pressure. A term commonly applied to an engine that exhausts into the atmosphere.

Inverted Cylinder. One the cylinder of which is supported above the crank shaft.

Low Pressure. A term commonly applied to an engine using steam of less than about 60 lbs. pressure per square inch, and exhausting into a condenser.

Non-Condensing. The exhaust steam is discharged into the atmosphere.

Oscillating. The cylinder is supported and vibrates on two trunnions, which also form the inlet and outlet for steam. The outer end of the rod is connected directly to the crank pin, and the cylinder follows the vibration of this rod.

Quadruple Expansion. When the steam used passes successively through four cylinders, each being larger in area than the one preceding it.

Side Lever. A beam engine having two beams, one on either side of the cylinder and below the level of the cylinder top, the whole engine being below the shafts.

Simple. When the steam after doing its work is discharged into the atmosphere or a condenser.

Single. When the steam is used in only one cylinder.

Steeple. A vertical, back-acting engine, the axes of whose shafts pass through or above the cylinder, intersecting and perpendicular to its axis.

Triple Expansion. When the steam used passes successively through three cylinders, the area of each being larger than the one preceding it.

Trunk. The connecting rod is connected at one end to the piston, and vibrates in a cylindrical shell, one end of which is secured to the piston, and reciprocates steam tight through the cylinder head.

Vertical, Inclined, or *Horizontal.* Dependent upon whether the axis of the cylinder is perpendicular with, inclined to, or parallel with the foundation.

Walking Beam, or *Working Beam.* The cylinder is vertical, and the power is transmitted upward to one end of a vibrating lever or beam; from the other end of the beam hangs a connecting rod through which the power is transmitted to the cranks.

Engineer. A person responsible for the care and operation of the engine and boilers.

Engine Frame. The parts connecting the cylinder to the bed-plate.

Engine Keelson. The fore-and-aft timber or iron framework, made fast to the inside of the bottom of the vessel, on which the engine bed-plate is secured.

Engine Room. The compartment in which the main engine is located.

Engine Room Telegraph. An electrical or mechanical system of wires, indicators, etc., located in and between the pilot house or bridge and the engine room, by means of which the orders for moving the engines are indicated on dials.

Equilibrium Valve. (See BALANCED VALVE.)

Escape Pipe. The pipe leading waste steam from the safety valve to the atmosphere.

Exhaust. The steam discharged from the cylinder after having performed its work.

Exhaust Hook. The hook on the end of the eccentric rod which works the exhaust valve gear.

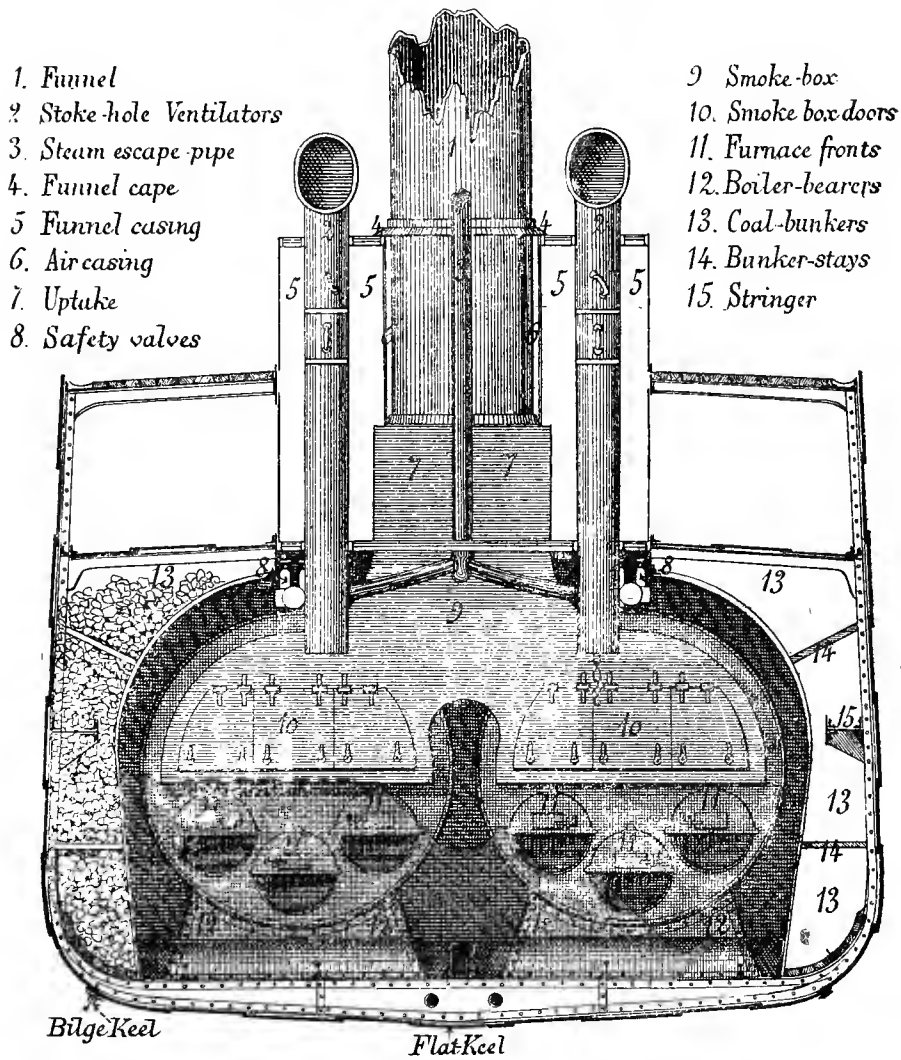
Exhaust Lap. (See LAP.)

Exhaust Lead. (See LEAD.)

Exhaust Line. The line which is traced on an indicator diagram from the time the exhaust valve opens until the piston reaches the end of its stroke.

Exhaust Pipe. The pipe which leads the exhaust steam from the cylinder to the atmosphere or the condenser.

Midship-Section of a Steamer, showing end of Boilers, Coal-bunkers, etc.



Exhaust Port. The opening in the valve seat communicating with the exhaust passage and pipe.

Exhaust Valve. That valve which controls the periodical release of steam from the cylinder.

Expansion. That property of steam which enables a given quantity of it to fill an increasing volume at a decreasing pressure.

Working Steam Expansively. (See CUT OFF.)

Expansion Gear. The mechanism for controlling the movements of the expansion valve.

Expansion Joint. A joint in a line of pipe which allows the pipe to expand or contract, the distance from end to end remaining constant.

Expansion Line. The line traced on an indicator diagram from the time the steam valve closes until the exhaust valve opens.

Expansion Valve. The valve which shuts off the admission of steam to the cylinder before the piston has reached the end of its stroke.

Eyebolt. A screw-bolt having a thread cut on one end and an eye formed at the other.

F.

Feathering Float. One of the floats or buckets of a feathering paddle wheel.

Feathering Paddle Wheel. (See PADDLE WHEEL.)

Feathering Screw Propeller. One in which the blades can be twisted on the hub to present the least resistance to the water when being dragged by the vessel when under sail.

Feed Pipe. The pipe conducting the feed water from the feed pump to the boiler.

Feed Pump. The pump which supplies the boiler with water.

Feed Tank. The reservoir from which the feed pump draws its supply.

Feed Water. The water which is forced into a boiler to be evaporated into steam.

Fillet. The filling in a corner formed by the intersection of two planes, or of a plane with a cylinder.

Fire Bars. (See GRATE BARS.)

Fireman. One of the engineer force whose duty it is to supply fuel to and regulate the fires.

Fire Room. The space in front of the boilers from which the fires are worked.

Fire Surface. (See HEATING SURFACE.)

Fires. The burning fuel in the furnaces.

Banked Fires. The burning fuel is heaped up in one part of the furnace, leaving part of the grate bare, and covered with ashes or coal to check combustion, and yet keep the water hot in the boiler.

Hauled Fires. Fires are hauled when the burning fuel is pulled out of the furnaces onto the fireroom floor and the grate left entirely bare.

Spread Fires. Fires are spread by distributing the burning fuel over the grates and adding fresh fuel and supplying draft to hasten combustion.

Fire Tools. Instruments used in working the fires under a boiler.

Flange. The strip along the edge of a boiler plate which is turned over at an angle, usually a right angle, with the plane of the plate. The ring of larger diameter about the end of a pipe or nozzle.

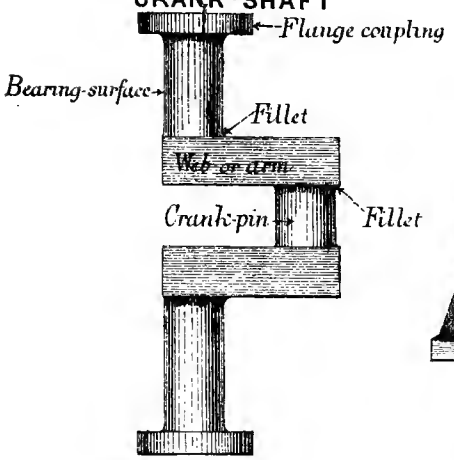
Float. (See BUCKET.)

Flooding a Condenser. Admitting too much injection water to a jet condenser.

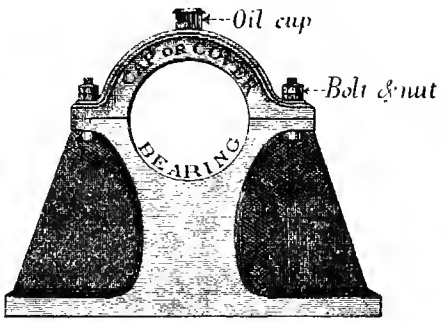
Flue. A large tube; usually a flue is built up of plates bent and riveted together.

PARTS OF MACHINERY

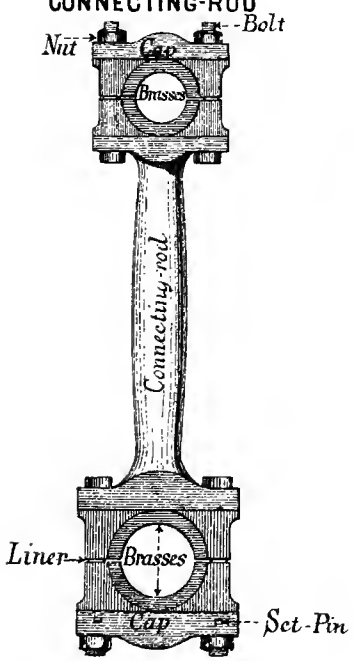
CRANK-SHAFT



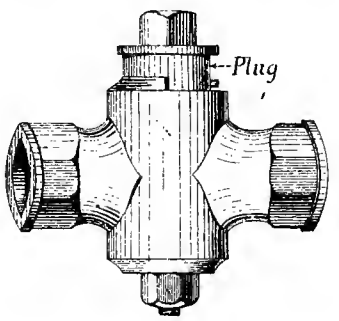
PLUMMER-BLOCK



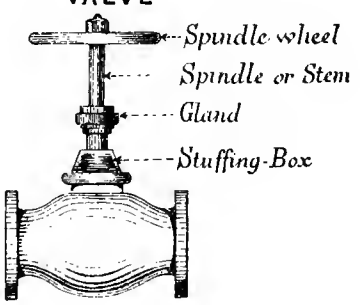
CONNECTING-ROD



COCK



VALVE



Foaming. Violent ebullition in a steam boiler, due to which particles of water are detached from the main body and carried upward with the steam.

Follower. In a piston, the ring or plate which holds the packing rings in place.

Follower Bolts. The bolts which secure the follower to the piston-head.

Foot Valve. A check valve in the suction passage to a pump; the valve in the channel way between condenser and air pump.

Forced Draft. (See DRAFT.)

Friction. The resistance which is met when one piece slides on another.

Friction Band. A band encircling a drum which can be tightened at will to control the revolutions of that drum.

Front. The side pipes, chests and valve gear attached to the cylinder of a beam engine.

Front Connection. The space into which the products of combustion are discharged when they leave the tubes.

Funnel. (See SMOKE PIPE.)

Furnace. The space in or under a boiler where the fuel is burned.

Furnace Door. The door closing the opening into a furnace through which the fuel is introduced.

Fusible Plug. A small metal plug through the centre of which is a hole filled with a metal that will fuse at a temperature a little higher than the temperature of steam. It is screwed into and through the plate at the highest heating surface of a boiler, one end being exposed to the heat, the other to the water or steam.

G.

Gab Lever. The arm attached to the rock-shaft across the front of a beam engine, and to the pin of which the eccentric rod hook is connected.

Gallows Frame. The frame which supports the beam of a beam engine.

Gasket. Material placed between flanges to make the joint tight.

Gate Valve. A valve used in a line of pipe. It has two faces and seats slightly wedge-shaped, the plane of one face being perpendicular to the axis of the pipe.

Gauge. An instrument for registering pressures.

Gauge Cock. (See COCK.)

Gauge Glass. An apparatus consisting of a small glass tube, the ends of which are held water-tight in metal connections, which, in turn, are secured to the boiler-shell, one above and the other below the water-line. A hole through all allows the water to stand at the same height in the boiler and tube. Literally the *gauge glass* is the glass tube only.

Generator. A term applied to boilers consisting of coils of pipe in which steam is generated.

Gib. A wearing-piece in contact with the slides, held in the jaws of a cross-head.

Gland. The ring in a stuffing box by which the packing is compressed and held in place.

Governor. Mechanism for controlling automatically the speed of an engine.

Grate Bars. Iron bars on which the fuel is supported while being burned in a furnace.

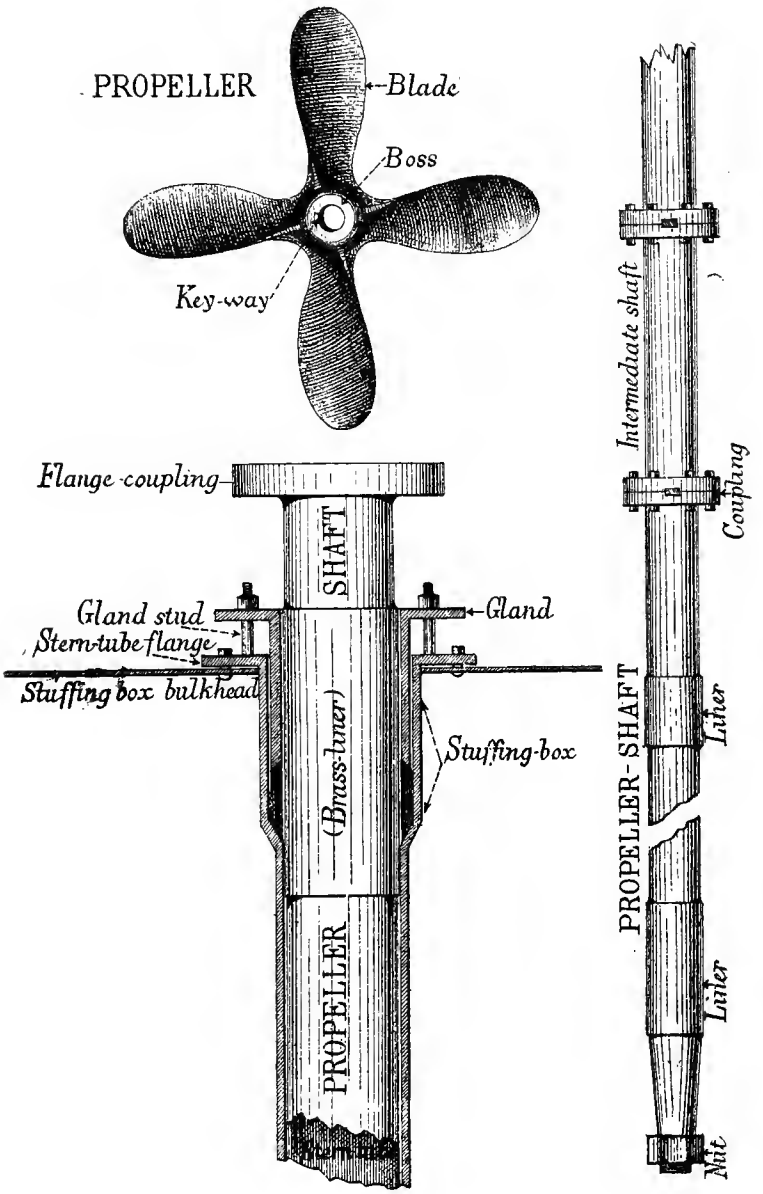
Grommet. A ring formed of cotton-wicking, or similar material, put under the head of a bolt to prevent leakage when the bolt is in place.

Guard. A metal piece over a disc or flap valve to prevent it from leaving the seat too far.

Guide. A bar or plate on which the cross-head travels.

Gusset Plate. A plate sometimes used in the construction of a boiler. It stands edgeways between two flat or curved surfaces, is secured to both, and acts as a brace.

PARTS OF MACHINERY.



H.

Half-moon. A bar bent to a V shape, with both ends flattened and turned up for feet, through which it is riveted to the interior of boiler-shell. It is used in connection with a fork-end brace.

Hand-hole. A small opening provided in a boiler-shell for cleaning and examining the interior. It is closed with a plate covering the hole from the inside.

Hauled Fires. (See FIRES.)

Heater. An apparatus for heating the feed water for a boiler with the exhaust steam or other waste heat.

Heating Surface. That surface of a boiler which is exposed to the hot gases on one side and has water on the other.

Heel Brace. (See BRACE.)

High-pressure Cylinder. The smallest cylinder of a compound or triple expansion engine.

Holding-down Bolts. The bolts which secure the bed-plate to the foundation.

Hot Well. The space above the delivery valves of an air-pump into which it discharges.

Horse Power. A conventional unit used in expressing the power developed by an engine. It is the result obtained by multiplying together the area of piston, the average unbalanced pressure of steam acting thereon during the stroke, and the speed of piston expressed in feet per minute, and dividing the product by the constant number 33,000.

Hub. The body of metal about a shaft hole.

I.

Incrustation. (See SCALE.)

Indicator. An instrument for registering the pressure in a cylinder at all parts of the stroke.

Indicator Card, or **Diagram.** The closed curve or figure traced by the pencil of the indicator.

Initial Pressure. The pressure of the steam as it enters the cylinder.

Injection. The cold water supplied to the condenser for condensing the exhaust steam.

Injection Pipe and Valve. Those leading the injection water from overboard into the condenser.

Injector, or **Inspirator.** An instrument for feeding water into a boiler in which the steam acts upon the water direct.

Intermediate Cylinder. That between the high and low-pressure cylinders of a triple expansion engine.

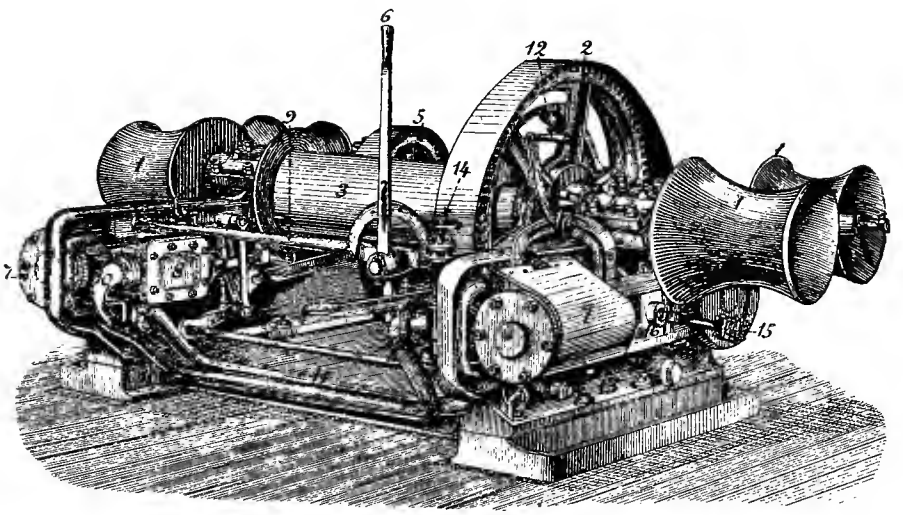
J.

Jack Bolt. A small bolt screwed through the flange of a bonnet or cover against the other part, to aid in breaking the joint.

Jacket. The covering of a cylinder, boiler or pipe. (See STEAM JACKET.)

Jack Screw. An instrument consisting of a screw and nut used for moving heavy weights.

STEAM-WINCH



1. *Warping-ends*
2. *Main spur wheel*
3. *Barrel*
4. *Barrel-shaft*
5. *Small spur-wheel*
6. *Clutch lever*
7. *Cylinders*
8. *Steam-chest*
9. *Stay or tie-rod*
10. *Steam-pipe*
11. *Exhaust-pipe*
12. *Reversing lever*
13. *Base-plate*
14. *Stop-valve*
15. *Connecting-rod*
16. *Piston-rod*

K.

Key. A taper piece of rectangular cross-section, two opposite sides of which are flat and parallel; a wedge.

Kingston Valve. A valve in the bottom of a vessel into which discharge the boiler blow-pipes, the pumps, etc. The valve is a truncated cone and opens downwards against the pressure of the water outside.

L.

Lagging. The covering of a cylinder or pipe which prevents radiation of heat.

Lap. A term applied to that joint in boiler construction in which the edge of one sheet is laid over the edge of the other far enough to be held by rivets.

The distance the end of the valve extends beyond the outside edge of steamport when the valve is in mid-position.

Lazy Bar. An iron bar supported horizontally across the furnace or ash pit door opening to take the weight of the fire-tools while they are being used in working the fires.

Lead. The distance the port is open when the piston is at the end of its stroke.

Lead. A strip of soft metal laid on top of a journal and squeezed down by the cap, the reduced thickness of which indicates the amount of play which the journal has in the bearing when the edges of the bearing and cap come together.

Left-hand Screw Propeller. (See SCREW PROPELLER.)

Leg. The water space about the furnace of a flue-and-return tubular boiler.

Levers. Handles vibrating about a pin, or attached to a shaft, for actuating various parts.

Lifters. The arms of the lifting rods of a beam engine that receive the impulse from the vibrating toes on the rock shaft.

Lifting Rods. The four upright rods in a beam engine front that transmit the motion from the steam and exhaust toes to their respective valves.

Lining. (See STEAM CHIMNEY.)

Link. The bar which is connected at either end to the eccentric rods from each of two adjoining eccentrics on the same shaft.

Link Block. The block sliding on the link through which the motion of either eccentric at will is transmitted to the valve.

Link Motion. The combination of two eccentrics on the same shaft, two rods, and the link and block for operating the steam valve of an engine.

Live Steam. Steam as it comes from the boiler.

Lock-up Safety Valve. A safety valve whose adjusting parts are so protected that they cannot be tampered with.

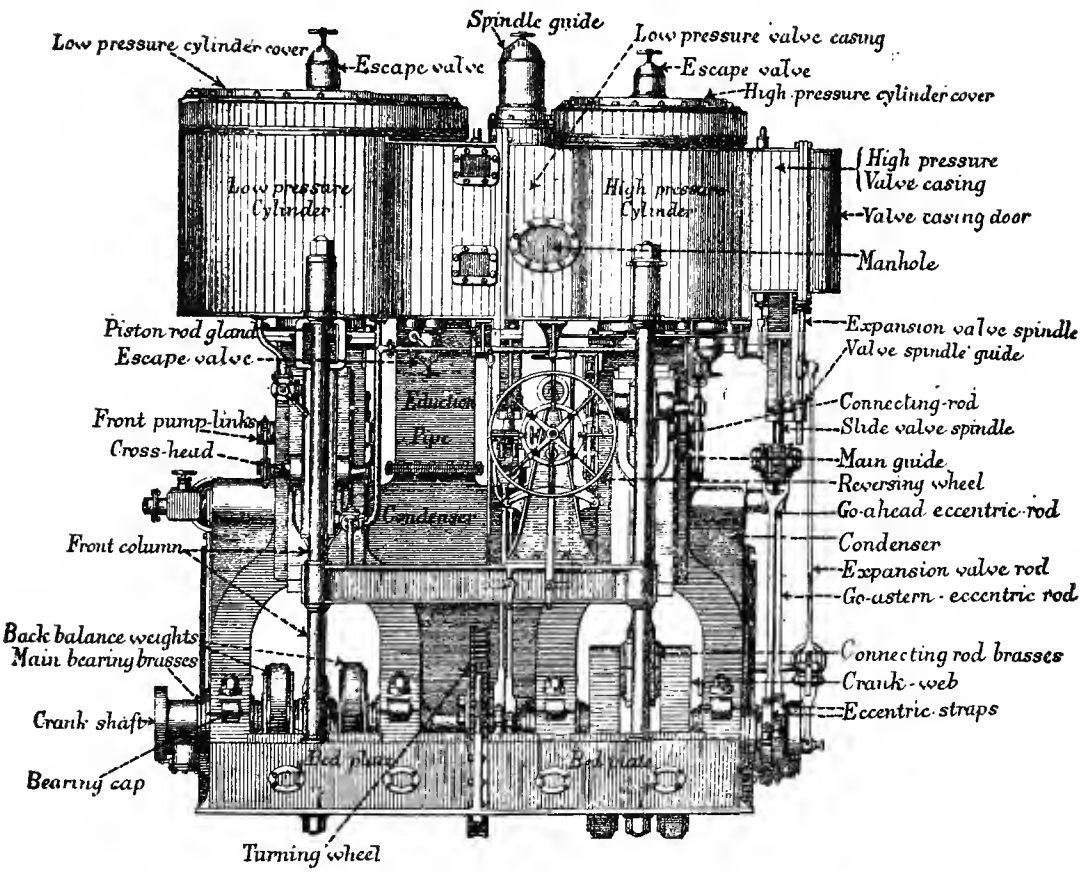
Low-pressure Cylinder. The largest cylinder in a compound or triple expansion engine.

Lubricant. Any substance that may be applied to wearing surfaces to reduce friction.

Lubricator. An apparatus for supplying a lubricant to the interior of a steam cylinder.

Lug. A flat projection from the body of a piece to which to fasten other pieces.

FRONT VIEW OF A COMPOUND ENGINE.



M.

Manhole. An opening in a boiler large enough to admit a man to examine and repair. It is closed with a plate covering the hole from the inside.

Manifold. A pipe or chamber to which are connected several branch suction pipes with their valves and one or more main suctions to pump.

Mean Pressure. The average pressure in a steam cylinder from the beginning to the end of a stroke.

Monkey Tail Valve. (See STARTING VALVE.)

N.

Natural Draft. (See DRAFT.)

Nozzle. A short pipe-like extension on a casting or other part.

O.

Oil Cups. Small cups through which oil is fed to wearing surfaces.

Oiler. One of the engineer force whose duty it is to keep the wearing parts supplied with the proper lubricant, and to watch their condition.

Oil Ways. Grooves cut in the wearing surface of a bearing, which allow the oil to reach all parts of the journal.

Outboard Bearing. That which supports the outer end of a paddle-wheel shaft.

Outboard Delivery Pipe and Valve. Those at the side of the vessel through which the discharge water from the condenser is led overboard.

P.

Packing. Elastic material confined about piston rods in the stuffing box to prevent leakage.

Packing Ring. (See PISTON RING.)

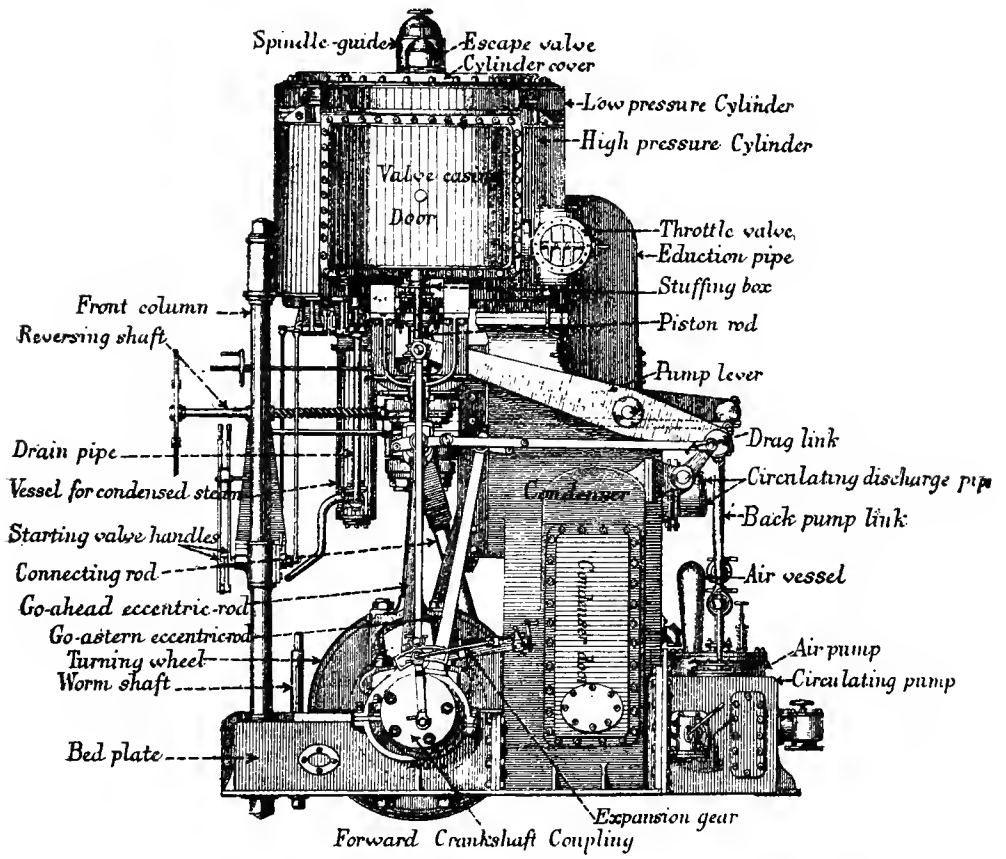
Paddle Wheel. A propelling wheel suspended and revolving at the side or stern of a vessel, its shaft being above the water and perpendicular to the vertical fore-and-aft plane of the vessel. It is provided with floats or buckets, secured at intervals around the circumference, only a few of which are in the water at the same time.

Radial Wheel. In this arrangement the buckets are secured rigidly to the arms of the wheel and the planes of their faces are practically radial planes.

Feathering Wheel. In this arrangement the buckets are supported at their ends on gudgeons or journals, and controlled by a mechanism which holds them with the plane of their faces practically perpendicular to the surface of the water during the time they are in the water.

Pillow Block. A shaft-bearing that is complete in itself and secured to the rest of the structure by bolts.

FORWARD END VIEW OF A COMPOUND ENGINE.



Piston. The circular disc in the bore of a steam cylinder which receives and transmits the pressure of the steam.

Piston Head. The principal piece composing a piston.

Piston Rings. Small metal rings closely fitted at the circumference of the piston between the flange and follower, and held out by springs against the bore of the cylinder to prevent leakage.

Piston Rod. The rod which is attached at one end to the piston, passes out through the stuffing box in head, and is attached at the other end to the cross-head. In some styles of engine the free end of the rod takes hold directly of the crank pin.

Piston Valve. A small single or double piston which reciprocates in its cylinder past ports which are in the circumference of that cylinder. It is a slide valve with curved face and seat, and is balanced.

Pitch of Screw. The distance that any given point in the screw would move in the direction of the axis if turned through one revolution in a solid fixed nut.

Pitch of Rivets. The distance between their centres.

Plummer Block. (See PILLOW BLOCK.)

Plunger. The cylindrical piece of equal diameter which, reciprocating in a pump cylinder through a stuffing box in one head, forces the fluid out past the delivery valve by displacing it in the cylinder.

Poppet Valve. A circular valve with a conical face and seat. It moves in the direction of its axis. There may be one or two on the same stem.

Port. An opening in a valve-seat leading to the interior of the cylinder, or to the exhaust passage.

Priming. (See FOAMING.)

R.

Racing. A sudden increase of speed of a marine engine due to the propeller being lifted wholly or partly out of the water when the vessel is pitching.

Receiver. The confined space between two cylinders of a compound or triple expansion engine into which the smaller discharges, and from which the next larger draws its supply.

Relief Valve. An automatic valve attached to a cylinder, pump or line of pipe, which opens when the pressure exceeds that for which it is set.

Reversing Gear. The apparatus for changing at will the distribution of steam to the engine, to make it run either ahead or back.

Right-hand Screw Propeller. (See SCREW PROPELLER.)

Rock Arm. An arm or lever attached to a shaft that vibrates only, receiving or transmitting motion from its outer end.

Rock Shaft. One that vibrates only, not making complete revolutions.

S.

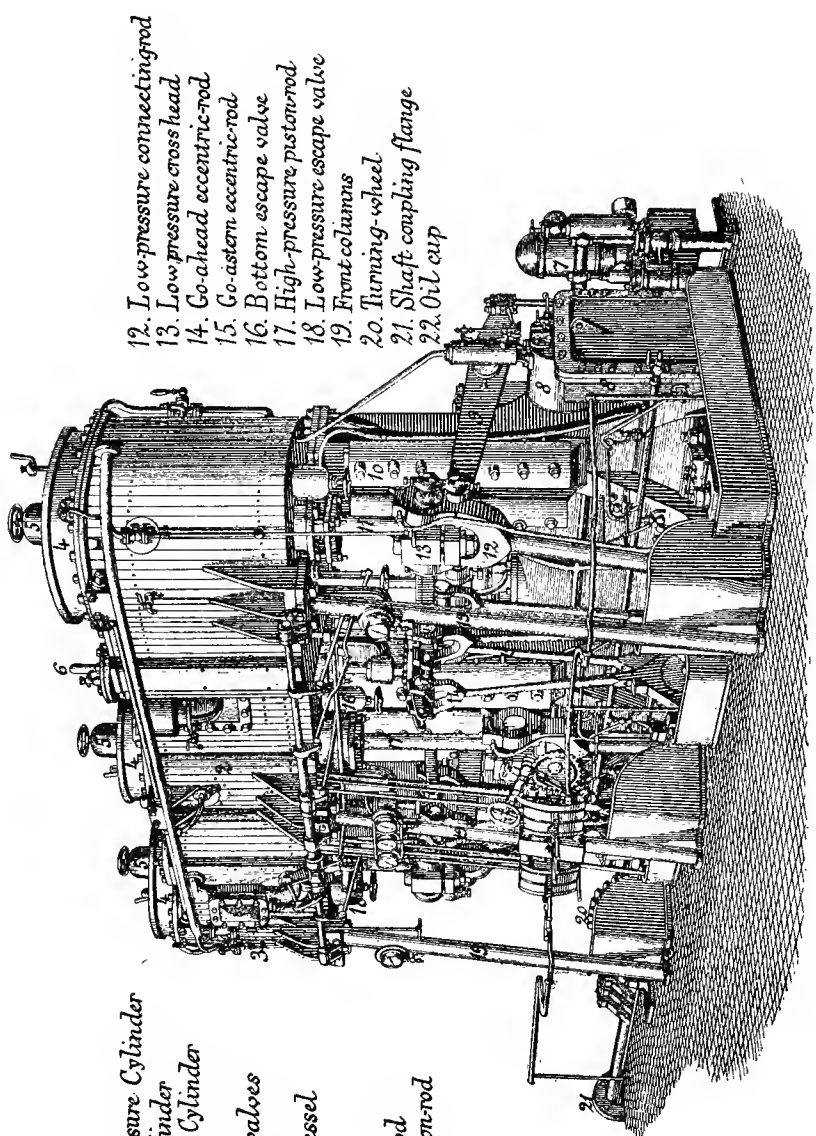
Saddles. The supports on which a boiler rests.

Safety Valve. An apparatus attached to a steam boiler or pipe for relieving it automatically of any pressure in excess of that for which it is set.

Salinometer Pot. A small vessel connected with the interior of a steam boiler into which a sample of the hot water can be drawn to determine its density.

Saturation. A term referring to the proportionate amount of saline matter held dissolved in the water in a boiler.

THREE CYLINDER COMPOUND ENGINE.



Scale. Mineral matter from the water in a boiler which has settled on and adhered to the heating surfaces.

Screw Propeller. A submerged propelling wheel. It is virtually a section of a screw of two or more threads or helices, each blade representing a thread.

Left-hand Screw Propeller. A propeller which revolves from the starboard to the port side during the upper part of its revolution while the engines are working ahead.

Right-hand Screw Propeller. A propeller which revolves from the port to the starboard side during the upper part of its revolution while the engines are working ahead.

Sea Valve. A valve in the bottom of the vessel with which pipes are connected leading to the pumps.

Seat. That surface upon which a valve makes its contact.

Separator. A vessel forming part of a steam pipe, in which the water entrained and carried through the pipe with the steam is separated from it.

Set Screw. A small finished bolt with a square head and the thread cut up to the head.

Shaft. A piece usually circular in cross-section which is used to transmit rotary motion.

Shaft Alley. The passage-way from the engine aft to the stern bearing through which the shaft passes.

Shoulder. The jog formed by the change from one diameter to another in a shaft.

Side Pipes. The pipes connecting the upper and lower chests of a poppet valve engine. There is one on the steam side and one on the exhaust side.

Slice Bar. An iron bar with one flattened end used to clear the grates of ashes and clinkers.

Slide. (See GUIDE.)

Slide Valve. A valve having a flat face reciprocating over ports in a flat seat.

Slip of a Screw Propeller. The difference between the pitch of the screw and the distance that the vessel moves during one revolution of that screw. (See PITCH.)

Slip Joint. An expansion joint in a line of pipe which is made by inserting an end of one of the lengths into the enlarged end of another length, as a stuffing box, and packing with soft material to make it tight.

Smoke Box. (See FRONT CONNECTION.)

Smoke Pipe. The pipe erected above a boiler which carries away the products of combustion from the furnace. It also confines the heated gases in a column of sufficient height to produce draft. (See DRAFT, NATURAL.)

Snifting Valve. A relief valve opening outward formerly attached to a condenser.

Socket Bolt. A stay-bolt through two parallel flat surfaces of a boiler, holding them together against internal pressure. There is a head on one end, the other being riveted over. Between the two sheets and about the bolt is a sleeve called a socket. A screw stay-bolt screwed through both plates has no socket about it.

Spread Fires. (See FIRES.)

Standing Bolt. A small bolt with thread cut at both ends. One end is screwed permanently into place, and the other is fitted with a nut.

Starting Bar. A bar used when starting an engine, to work the valves by hand while the mechanical gear is disconnected.

Starting Valve. A small valve by which steam may be admitted into a cylinder when the engine stands in such a position that the main steam valve covers both steam ports.

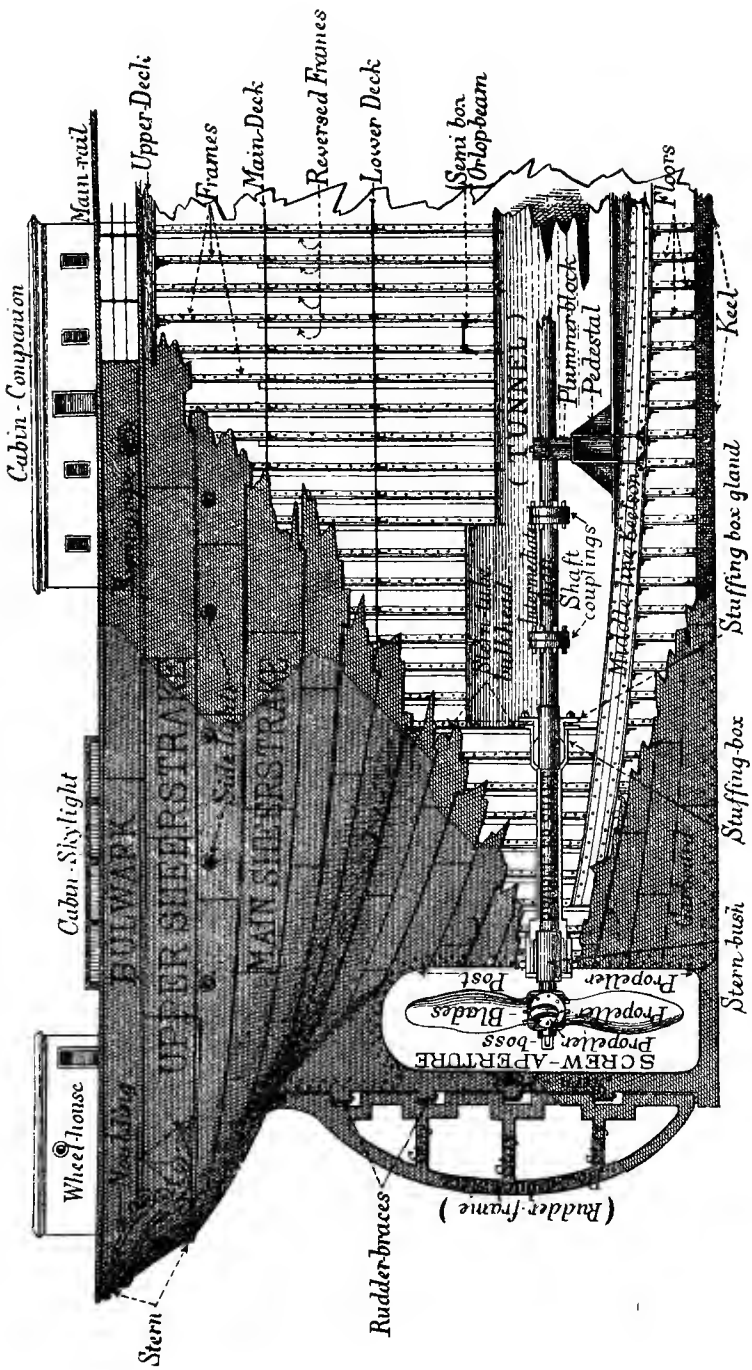
Stay Tube. A boiler tube that is secured in the tube sheet more firmly than by merely expanding and beading over the ends, in order that the tube may act as a brace to hold the flat tube sheet against internal pressure.

Steam. An elastic vapor generated from boiling water.

Dry Steam is that which has no particles of water held in suspension.

Saturated Steam is that which has a temperature due only to its pressure.

AFTER-BODY OF A SCREW-STEAMER, SHOWING PART IN SECTION



Superheated Steam has received an additional amount of heat and its temperature is in excess of that due to its pressure.

Steam Chest. The chamber attached to an engine cylinder into which the main steam pipe discharges and in which the main steam valve operates.

Steam Chimney. A large steam dome built about the base of the chimney, and the annular space thus formed connects directly with the interior of the boiler. The inner cylinder through which the gases pass is called the "lining."

Steam Dome. A cylindrical reservoir built on the top of a boiler-shell. One end has a head riveted in, the other end is riveted to the shell.

Steam Drum. A cylindrical reservoir having two heads. It is attached to the boiler by one or more short nozzles, through which steam reaches its interior.

Steam Jacket. The outer casing about an engine cylinder. Into the space enclosed is admitted live steam to heat the walls of the interior cylinder or lining.

Stoke Hole. An English term for fire room.

Steam Lead. (See LEAD.)

Steam-packing. That system in which live steam is admitted behind packing rings to set them out tight against the walls of the cylinder.

Steam Port. (See PORT.)

Steam-room. Space in a steam boiler above the surface of the water therein.

Steering Propeller. A screw propeller so arranged that it may be swung through a limited range about a vertical axis, thus altering the direction of the thrust in reference to the centre line of the hull.

Stoker. An English term for a fireman.

Stop Valve. The valve in a steam pipe close to the boiler by which the passage may be closed or opened.

Straightway Valve. One through which fluid passes without its direction being changed.

Strap. A flat band used to bind various loose parts securely together.

Connecting Rod Strap is a U-shaped piece over the end of the rod which holds the brass boxes about the pins and to the rod.

Stroke. The distance the piston travels in moving from one end of the cylinder to the other.

Stud. (See STANDING BOLT.)

Stuffing Box. The cavity in a cylinder head in which packing is confined about the piston rod to prevent leakage.

Strut. A support for the outer end of a twin-screw propeller shaft.

Superheater. A closed vessel in which steam, separated from water, is brought in contact with heated plates or pipes.

T.

Tap Bolt. A small finished bolt with thread cut only part way from point to head.

Tappet. A rotating or vibrating piece applied to move periodically another part.

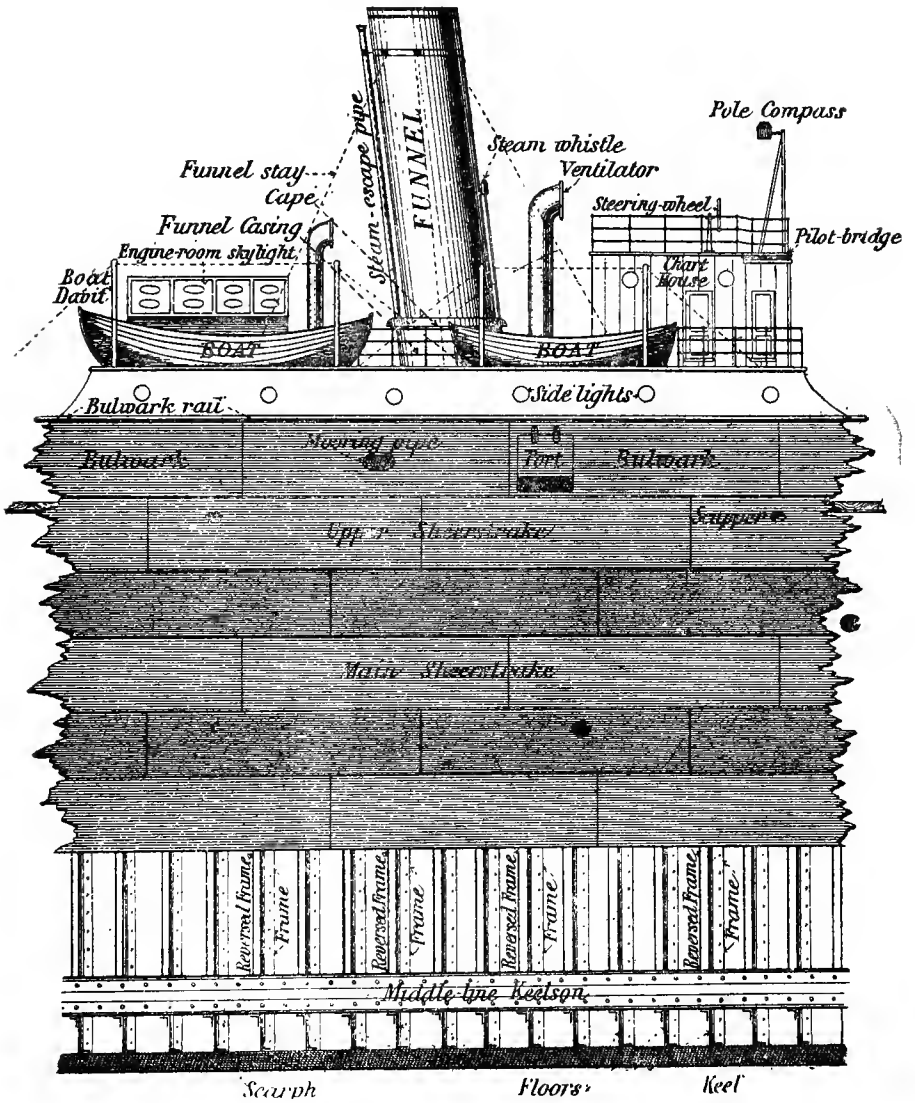
Telescopic Smoke Pipe or Funnel. The pipe is made in two or more lengths, the higher one smaller in diameter than the one below it, into which it can be lowered.

Tell-tale. An instrument for indicating at all times the position of a moving part.

Throttle Valve. That valve in the steam pipe next to engine by which the flow of steam to the engine is controlled.

Throw. The distance from the centre of shaft-hole in a crank to the centre of the pin; and the distance from the centre of shaft-hole in an eccentric to the centre of the eccentric.

MIDSHIP PORTION OF AN IRON SCREW STEAMER.



Thrust. The pressure on the hull produced by the screw revolving in the water.
Thrust Bearing. (See BEARING.)
Thrust Rings. Collars turned on the thrust shaft and in the thrust bearing.
Thrust Shaft. That piece of shaft laying in the thrust bearing which transmits the thrust of the screw to the vessel.
Tube. Small welded pipe used in boiler construction for the passage of products of combustion.
Tube Expander. A tool used to expand the end of a boiler tube against the inside of the hole in the tube sheet, making the joint steam tight.
Tube Plate, or **Tube Sheet.** The plate into which the ends of the boiler tubes are fitted and secured.
Twin Screws. The two screws fitted to one vessel, each driven by a separate engine. One is right hand, the other left.

U.

Uptake. The smoke passage between the smoke box and chimney.

V.

Vacuum. Space containing no matter. As used in steam engineering the term is applied to the *partial* vacuum obtained by abstracting, in a closed vessel, the heat of vaporization from steam, reducing that given volume of steam to an approximately equal weight of water of much less volume. Vacuum is measured by the height of a column of mercury sustained in the long leg of a bent tube, the long leg being connected with the enclosed space in "condenser," the other open to the atmosphere. The sustaining force is the difference between the pressure of the atmosphere and the slight pressure in the "condenser." In case of a *perfect* vacuum this slight pressure would be zero.
Vacuum Gauge. An instrument attached to the condenser to register the height in inches of the column of mercury that would be sustained by the partial vacuum within. It may be the primary mercury column or a spring gauge adjusted by one.
Valve. An appliance for controlling the flow of liquids and gases through a pipe or aperture.
Valve Chamber. The casting which encloses the valve.
Valve Gear. The combination of parts by which an engine valve is operated.
Valve Seat. (See SEAT.)
Valve Stem. The rod entering the steam chest and connected to the valve which it moves.
Viscosity. Oil is said to have *viscosity* when it possesses good body.

W.

Walking Beam. (See BEAM.)
Walking Beam Engine. (See ENGINE.)
Washer. A small plate about a bolt and next to the nut. Its use is to distribute the strain which the nut resists over a greater area than the nut possesses.

PART V.

DICTIONARY OF NAVAL TERMS.

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A.

Academy. (See NAVAL ACADEMY.)

Action. An engagement between two or more vessels.

Clear Ship for Action. To make preparation for battle by removing everything liable to obstruct the working of the guns, also such material as hatch-railings, etc., that would naturally be shattered and scattered by the enemy's shot.

Admiral. The highest ranking officer in the navy. The respective ranks of admiral and vice-admiral no longer exist in the U. S. Navy, having died out with the deaths of Admiral Porter and Vice-Admiral Rowen.

Aid. An officer of the rank of lieutenant, attached to the admiral's staff. This officer is also known as flag lieutenant. He transacts the secret official business of the commander-in-chief and does duty as an amanuensis.

Altiscope. An instrument so constructed as to permit the observer to look over intervening objects, and by the employment of which guns may be pointed, or trained, from the deck below.

Ammunition. Explosives and projectiles designed to be fired from ordnance. (See POWDER; EXPLOSIVES; CHARGES; TABLE OF U. S. NAVAL BREECH LOADING GUNS.)

Apprentice. (See NAVAL APPRENTICE.)

Armed Stem. The forward part, or entrance, of the ship strengthened with armor, for the purpose of ramming.

Armor. A metal protection against artillery projectiles.

Belted Armor. A plating completely encircling the ship in the vicinity of the water line, and from ten inches to twenty inches in thickness.

Compound Armor. A combination of iron or steel, or nickel and steel, or other metals. *Compound armor* is generally considered to refer to a layer of steel facing an iron plate.

Internal Armor. This applies to two denominations of armor; *first*, as a backing for main or outboard armor; *second*, for transverse bulkheads, extending from side to side, forward and aft, enclosing the battery and protecting the vessel against a raking fire. These bulkheads extend from the water line to the lower part of the upper deck.

Nickel-steel Armor. A combination of steel and nickel. This is the standard armor for the U. S. Navy. Its advantage is its superior resisting power—the mixing of the two metals makes a very tough substance, and renders it less liable to split upon impact with projectiles.

Armored Cruiser. A man-o'-war protected with heavy plates of iron and steel, especially surrounding the guns.

Armorer. A petty officer who keeps the small arms in condition.

Armory. A room set apart for the storage of small arms.

Attached. When an officer serves on board a vessel he is said to be *attached* to her.

Aye! Aye! (See HAIL.)

B.

Barbette. A circular breastwork of metal inside of which guns are mounted. A gun is said to be *in barbette* when it is fired over a parapet instead of through an embrasure.

Barbette Gun. A gun mounted *in barbette.*

Barge. A large double-banked boat used by flag officers.

Bargemen. The crew of a barge.

Battery. Mounted ordnance. The guns on the sides of the ship, taken collectively, are respectively referred to as *port* and *starboard batteries.*

Barbette Battery. A gun or guns mounted *in barbette.*

Covered Battery. Ordnance concealed by a breastwork.

Floating Battery. Ordnance mounted on a raft or hulk.

Masked Battery. Same as covered battery.

Mortar Battery. Mortars are fired at an angle of 45°. These guns have no embrasures.

Water Battery. Ordnance mounted close to and almost on a level with the water, so as to penetrate the hulls of vessels in the vicinity of the water line. (See TABLE OF U. S. NAVAL BREECH LOADING GUNS.)

Battle Lantern. Until recently an oil lantern placed near each gun for the purpose of lighting the deck during an engagement at night. Since the introduction of electricity on board men-o'-war, battle lanterns have been electric. The lamps are shaded, and the light is thrown down on the deck, thus furnishing sufficient illumination for working the guns without dazzling the eyes and making outside objects obscure.

Battle Ship. A modern armored man-o'-war carrying a heavy battery.

Bay. The hospital on board ship, situated forward between decks. Also known as *Sick Bay.*

Bayman. A hospital nurse.

Bed. A platform for raising a gun carriage above the level of the deck when the gun is too low for the port. A platform for supporting a mortar.

Belted Armor. (See ARMOR.)

Berth. The sleeping-place between decks allotted to a seaman.

To berth a ship's company is to assign each member of the crew a certain number, which will be found tacked over the hammock-hook below decks.

Berth Deck. The deck below the gun deck; the upper deck of a man-o'-war is called the *spar deck.*

Binnacle List. Sick men have their names recorded on a list which is sent to the officer of the deck by the surgeon, and are excused from duty. This list of names is called the *Binnacle List.* (See SICK LIST.)

Blue Jacket. A name for a man-o-'war's man.

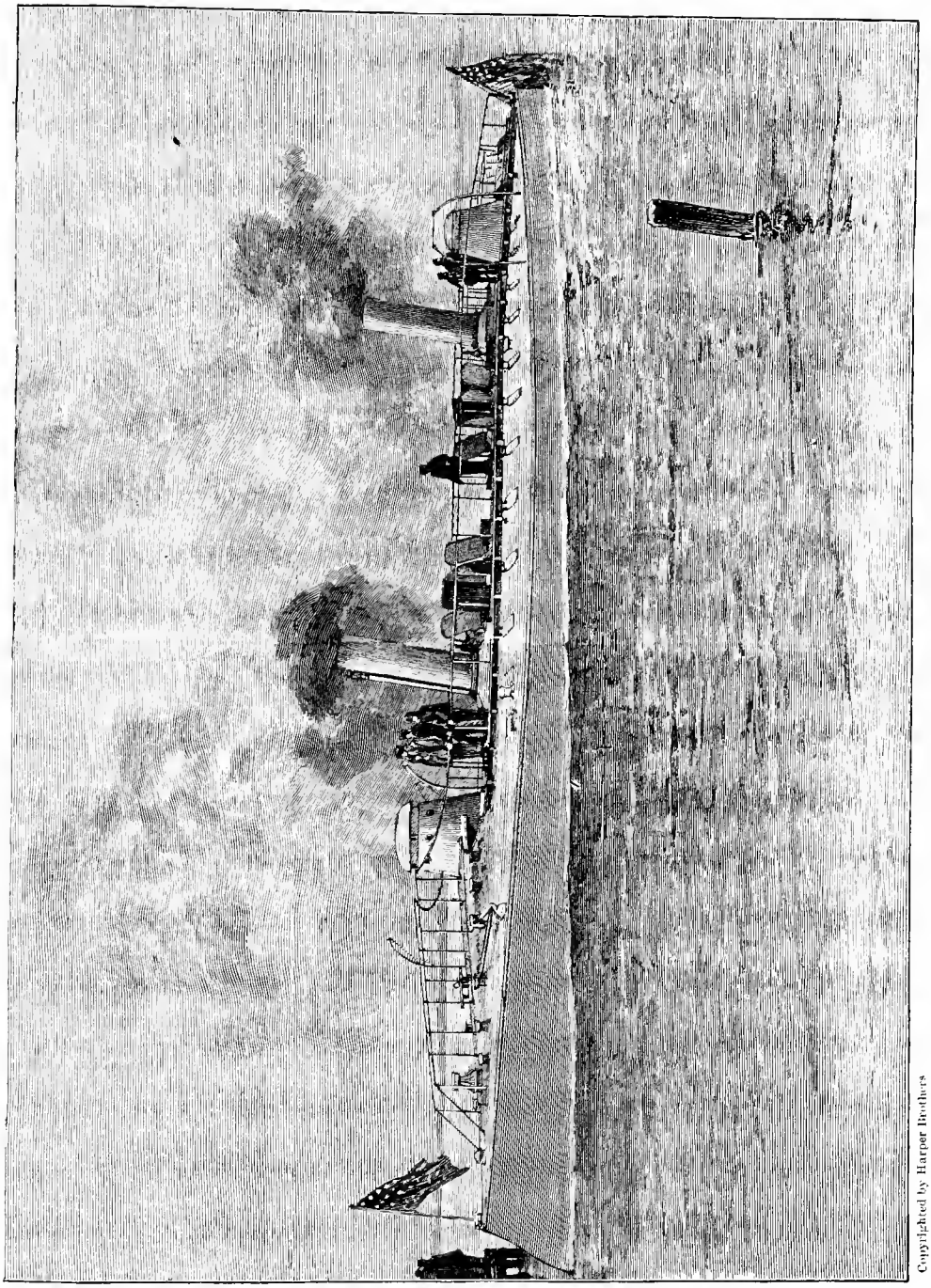
Boarders. Certain members of the ship's company detailed to board the enemy's vessel.

Boarding. As applied to a naval engagement, to enter the enemy's vessel with hostile purpose.

Boarding Nettings. A strong meshwork, the lower edge of which is made fast to the rail, and the upper part triced up by whips, and employed to prevent boarders from entering upon the ship's deck.

Boarding Pike. A lance having a steel head, and used in repelling an attack by boarders.

Boatswain. A warrant officer whose duty it is to care for the rigging, anchors and cables; to see that his mates get the men quickly on deck after the word has been passed, and to note that their work is performed quickly and well; to observe that the boats and booms are properly secured; to square the yards, and in fact to keep the vessel looking ship-shape and trim so far as masts, spars, sails and rigging are concerned.



TORPEDO BOAT "CUSHING."

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Boatswain's Mate. The chief petty officer of the watch, who, in the absence of the boatswain, repeats the orders of the officer of the deck and observes that the same are executed by the men.

Bomb. A hollow shell of iron filled with an explosive substance so arranged that the shell is blown to pieces a certain number of seconds after it is fired, or upon coming in contact with an object.

Bomb Bed. A mortar platform.

Bomb Ketch. A mortar vessel.

Bombshell. (See BOMB.)

Bomb Vessel. A mortar boat.

Bow Chasers. Guns situated so as to fire through the bow ports, or sharp on either bow from the main deck.

Breech. That section of a gun which is abaft the chamber—the aftermost part of the gun.

Breech Block. The hinged shape of metal in a breech-loading gun which closes the breech and receives the thrust of the charge when the gun is fired.

Breeching. The rope which is rove through the cascabel of a muzzle-loading gun and secured to each side of the port, so as to limit the recoil.

Breeching Bolts. Bolts in the ship's side by which the two ends of the breeching are secured.

Breech-loader. A gun which is charged at the breech instead of the muzzle.

Breech Mechanism. The mechanism which opens and closes the breech.

Breech Plug. (See BREECH MECHANISM.)

Breech Sight. (See SIGHT.)

Bridle Port. The forward port on the gun deck.

Brig. The prison on board ship.

Broad Pennant. A broad piece of bunting, cut swallow-tail, for a commodore, and rectangular for a rear admiral—the commodore's has one and the rear admiral's has two stars in the flag.

Broadside. A simultaneous discharge of all the guns on one side.

Broadsword. A cutlass; a cutting sword with a heavy, broad blade.

Buckler. A tompion to fit into the circular opening in the half-ports.

Bureaus. The business of the Navy Department is divided under eight heads, called *Bureaus*, each one being presided over by an officer of the navy, who, if below the rank of commodore, is given that rank, or, in the case of a staff officer, the relative rank of commodore. The eight bureaus are as follows: Ordnance, Equipment and Recruiting, Navigation, Yards and Docks, Medicine and Surgery, Provisions and Clothing, Steam Engineering, Construction and Repair.

C.

Cadet. A student in the art of military science.

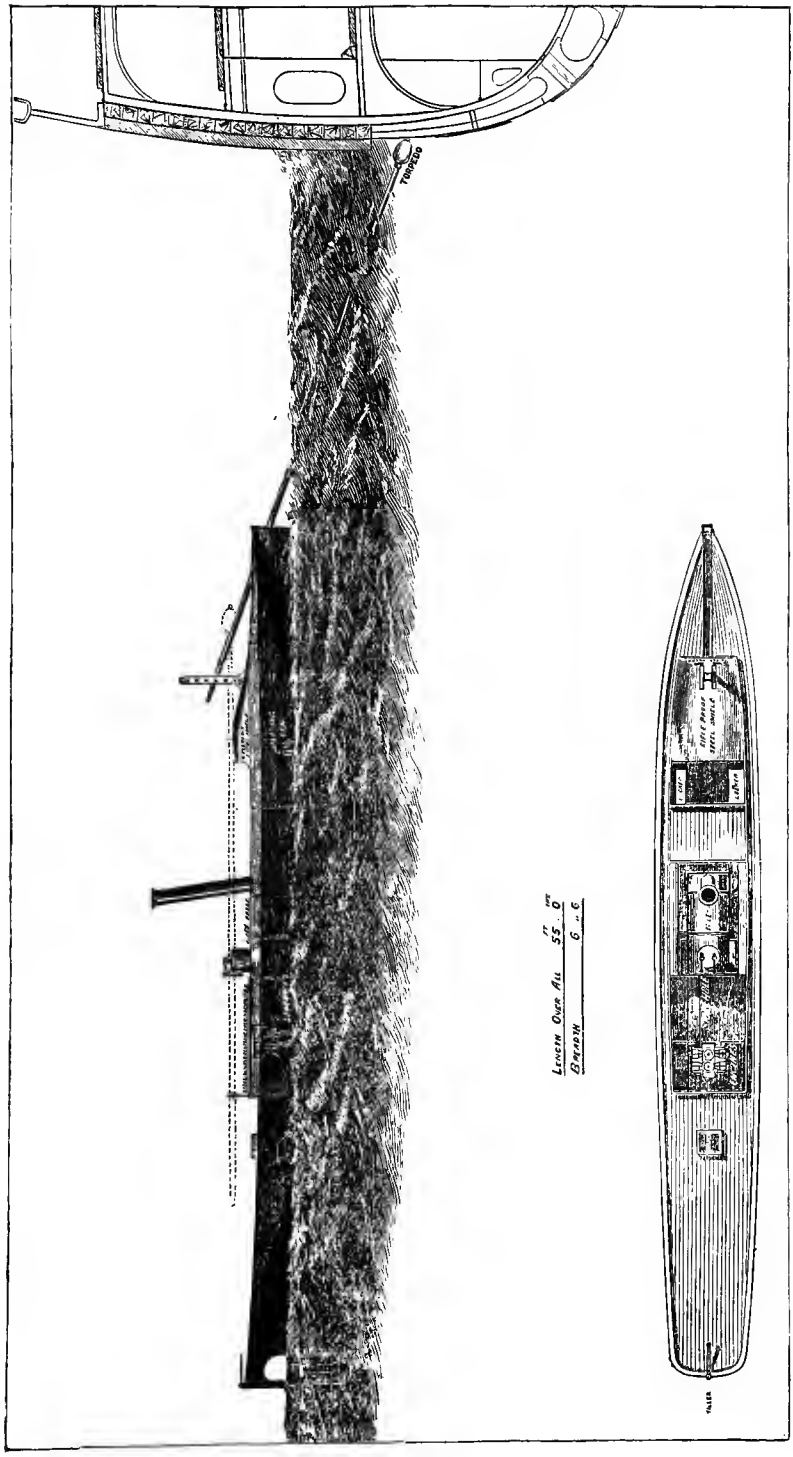
Cadet Engineer. The lowest grade of staff officer in the navy. A student at the Naval Academy belonging to the steam engineering branch of the service. After graduating he pursues the same course as the cadet midshipman. (See NAVAL ACADEMY.)

Cadet Midshipman. The lowest grade of line officer in the service. After graduating from the Naval Academy, two years must be spent at sea, after which the cadet midshipman returns to the Naval Academy and undergoes a final examination, and if successful in passing same he is promoted to midshipman. (See NAVAL ACADEMY.)

Canister. A thin sheet-iron shell filled with cast-iron shot, and closed at each end by discs of wood. When the piece is fired the mass is scattered.

Cannon. Under this head belong guns, mortars and howitzers.

Captain. A naval captain is the next grade below a commodore, and the next grade



TORPEDO LAUNCH, EXPLODING SPAR TORPEDO.

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above a commander. The commanding officer of a man-o'-war is called *captain*, irrespective of his rank. The leading men among the crew are called respectively: *captain of the top, hold,* and *afterguard.* The *captain of the head* is a jocular title given to the man, generally a negro, whose duty it is to keep the *head* clean.

Captain's Clerk. This office was abolished by act of Congress in 1878; previous to which it signified an officer holding the relative rank of midshipman, appointed from civil life by the commanding officer of a man-o'-war, to act as his amanuensis. The appointment was subject to the approval of the Secretary of the Navy, and remained in force until the expiration of the cruise of the vessel, or until the commanding officer was detached. Midshipmen and ensigns are now detailed by the commanding officer to perform such duties.

Carpenter. A warrant officer, whose duty it is to care for the spars, boats and hull of the vessel, also the pumps.

Carronade. A short piece of ordnance, carrying a large ball, and taking its name from the place where it was originally made—Carron, Scotland.

Carry. A gun is said to carry well when it propels shot a long distance.

Cartouch. A case filled with shot to be fired from a cannon.

Cartridge. A case of paper, pasteboard, cloth or metal containing a charge of powder for a fire-arm.

Blank Cartridge. A cartridge for practice or for salutes, in which there is no projectile.

Cascabel. That part of the gun which is abaft the base of the breech.

Casemate Battle Ship. A vessel having guns mounted *en casemate,* which signifies that they are fired from behind a heavy armored immovable breastwork, inside of which the guns revolve horizontally.

Caterer. The ward-room, steerage, warrant officers' and chief petty officers' messes elect a caterer from their number, whose duty it is to manage all the affairs of the mess, keep an account of receipts and expenditures and render a statement to the mess on the first of each month.

Chaplain. A clergyman who performs divine service on board a man-o'-war. Chaplains in the U. S. Navy have the relative rank of captain, commander and lieutenant respectively.

Charge. The nature and quantity of the powder used for ordnance.

Howitzer Charges. The only howitzer used in the U. S. Navy to-day is the 3-inch, weighing 300 and 500 pounds respectively—the lighter one being used in boats. The charge for the 300-lb. gun is 12 ounces of cannon powder; for the 500-lb. gun 16 ounces of cannon powder; the weight of the projectile is 10 pounds, and the range about 2 miles.

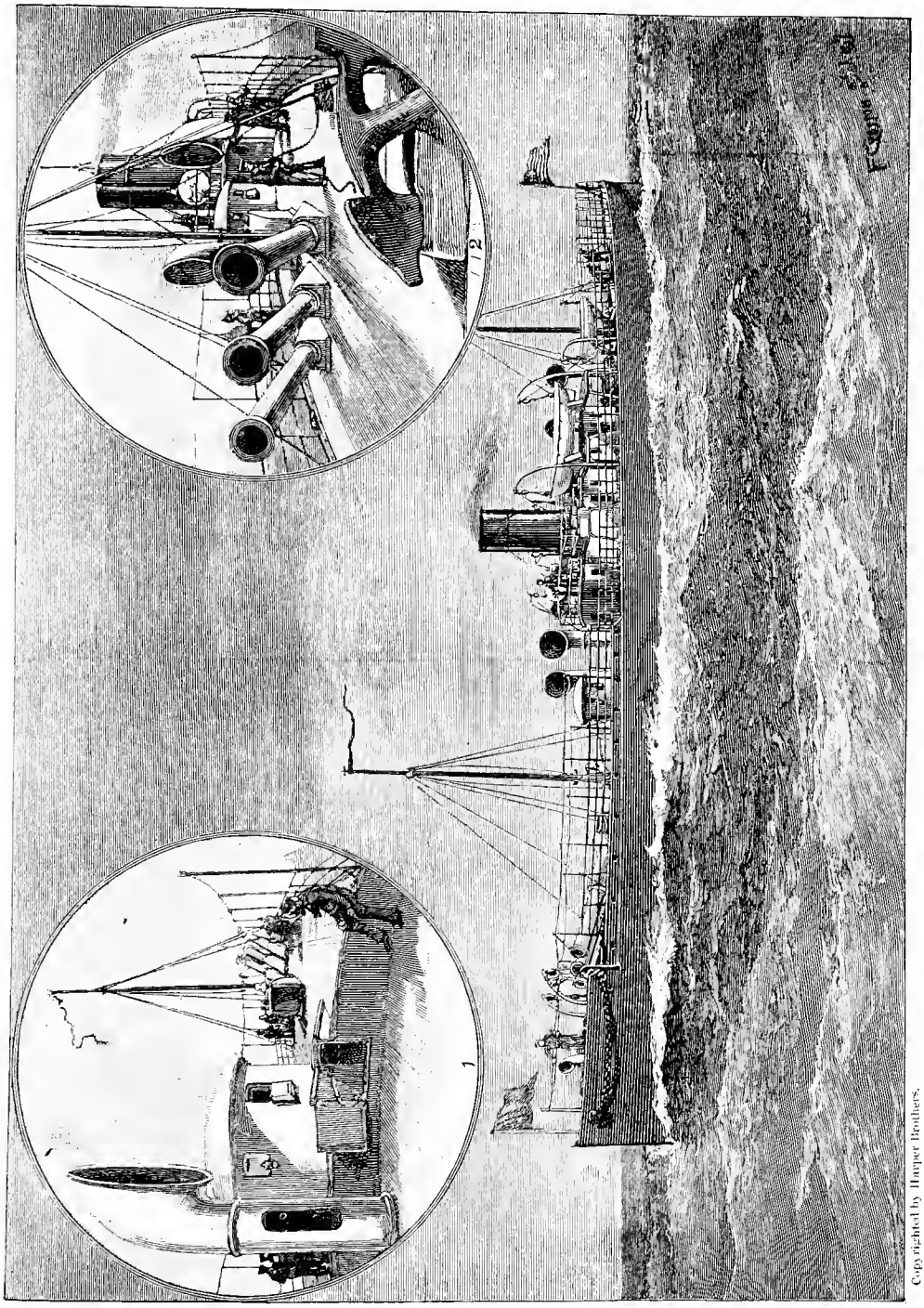
Rifle Charges. The maximum charge for the 6-inch rifle is 43 pounds of brown prismatic powder, with about 1 pound of black prismatic in the rear of the charge for quick ignition. The weight of the projectile is 100 pounds, and the range between 5 and 6 miles. The weight of this rifle is 10,000 pounds; this is exclusive of the carriage.

The maximum charge of the 8-inch rifle is 120 pounds of brown prismatic, with two pounds of black prismatic powder in the rear of the charge. The weight of the projectile is 250 pounds, and the range about 8 miles. The weight of this rifle is 27,000 pounds, without the carriage.

The maximum charge for the 10-inch rifle is 250 pounds of brown prismatic, with 4 pounds of black prismatic powder in the rear of the charge. The weight of the projectile is 500 pounds, and the range about 10 miles. The weight of this rifle is 57,000 pounds, not including the carriage.

Service Charges. These are divided into two classes, *full* and *reduced.* The first is used when extreme range and penetration are required, and with armor-piercing shell. The latter is used when only ordinary ranges and penetration are required, so that the gun may not be subjected to an unnecessarily heavy strain.

Shell Charges. An amount of explosive contained in a shell sufficient to break and scatter the same when it strikes; or when it attains the limit of its flight, as when a



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1. LOOKING FORWARD. 2. LOOKING AFT INTO MUZZLES OF DYNAMITE GUNS.

DYNAMITE-GUN VESSEL "VESUVIUS."

time fuse is used. The amount of shell charges varies with the size and thickness of the shell.

Torpedo Charges. The regulation torpedo charge is about 30 pounds of gun cotton, exploded by means of 30 grains of fulminate of mercury, which is itself first exploded by electricity.

Small Arm Charges. The standard small arm for the U. S. Navy is the Lee detachable magazine rifle of 45 calibre. The revolver is the Colt double action of 38 calibre. (See TABLE OF U. S. NAVAL BREECH-LOADING GUNS.)

Chase. A vessel pursued. That section of a gun contained between the reinforce and the muzzle.

Stern Chase. When the pursuing vessel follows directly in the wake of pursued.

Chase Guns. Guns mounted so as to fire ahead or astern.

Chase Ports. Ports forward and aft used for chase guns.

Chasers. Same as *Chase Guns.*

Chevron. Stripes on the sleeve of a non-commissioned officer of marines, also on the sleeve of petty officers.

Chief. A title applied to the senior engineer of a vessel. A line of petty officers on board a man-o'-war are termed chief boatswain's mate; chief gunner's mate; chief quartermaster, and chief musician.

Chief of Staff. The senior line officer attached to a flag-ship, whose duty it is to assist the flag officer in the management of the fleet.

Civil Engineer Corps. The *Civil Engineer Corps* of the U. S. Navy consists of one civil engineer with the relative rank of captain; two with the relative rank of commander; three with the relative rank of lieutenant-commander; and four with the relative rank of lieutenant.

Classification. The vessels of the navy are divided into classes, under the heads of first, second, third and fourth rates, tugs and sailing vessels.

Class Marks. (See UNIFORM.)

Coast Defence Vessel. A man-o'-war constructed of steel, with low freeboard and carrying a heavy battery either in turrets or in casemates.

Colors. The national ensign. In port colors are made at 8 A. M. and hauled down at sunset. When at sea colors are shown upon falling in with another vessel. When colors are half-masted it is a symbol of mourning. When absent from the ship, boats keep their colors flying from a pole in the stern.

Commandant. The title of an officer commanding a navy-yard or station.

Commandant of Cadets. The title of the commanding officer of a naval academy.

Commander. A rank next below that of captain, and next above that of lieutenant-commander.

Commander-in-Chief. The President of the United States is *commander-in-chief* of the army and navy. This title is also applied to the flag officer of a fleet.

Commission. A document investing one with authority, issued by the President or sovereign, and by which an officer is constituted. A vessel is put in commission by hoisting the ensign and the pennant of the commanding officer, and reading to the ship's company the order authorizing said officer to assume command.

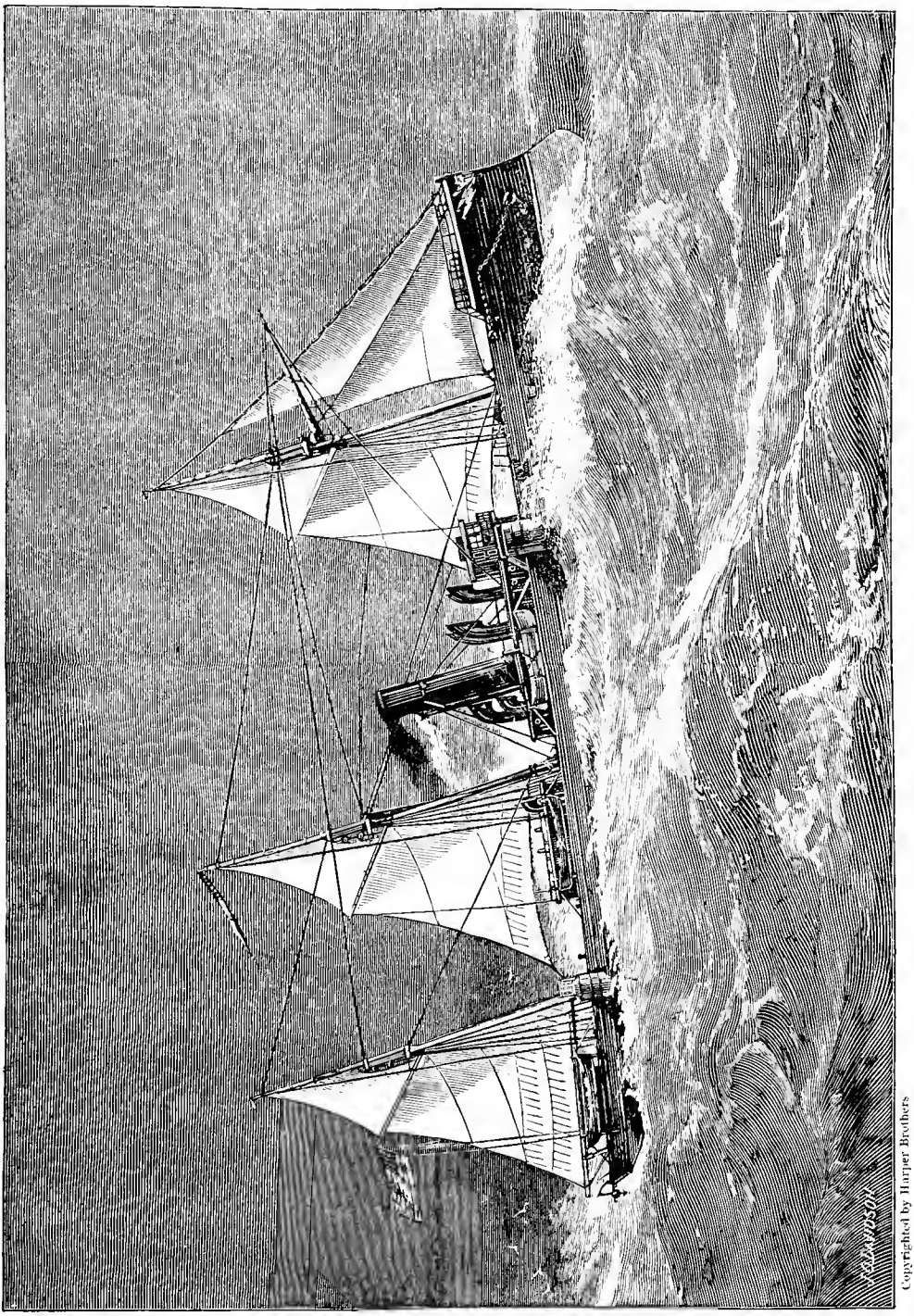
Commissioned Officer. An officer who holds a commission issued to him by the President or sovereign.

A Non-Commissioned Officer is made by military authority. (See NAVY PAY TABLE.)

Commodore. The rank next below that of rear-admiral, and next above that of captain.

Conning Tower. A small, strong metal house, raised above the deck and furnished with peep-holes, in which the commanding officer is stationed, and from which place he directs the movements of the ship during an engagement.

Constructor. An officer who designs and superintends the building and repairing of men-o'-war. Constructors in the U. S. Navy have the respective relative ranks of commodore, captain, commander, lieutenant and lieutenant, junior grade.



DESPATCH VESSEL "DOLPHIN."

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Corvette. A French sloop-of-war carrying from 20 to 32 guns.

Coston's Signals. (See PART I.)

Court Martial. A court composed of military or naval officers for the purpose of trying offenders.

Coxswain. A seaman who steers and has charge of a boat in the absence of a line officer. In a single-banked boat he pulls the stroke oar when an officer is present; but in a double-banked boat his duty is to steer, sitting in the coxswain's box.

Coxswain's Box. The space contained between the backboard of the boat and the stern.

Cruiser. A fast modern man-o'-war, and designed to prey upon an enemy's commerce.

D.

Darning the Water. When a fleet is cruising to and fro before an embargoed port it is said to be *darning the water.*

Descriptive List. When a man is discharged from the service, or transferred from one vessel or station to another, a personal description of the man is furnished, together with his name, naval service, place of birth, rating, etc.

Despatch Boat. A swift vessel employed in carrying despatches between men-o'-war situated at a distance from one another, from one naval station to another, etc.

Devices. (See UNIFORM.)

Division. A number of vessels of war detached from the main fleet. A division is smaller than a squadron. A separation of the ship's company under the heads of *powder division, gun divisions,* etc.

Detached. When an officer is relieved permanently from a certain duty he is said to be *detached.*

Detonator. (See EXPLOSIVES.)

Double-decker. A term applied to a man-o'-war having two gun decks.

Double-headed Shot. Two balls connected by a short bar of metal.

Double-sided. When a double-deck ship is painted so as to show both rows of ports she is said to be *double-sided.*

Dynamite. (See EXPLOSIVES.)

Dynamite Gun Vessel. This term is somewhat of a misnomer, as the guns of these so-called *dynamite vessels* throw gun-cotton instead of dynamite.

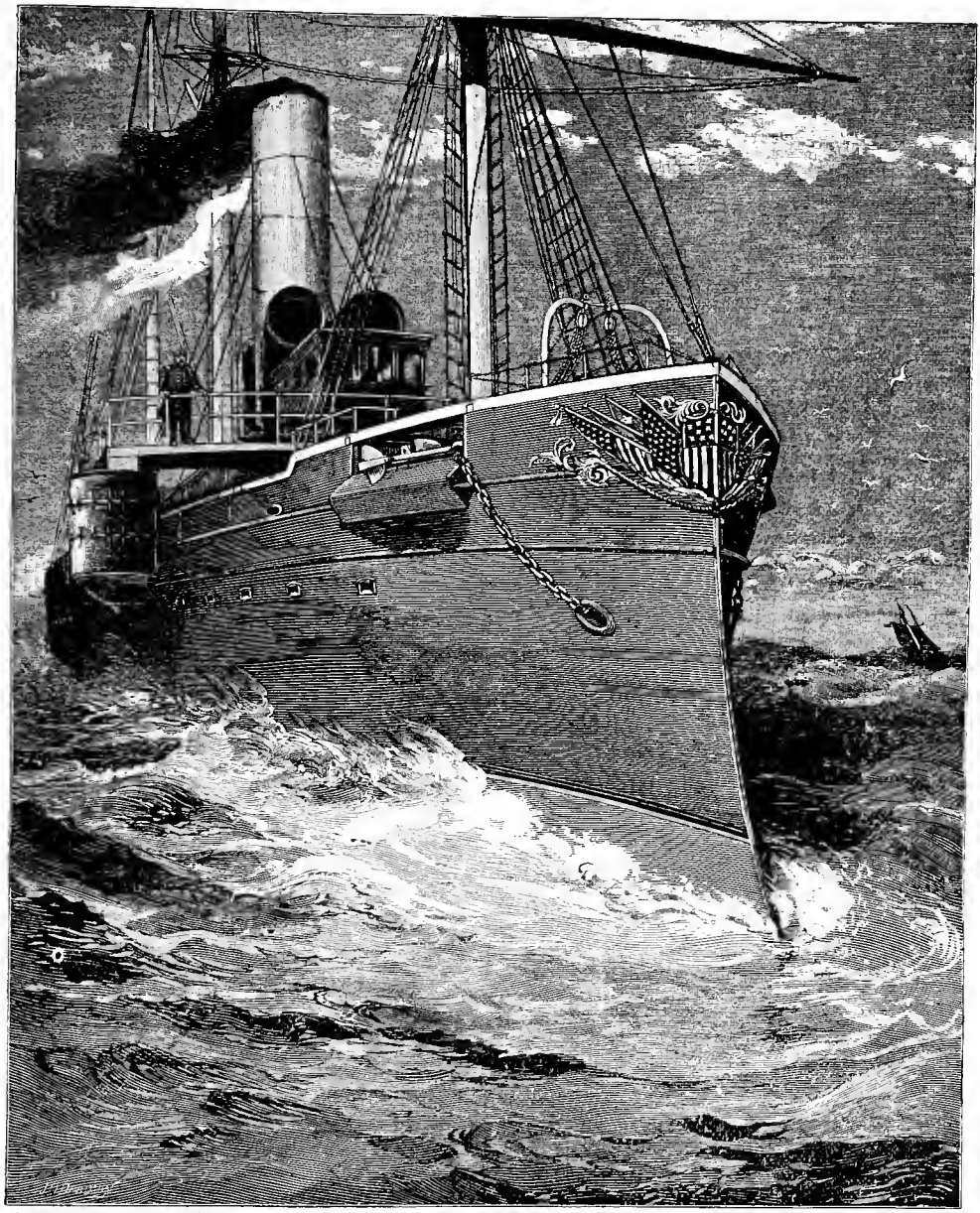
E.

Engineer Corps. The engineer corps of the U. S. Navy consists of one engineer-in-chief with the relative rank of commodore; chief engineers with the relative rank of captain; chief engineers with the relative rank of commander; chief engineers with the relative rank of lieutenant-commander; passed-assistant engineers with the relative rank of lieutenant; passed-assistant engineers with the relative rank of lieutenant, junior grade; assistant engineers with the relative rank of ensign, and cadet engineers with the relative rank of cadet midshipman.

Fleet Engineer. The senior chief engineer attached to the flagship, who has jurisdiction over all the engineers of the fleet.

Engineer's Yeoman. A first-class petty officer who has charge of all engineers' stores, keeps the accounts of his department, and writes up the engineer's log-book. The engineer's yeoman is under the direct orders of the chief engineer.

Ensign. An officer next below the rank of lieutenant, junior grade, and next above that of midshipman.



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BOW VIEW OF THE DESPATCH VESSEL "DOLPHIN."

Entering Port. In old line-of-battle ships an *entering port* was cut down to the level of the deck on the middle deck.

Equipment Yeoman. Formerly called *ship's yeoman.* A first-class petty officer who has charge of all stores in the way of spare gear, spars, canvas, small stores, etc., belonging to the deck department. The equipment yeoman is under the direct orders of the executive officer.

Evening Gun. The gun fired at tattoo (9 P. M.).

Executive Officer. The *first lieutenant* of the ship, or the officer next in rank to the commander. The executive officer is the hardest-worked man on board a man-o'-war, for it is his duty to station officers and crew for sail, spar and boat drill, exercise at the great guns, fire quarters, small arms, arrange the messes, look after the discipline of the ship day and night, keep a conduct book of the entire ship's company, a liberty and punishment book, suppress smuggling of liquor, gambling, fighting, take the ship in and out of port, stimulate a feeling of contentment among the crew so as to make a "happy ship," preserve a cleanly and orderly ship from keel to truck, receive all reports from officers for transmission to the commanding officer, listen to complaints from any member of the ship's company, always to be at the gangway when the captain leaves the vessel or returns to her, to receive the reports of the warrant and petty officers at 8 P. M. concerning the security of their respective departments for the night, and in fact to be on the alert all hours of the day and night, and to almost entirely forego the pleasure of a "run ashore," owing to the exactions of his duties.

Explosives. Under this head are classed dynamite, gun-cotton, nitro-glycerine, fulminates, gelatine and picrates. The high explosive at present in use in the U. S. Navy is gun-cotton, on account of its safety. It possesses as great explosive force as No. 1 (highest grade) dynamite. Gun-cotton is used for torpedo charges exclusively, which may be employed for submarine work or in military operations on shore. Gun-cotton can only be exploded by detonation, for which purpose a 30-grain detonator of fulminate of mercury is used.

A *detonator* is a small cartridge of fulminate of mercury employed for exploding gun-cotton, it being a higher and quicker-acting explosive than gun-cotton. (See TERRORITE.)

F.

False Muster. A wrong statement as to the number of persons borne on the ship's books.

False Papers. When a vessel carries papers certifying falsely as to her cargo, name, destination, nationality, etc., she is a lawful prize.

Fire Bill. (See PART I.)

Fire Quarters. (See PART I.)

First Lieutenant. The executive officer of a man-o'-war. (See MARINE CORPS.)

First Rate. A qualification for the highest grade ships in the navy.

Flag Captain. The commander of a flag-ship—also known as *chief of staff.*

Flag Lieutenant. An aid to the flag officer.

Flag Officer. An officer above the rank of captain—such as commodore, rear admiral, vice admiral and admiral.

Flag of Truce. A white flag is used as a *flag of truce* by all nations. When shown it is an evidence of a desire to communicate, and its nature is of sacred character.

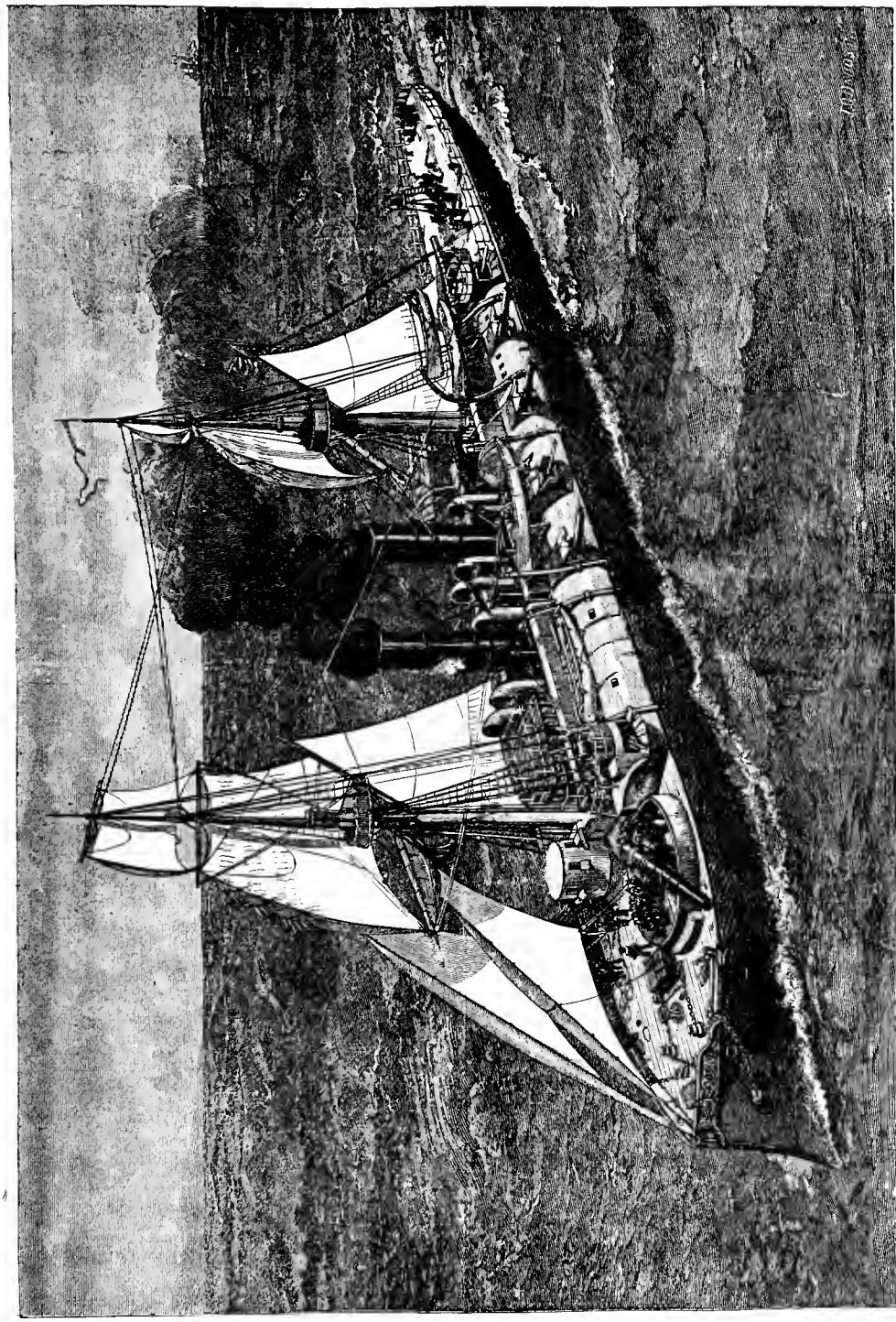
Flag Share. The share of prize money which goes to the flag officer of a fleet in consequence of prizes captured within the limits of that officer's command.

Flag Ship. Any vessel flying the flag of an officer above the rank of captain.

Fleet. A collection of men-o'-war. A fleet is divided into divisions and squadrons.

Fleet Captain. Same as flag captain.

Fleet Gig. The boat used by the fleet captain.



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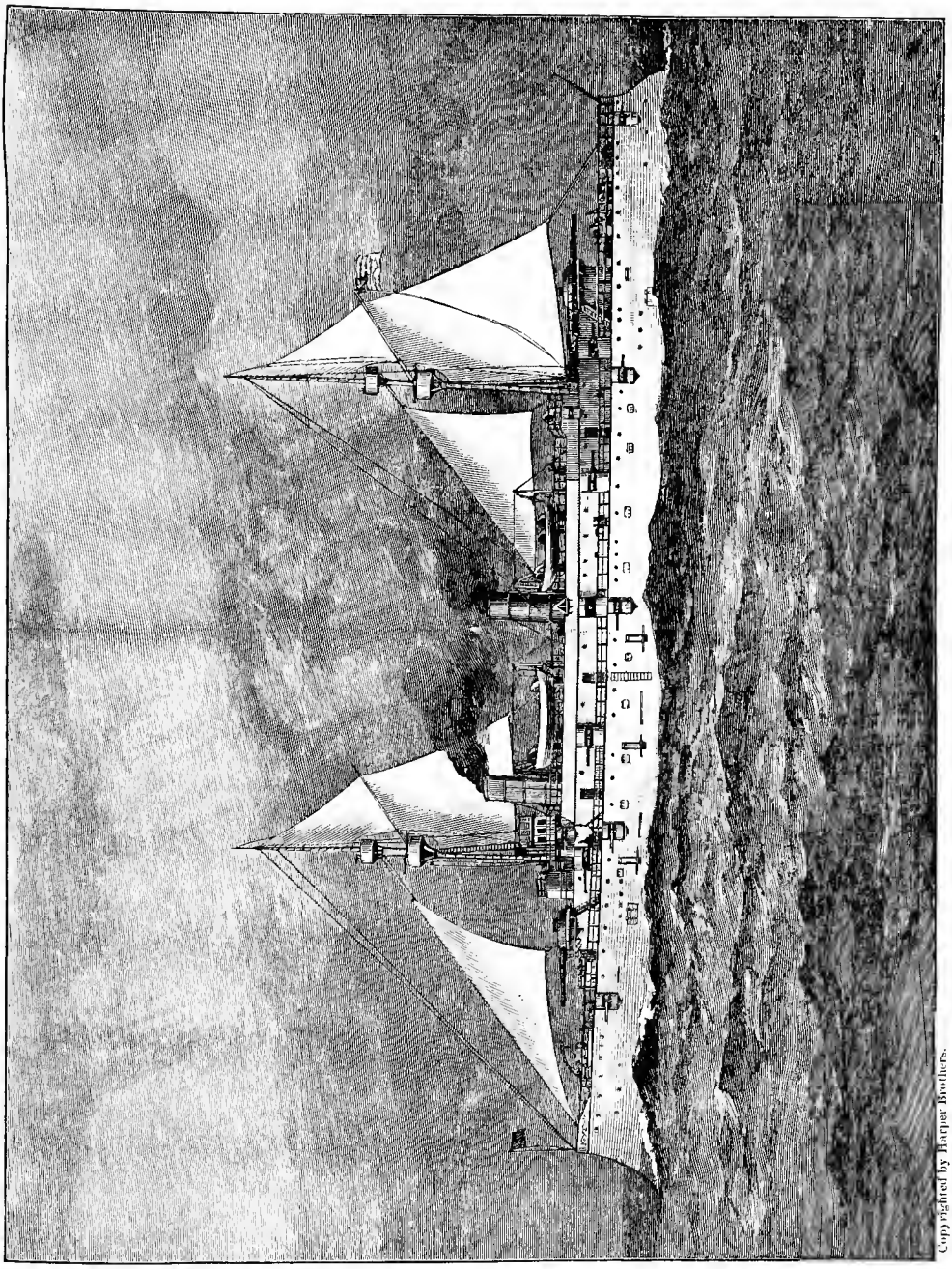
PARTIALLY PROTECTED CRUISER "ATLANTA."

Fleet Engineer. (See ENGINEER.)
Fleet Marine Officer. The senior marine officer in the fleet, who is attached to the flag-ship.
Fleet Paymaster. The senior paymaster in the fleet, who is attached to the flag-ship.
Fleet Surgeon. The senior surgeon in the fleet who is attached to the flag-ship.
Fleet Tactics. Naval evolutions.
Floating Coffin. A name applied particularly to monitors, and in general to unseaworthy vessels.
Flotilla. A fleet comprised of small vessels.
Frigate. A ship of war having a quarter-deck and forecastle raised above the main deck. A vessel carrying a gun deck and spar deck battery, numbering from 20 to 50 guns.
Fulminates. (See EXPLOSIVES.)
Fuze. The mechanism attached to a shell or torpedo, and by which the latter are exploded. (See TIME FUZE.)

G.

Gatling. A repeating machine-gun, named after its inventor, Dr. Gatling, of this country, and is also known as a *mitrailleuse;* consists of a number of breech-loading rifled barrels revolving about a common axis. Twelve hundred shots per minute have been fired by this gun.
Grape. Small shot done up in a strong canvas bag and bound together by a cord network on the outside of the bag.
Grenade. (See HAND GRENADE.)
Guard. The marines attached to a vessel or navy-yard.
Guard Boat. A picket boat.
Guardo. A receiving ship.
Guard Ship. A man-o'-war which looks after the marine affairs in a harbor, and is distinguished by a guard flag flown at the fore.
Guns. Heavy ordnance—mortars and howitzers not included.
Breech-loading Guns. Guns in which the charge is inserted at the breech.
Built-up Guns. Parts formed separately and then united by welding the parts together, or by shrinking one part over another.
Hooped Guns. Same as *built-up guns.*
Muzzle-loading Guns. Guns in which the charge is inserted at the muzzle.
Rifled Guns. Guns having spiral grooves cut in the surface of the bore.
Smooth Bore Guns. Guns having a perfectly smooth bore surface. (See TABLE OF U. S. NAVAL BREECH-LOADING GUNS.
Gunboat. A small vessel carrying one or more guns.
Gunboat Cruiser. A fast vessel, carrying a moderate battery, and designed to prey upon the enemy's commerce.
Gun Carriage. A support for a piece of ordnance, offering facilities for elevating, depressing and training the same.
Gun Cotton. (See EXPLOSIVES.)
Gun Deck. A deck on which cannon are carried below the spar deck.
Gun Fire. The morning or evening gun.
Gun Gear. All the tackles and implements belonging to the gun and carriage.
Gun Lod. A vessel containing explosives.
Gun Metal. A bronze made of ninety parts of pure copper alloyed with ten parts of pure tin.
Gun Pendulum. A contrivance employed for determining the initial velocity of a projectile.



PROTECTED CRUISER "No. 6."

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Gun Room. An after-room found on old line-of battle ships in which the midshipmen and ensigns lived. It was situated on the deck next below the wardroom, being directly under the latter.

Gun Room Ports. The stern ports of the gun room.

Gun Slings. Iron chains or wire rope to pass about the chase of the gun, and used for hoisting guns on and off a vessel.

Gunner. A warrant officer, under whose special charge are the battery, magazines, small arms, ordnance stores, torpedoes, etc.

Quarter Gunner. A third-class petty officer who takes care of the guns and gear of the division to which he belongs.

Gunner's Gang. The chief gunner's mate, gunner's mates, quarter gunners, armorer, and armorer's mate.

Gunner's Mate. A petty officer of the second class, whose station is in the magazine when in action. The *chief gunner's mate* assumes the duties of gunner in the event of accident to or absence of that officer, and rates in the latter case as a *first-class* petty officer.

Gunnery. The science of managing ordnance.

Gunnery Ship. A training ship for officers undergoing ordnance instructions.

Gunpowder. (See POWDER.)

Gunshot. The distance that a projectile is thrown by a gun.

H.

Hail. The various responses made by officers at night to the sentry, and by which he may learn the rank of the officer approaching, are as follows: The flag officer answers "Flag!"; the captain gives the name of his ship; the wardroom officers answer "Aye! aye!"; the steerage and warrant officers answer "No! No!"; and a petty officer and members of the crew answer "Hello!"

Hail Shot. A charge of small cannon-shot fired for cutting purposes.

Half Port. Ports made in two pieces and hinged top and bottom, so as to open by tricing up the upper one and dropping the lower one. A circular hole is provided in the centre of the shutter so that a length of the gun may project outboard.

Hand Grenade. A shell filled with an explosive, and thrown by hand from the tops to the enemy's deck when vessels are fighting at close quarters. It is also used to repel boat attacks.

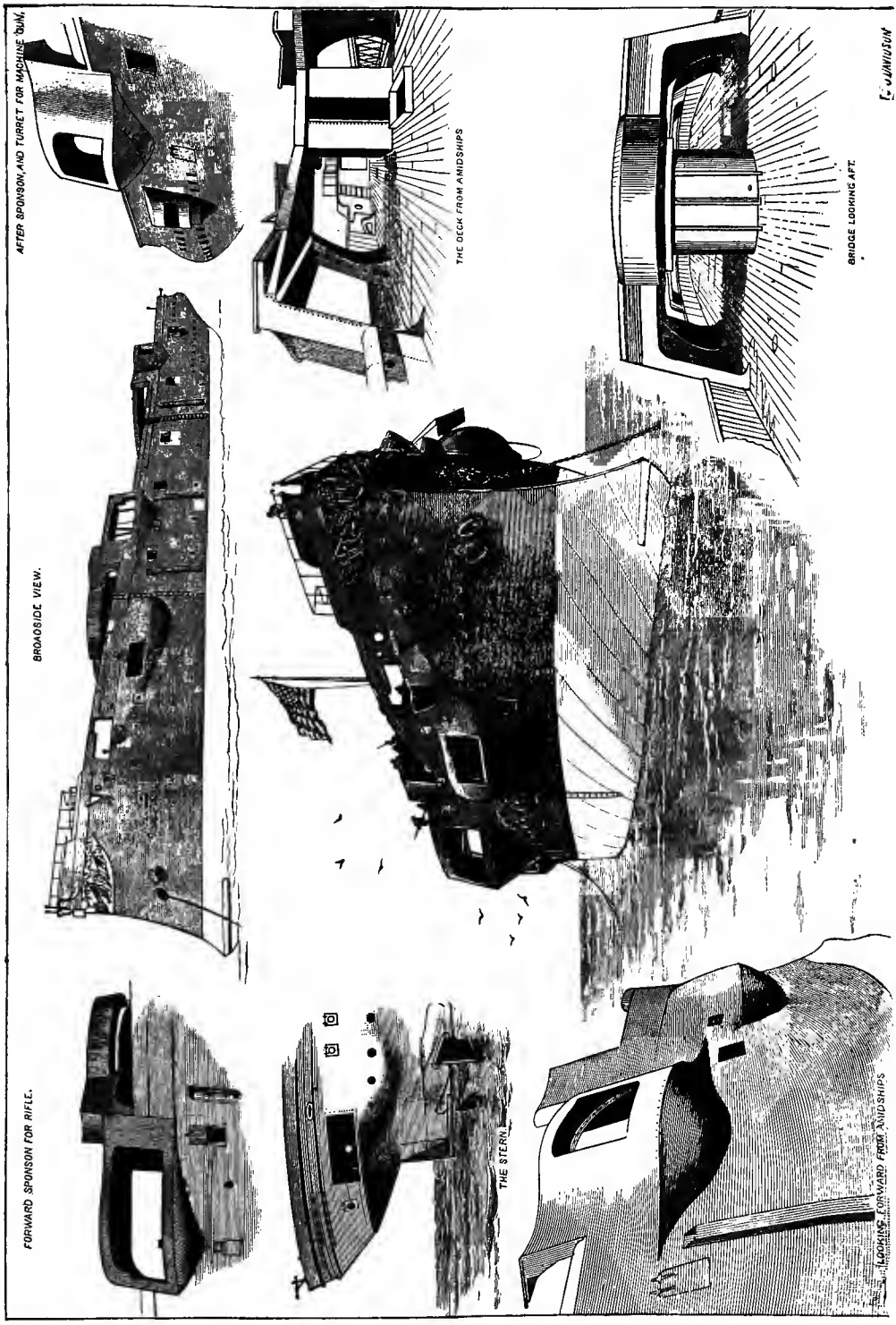
Handspike. A wooden lever.

Hang Fire. When slow ignition occurs a piece is said to *hang fire.*

Hello! (See HAIL.)

High Explosives. Dynamite, gun-cotton, nitro-glycerine, fulminates, picrates, and glycerine.

Hotchkiss Guns. These guns are divided into two classes, and are known as *rapid fire* (R. F.) and *machine* (M.), and throw 1-lb., 3-lb. and 6-lb. explosive projectiles respectively. The Hotchkiss *machine-gun* is on the principle of the Gatling—a revolving cannon, has five barrels, and throws 1-lb. and 3-lb. projectiles. The greatest range of the 3-lb. machine-gun is about 1½ miles at an elevation of, say, 30°, and the range of the 1-pounder is about 1 mile for the same elevation. There are also 1, 3 and 6-pounder Hotchkiss rapid-fire guns, which are loaded at the breech and throw single projectiles, the ranges of the 1 and 3-pounders being respectively 2 miles and 1½ miles, and the penetration about 1½ inches and 1 inch of steel at 1,000 yards. The range of the 6-pounder is about 3 miles with an elevation of 30°, and its penetration is about 2 inches of steel at 1,000 yards. The Hotchkiss machine-guns may be fired at the rate of fifty projectiles per minute, the rapid-fire guns at the rate of twelve per minute. The cartridges used in these machine-guns have metallic cases, on the principle of the revolver cartridge, and they are fired by revolving a crank. The rapid-fire guns are fired by a trigger, as in a small arm.



ARMORED CRUISER "MAINE."

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I.

Idlers. Those members of the ship's company who do not stand watch, such as the cooks, stewards, yeomen, musicians, writers and apothecary.
Incendiary Shell. A shell charged with an inflammable substance, which escapes when the shell is broken by coming in contact with another body.
Insignia. (See UNIFORM.)
Internal Armor. (See ARMOR.)
International Code. (See PART I.)
Ironclad. A term applied to monitors during the war of the Rebellion. The qualification is applicable to all vessels that are protected with armor against projectiles. (See MONITOR.)

J.

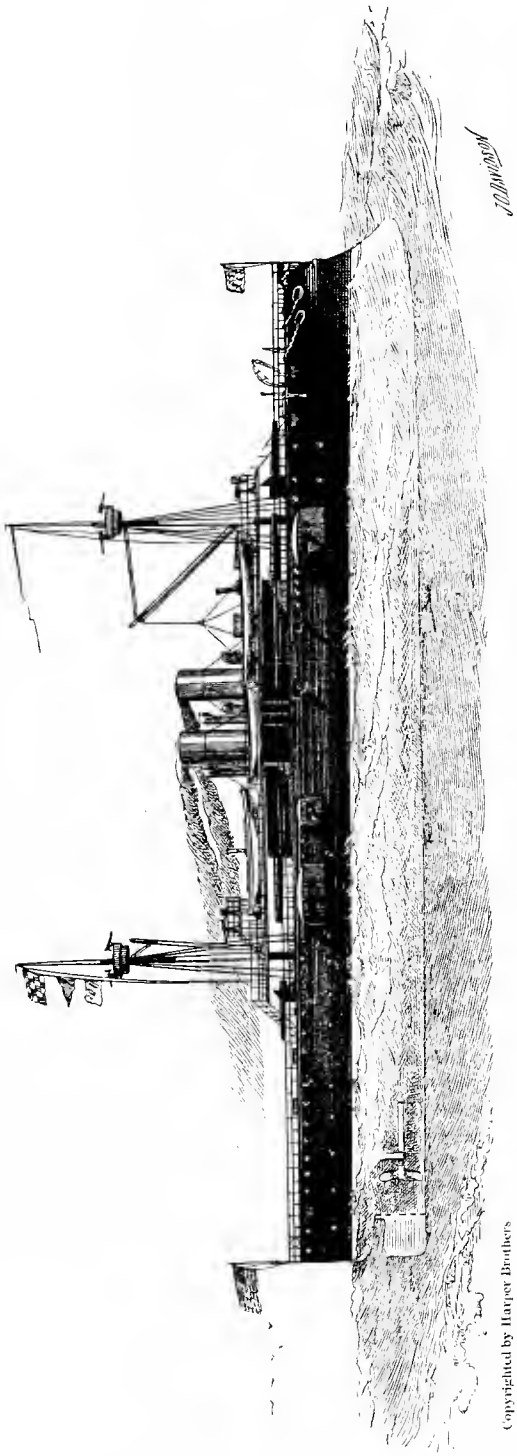
Jack of the Dust. One of the crew, who acts as an assistant to the paymaster's yeoman.
Jimmy Legs. A nickname for the master-at-arms.

L.

Landsman. A rate signifying that the person has no knowledge, or very little knowledge, of seamanship. It is a rate next below that of ordinary seaman.
Letter of Marque. A commission granted by government to a privateering vessel.
Lieutenant. The grade next below that of lieutenant-commander, and next above that of lieutenant junior grade. Lieutenants junior grade were at one time called *masters.* A lieutenant of marines ranks the same as an army lieutenant. (See RELATIVE RANK.)
Lieutenant Commander. A line officer one grade lower than a commander, and one grade higher than a lieutenant.
Lieutenant, Junior Grade. A line officer one rank under a lieutenant, and one rank higher than an ensign.
Line-of-Battle Ship. An obsolete type of man-o'-war, having three rows of ports and carrying from 74 to 120 guns.
Line Officers. Admiral, vice-admiral, rear-admiral, commodore, captain, commander, lieutenant-commander, lieutenant, lieutenant junior grade, ensign, midshipman, cadet-midshipman, mate, boatswain and gunner.
Loaded Shell. A fuzed shell charged with powder.
Loading Tray. A metal shelf for assisting the passage of a shell into the breech.
Long Tom. A gun of great length and range as compared with the broadside gun.

M.

Machine Guns. (See HOTCHKISS, GATLING.)
Machinist. A petty officer of the first class, who stands watch in the engine-room when the vessel is under way; belongs to the artificer class.
Magazine. An apartment on board a man-o'-war in which explosives are stored. Also a chamber in a repeating rifle for containing a number of cartridges with which the gun is fed automatically.



BATTLE SHIP "TEXAS."

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Magazine Cocks. A faucet contrivance connected with the outside of the vessel for flooding the magazine in case of fire.

Magazine Dress. A worsted frock and shoes of canvas—metal of whatever nature being absent.

Magazine Gun. A repeating rifle. The magazine is detachable in the rifle used in the U. S. Navy, and the detaching of the same converts the rifle into a single-fire arm.

Magazine Passage. An alleyway in the magazine.

Magazine Screen. A screen of thick cloth arranged so as to prevent sparks from entering the scuttle in the magazine passage.

Magazine Scuttle. The scuttleway in the magazine passage through which the charges are passed.

Marine Corps. The duty of the marine corps is to furnish a guard to ships of war and to garrison navy yards. Commissioned officers of the marine corps are: colonel-commandant, colonel, lieutenant-colonel, major, captain, first lieutenant and second lieutenant. The non-commissioned officers are: sergeant-major, quartermaster-sergeant, drum-major, first sergeant, sergeant and corporal.

Marine Rams. Vessels of war constructed with a projecting "snout" or "spur," with which to ram and sink an adversary by bursting in the side of such vessel below the water line.

Mark. Marks I, II, and III are intended to express the difference in the dimensions of chamber and gun, the charge of powder being regulated according to the respective *marks*. When carriages are distinguished by a *mark number*, they are supposed to accommodate guns of like *mark*.

Master-at-Arms. The chief petty officer on board a man-o'-war. The ship's corporals are subordinate to him, and together they police the ship, confine and have charge of offenders, etc.

Mate. A line officer who is not eligible for promotion, and ranks about the same as a warrant officer. Mates are no longer appointed, and the rank will become obsolete with the death of the few now in the service.

Medical Corps. The medical corps of the U. S. Navy consists of one surgeon-general with the relative rank of commodore, medical directors with the relative rank of captain, medical inspectors with the relative rank of commander, surgeons with the respective relative ranks of lieutenant-commander and lieutenant, passed assistant surgeons with the relative rank of lieutenant junior grade, passed assistant surgeons with the relative rank of ensign.

Medical Survey. A personal examination made to determine the physical and mental health of a person.

Mess. A number of officers, petty officers, seamen or mariners who take their meals together.

Master-at-Arms' Mess. To this mess belong all the yeomen, ship's writer, schoolmaster, apothecary, machinists, boilermakers, and the orderly sergeant of marines, who, however, may form his own mess if he so desires, in which case all the sergeants and corporals of marines are members of it.

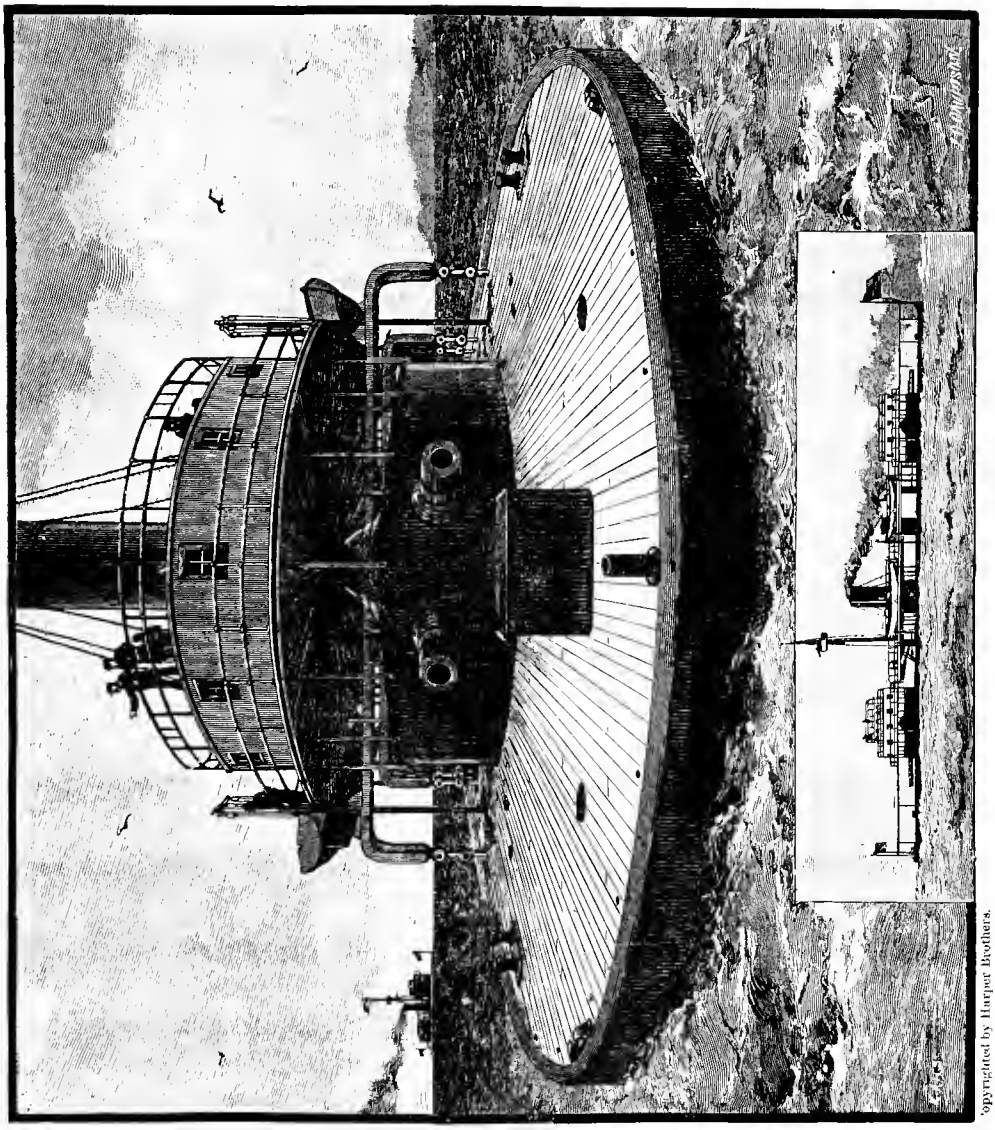
Orderly Sergeant's Mess. (See MASTER-AT-ARMS' MESS.)

Steerage Mess. This mess is composed of midshipmen, ensigns, clerks and mates.

Ward-Room Mess. Composed of staff officers (medical, engineer, and pay) above the rank of ensign, and line officers from lieutenant-commander to lieutenant junior grade inclusive. Marine officers are always members of the ward-room mess. Should an ensign be assigned to regular watch duty on board ship, he is entitled to mess and live in the ward-room. Also, if a staff officer, holding the relative rank of ensign, is the senior officer of his corps (in charge of a department) on board ship, he also is entitled to live in the ward-room.

Warrant Officers' Mess. Composed of the boatswain, gunner, sailmaker and carpenter.

Mess Cloth. A sailor's table-cloth—a tarpaulin spread on the deck, and designed to protect the latter from contact with the seamen's tin plates, cups, etc., as well as the spillings from the same.



MONITOR "MIANTONOMOH."

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Mess Gear. Pots, pans, plates, spoons, forks, knives, etc.

Messenger Boy. A boy who carries messages to various parts of the ship from the quarter-deck, being under the personal command of the officer of the deck.

Metre. The unity of the French measure of length, being equal to 39.37 English inches.

Midshipman. A line officer one rank lower than an ensign, and one grade higher than a cadet midshipman.

Military Masts. Mast designed to support military tops.

Military Tops. Tops encircled with a barbette of steel, from behind which machine-guns are worked when the vessel is in action, and by which a plunging fire is obtained.

Millimetre. In French measure a thousandth part of a metre, or .03937 of an English inch. Hotchkiss guns are often referred to as "37" and "47," meaning that they are respectively 37 millimetre and 47 millimetre in relation to the diameter of the bore.

Mitrailleuse. A Gatling gun. (See GATLING GUN.)

Monitor. The turreted ironclad vessel designed by Mr. John Ericsson in 1861 was named the *Monitor*, and that name has become a general designation for all vessels of that type. The *Monitor* drew about twelve feet of water, the hull was almost immersed, and the cylindrical turret revolved so that an all-round fire could be maintained while the vessel remained stationary. The Confederates called this vessel "cheese box on the raft."

Morning Gun. The gun fired from the flag-ship announcing daybreak.

Mortar. A very short piece of ordnance possessing a large bore, and used for throwing shells at an angle of 45°.

Mortar Float. A vessel designed for carrying and working a mortar, and resembling a platform or raft.

Mount. A vessel *mounts* ten guns, *i. e.*, carries ten guns. When a gun is placed on its carriage it is said to be *mounted*. The term also applies to carriages for Gatling and rapid-fire guns.

Muzzle-loader. A gun which is charged at the muzzle instead of the breech.

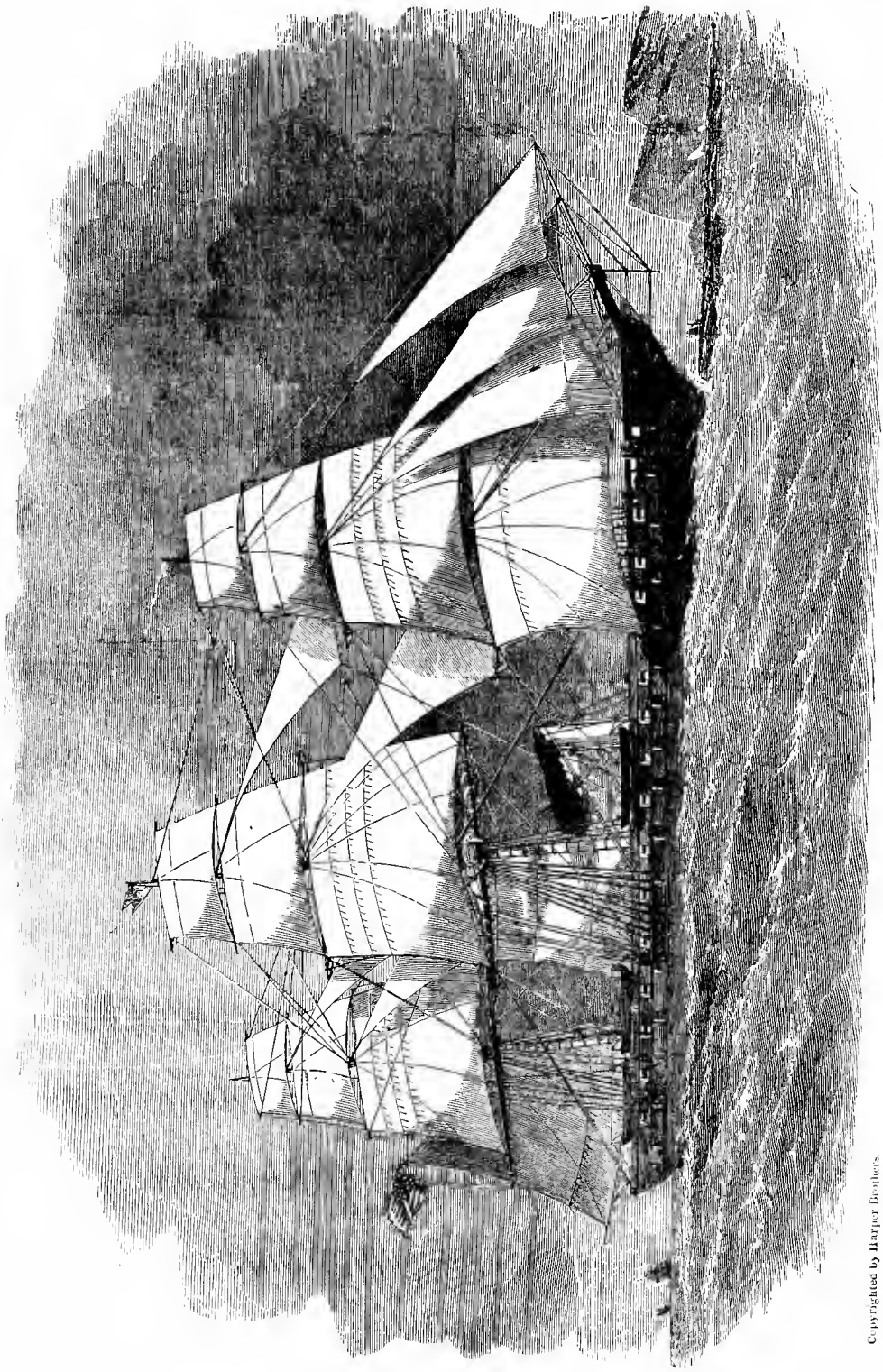
N.

Naval. Pertaining to the navy.

Naval Academy. An institution where young men are educated in naval science. At the U. S. Naval Academy a four years' course of study is undergone, after which follows a probationary course of two years, then final graduation. During this six years the student is known as a cadet-midshipman, or cadet engineer, but after a successful final examination he becomes a midshipman, or an assistant engineer, as the case may be. The pay of naval cadets while at the academy is $500 a year, and at sea $950 a year.

Cadet Midshipman. Candidates must be physically sound and between the ages of fourteen and eighteen years. A satisfactory examination in the following branches must be passed by candidates: arithmetic, geography, grammar, writing, reading and spelling. The curriculum of study is as follows: seamanship, naval construction, naval tactics, gunnery, infantry tactics, field artillery, fencing, algebra, geometry, trigonometry, calculus, steam engineering, astronomy, navigation, surveying, physics, chemistry, English studies, French and Spanish.

Cadet Engineer. The examination for cadet engineer is competitive. Candidates must be between the ages of sixteen and twenty years, and physically sound. A satisfactory examination in the following branches must be passed by candidates: arithmetic, algebra, plane geometry, natural philosophy, reading, writing, spelling, grammar, geography, free-hand drawing, and elementary principles of the steam engine. The curriculum of study is as follows: mathematics, analytical mechanics, physics, chem-



WOODEN FRIGATE—OLD NAVY CLASS.

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istry, theory and practice of steam engineering, designing of machinery, French, Spanish, and naval architecture.

Naval Apprentices. Boys between the ages of fifteen and eighteen years enlisted to serve in the navy until they shall arrive at the age of twenty-one years, provided they shall have the consent of their parents or guardians. These boys are sent on board of suitable naval vessels to be trained for the naval service, under the following regulations: every boy previous to being enlisted must satisfy the examining board of officers that he is of robust frame, of good moral character, intelligent, of perfectly sound and healthy constitution, and able to read and write. The education of these boys comprises the elements of an ordinary English education, practical seamanship, and other professional studies designed to prepare them for *sailors* in the navy. They are enlisted as "third-class" boys, at the pay of $9.50 per month and one ration. While serving on training ships they may, if deserving, be promoted to the rating of "second-class" boys, at the pay of $10.50 and $11.50 per month respectively, and on cruising vessels will be entitled to higher ratings at the discretion of their commanding officer, as a reward of proficiency and good conduct. The highest rank that a naval apprentice can look forward to is that of a warrant officer.

Naval Asylum. A home, supported by the government, for men who have served twenty years in the U. S. Navy. Each member has a separate room, is given three wholesome meals each day, supplied with all necessary clothing, and allowed one pound of tobacco, and one dollar per month for spending money. The Asylum is situated within the limits of the city of Philadelphia.

Naval Brigade. A body of seamen and marines forming a landing party for infantry and field artillery operations.

Naval Constructor. (See CONSTRUCTOR.)

Naval Institute. The headquarters of the U. S. Naval Institute is at Annapolis, Md., and the object of the society is to bring interesting professional subjects under discussion. These discussions are forwarded in writing to headquarters from the various branches of the society, and are there printed and circulated among the members. Officers holding positions under the Navy Department are eligible to membership, and provision is made to accept as associate and honorary members such desirable persons outside of the profession as may make application to join.

Naval Reserve. A body of men recruited as an auxiliary naval force to be employed in time of emergency. State naval reserves are on about the same footing as the militia.

Naval Station. A rendezvous where coal and stores may be secured and where minor repairs may be made. A naval station has not the dignity of a navy yard. The naval stations of the United States are situated as follows: Key West, Fla.; New London, Conn.; Port Royal, S. C., and Newport, R. I.

Naval Tactics. Disposing and arranging ships for battle. The science of naval evolutions.

Naval Training Ship. A vessel employed as a school ship for the instruction of naval apprentices.

Navigating Officer. A line officer on board a man-o'-war, next in rank to the executive. His duty is to navigate the ship, and all the instruments of navigation are in his special keeping. He also has supervision over the ground tackle, steering-gear, etc., and the disposal of the ballast and the stowage of water, provisions, etc., and is also the ordnance officer of the vessel.

Navy. The ships of war belonging to the nation. The table, under the head of "List of Vessels of the U. S. Navy," gives the names of the vessels of the U. S. Navy, together with particulars as to type, hull, propulsion, rig, battery, and displacement.

Navy Department. A bureau presided over by the Secretary of the Navy, who controls and directs the naval forces of the country.

Navy Pay Table. (See PAY TABLE.)

Navy Register. (See REGISTER.)

Navy Yard. A government shipyard in which men-o'-war are built and repaired.

U. S. NAVAL B. L. GUNS.

NATURE OF GUN.	Caliber.	Weight.	Weight.	Total Length.	Distance across Rimbases.	Greatest Diameter. of Gun Body.	Total Length of Bore.	Length of Rifled Bore.	Twist of Rifling.	GROOVES. Number.	GROOVES. Width.	GROOVES. Depth.	CHAMBER. Length.	CHAMBER. Diameter.	CHAMBER. Capacity.	Total Capacity of Bore.	Travel of Projectile.	Weight of Charge Service Velocity.	Weight of Charge 1700 f. s. Velocity.	Weight of Projectile.	Total Weight of Fixed Ammunition.	Ratio of Projectile. Weight to Weight of Gun.	Chamber Pressure.	Muzzle Velocity. (Service.)	REMAINING VELOCITY AT 1000 yds.	1500 yds.	2000 yds.	2500 yds.	Muzzle Energy.	Thickness of Steel which Shell will Perforate at Muzzle.
	In.	Lbs.	Tons.	Ft.	Inches.						Inches.				Cubic Inches		In.	Pounds.					Tons.	Feet-Seconds.					Foot Tons.	In.
4-in. B. L. R. Mark 1	4	3380	1.5	13.7	....	13.0	157.29	130.29	Zero to 1 in 26	30	.279	.025	24.74	4.30	367	2037	132.65	12 to 14	.....	33	58	1/102	15	2000	1051	1501	1364	1246	915	7.18
4-in. R. F. Gun.	4	3400	1.5	13.7	....	13.0	157.50	128.12	"	30	.279	.025	26.39	4.44 / 4.09	329	1994	132.12	"	.....	33	.....	1/103	"	2000	"	"	"	"	"	7.18
5-in. B. L. R. Mark I.	5	6190	2.8	13.5	21.0	18.0	150.27	120.75	1 in 180 to 1 in 30	20	.485 .435	.05	27.07	8.5	899	3326	123.20	26 to 29	.....	60	.....	1/103	"	2000	1697	1563	1439	1323	1660	8.67
5-in. R. F. Gun.	5	7000	3.1	17.4	...	16.5	191.60	164.40	Zero to 1 in 25	30	.349	.026	32 00	5.65 / 5.10	655	3965	168.00	28 to 30	.....	60	95	1/140	"	2250	1847	1873	1516	1374	1754	9.00
6-in. B. L. R. Mark I.	6	10775	4.8	15.8	25.0	21.5	178.0	136.65	1 in 180 to 1 in 30	24	.485 .435	.05	36.85	7.0	1408	5360	139.15	50	38	100	.....	1/108	"	2000	1735	1616	1505	1402	2773	10.27
6-in. B. L. R. Mark II.	6	10900	4.9	16.1	25.5	21.5	180.08	144.85	"	24	"	"	32.73	7.5	1410	6595	147.35	45 to 48	34 to 36	100	.....	1/109	"	2000	"	"	"	"	"	"
6-in. B. L. R. Mark III of 30 cals.	6	10800	4.8	16.3	24.0	20.5	183.75	147.26	Zero to 1 in 25	24	.485 .415	"	33.09	7.0	1299	5552	149.76	44 to 47	33 to 35	100	.....	1/108		2000	"	"	"	"	"	"
6-in. B. L. R. Mark III of 35 cals.	5	11554	5.2	18.8	24.0	20.5	213.75	177.26	"	24	"	"	33 99	7.0	1299	6404	179.76	"	.....	100	.....	1/118	"	2060	1807	1680	1565	1458	2990	10.86
6-in. B. L. R. Mark III of 40 cals.	5	13370	6.0	21.3	24.0	21.0	243.75	207.26	"	24	"	"	33.99	7.0	1299	7256	209.76	"	.....	100	.....	1/134	"	2160	1865	1737	1618	1507	3204	11.38
*8-in B. L. R. Mark 1.	8	27500 28800	12.3 12.9	21.5	33.8	30.0	239.91	195.16	1 in 180 to 1 in 30	32	.485 .435	"	42.05	10.5	3569	13541	197.86	105 to 115	80 to 86	250	.....	1/110 1/115	"	2000	1808	1719	1634	1554	6932	14.51
8-in. B. L. R. Mark II.	8	29100	13.0	21.5	33.8	30.0	239.91	195.16	"	32	"	"	42.05	10.5	3569	13541	197.86	"	.....	250	.....	1/116	"	2000	"	"	"	"	"	"
8-in. B. L. R. Mark III of 35 cals.	8	29400	13.1	25.4	33.8	28.75	290.52	242.77	Zero to 1 in 26	32	.485 415		45.05	9.5	3176	15548	245.47	"	75 to 80	250	.....	1/118	"	2080	1880	1787	1700	1615	7498	15.61
8-in. B. L. R. Mark III of 40 cals.	8	34000	15.2	28.7	33.8	28.75	330.52	282.77	"	32	"	"	45.05	9.5	3176	17564	285.47	"	.....	250	.....	1/136	"	2150	1943	1848	1757	1670	8011	18.10
10-in B. L. R. Mark 1 of 30 cals.	10	57500	25.7	27.4	....	40.0	306.26	247.26	1 in 180 to 1 in 35	40	.485 .435	"	57.17	12.5	6880	26639	250.43	225 to 240	170 to 190	500	.....	1/115	"	2000	1848	1777	1708	1642	13864	18.75
†10-in. B. L. R. Mark I of 35 cals.	10	60660 63100	27.1 28.2	30.5	....	40.0	343.76	283.76	Zero to 1 in 25	40	.485 .415	"	57.17	12.5	6880	29480	286.93	"	160 to 180	500	.....	1/121 1/126		2080	1922	1848	1777	1707	14996	19.83
10-in B. L. R. Mark II of 30 cals.	10	56400	25.1	27.4	....	39.0	307.26	247.26	Zero to 1 in 26.8	40	"	"	57.17	12.5	6831	26590	250.43	"	170 to 190	500	.....	1/113	"	2000	1848	1777	1708	1642	13864	18.75
10-in. B. L. R. Mark II of 35 cals.	10	61900	27.6	31.2	....	39.0	354.91	294.91	Zero to 1 in 25	40	"	"	57.17	12.5	6831	30350	298.08	"	160 to 180	500	.....	1/124	"	2100	1940	1865	1793	1724	15285	20.10
12-in B. L. R. Mark 1.	12	101300	45.2	36.8	....	45.0	419.20	343.12	Zero to 1 in 25	48	"	"	74.14	14.5	12043	51355	346.06	425	.....	850	.....	1/119	"	2100	1964	1900	1837	1777	25985	24.16
13-in B. L. R. Mark 1.	13	135500	60.5	40.0	....	49.0	454.46	370.46		52	"	"	80.88	15.5	15059	64857	373 58	550	.....	1100	.....	1/123	"	2100	1977	1918	1860	1805	33627	26.66

*8" B. L. Rs. Nos. 1 and 3 are not hooped to the muzzle while Nos. 2 and 4 are.

†10" B. L. R. No. 3 differs in exterior from 10" B. L. R. No. 4 and is somewhat lighter in consequence.

Also a depot of provisions, stores belonging to the various departments, coal, etc. The navy yards of the United States are situated as follows: Portsmouth, N. H.; Boston, Mass.; Brooklyn, N. Y.; League Island, Pa.; Norfolk, Va.; Washington, D. C.; Pensacola, Fla.; Mare Island, Cal.

Nitro-glycerine. (See EXPLOSIVES.)

No! No! (See HAIL.)

Non-commissioned Officer. (See COMMISSIONED OFFICER.)

O.

Officer of the Deck. The watch officer in charge of the deck and the general management of the ship. When at sea the officer of the deck directs the movements of the vessel, and follows the course laid down by the navigating officer. When entering or leaving port the executive officer takes charge of the deck and handles the vessel. When at quarters the navigating officer assumes charge of the deck, and the watch officer relieved takes command of his division. When in port the officer of the deck observes that the routine of the ship is carried on, that the boats leave and return to the ship at proper times, and keeps the rough-log, entering therein an account of all happenings and work going on during his watch, makes a memorandum of the names of liberty parties leaving and returning to the ship, etc. (See WATCH OFFICER.)

Ordnance. A term embracing cannon, mortars, howitzers, and machine-guns.

Ordinary. Vessels laid up—out of commission.

Ordinary Seaman. A rating next below that of seaman, and next above that of landsman.

Ornaments. (See UNIFORM.)

P.

Parrot Gun. A rifled gun named after its inventor.

Partially-protected Cruiser. A modern man-o'-war built with not less than a 2-inch steel deck, forming an arch and curving from a point a short distance below the water-line on either side, the highest point of the curve being over the midship line, or keel, of the vessel, and in contact with the first deck above the water-line. The idea is that a projectile striking and penetrating the vessel in the vicinity of the water-line will naturally be deflected by the curve of the steel deck, and thus be prevented from doing injury to any vital part in the ship's interior.

Partridges. Grenades fired from a mortar.

Pay Clerk. An appointed officer who acts as clerk to the paymaster, keeping the latter's books and exercising care over the paymaster's stores, consisting of provisions, clothing, etc.

Pay Corps. The paymaster's corps of the U. S. Navy consists of one paymaster-general with the relative rank of commodore; pay directors with the relative rank of captain; pay inspectors with the relative rank of commander; paymasters with the relative rank of lieutenant-commander; paymasters with the relative rank of lieutenant; passed assistant paymasters with the relative rank of lieutenant junior grade, and assistant paymasters with the relative rank of ensign.

Pay Table. The table, under the head of "Navy Pay Table," gives the pay of officers, petty officers, seamen, etc., in the U. S. Navy.

Petty Officers. (See PAY TABLE.)

Pivot Gun. A gun that can be revolved horizontally and fired on either side of the ship.

LIST OF VESSELS OF THE U. S. NAVY.

FIRST RATE.

Name.	Type.	Hull.	Propulsion.	Rig.	Guns (main battery).	Displacement (tons).
UNARMORED.						
Chicago	Partially protected cruiser	Steel	Twin screws	Bark	14	4,500
Baltimore	Protected cruiser	"	"	Two military masts	10	4,400
Philadelphia	"	"	"	3 mast schooner	12	4 324
Newark	"	"	"	Bark	12	4,083
San Francisco	"	"	"	3 mast schooner	12	4,083

SECOND RATE.

ARMORED.						
Maine	Cruiser	Steel	Twin screws	3 mast schooner	10	6,648
Texas	Battle ship	"	"	Two military masts	8	6,300
UNARMORED.						
Charleston	Protected cruiser	Steel	Twin screws	Two military masts	8	3,730
Lancaster	Cruiser	Wood	Screw	Ship	10	3,250
Pensacola	"	"	"	"	*16	3,000
Atlanta	Partially protected cruiser	Steel	"	Brig	8	3,000
Boston	"	"	"	"	8	3,000
Hartford	Cruiser	Wood	"	Ship	*14	2,900
Richmond	"	"	"	"	*14	2,700
Omaha	"	"	"	Bark	12	2,400

THIRD RATE.

ARMORED.						
Puritan	Double-turret monitor	Iron	Twin screws	One military mast	4	6,060
Amphitrite	"	"	"	"	4	3,990
Miantonomoh	"	"	"	"	4	3,990
Monadnock	"	"	"	"	4	3,990
Terror	"	"	"	"	4	3,990
Ajax	Single-turret monitor	"	Screw		†2	2,100
Canonicus	"	"	"		†2	2,100
Mahopac	"	"	"		†2	2,100
Manhattan	"	"	"		†2	2,100
Wyandotte	"	"	"		†2	2,100
Camanche	"	"	"		†2	1,875
Catskill	"	"	"		†2	1,875
Jason	"	"	"		†2	1,875
Lehigh	"	"	"		†2	1,875
Montauk	"	"	"		†2	1,875
Nahant	"	"	"		†2	1,875
Nantucket	"	"	"		†2	1,875
Passaic	"	"	"		†2	1,875

* Mostly smooth bore. † Smooth bore.

Plebe. A term applied to members of the fourth, or lowest, class at the Naval Academy.

Point-blank. In a direct line with the object at which the gun is aimed.

Point-blank Range. The distance at which a projectile, fired at *point-blank*, will hit the object at which it is aimed.

Port. In gunnery, an opening in the side of a man-o'-war through which a gun is fired.

Powder. The powders explained following are in use in the U. S. Navy.

Brown Prismatic. A slow-burning powder, brown in color, in shape hexagonal prism, having a hole in the centre through which it is strung when putting the charge together, and through which also the circulation of the flame is accelerated throughout the mass. This powder is used for service charges for the modern breech-loading rifles.

Black Prismatic. A quick-burning powder used in small quantities as a primer for brown prismatic powder. (See CHARGES.)

Cannon Powder. A black grain powder, used for service and saluting charges for the old smooth-bore guns.

Mealed Powder. The only use for this powder in the service is for filling primers. As its name implies, it is very fine.

Musket Powder. This is a black, fine-grain powder and is used for filling small arm cartridges and shell.

Powder Hoy. A vessel designed for conveying powder, and may be distinguished by the red flag which she exhibits.

Powder Magazine. (See MAGAZINE.)

Powder Monkey. A term applied to a boy who passes powder charges to the guns.

Powder Tank. A copper case for containing powder.

Powder Vessel. Same as *Powder Hoy.*

Prime. To prepare a muzzle-loading gun for being fired by pricking the cartridge through the vent and inserting a primer in the same.

Primer. An instrument for firing the cartridge in a gun.

A Percussion Primer is made of a quill tube, the lower end being closed. It is filled with powder, and capped with fulminating mercury and powder, and exploded by concussion.

A Friction Primer is made of a brass tube the size of a quill, filled with powder, and in the cap is a brass wire with teeth, the outer end of the wire having an eye formed by twisting. The cap is filled with sulphuret of antimony and chlorate of potassa. This primer is exploded by pulling the lanyard and breaking the primer, which causes the necessary friction.

A Quill Friction Primer is made of two quills, one inside of the other, and is filled with antimony tri-sulphide, potassium chlorate, flower of sulphur and a small proportion of gum arabic. Wires are contained within the quills, and the action of the lanyard is to withdraw these wires and explode the primer by friction.

Priming Wire. A steel wire used to prick the cartridge after it is rammed home in the gun.

Prisoner-at-Large. A captive who is not placed in irons or kept confined, but who is granted a certain amount of liberty.

Prisoner of War. One captured by the enemy and entitled to protection.

Prison Ship. A vessel fitted up for the safe keeping of prisoners of war.

Prize. A vessel captured by the enemy.

Prize Court. A court having jurisdiction to adjudicate and dispose of vessels captured from the enemy.

Prize Goods. The freight of prizes.

Prize List. The names of all the persons on board a vessel or vessels which has, or have, captured a prize. Should any of the regular crew of such successful vessel be absent in the line of duty, they, too, are sharers in the prize money awarded.

Prize Master. The officer sent on board a prize for the purpose of navigating her to port.

LIST OF VESSELS OF THE UNITED STATES NAVY.—Continued.

Name.	Type.	Hull.	Propulsion	Rig.	Guns (main battery).	Displacement (tons).
UNARMORED.						
Swatara	Cruiser	Wood	Screw	Bark	*8	1,900
Galena	"	"	"	"	*8	1,900
Marion	"	"	"	"	*8	1,900
Mohican	"	"	"	"	*8	1,900
Yorktown	"	Steel	Twin Screws	3-mast schooner	6	1,703
Concord	"	"	"	"	6	1,703
Bennington	"	"	"	"	6	1,703
Iroquis	"	Wood	Screw	Bark	*7	1,575
Kearsarge	"	"	"	"	*7	1,550
Dolphin	Despatch Vessel	Steel	"	3 mast schooner	1	1,500
Adams	Cruiser	Wood	"	Bark	*6	1,375
Alliance	"	"	"	"	*6	1,375
Essex	"	"	"	"	*6	1,375
Enterprise	"	"	"	"	*6	1,375
Nipsic	"	"	"	"	*6	1,375
Monocacy	"	Iron	Paddle	Schooner	*6	1,370
Tallapoosa	"	Wood	"	"	6	1,270
Thetis	"	"	Screw	Barkentine	†2	1,250
Intrepid	"	Iron				1,150
Alert	"	"	Screw	Bark	*4	1,020
Ranger	"	"	"	"	1	1,020
Yantic	"	Wood	"	"	*4	900

FOURTH RATE.

ARMORED.						
Alarm	Torpedo ram	Iron	Mallory propeller.		‡1	800
UNARMORED.						
Petrel	Cruiser	Steel	Screw	Barkentine	4	885
Vesuvius	Dynamite-gun vessel	"	Twin screws		§3	725
Michigan	Cruiser	Iron	Paddle	Barkentine	4	685
Despatch	Despatch vessel	Wood	Screw	Schooner		560
Pinta	Gunboat	Iron	"	"	†4	550
Palos	"	"	"	"	†7	420
TORPEDO BOATS.						
Stiletto	Torpedo boat	Wood	Single screw			31
Cushing	"	Steel	Twin screw		(‖)	116

TUGS.

Catalpa	Tug	Wood	Screw	Schooner		300
Cohasset	"	"	"	None		188
Fortune	"	Iron	"	Schooner		450
Leyden	"	"	"	"		450
Mayflower	"	"	"	"		450
Ivy	"	Wood	"	None		229
Nellie	"	"	"	"		32
Nina	"	Iron	"	Schooner		357
Rocket	"	Wood	"	None		137
Standish	"	Iron	"	Schooner	2	450
Triana	"	"	"	"		450
Triton	"	"	"	None		212

* Mostly smooth bore. † Howitzers. ‡ Smooth bore. § Pneumatic dynamite guns. ‖ 3 torpedo tubes.

Prize Money. The proceeds of the sale of vessels captured. The captures are sent to port and turned over to the prize court, which adjudicates in relation to them, and either declares the capture illegal, or in the other case a U. S. Marshal is authorized to dispose of the property, and the proceeds are awarded by the prize court as follows:

If the prize was of equal force to the vessel engaged in its capture the net proceeds go to the captors; but if of inferior force, one-half of the proceeds go to the captors and the other half to the government. The rules of distribution are as follows:

The commander of the fleet or squadron receives one-twentieth part.

The commander of a division of the fleet or squadron, one-fiftieth part from the moiety due the government, provided there be such moiety due, and if not, then from the amount due the captors. If, however, his vessel is the captor, then he may decide which he will receive, the fiftieth part, or the regular share as commander of the captor; he cannot receive both.

The fleet captain receives one hundredth part, unless the capture is made by his vessel, in which case he shares in proportion with his officers and crew.

The commander of a single vessel receives one-tenth awarded to the vessel, provided she was at the time of capture under the command of the commanding officer of the fleet or division, and three-twentieths if his vessel was acting independently of the above superior officer.

The remainder of the prize money is awarded to the remaining officers and men on board in proportion to their rates of pay.

All men-o'-war within signal distance of the one making the capture, provided they are in condition to contribute aid if necessary, are entitled to a share in the prize.

Members of the crew absent temporarily are entitled to a share in the prize.

The prize court decides concerning the vessels entitled to prize money.

The Secretary of the Navy decides concerning the persons entitled to prize money.

The Fourth Auditor of the Treasury figures the amount of money due each person according to the foregoing rules, and issues certificates to the persons so entitled after Congress has made an appropriation for said payment.

The prize money awarded to the government is used exclusively as a fund out of which to pay to naval officers, seamen and marines the pensions to which they are entitled.

Professors of Mathematics. The *Corps of Professors of Mathematics* in the U. S. Navy consists of three with the relative rank of captain, four with the relative rank of commander, and five with the relative rank of lieutenant.

Projectile. A mass of metal discharged from a gun by the explosion of a charge of gunpowder or some high explosive, or by compressed air.

The projectiles used in the U. S. Navy for breech-loading cannon are armor-piercing shells, which are distinguished from the ordinary explosive shell by having thicker walls, not provided with a fuze, and having a smaller bursting charge. The bursting of these shells is insured by the heat generated by the blow.

The ordinary shell is of moderately thick walls, has a large bursting charge, and is furnished with a percussion fuze to cause the shell to explode on striking. These latter shells are for use against stone forts and earthworks, and vessels other than iron-clads.

Shrapnel is furnished with a time fuze, has a small bursting charge, and is for use against boats and exposed masses of men on shore.

Protected Cruiser. A modern man-o'-war built with not less than a four-inch steel protective deck. (See PARTIALLY-PROTECTED CRUISER.)

Protective Deck. (See PARTIALLY-PROTECTED CRUISER.)

LIST OF VESSELS OF THE UNITED STATES NAVY.—Continued.

SAILING VESSELS.

Name.	Type.	Hull.	Propulsion.	Rig.	Guns (main battery).	Displacement (tons).	Station or Condition.
New Hampshire		Wood	Sails	Ship	*8	4,150	Receiving-ship for boys, New London, Conn.
Vermont		"	"	Dismantled	1	4.150	Receiving-ship, New York.
Independence		"	"	"	*7	3,270	Receiving-ship, Mare Island.
Constitution		"	"	"	†4	2,200	Portsmouth, N. H.
Monongahela		"	"	Bark	†2	2,100	Fitting-out, Portsmouth, N.H.
Constellation		"	"	Ship	†10	1,186	Naval Academy.
Jamestown		"	"	"	†12	1,150	Apprentice training-ship.
Portsmouth		"	"	"	*12	1,125	"
Saratoga		"	"	"	*12	1,025	Public Marine School, Philadelphia.
St. Mary's		"	"	"	*8	1,025	Public Marine School, New York.
St. Louis		"	"	"		830	Receiving-ship, League Island.
Dale		"	"	Dismantled		675	Receiving-ship, Washington, D. C.

UNSERVICEABLE.

Franklin‡	Old-type frigate	Wood	Screw	Ship	†22	5,170	Receiving-ship, Norfolk, Va
Minnesota ‡	"	"	"	"	*19	4,700	Receiving-ship for boys, New York.
Wabash ‡	"	"	"	"	*20	4,650	Receiving-ship, Boston.

LIST OF VESSELS BUILDING FOR THE U. S. NAVY. (1891.)

ARMORED.							
Indiana	Steel belted cruiser.	Steel.	Twin screws.	One military mast.	16	10.200	Building at William Cramp & Sons, Philadelphia, Pa.
Massachusetts	"	"	"	"	16	10,200	"
Oregon	"	"	"	"	16	10,200	Building at Union Iron Works, San Francisco, Cal.
New York	Armored steel cruiser.	"	"	Two military masts.	14	8.150	Building at William Cramp & Sons, Philadelphia, Pa.
Monterey	Steel low free board barbette - turret coast-defence	"	"	One military mast.	4	4,048	Building at Union Iron Works, San Francisco, Cal.
Harbor Defense Ram.		"	"		None	2,050	Building at Bath Iron Works, Bath, Me.
UNARMORED.							
No. 12	Protected cruiser.	Steel.	Triple screws	Two - masted schooner.	15	7,400	Building at William Cramp & Sons, Philadelphia, Pa.
No. 6	"	"	Twin screws.	Two - masted schooner with military tops.	14	5.500	Building at Union Iron Works, San Francisco, Cal.
Cincinnati	"	"	"	Two military masts.	11	3,183	Building at navy-yard, Brooklyn, N. Y.
Raleigh	"	"	"	"	11	3.183	Building at navy-yard, Norfolk, Va.
No. 9	Cruiser	"	"	Two - masted schooner.	10	2,000	Building at Columbian Iron Works, Baltimore, Md.
No. 10	"	"	"	"	10	2,000	"
No. 11	"	"	"	"	10	2,000	Building at City Point Works, Boston, Mass.
GUNBOATS.							
No. 5	Gunboat	Steel.	Twin screws.	Two - masted schooner.	8	1,050	Building at Bath Iron Works, Bath, Me.
No. 6	"	"	"	"	8	1,050	"
SPECIAL CLASS.							
Practice cruiser	Cruiser for naval cadets.	Steel.	Twin screws.	Barkentine	4	838	Building at Moore & Sons, Elizabethport, N. J.
TUGS.							
No. 1	"	Steel.	"	"		192.4	Building at City Point Works, Boston, Mass.
No. 2	"	"	"	"		192 4	"
No. 3	"	"	"	"		191.4	"

* Howitzers. † Smooth bore. ‡ Not recommended for further sea service.

Q.

Quarter Bill. A written or printed form showing the various stations assigned to the officers and men for going into action.

Quartermaster. A petty officer who assists the navigating officer of the ship in the care of the sounding leads, the lights, bunting, etc., who has charge of the wheel, reads and hoists signals, and stands a regular watch, day and night, whether at sea or at anchor. His duty is to observe signals made to the ship from the shore or other vessels, the approach of small boats or boats containing officers, and report same to the officer of the deck.

Quarters. (See PART I.)

Quarter Watch. A division of one-fourth part of the ship's company.

Quick Match. There are various kinds. One kind is cotton wick saturated with mealed powder, spirits and gum. It will burn about 15 feet per minute. (See SLOW MATCH.)

Quill Tube. That part of a primer which contains the powder.

Quoin. An old-fashioned wooden instrument, in the shape of a wedge, which was used for elevating guns before the introduction of elevating screws.

Chocking Quoins. Shapes of wood to chock the wheels of an old-fashioned gun carriage and prevent the same from running in or out.

R.

Rake. To fire into a vessel in the direction of her length—in her fore-and-aft line.

Ram. (See MARINE RAMS.)

Random Shot. A shot fired when the gun has an angle approaching 45°, which would give the utmost range. An angle of 45° is considered to give a range about ten times greater than the point-blank. Also a shot fired without regard to aiming at the object struck.

Range. The distance from the muzzle of the gun to the point struck by the projectile.

Rank. (See RELATIVE RANK.)

Rate. (See CLASSIFICATION.)

Rating Badges. (See UNIFORM.)

Ration. The daily allowance of food served out on government vessels to seamen and marines. Officers are entitled to one ration, which may be *stopped*, and in lieu thereof 30 cents per day credited to their accounts. Petty officers may also stop their rations, and draw commutation therefor at the rate of 30 cents per day. At the discretion of the commanding officer permission to stop one or more rations may be given to a seamen's, firemen's, or marines' mess, and the commutation paid to said mess by the paymaster. This is done to enable the mess to purchase such small stores and fresh vegetables for the mess as are not furnished in the ration list. Rations are not allowed except to the members of a vessel in commission.

Razee. A vessel cut down or reduced by a deck.

Rear-Admiral. A line officer one rank lower than a vice-admiral and one rank higher than a commodore. A rear-admiral is the highest officer in the U. S. navy. (See ADMIRAL.)

Receiving Ship. A man-o'-war, unfit for sea duty, stationed at a navy yard for recruiting seamen.

Red-hot Shot. This projectile is obsolete, and was once used for incendiary purposes.

Register. A book issued by the Navy Department giving the names of the commissioned and warrant officers in active service and on the retired list of the navy of the

NAVY PAY TABLE.

Rank.	At sea.	On shore duty.	On leave or waiting orders.
ADMIRAL	$13,000	$13,000	$13,000
VICE-ADMIRAL	9,000	8,000	6,000
REAR-ADMIRALS	6,000	5,000	4,000
COMMODORES	5,000	4,000	3,000
CAPTAINS	4,500	3,500	2,800
COMMANDERS	3,500	3,000	2,300
LIEUTENANT-COMMANDERS—			
First four years after date of commission	2,800	2,400	2,000
After four years from date of commission	3,000	2,600	2,200
LIEUTENANTS—			
First five years after date of commission	2,400	2,000	1,600
After five years from date of commission	2,600	2,200	1,800
LIEUTENANTS (Junior Grade)—			
First five years after date of commission	1,800	1,500	1,200
After five years from date of commission	2,000	1,700	1,400
ENSIGNS—			
First five years after date of commission	1,200	1,000	800
After five years from date of commission	1,400	1,200	1,000
NAVAL CADETS*	500	500	500
MATES	900	700	500
MEDICAL AND PAY DIRECTORS AND MEDICAL AND PAY INSPECTORS AND CHIEF ENGINEERS, HAVING THE SAME RANK, AT SEA	4,400	.....	.....
FLEET-SURGEONS, FLEET-PAYMASTERS, AND FLEET-ENGINEERS	4,400	.....	.....
SURGEONS, PAYMASTERS, AND CHIEF ENGINEERS—			
First five years after date of commission	2,800	2,400	2,000
Second five years after date of commission	3,200	2,800	2,400
Third five years after date of commission	3,500	3,200	2,600
Fourth five years after date of commission	3,700	3,600	2,800
After twenty years from date of commission	4,200	4,000	3,000
PASSED ASSISTANT SURGEONS AND PAST ASSISTANT PAYMASTERS—			
First five years after date of appointment	2,000	1,800	1,500
After five years from date of appointment	2,200	2,000	1,700
PASSED ASSISTANT ENGINEERS—			
First five years after date of appointment	2,000	1,800	1,500
Second five years after date of appointment	2,200	2,000	1,700
Third five years after date of appointment	2,450	2,250	1,900
Fourth five years after date of appointment	2,700	2,350	1,950
ASSISTANT SURGEONS, ASSISTANT PAYMASTERS, AND ASSISTANT ENGINEERS—			
First five years after date of appointment	1,700	1,400	1,000
After five years from date of appointment	1,900	1,600	1,200
NAVAL CONSTRUCTORS			
First five years after date of appointment	.....	3,200	2,200
Second five years after date of appointment	.....	3,400	2,400
Third five years after date of appointment	.....	3,700	2,700
Fourth five years after date of appointment	.....	4,000	3,000
After twenty years from date of appointment	.....	4,200	3,200
ASSISTANT NAVAL CONSTRUCTORS—			
First four years after date of appointment	.....	2,000	1,500
Second four years after date of appointment	.....	2,200	1,700
After eight years from date of appointment	.....	2,600	1,900
CHAPLAINS—			
First five years after date of commission	2,500	2,000	1,600
After five years from date of commission	2,800	2,300	1,900
PROFESSORS OF MATHEMATICS AND CIVIL ENGINEERS—			
First five years after date of appointment	2,400	2,400	1,500
Second five years after date of appointment	2,700	2,700	1,800
Third five years after date of appointment	3,000	3,000	2,100
After fifteen years from date of appointment	3,500	3,500	2,600
BOATSWAINS, GUNNERS, CARPENTERS, AND SAILMAKERS—			
First three years after date of appointment	1,200	900	700
Second three years after date of appointment	1,300	1,000	800
Third three years after date of appointment	1,400	1,300	900
Fourth three years after date of appointment	1,600	1,300	1,000
After twelve years from date of appointment	1,800	1,600	1,200

*After leaving Academy, *at sea*, in other than practice-ships, $950 per annum.

United States, and of the Marine Corps, together with their respective numbers in their grade, States from which appointed, dates of promotions, lengths of sea and shore service, etc.; also a list of the vessels belonging to the navy.

Regular. An officer, petty officer, seaman, etc., belonging to the permanent military forces maintained by government.

Reinforce. That part of a gun between the trunnions, and only applies to old-fashioned ordnance.

Relative Rank. The relative rank between officers of the navy and army is as follows:

Admiral with General; Vice-Admiral with Lieutenant-General; Rear-Admiral with Major-General; Commodore with Brigadier-General; Captain with Colonel; Commander with Lieutenant-Colonel; Lieutenant-Commander with Major; Lieutenant with Captain; Lieutenant Junior Grade with First Lieutenant; Ensign with Second Lieutenant.

Officers of the Marine Corps take rank with officers of similar grade in the army.

Rendezvous. The place appointed where several ships are to join company; also a name sometimes applied to a recruiting station on shore.

Reserve. (See NAVAL RESERVE.)

Rifled Gun. A piece of ordnance having the inside of the barrel furrowed with spiral channels, which give to the projectile a rotary motion about an axis, and by which great precision of aim is obtained. The *rifled guns* in use in the U. S. Navy are the 5-in., 6-in., 8-in., 10-in. and 12-in. (See CHARGE.)

Rotten Row. A certain place in a navy yard in which worn-out vessels are moored.

Routine. A series of established rules whereby the business on board ship may be carried out systematically, whether at sea or in port, in warm or cold climates, etc. These rules embrace the care and preservation of the vessel, the airing and washing of clothes and bedding, holy-stoning of decks, arrangement of meal and smoking hours, drills, etc.

Ruffle. A low roll of the drum used in the ceremony of saluting officers of high rank when boarding or leaving the vessel. An officer holding the rank of admiral receives *four* ruffles; a vice-admiral *three,* and rear-admirals and commodores *two* ruffles.

S.

Sabot. A flat circle of wood secured to a spherical exploding projectile, fitted with a fuze, in order to keep it in position during the time of its passage through the gun, and to prevent the fuze from coming in contact with the bore or with the exploding charge —thus preventing premature explosion.

Sailmaker. A warrant officer who has charge of the sails, awnings, wind-sails, and, in fact, exercises supervision over all canvas appliances on board ship.

Sailmaker's Mate. A petty officer of the second class who works under the direction of the sailmaker, and who has care of the sail-room.

Sally. A sudden rush in a body from one part of the vessel to another; to issue suddenly.

Sally Port. In reference to fire ships, the place of escape for the train-firers.

Salt Box. A deck case for temporarily containing a number of charges for the guns.

Salutes. The President or an ex-president of the United States visiting a vessel of the navy, or a navy-yard, receives 21 guns; the vice-President or an ex-vice-president and the Secretary of the Navy, 19 guns; members of the Cabinet, Justices of the Supreme Court and Governors of States, 17 guns; a committee of Congress, officially visiting a vessel or navy-yard, 17 guns; ministers, 15 guns; a commissioner, 11 guns; a consul-general, 9 guns; a consul, 7 guns; a vice-consul, 5 guns; an officer having the rank of admiral, 17 guns; vice-admiral, 15 guns; rear-admiral, 13 guns; commodore, 11 guns; Chiefs of Bureau of the Navy Department, 11 guns; a foreign

NAVY PAY TABLE.—Continued.

Rank.	Pay per annum.
SECRETARIES—	
To Admiral (on shore)	$2,500
To Naval Academy	1,800
CLERKS—	
First clerks to commandants of navy-yards	1,500
Second clerks to commandants of navy-yards	1,200
To commandant at navy-yard, Mare Island	1,800
To commandants of naval stations	1,500
CLERKS TO PAYMASTERS—	
At navy-yard, Mare Island	1,800
At navy-yards, Boston, New York, Philadelphia and Washington	1,600
At navy-yards, Kittery, Norfolk, and Pensacola	1,400
At other stations	1,300
At receiving-ship, Boston, New York, and Philadelphia	1,600
At receiving-ship, Mare Island	1,800
At other receiving-ships, on vessels of the first rate, at the Naval Academy, and at the Naval Asylum.	1,300
On vessels of the second rate and to fleet-paymasters	1,100
On vessels of the third rate and supply-vessels and store-ships	1,000
To inspectors in charge of provisions and clothing at navy-yards, Boston, New York, Philadelphia and Washington	1,600
At other inspections	1,300

NOTE.—From and after July 1, 1870, the spirit ration is totally abolished, and in lieu thereof the navy ration, under the appropriation of provisions for the Navy, is 30 cents per day.

Provided, That no officer on the retired list of the navy shall be employed on active duty except in time of war: *And provided*, That those officers on the retired list, and those hereafter retired, who were, or who may be, retired after forty years' service, or on attaining the age of sixty-two years, in conformity with section one of the act of December, eighteen hundred and sixty-one, and its amendments, dated June twenty-fifth, eighteen hundred and sixty-four, or those who were or may be retired from incapacity resulting from long and faithful service, from wounds or injuries received in the line of duty, from sickness or exposure therein, shall, after the passage of this act, be entitled to seventy-five per centum of the present sea-pay of the grade or rank which they held at the time of their retirement. The rear-admirals provided for in the act of June fifth, eighteen hundred and seventy-two, shall be considered as having been retired as rear-admirals. [Act 3d March, 1873.]

PETTY OFFICERS, SEAMEN, ETC.

CLASSIFICATION AND PAY.

Petty officers, first class.

Seaman class.	Monthly pay.	Special class.	Monthly pay.	Artificer class.	Monthly pay.
Chief Boatswains' Mates	$35	Masters-at-arms	$65	Machinists	$70
Chief Quartermasters	35	Equipment Yeomen	60		
Chief Gunners' Mates	35	Apothecaries	60		
		Paymasters' Yeomen	60		
		Engineers' Yeomen	60		
		Ship's Writers	45		
		School Masters	45		
		Band Masters	52		

Petty officers, second class.

Boatswains' Mates	$30	Ship's Corporals	$28	Boiler-makers	$60
Quartermasters	30	Ship's Cooks	35	Armorers	45
Gunners' Mates	30	Chief Musicians	36	Carpenters' Mates	40
Coxswains to Commander-in-Chief	35			Blacksmiths	60
				Sailmakers' Mates	40
				Water Tenders	38

Petty officers, third class.

Captains of Forecastle	$30	Captains of hold	$30	Printers	$40
Captains of Main Top	30			Painters	30
Captains of Foretop	30			Oilers	26
Captains of Mizzen Top	30				
Captains of Afterguard	27				
Coxswains	30				
Quarter Gunners	27				

sovereign and members of a royal family when visiting a vessel of the navy receive the same number of guns as prescribed for the President. An officer or enlisted man is required to salute his superior officer on meeting by raising the cap.

Salvo. A simultaneous discharge of a number of pieces of ordnance.

Sand Shot. A coarse kind of shot once used, which derived its name from being cast in sand molds.

Scaldings. A warning cry employed on board ship to signify that the enemy is using scalding water from the boilers, led through a hose, as a weapon to drive their opponents away from the guns. Also used as a warning to avoid something thrown.

Schoolmaster. A petty officer of the first class who is under the direct orders of the navigating officer, and whose duty it is to write the smooth-log and instruct such classes as may be voluntarily formed from the crew of sea-going vessels. The course of simple instruction is arranged by the executive or commanding officer, or, in the case of a ship carrying a chaplain, by that officer. Naval training vessels are allowed several schoolmasters, who have charge respectively of the various classes of boys engaged in English studies, under the orders of an officer who instructs them personally in the profession of seamanship, rudimentary navigation, great gun and small arm drill, etc.

School-ship. A vessel set apart for the education of boys and young men in all that pertains to practical seamanship and the common English branches, in order to fit them for sailors in the navy. (See NAVAL APPRENTICE.)

A State School-ship is organized and supported by the local authorities, with the design of preparing young men to become officers in the merchant marine. These ships are known as "Public Marine Schools," and are possessed by two States only—New York and Pennsylvania. The New York marine school-ship is the *St. Mary's*, and the Pennsylvania school-ship the *Saratoga*, these two vessels being under the direct charge of the Board of Education of the cities of Philadelphia and New York respectively. They are officered by naval officers detailed by the Secretary of the Navy for that purpose, but the money for running the vessels is drawn from the city's school fund. The *St. Mary's* and *Saratoga* belong to the Government, being merely loaned to the States in question.

The following qualifications are necessary for candidates:

First. They should be between the ages of 15 and 20 years.

Second. They must be of average size, of sound constitution and free from all physical defects.

Third. They must, upon admission, produce testimonials of good character.

Fourth. They must have an inclination for a seafaring life, and enter of their own free will.

The School is in no sense a reformatory, and only boys who can produce satisfactory testimonials will be admitted, nor will they be allowed to remain on board unless they yield prompt and willing obedience to the "Rules and Regulations" of the ship.

Boys who are admitted to the School are provided for at the expense of the city, with the following exceptions:

First. They are required to provide themselves with the following articles, which must be renewed if necessary: 2 Pairs Boots or Shoes, 1 Pair Rubber Boots, 1 Dark Blue Monkey Jacket, 1 Dark Blue Guernsey, 3 Pairs Heavy Drawers, 3 Heavy Undershirts, 3 Pairs Heavy Socks, 1 Black Silk Neckerchief, 3 Pocket Handkerchiefs, 1 Strong Jack Knife, 3 Towels, 1 Scrub Brush, 1 Tooth Brush, 1 Clothes Brush, 1 Hair Brush, 1 Blacking Brush, 1 Box Blacking, 2 Combs—1 fine and 1 coarse, Thread, Needles, Wax, Tape and Buttons.

Second. A deposit of $30.00 is required to defray the expense of white and blue uniforms during the whole time on board. Should the boy be withdrawn, expelled, or desert, the deposit is forfeited.

Application may be made in writing to the Chairman of the "Executive Committee on Nautical School," Hall of Board of Education, 146 Grand Street, New York City.

Scotch Prize. An illegal prize—one that must be surrendered.

Sea Duty. (See SHORE DUTY.)

NAVY PAY TABLE.—Continued.

PETTY OFFICERS, SEAMEN, ETC.—*Continued.*

CLASSIFICATION AND PAY.—*Continued.*

Seamen, first class.

Seaman class.	Monthly pay.	Special class.	Monthly pay.	Artificer class.	Monthly pay.
Seamen Gunners	$26	Lamp-lighters	$25	Firemen, first class	$35
Seamen	24	Jacks-of-the-Dust	22	Carpenters	25
Seamen Apprentices, first class	24	Buglers	33	Caulkers	25
		Musicians, first class	32		
		Tailors	30		
		Barbers	30		

Seamen, second class.

Ordinary Seamen	$19	Baymen	$18	Firemen, second class	$30
Seamen Apprentices, first class	19	Musicians, second class	30		

Seamen, third class.

Landsmen	$16			Coal Heavers	
Apprentices, first class	11				
Apprentices, second class	10				
Apprentices, third class	9				
Boys	10				

MESSMEN.

Stewards to commanders-in-chief	$45	Cooks to commanders in-chief	$40
Stewards to commandants of navy-yards	45	Cooks to commandants of navy-yards	40
Cabin stewards	37	Cabin cooks	32
Wardroom stewards	37	Wardroom cooks	32
Steerage stewards	25	Steerage cooks	22
Warrant officers' stewards	24	Warrant officers' cooks	30

Chief boatswains' and chief gunners' mates allowed to vessels not having boatswains or gunners.

Men enlisting under *continuous-service certificates* will be entitled to receive one dollar per month, in addition to the pay of their respective ratings, for each consecutive re-enlistment for three years within three months from the date of their discharge.

Seaman. A rating next higher than that of ordinary seaman. A *seaman* is a first-class sailor, able to hand, reef and steer, heave the lead, is proficient in marlinspike seamanship, etc. An ordinary seaman is only partially proficient in these duties.

Seaman Apprentice. A naval apprentice who has been rated as a seaman before his term of apprenticeship is closed.

Seaman Gunner. A seaman who is skillful in gunnery and torpedo duties, and receives a little additional pay on account of such proficiency.

Sea Pay. (See PAY TABLE.)

Search Light. A more or less powerful arc (electric) lamp placed at the focus of concave reflectors, the object of the arrangement being to project the rays of light from the lamp in parallel or nearly parallel lines. The whole is mounted on a suitable stand, that the lamp and reflectors may have motions over this stand in horizontal and vertical planes. The intensity of the light and range of illumination vary greatly.

Second Lieutenant. An officer in the marine corps one rank lower than a first lieutenant; a *second lieutenant* is the lowest ranking officer in the corps. The term is applied sometimes to the navigating officer of the vessel.

Second Rate. (See CLASSIFICATION.)

Secretary. There was allowed by law a secretary to the admiral and one to the vice-admiral of the navy, these appointments being made from civil life by the admiral and vice-admiral respectively, subject to the approval of the Secretary of the Navy. These two secretaries had the relative rank and allowances of a lieutenant in the navy, but were appointed for no specified period—their term of service being controlled by the officers who appointed them. With the death of the admiral and vice-admiral the office of Secretary was abolished; consequently, no such office exists at the present time in the U. S. Navy. The secretaries to the admiral and vice-admiral were paid from the appropriation under the head of "Pay of the Navy," the same as the regular officers of the service.

The secretaries to rear-admirals afloat are now detailed from regular line officers of the navy, not above the grade of lieutenant.

Until a few years ago all flag officers afloat were allowed by law to appoint their secretary from civil life. The appointment carried with it the relative rank and pay of lieutenant, but in 1878 Congress abolished this office together with that of Captain's Clerk.

The Secretary at the Naval Academy is appointed from civil life, and there is no law or regulation giving him rank. His pay is fixed by statute, and appropriated for under the head of "Pay of professors and others at the Naval Academy." The secretary at the Naval Academy stands towards the Superintendent in the way of a chief clerk. The Secretary of the Navy is in command of the navy under the President, being a member of the latter's Cabinet.

Secure. An order as applied to ordnance, signifying that exercise at the guns is to cease.

Securing Bolts. Related to old-fashioned guns, being eye-bolts in the ship's side near the port for securing the gun.

Sentry. A marine or blue-jacket placed on guard. Sentries are stationed at the commanding officer's door, at gangways, on the forecastle and poop, and over prisoners.

Sentinel. Same as SENTRY.

Serve. To serve a vent is to close it by placing the thumb over it while sponging, and to clear it with a priming wire before the gun is loaded.

Shell. (See PROJECTILE.)

Shell Bag. A bag made use of for hoisting shell in and out of a vessel, or for transporting same, or bags which once took the place of shell boxes.

Shell Bearer. A contrivance for transporting heavy shell.

Shell Craddle. A contrivance of two brass rings for hoisting shell through hatches.

Shell Crane. An iron stanchion shaped like a fish davit. It is shipped near a hatch, has a tackle hooked into the overhanging end, and is used for hoisting or lowering shell.

NAVY PAY TABLE.—Continued.

MARINE CORPS PAY TABLE.

Rank.	Pay per annum.
COLONEL COMMANDANT	$3,500
COLONEL	3,500
LIEUTENANT-COLONEL	3,000
MAJOR (Staff and Line)	2,500
CAPTAIN AND ASSISTANT QUARTERMASTER	2,000
CAPTAIN	1,800
FIRST LIEUTENANT	1,500
SECOND LIEUTENANT	1,400

NOTE.—All officers below the rank of Brigadier-General are entitled to ten per centum, in addition to their current yearly pay as given above, for each and every period of five years' service, provided the total amount of such increase shall not exceed forty per centum of their current yearly pay; and provided further, that the pay of a Colonel shall not exceed $4,500 per annum, and that of a Lieutenant-Colonel $4,000 per annum. Officers on the retired list are entitled to seventy-five per centum of pay (salary and increase) of their rank, but no increase accrues for time subsequent to date of retirement.

NON-COMMISSIONED OFFICERS, MUSICIANS, AND PRIVATES.

Grades.	First period of 5 years' service.	Second period of 5 years.	Third period of 5 years.	Fourth period of 5 years.	Fifth period of 5 years.
	Per month.	*Per month.*	*Per month.*	*Per month.*	*Per month.*
Sergeant-major	$23	$27	$28	$29	$30
Quartermaster-sergeant	23	27	28	29	30
Drum-major	22	26	27	28	29
First sergeant	22	26	27	28	29
Sergeant	17	21	22	23	24
Corporal	15	19	20	21	22
Drummer and fifer	13	17	18	19	20
Private	13	17	18	19	20
Leader of the band	79	81	82	83	84
Musician, first class	34	36	37	38	39
Musician, second class	20	22	23	24	25

All enlisted men, except musicians of the band, serving on a first period of five years' service, are entitled to one dollar per month for the third year, two dollars per month for the fourth year, and three dollars per month for the fifth year's service, in addition to the sums given in the first column above, which additional amounts are retained until expiration of service, and paid only upon final settlement and *honorable* discharge.

One dollar per month is retained from all enlisted men (except the Marine Band) serving under a re-enlistment. This retained pay is not included in the above table, and is to be credited and paid only upon final settlement and *honorable* discharge from service.

Members of the Marine Band are allowed $4 per month in addition to rates of pay as given above for playing at the White House and public grounds, under the provisions of the act of Congress of August 18, 1856.

All enlisted men (except musicians of the band and re-enlisted men) have $4 per month retained from their pay during the first year of their enlistments; the amounts so accruing being paid with interest at 4 per cent. per annum on *honorable* discharge from the service.

Shell Extractor. Mechanism in the rear of a breech-loading small arm by which the empty shells are removed. Also an instrument for removing shells from heavy guns.

Shell Gauge. A ring or cylinder by which the dimensions of shells are obtained, by passing the latter through them.

Shellman. A member of the gun's crew who provides shell for the gun.

Shell Powder. (See CHARGES.)

Shell Room. A compartment in the vessel for storing shell.

Shell Strap. The fastening used to secure the sabot to the shell.

Shell Whip. A tackle used for hoisting or lowering shell through the hatch.

Ship's Cook. A petty officer who has charge of the cooking for the ship's company. At seven bells (11.30 A.M.) each day he carries a sample of the dinner provided for the crew to the officer of the deck, who tastes and passes judgment upon the same before he is allowed to serve out the same to the mess cooks.

Ship's Corporal. An assistant to the master-at-arms. (See MASTER-AT-ARMS.)

Ship's Writer. A clerk to the executive officer. He is a first class petty officer, and his duty is to keep the names and rates of the ship's company; the respective watches to which they belong; preserve a record of the conduct and offenses of the crew; the punishments inflicted; detail the anchor watches; keep a book showing the stations to which members of the crew are assigned by the executive officer when coming to anchor, making, reefing and furling sail; exercise at the guns; repelling boarders; abandoning ship, etc.

Ship's Yeoman. (See EQUIPMENT YEOMAN.)

Shore Duty. Service performed at navy yards, naval stations, at the navy department, light-house board, hydrographic office, etc.

Sea Duty refers to service performed on cruising vessels.

Shore Pay. (See PAY TABLE.)

Shot. (See PROJECTILES.)

Shot Garland. A rope grommet for containing shot—obsolete.

Shot Gauge. A ring or cylinder for ascertaining the diameter of shot.

Shot Locker. A compartment in the hold of a vessel for the stowage of shot.

Shot Pile. A pyramid of shot. To ascertain the number of shot in a pile, multiply the sum of the three parallel edges by the number of shot in a triangular face.

Shot Plug. A wooden cone used for closing up shot holes made in a wooden vessel.

Shot Rack. Iron rods about the hatch coamings for holding shot.

Shot Tongs. An iron contrivance, on the principle of ice tongs, for picking up shot.

Shot Trough. Troughs of wood for conveying shot along the decks during an engagement, or from one pile to another on shore.

Shot Wad. Junk placed in front of a shot to hold it in place in the bore of the gun.

Shot Whip. A purchase used in hoisting or lowering shot.

Shoulder Knot. (See UNIFORM.)

Shoulder Strap. (See UNIFORM.)

Sick Bay. The compartment on board ship in which the sick are treated—the hospital of the ship.

Sick Call. The drum and fife call sounded each morning on board a man-o'-war, notifying all sick men to report for examination to the surgeon in the sick bay.

Sick Leave. A vacation granted upon a surgeon's certificate of disability.

Sick List. The names of the sick, together with their respective ailments and condition, is sent daily to the captain by the surgeon. A duplicate list of the names, without details, is posted on the spar deck, and is called the *binnacle list.*

Sick Mess. A mess for the sick members of the crew, provided for wholly or in part by the surgeon from stores in his department.

Sick Ticket. A document which accompanies a member of the crew when he is sent to the hospital, and which records his name, rate, disease, etc.

Side Boys. Boys who attend the gangway when officers of rank enter upon or leave a vessel. The admiral and vice-admiral are entitled to eight side-boys; rear-admirals and commodores, six; captains and commanders, four; all officers below the grade of commander are entitled to two side-boys.

Side Tackles. (See TRAIN TACKLE.)

Sight. A shape of metal placed on a small arm or cannon in order to direct the fire of the same.

Breech Sight. A sight fixed on the breech of a gun. This sight has marked on it various degrees of elevation with the corresponding distances attained by the shot.

Front Sight. A small shape of metal on the upper surface of the gun between the trunnions. It is brought in line with the object, and the score in the breech sight, so that all three form one straight line.

Reinforce Sight. A sight placed at, or close to the reinforce of the gun, so called in the old ordnance.

Side Sights. Sights situated at the side of the gun on the rimbase or trunnion.

Trunnion Sight. A side sight; a sight situated on the trunnion of a gun—obsolete.

Dispart Sight. A reinforce sight.

Tangent Sight. A rear sight.

Sight Bar. A part of the breech-sight. It is a small rod of metal which can be elevated and lowered, and on which the different ranges are marked in yards and degrees.

Sight Cover. A metal cover, which is placed over the sight of a gun as a protection when the piece is not in use.

Sight Mass. The projection on a gun on which the sights are fixed.

Sight Telescope. Gun sights provided with magnifying telescopes.

Signals. A code of communication by means of certain signs. For communication between men-o'-war belonging to the same country a special code of signals is employed. The book containing these signals has lead covers, and when capture is imminent the volume is thrown overboard to prevent it from falling into the hands of the enemy. (See INTERNATIONAL CODE; STORM SIGNALS; COSTON'S SIGNALS; WIG-WAG SIGNALS.)

Signal Quartermasters. Quartermasters who have charge of the signal-locker and lights, and whose duty it is to signalize under the direction of an officer.

Single-stick. A hickory sword employed in broad-sword exercise.

Skids. As applied to naval ordnance iron beams arranged parallel to one another for guns to rest on.

Sleeve Ornaments. (See UNIFORM.)

Sloop of War. Before the introduction of steam a *sloop of war* was smaller than a frigate, and carried from 18 to 32 guns; but as applied to steam, a vessel carrying guns on one deck, and rating larger than a gun-boat.

Slow Match. A loosely twisted wick saturated in lime-water and saltpetre. It will burn about six inches in an hour.

Slush. (See PART I.)

Small Arms. Rifles, revolvers, cutlasses and bayonets.

Small Arm Men. Members of the crew specially trained in the use of small arms.

Solid Shot. A perfectly solid projectile.

Spirit Ration. The allowance of grog which previous to 1862 was served out daily to all hands on board U. S. vessels of war.

Spike. A small steel rod used to close the vent of a muzzle-loading gun by dropping it into the same, thus rendering the piece useless. A rat-tail file about the size of the vent is furnished for spiking purposes. (See SPRING SPIKE.)

Splinters. Fragments of wood, iron, etc., broken off and scattered owing to a shot striking the vessel.

Splinter Nettings. Mesh work arranged to retard the passage of splinters.

Sponge. A contrivance for cleaning the bore of a gun. It may be composed of soft material or stiff bristles. A marine sponge is used for wiping out the chamber and breech mechanism of modern guns.

Sponge Cap. A shape of canvas to fit over the head of a sponge when not in use.

Sponge Cover. Sheepskin tacked over the head of a sponge.

Sponge Handle. A wooden staff to which the sponge is attached. This staff may be in one piece or in sections like a fishing-rod.

Sponge Head. The wooden head on the end of the sponge staff.

Sponge Staff. (See SPONGE HANDLE.)

Sponson. A projection from the ship's side in which guns are mounted to enable them to fire fore and aft.

Sponson Platform. An extension of the gun deck on which the guns are mounted in the sponsons.

Spring. A hawser led from the stern of the vessel to the cable by which the ship is riding. It is employed to bring the broadside of the vessel to bear on the enemy when desired.

Spring Searcher. A pronged tool of steel utilized for searching for orifices or cracks in the bore of a gun.

Spring Spike. An instrument used for spiking a gun. It differs from the ordinary spike inasmuch as it is provided with a spring at its lower end to prevent its withdrawal.

Spur. (See MARINE RAMS.)

Squadron. A number of vessels of war detached from the main fleet. A squadron is larger than a division, and smaller than a fleet.

Flying Squadron. A number of vessels of war cruising rapidly from place to place.

White Squadron. A name applied to the collection of modern U. S. men-o'-war first sent afloat, owing to their color.

Staff Officers. Officers of the medical, pay, and engineering corps, constructors, chaplains, civil engineers, secretaries, professors of mathematics, carpenters, and sailmakers.

Stand. A support for small arms.

Stand of Ammunition. The complete charge and projectile. Also called a *round* of ammunition.

Stand of Arms. A rifle, including the bayonet and cartridge belt.

Stand of Grape. A charge of grape shot.

Station Bill. (See PART I.)

Steel-belted Cruiser. (See BELTED CRUISER.)

Steerage. The apartment in which the steerage officers live.

Steerage Officers. Midshipmen, cadet midshipmen, mates, cadet engineers, and ensigns when they do not perform duty as regular watch officers. (See MESS.)

Stern Chasers. Guns situated so as to fire through the stern ports, or sharp on either quarter from the main deck.

Store Ship. A government vessel employed in carrying stores of various kinds for the use of men-o'-war.

Storm Signals. (See PART I.)

Stripes. (See UNIFORM.)

Sub-calibre. When projectiles are smaller than the bore of the gun they are called *sub-calibre projectiles*, and are fired from the guns by the aid of contrivances which reduce the diameter of the bore to the size of the projectile.

Submarine Gun. A gun projecting shell from a point below the surface of the water.

Submarine Projectiles. Explosive shell fired from submarine guns.

Supernumeraries. Men in excess of the ship's complement, or extra members of a boat's or gun's crew.

Surgeon. (See MEDICAL CORPS.)

Survey. An ordered examination of government stores. (See MEDICAL SURVEY.)

Suspend. To prohibit an officer from performing duty is to *suspend* him.

Swivel Gun. A small piece of ordnance turning on a pivot.

T.

Tattoo. The drum-beat previous to 9 P.M., at which time two bells are struck and "pipe down" made.

Terrorite. A new and powerful explosive, the component parts of which is eighty per cent. nitro-glycerine, the secret of its power being in the mode of purification of the nitro-glycerine. It is claimed for this explosive that it cannot be exploded by shock, requiring to be fired by detonation. (See DETONATOR.)

Three Decker. A ship carrying guns upon three gun decks, besides her spar decks.

Time Fuze. A fuze so constructed as to permit the regulation of the number of seconds between the firing of the piece and the explosion of the projectile.

Tompion. The wooden plug fitted into the muzzle of a gun for the exclusion of dust and water.

Top Swivel. A small piece of ordnance once used in the tops of men-o'-war, but which has since been succeeded by rapid-fire guns and Gatlings.

Torpedo. In regard to our torpedo system, it is to be explained that the same is in an embryo state at the present time. The Government has purchased the right to use the Whitehead torpedo, and our new vessels are being constructed with a view to their use, and the Government is also engaged in experimenting with the systems of other inventors, notably the Howell. Torpedoes are divided into three classes: *Mobile Torpedoes* are of the Whitehead or Howell type, which possess their own motive power; *Auto-Mobile*, or *Controllable Torpedoes*, in which the motive power is furnished by gases and their movements controlled by electricity; *Boat* or *Spar Torpedoes* are carried on the ends of spars projecting from the bows of steam launches, and exploded by electricity from the boat, the idea being to push them below the water line of an enemy's vessel and explode them while in contact. There is also a kind of torpedo called *Sub-Marine Mine*, which rests on the bottom and is used to defend channels and entrances to harbors. Gun cotton is the explosive used in all naval torpedoes.

Torpedo Boat. A small, swift vessel with little freeboard, designed for creeping upon an enemy's ship and exploding a torpedo against her side.

Torpedo Ram. A small, fast boat designed for the double purpose of exploding a torpedo against an enemy's vessel and ramming her also. Such a vessel is the *Alarm* of our navy.

Trail. The tongue of a howitzer carriage which rests on the ground.

Trail Bar. A wooden bar by which the trail of a howitzer carriage is turned and the piece pointed.

Trail Rope. A rope made fast to the trail of a howitzer carriage, and by means of which it is directed while in motion.

Training Level. An instrument for ascertaining the elevation or depression of a gun, or for sighting the same.

Training Pendulum. An instrument consisting of a level and pendulum, designed for pointing guns.

Train Tackle. A tackle, one block of which is hooked to the rear of a broadside gun-carriage, the other block being hooked to an eye-bolt amidships. By this tackle the gun is run in, and is also prevented from running out while it is being loaded. The tackles which run a gun out are known as *side tackles*—old ordnance.

Trajectory. The curve which a projectile describes after leaving the gun.

Transfer. When officers and men are changed from one vessel to another they are said to be *transferred*.

Transport. A vessel employed in carrying troops from one place to another. The name is sometimes applied to vessels carrying cargoes of war material.

Transporting Axles. Axles employed in moving from one part of the deck to another a gun which is mounted on a pivot carriage.

Transporting Trucks. The wheels used in connection with transporting axles.

Troop Ship. A vessel used in carrying troops, horses, and field artillery. (See TRANSPORT.)

Truce. Suspended hostilities. When such suspension is desired, it is indicated by

the display of a white flag, and the person approaching the enemy's lines carrying a flag of truce is always given safe conduct in going and returning.

Trunnions. The two round projections on the sides of a piece of ordnance by which it rests upon the carriage and affords means of elevating and depressing the piece by its oscillations in the grooves on the upper edges of the checks of the carriage.

Trunnion Gauge. An instrument by which the diameter of the trunnions is measured.

Trunnion Ledge. The small shelf to the trunnion of a heavy piece of ordnance.

Trunnion Level. The spirit level by which the trunnion ledge is placed in a horizontal position.

Trunnion Plate. The plate which covers the upper part of the side-pieces and goes under the trunnion.

Trunnion Ring. The ring upon a gun just forward of the trunnions—now obsolete.

Trunnion Rule. The rule employed in measuring the distance from the base ring to the trunnions.

Trunnion Square. The instrument made use of in ascertaining whether or not the axis of trunnions is perpendicular to the axis of the bore.

Tub. Under this head come *division-tub*, *fire-tub*, *grog-tub*, and *match-tub*.

Division Tub. A large flat bucket for holding fresh water, and placed about decks during action.

Fire Tub. A wooden tub containing water and fitted with a grating. In order to provide against explosion of the new charges by fire on account of possible sparks contained in the cartridge boxes, each empty one is placed inverted on the grating for a moment as it is passed below from the deck—old ordnance.

Grog Tub. The tub in which the allowance of grog was contained, before the spirit ration was abolished, and from which it was served out to the crew.

Match Tub. A bucket for containing slow-matches.

U.

Unarmored Cruiser. A vessel not provided with protective armor to hull and guns. This class of vessel is designed chiefly to prey upon an enemy's commerce, and is not considered as a regular fighting ship.

Uniform. The following particulars relate to the uniform worn by officers in the U. S. Navy:

SLEEVE ORNAMENTS. The sleeve ornaments on the special full-dress coat of the admiral, vice-admiral, and rear admirals are as follows:

Admiral: Three strips of gold embroidered white-oak leaves, the strips 1 inch wide and a half an inch apart.

Vice-Admiral: Two strips of oak leaves, similarly placed.

Rear-Admirals: One strip of 2-inch gold lace, 1½ inches from the edge of the sleeve, with one strip of ½-inch gold lace one-quarter of an inch above it.

THE REGULAR SLEEVE ORNAMENTS ARE:

Admiral: One strip of 2-inch gold lace, with three strips of ½-inch gold lace, one-quarter of an inch apart.

Vice-Admiral: One strip of 2-inch gold lace, with two strips of ½-inch lace above.

Rear-Admirals: One strip of 2-inch gold lace, with one strip of ½-inch lace above.

Commodores: One strip of 2-inch gold lace.

Captains: Four strips of ½-inch gold lace set one-quarter of an inch apart.

Commanders: Three strips ½-inch gold lace, set one-quarter of an inch apart.

Lieutenant-Commanders: Two strips of ½-inch gold lace with one strip of ¼-inch gold lace between, each a quarter of an inch apart.

Lieutenants: Two strips of ½-inch gold lace, one-quarter of an inch apart.

Lieutenants (junior grade): One strip of ½-inch gold lace, with one strip of ¼-inch gold lace one-quarter of an inch above it.

Ensigns: One strip of ½-inch gold lace.

Naval Cadets who have completed the four years' course at the Naval Academy: One strip of ¼-inch gold lace to be wound with dark blue silk at intervals of 2 inches, the width of the silk wrapping to be ½ inch.

All staff officers except chaplains wear the same lace on the cuff as is prescribed for line officers with whom they have relative rank, with bands of colored cloth around the sleeve, between the strips of gold lace, as follows:

Medical officers: Dark maroon velvet.

Pay officers: White cloth.

Engineer officers: Red cloth.

Naval constructors: Dark violet cloth.

Professors of mathematics: Olive green cloth.

Civil engineers: Light blue velvet.

All line officers (including mates, boatswains and gunners) wear a star of five rays, embroidered in gold, one inch in diameter, on the outer side of each sleeve.

DEVICES. The following devices are worn on epaulets and shoulder-straps:

Admiral: Four silver stars of five rays each, placed at equal distances, with a gold foul anchor 1⅛ inches long under each of the outer stars.

Vice-Admiral: Three similar stars, placed at equal distances, with a gold foul anchor 1⅛ inches long under the central star.

Rear-Admirals: Two similar stars, one near each end of the frog, with a silver foul anchor seven-eighths of an inch long in the centre.

Commodores: One similar star, placed in the centre, with a silver foul anchor at each end of the frog.

Captains: A silver spread eagle in the centre, with a silver foul anchor at each end

Commanders: A silver oak leaf at each end, with a silver foul anchor in the centre.

Lieutenant-Commanders: A gold oak leaf at each end, with a silver foul anchor in the centre.

Lieutenants: Two silver bars at each end, with a silver foul anchor in the centre.

Lieutenants, junior grade: One silver bar at each end, with a silver foul anchor in the centre.

Ensigns: A silver foul anchor in the centre.

Naval cadets who have completed the four years' course at the Naval Academy: A gold foul anchor in the centre of the pad of the shoulder knot.

Staff officers wear on the frog of the epaulet and in the centre of shoulder strap the same rank devices as are prescribed for line officers with whom they have relative rank, substituting the proper corps device for the foul anchor.

CORPS DEVICES: The following corps-devices distinguish officers of one branch of the service from another:

Medical corps: A spread oak leaf embroidered in dead gold, with an acorn embroidered in silver upon it.

Pay corps: A silver oak sprig.

Engineer corps: Four silver oak leaves.

Construction corps: A gold sprig of two live-oak leaves and an acorn.

Professors: One silver oak leaf and an acorn.

Civil engineers: The letters C E in silver.

Secretaries: The letter S in silver.

WARRANT OFFICER'S DEVICES: These devices are worn on the frock and service coats of warrant officers and pay clerks.

Boatswains: After twenty years' service as such, two foul anchors, crossed, embroidered in silver. Under twenty year's service as such, two foul anchors, crossed, embroidered in gold.

Gunners: After twenty years' service as such, a flaming spherical shell, embroidered in silver. Under twenty years' service as such, a flaming spherical shell, embroidered in gold.

Carpenters: After twenty years' service as such, a chevron, point down, embroidered in silver. Under twenty years' service as such, a chevron, point down, embroidered in gold.

Sailmakers: After twenty years' service as such, a diamond, embroidered in silver. Under twenty years' service as such, a diamond, embroidered in gold.

Mates: After twenty years' service as such, a binocular glass, with the axes at right angles to the edge of the collar, eye-pieces up, embroidered in silver. Under twenty years' service as such, a binocular glass placed as above, embroidered in gold.

Pay clerks: The corps device of the Pay Corps, embroidered in gold.

CAP ORNAMENTS: For all commissioned officers and naval cadets who have completed the four years' course at the Naval Academy, the device is a silver shield, emblazoned paleways, of thirteen pieces, with a chief strewn with stars surmounted by a silver spread eagle, the whole being placed upon two crossed foul anchors embroidered in gold.

For warrant officers, mates, and pay clerks, two gold foul anchors crossed.

SWORD. The sword for all officers is a cut-and-thrust blade, not less than 26 nor more than 32 inches long; half-basket hilt; grip white; scabbards of black leather; mountings of yellow gilt; and all as per pattern.

Chaplains wear the dress commonly worn by clergymen, consisting of a single-breasted coat, with standing collar, waistcoat, and trousers of black or dark navy-blue cloth, and black, low-crowned soft felt hat.

PETTY OFFICERS' RATING BADGES. All petty officers wear on the outer garment a rating badge, consisting of a spread-eagle placed above a *class chevron.* (See NAVY PAY TABLE for information concerning *class.*) In the interior angle of the chevron, under the eagle, the specialty mark of the wearer is placed. The badge is worn on the outer side of the right or left sleeve half way between the shoulder and elbow. Petty officers of the starboard watch wear the badge on the right arm, those of the port watch on the left arm. On blue clothing the eagle and specialty mark are worked in white; on white clothing in blue, and the chevron is always made of scarlet cloth, each stripe raised by padding.

For petty officers, enlisted in their ratings by reason of holding three consecutive good conduct badges, the chevron is made of gold lace, instead of scarlet cloth.

The chevron is, for—

The master-at-arms: Three stripes and an arch of three stripes.

Other petty officers, first class: Three stripes and a lozenge.

Petty officers, second class: Three stripes.

Petty officers, third class: Two stripes.

The specialty marks are worked so as to be entirely included in a circle one inch in diameter.

The specialty marks are as follows:

Master-at-arms	A five-pointed star.
Ship's corporal	A five-pointed star.
Chief boatswain's mate	Two crossed anchors.
Boatswains' mates	Two crossed anchors.
Captains of tops	Two crossed anchors.
Captains of afterguard	Two crossed anchors.
Coxswains	Two crossed anchors.
Chief quartermasters	Ship's wheel.
Quartermasters	Ship's wheel.
Chief gunner's mates	Two crossed cannon.
Gunner's mates	Two crossed cannon.
Armorer	Two crossed cannon.
Quarter gunners	Two crossed cannon.
Seaman gunner	Flaming spherical shell.
Yeomen	Two crossed keys.
Captain of hold	Two crossed keys.
Apothecary	Staff surmounted with wings, and two intertwining snakes about staff.
Ship's writer	Two crossed pens.
Schoolmaster	Open book.
Printer	Open book.

Bandmaster	Lyre.
Chief musician	Lyre.
Ship's cook	Disc with hole in center.
Machinists	Propeller wheel.
Boilermakers	Propeller wheel.
Water-tenders	Propeller wheel.
Oilers	Propeller wheel.
Carpenter's mate	Crossed broad-axes.
Painter	Crossed broad-axes.
Blacksmith	Two crossed mauls.
Sailmaker's mate	Cringle.
Apprentice mark	Figure eight knot.

PETTY OFFICERS' AND SEAMEN'S CLASS MARKS. *Petty officers of the second and third classes, enlisted men of the seaman first, second, and third classes, except bandsmen,* wear around the collar of the overshirt and white jumper three stripes of white tape three-sixteenths of an inch wide and three-sixteenths of an inch apart, the outer stripe one-quarter of an inch from the edge, the stripes extend down in front to bottom of opening. In each corner of the collar there is worked, in white, a star three-quarters of an inch in diameter.

Petty officers of the second and third classes and enlisted men of the seaman first class, except bandsmen, wear around the cuffs of the overshirt and white jumper three stripes of white tape three-sixteenths of an inch wide, one-quarter of an inch apart, the middle of the middle stripe to be in the centre line of the cuff.

Enlisted men of the seaman second class, except bandsmen, wear around the cuffs of the overshirt and white jumper two stripes of white tape three-sixteenths of an inch wide, one-quarter of an inch apart, the middle line of the space between the stripes come over the middle of the cuff.

Enlisted men of the seaman third class wear around the cuffs of the overshirt and white jumper one stripe of white tape three-sixteenths of an inch wide, placed over the middle line of the cuff.

THE APPRENTICE MARK, worked in white on blue clothes and in blue on white clothes, is worn by all enlisted men who belong to, or have passed through, the ratings of apprentice in the navy. On the overshirt and jumper it is worn on the breast, two inches below the neck-opening. On coats of all descriptions it is worn on the outside of the same sleeve as the rating-badge, half way between the elbow and wrist.

THE WATCH-MARK is worn by all enlisted men except petty officers and messmen. It consists of a strip of tape three-eighths of an inch wide, white on blue shirts and blue on white shirts; placed on the shoulder seam of the sleeve, and extending entirely around the arm. For 1st and 2d class firemen and coal-heavers, the tape is red on both blue and white shirts, and of the same width and disposition as above. The men of the starboard watch wear the mark on the right sleeve; those of the port watch wear it on the left sleeve. (See NAVY PAY TABLE for information concerning *class.*)

V.

Velocity. Swiftness; rapidity; rate of motion.

Equal Velocity. (See FINAL VELOCITY.)

Final Velocity. Applied to a body when it passes over equal spaces in equal times —also known as *Equal Velocity* and *Uniform Velocity.*

Initial Velocity. The velocity with which a projectile issues from the mouth of a cannon. This is also known as *Muzzle Velocity.*

Muzzle Velocity. (See INITIAL VELOCITY.)

Remaining Velocity. The velocity of a projectile at any point between the mouth of the cannon and the point of striking.

Striking Velocity. (See TERMINAL VELOCITY.)

Terminal Velocity. The velocity of the projectile at the point of striking. This is generally known as *striking velocity.*

Uniform Velocity. (See FINAL VELOCITY.)

Vent. The small hole in the after part of a muzzle-loading cannon, through which fire is communicated to the charge. In a breech-loading gun it is the hole passing through the stem of the mushroom which passes through the breech plug to the rear of the charge.

Vent Drill. An instrument for clearing the vent when obstructed with caked powder, or fragment of metal from a primer.

Vent Plug. A stopper of leather for closing the vent of a gun when it is not in use.

Vessels of the U. S. Navy. All the vessels of the U. S. Navy, together with those building for the same, are to be found in a table under the heading of "List of Vessels of the U. S. Navy."

Vice-Admiral. An officer next higher than a rear-admiral, and next lower than an admiral. (See ADMIRAL.)

Volley. The simultaneous discharge of a number of small fire-arms, such as muskets

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W.

Wad. A mass of oakum or other loose substance, rammed into a gun after the projectile has been inserted, so as to keep the latter pressed against the charge.

Grommet Wads. Rough grommets of rope.

Junk Wads. Junk laid up in a coil.

Selvagee Wads. Rope yarn marled together to form a strop.

Wardroom. The apartment in which the higher commissioned officers live. (See MESS.)

Wardroom Country. The space contained between the staterooms in the wardroom. In this space is placed the wardroom dining-table.

Wardroom Officers. (See MESS.)

Warrant Officer. An officer warranted by the President of the United States. Warrant officers in the U. S. Navy are: gunner, boatswain, carpenter, and sailmaker, and are promoted from seamen and carpenters-mates in the service, or, in the two latter cases they may be appointed from ship carpenters and sailmakers in civil life.

Watch Bill. (See PART I.)

Watch Gun. A gun once fired in the service at 8 P.M., when the first anchor watch was set.

Watch Officer. A line officer generally below the rank of lieutenant-commander who, while on duty, is the authorized representative of the commanding officer, and is subject only to his authority. While on duty a watch officer is known as *the officer of the deck.* (See OFFICER OF THE DECK.)

Water Cap. A screw plug in a time fuze which prevents the water from extinguishing the latter.

Water Shell. A hollow projectile filled with water, and which contains an explosive charge of gun cotton in a cylinder which is surrounded by the water.

Water Tenders. Petty officers of the second class, belonging to the Engineer's Department, whose duty it is to observe the height of water in the boilers and keep the engineer on watch advised as to same.

White Squadron. (See SQUADRON.)

Wig Wag. A system of signaling all the letters of the alphabet by waving a flag in the daytime and a lantern at night. By these means messages may be communicated from ship to ship or between a ship and the shore.

Windage. The difference between the diameter of a projectile and that of the bore of the cannon.

Y.

Yeoman. (See ENGINEERS, EQUIPMENT, PAYMASTERS, and SHIP'S YEOMAN.)

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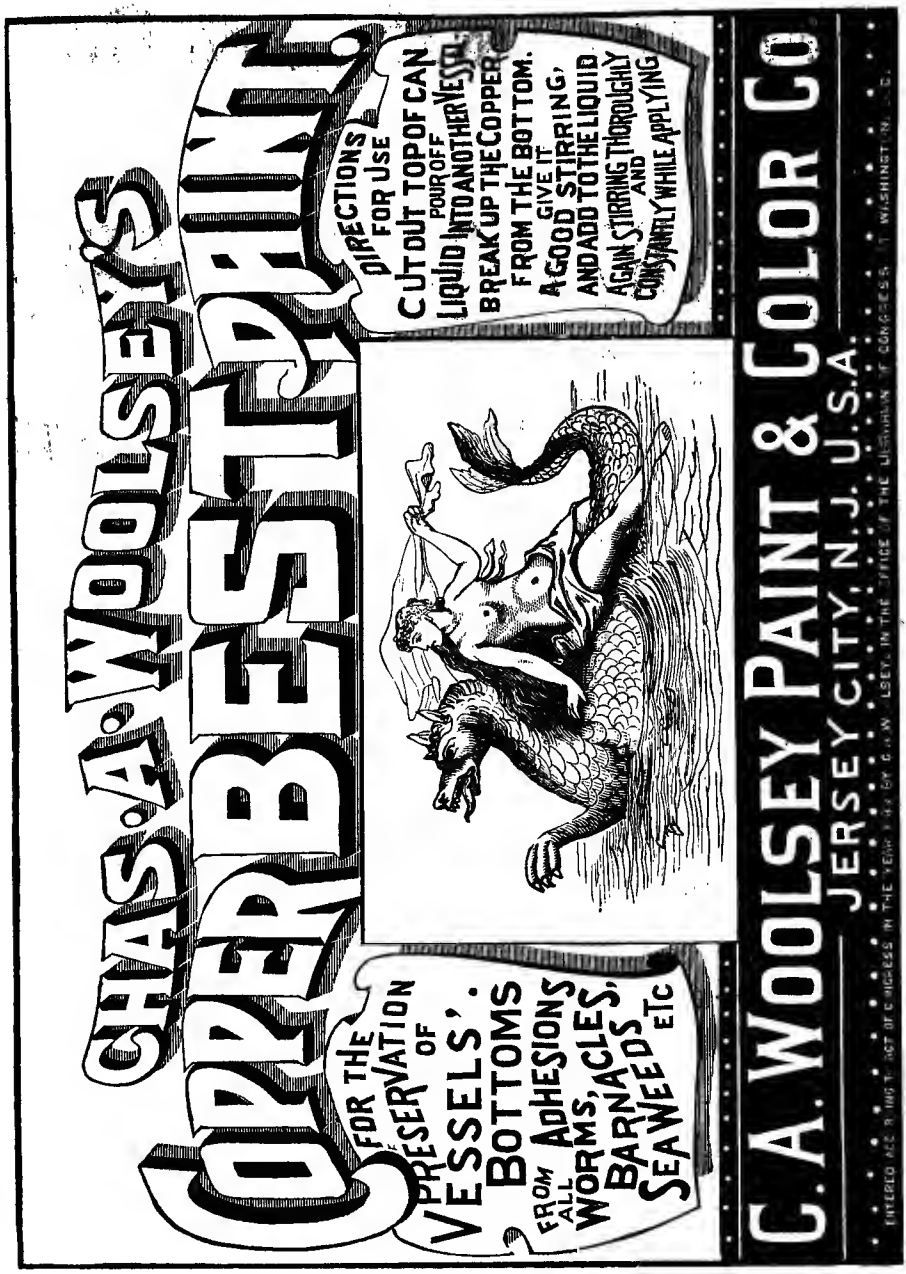

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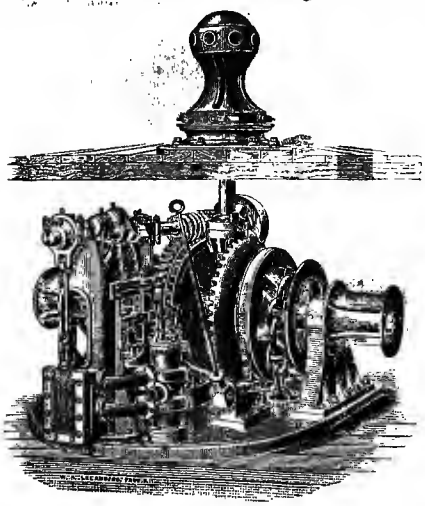

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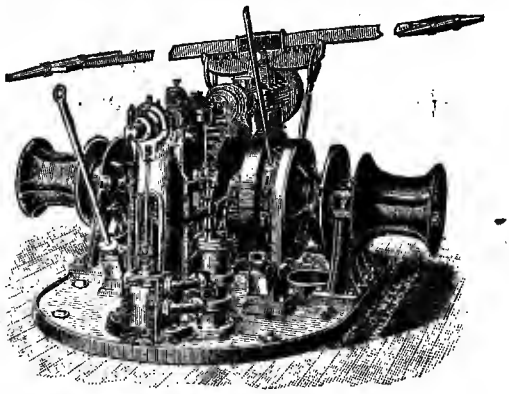

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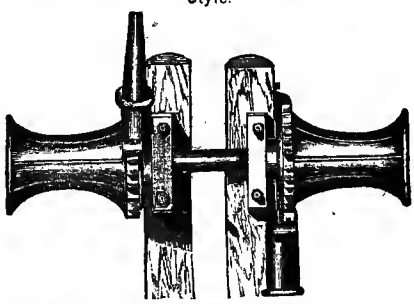

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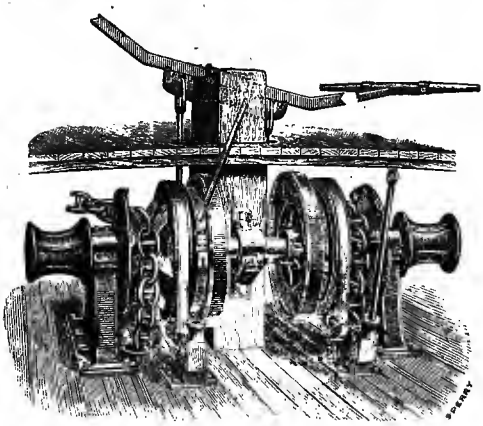

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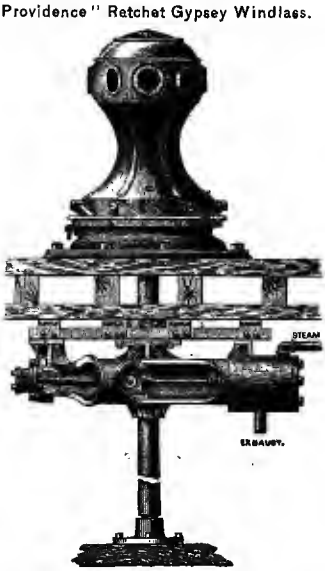

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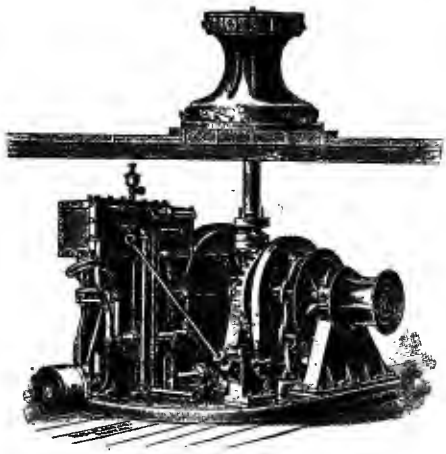

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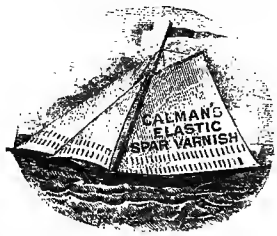

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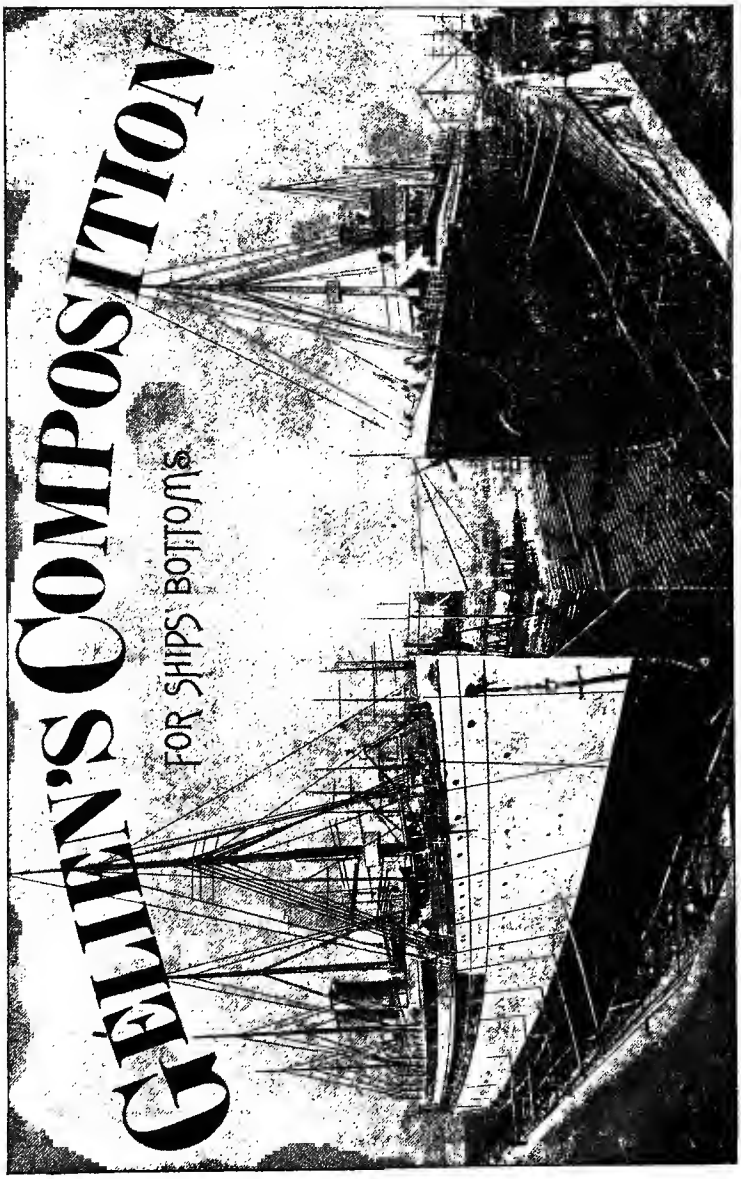

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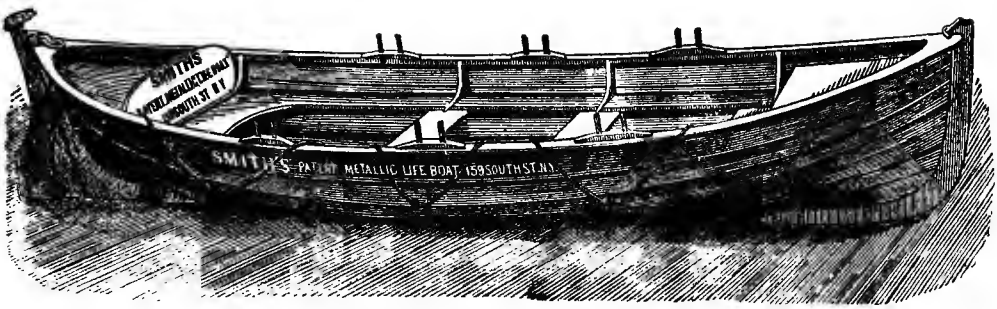

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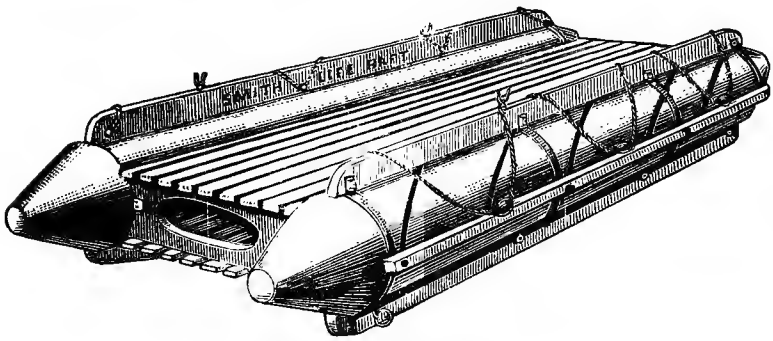

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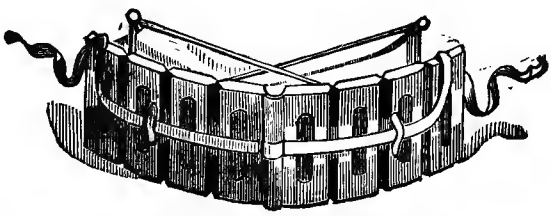

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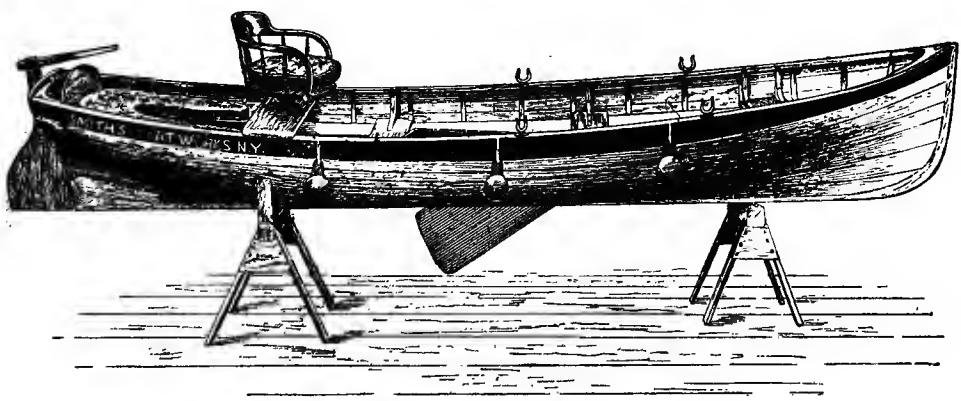

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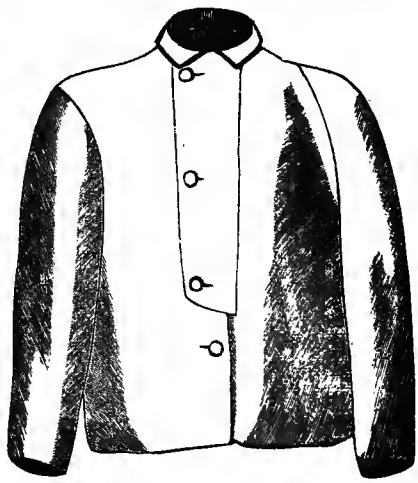

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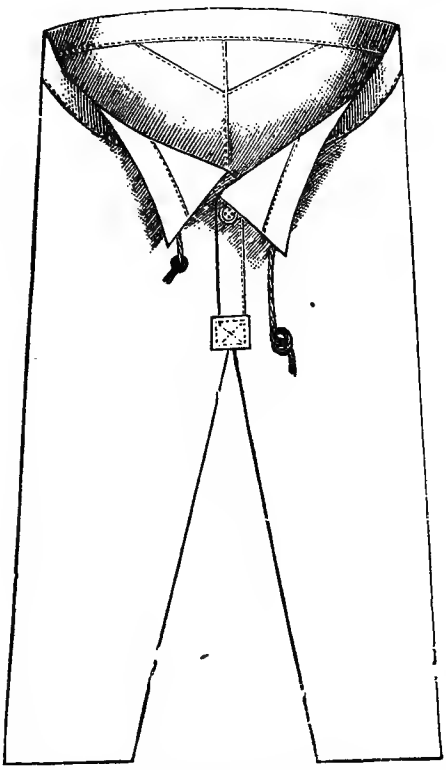

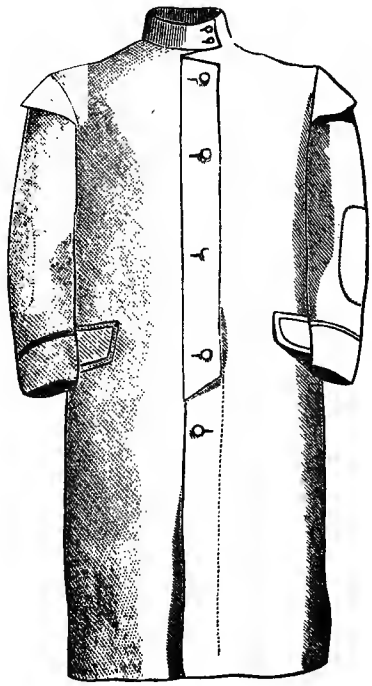

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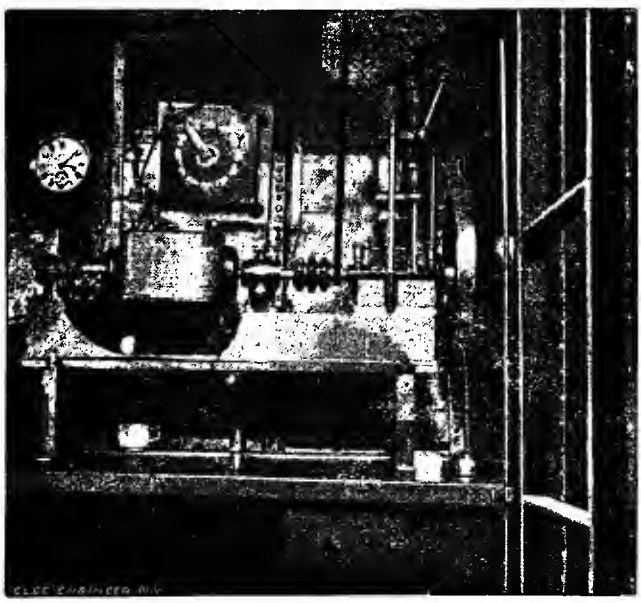

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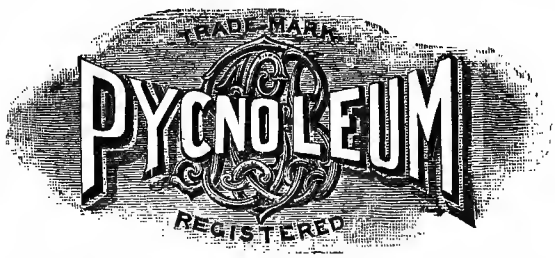

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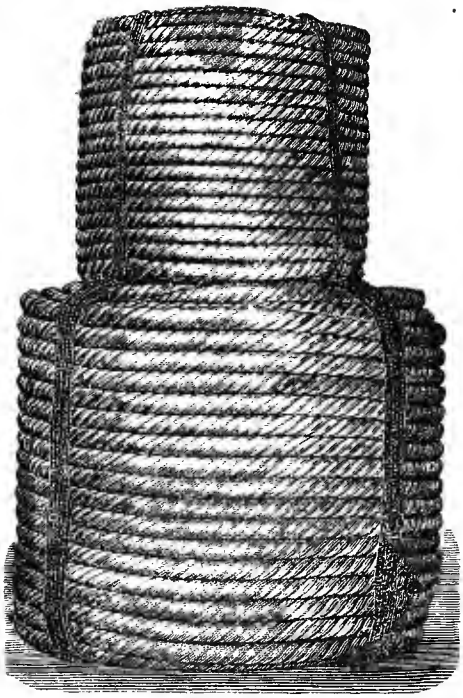

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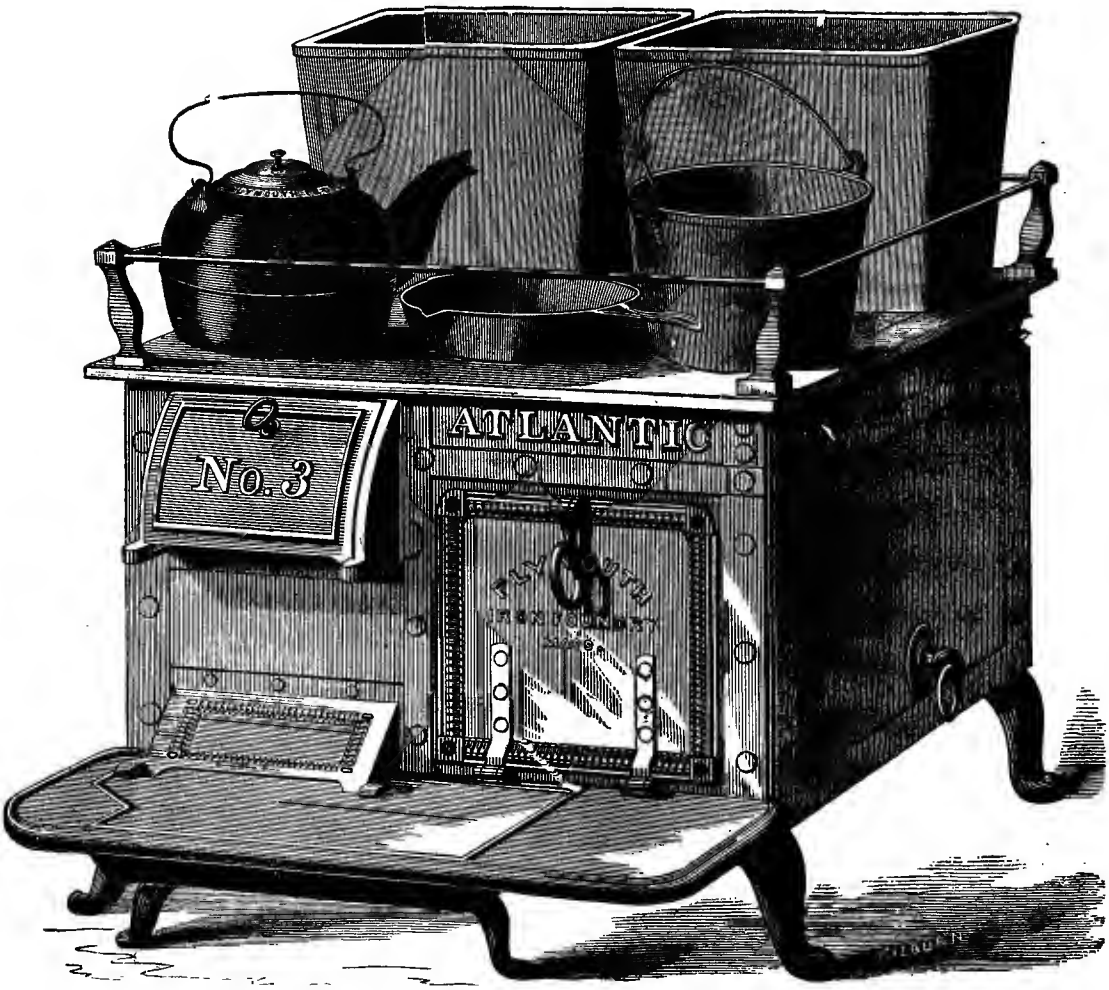

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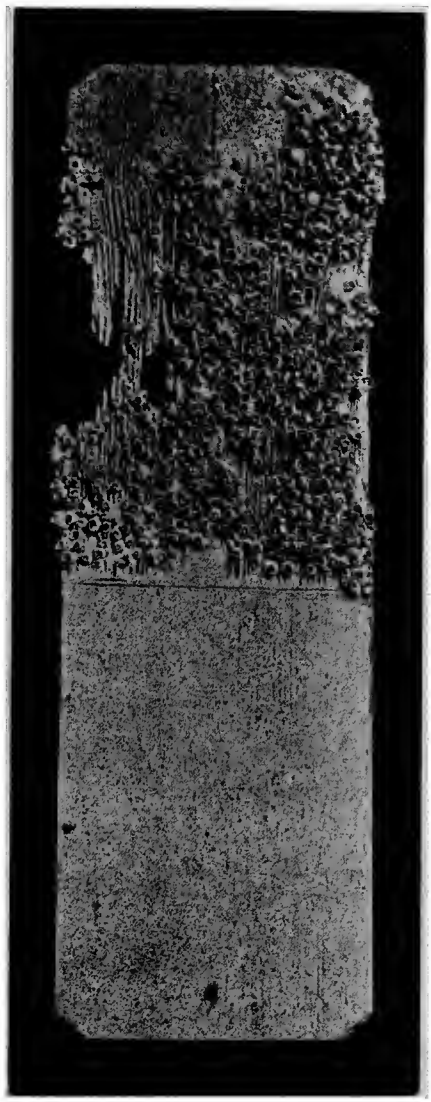

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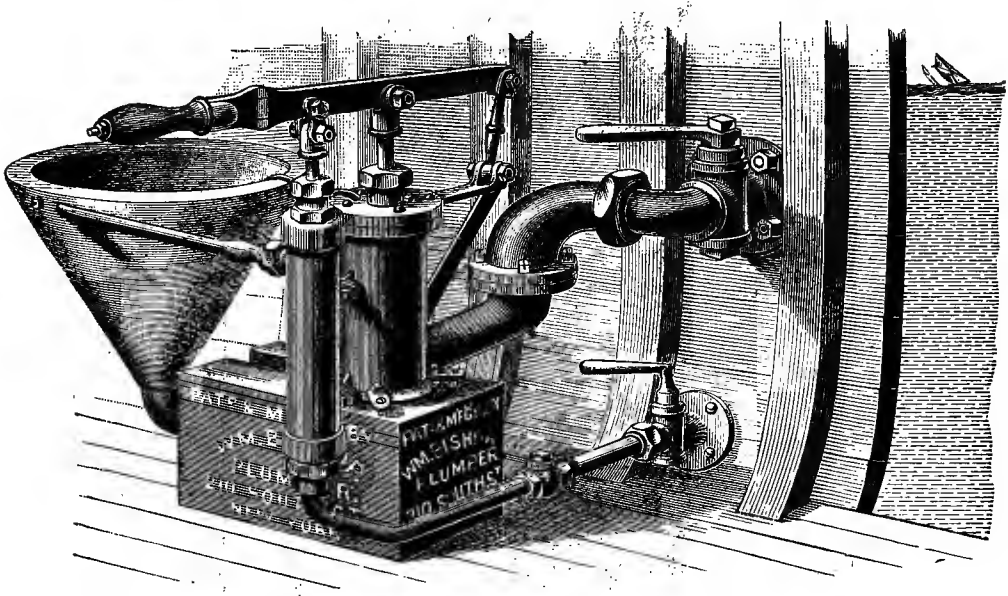

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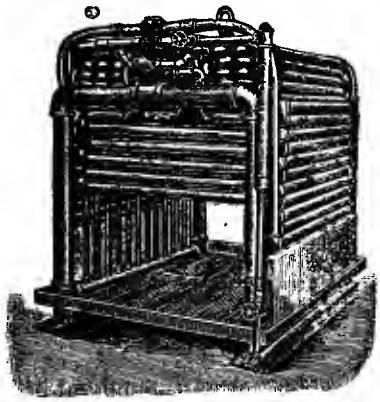

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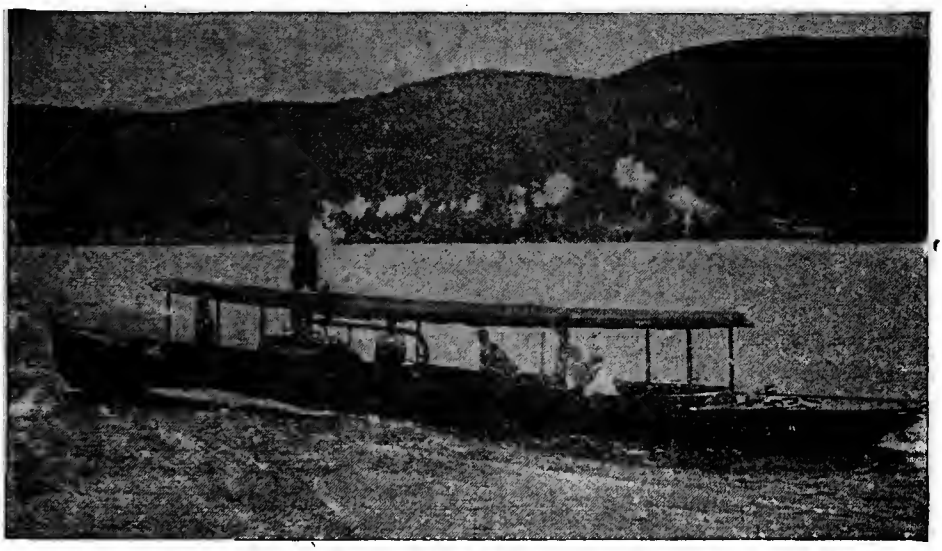

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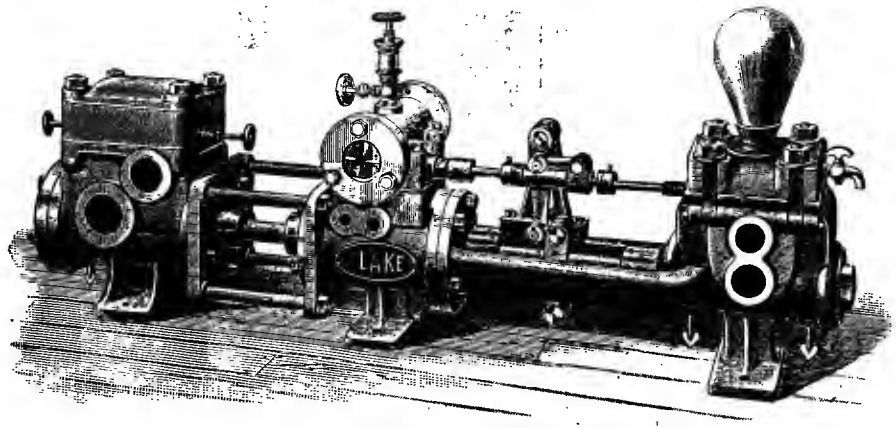

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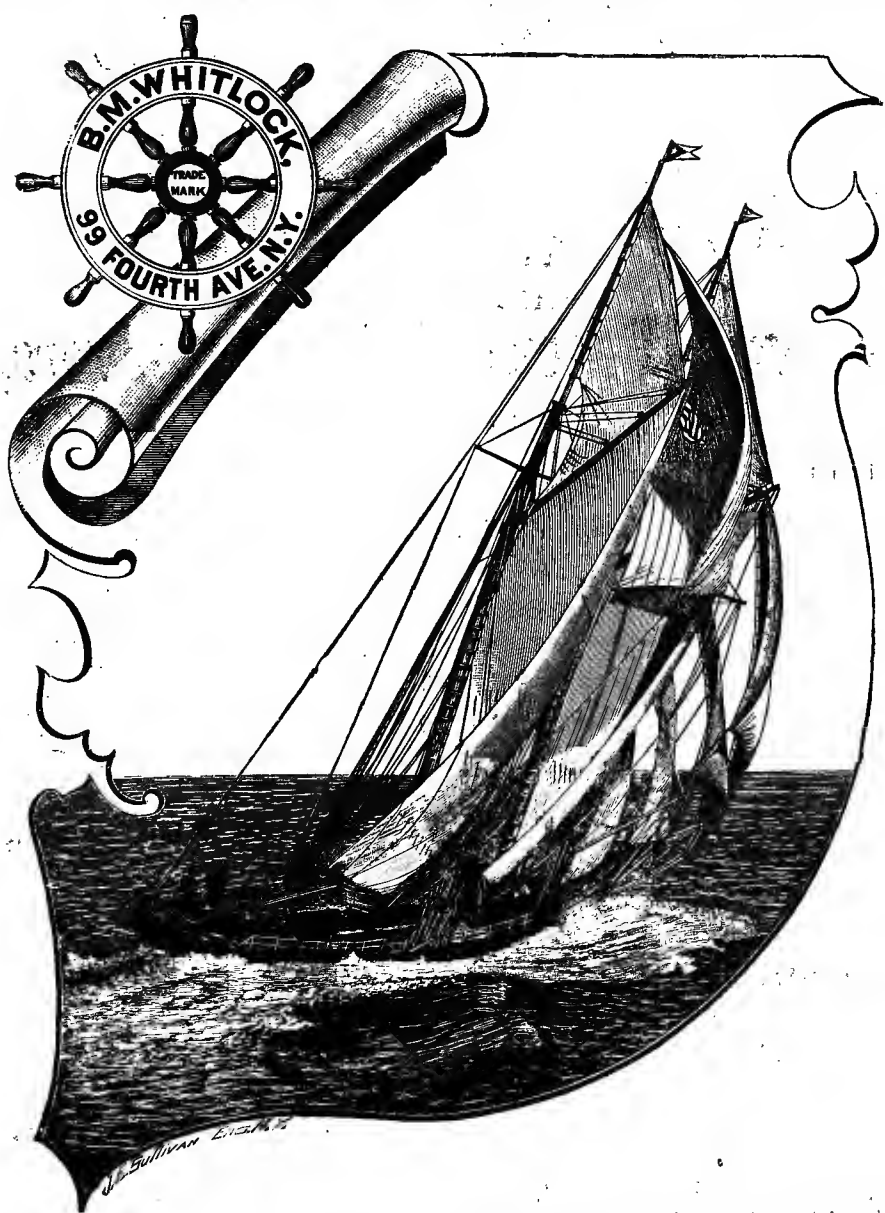

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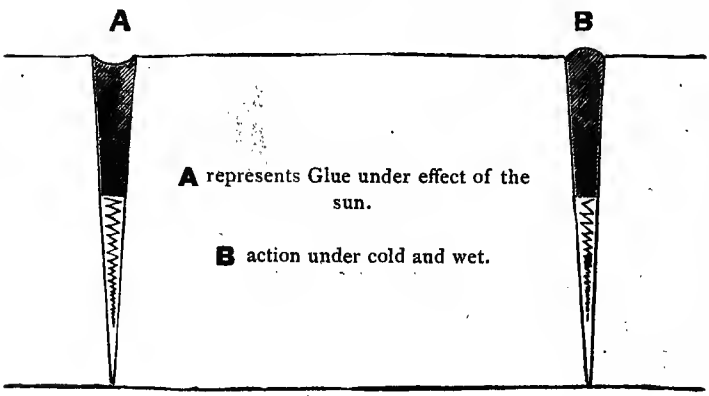

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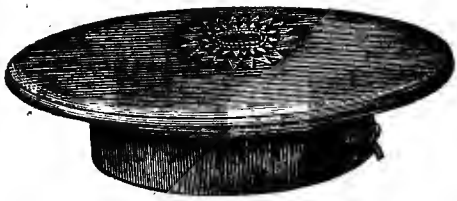

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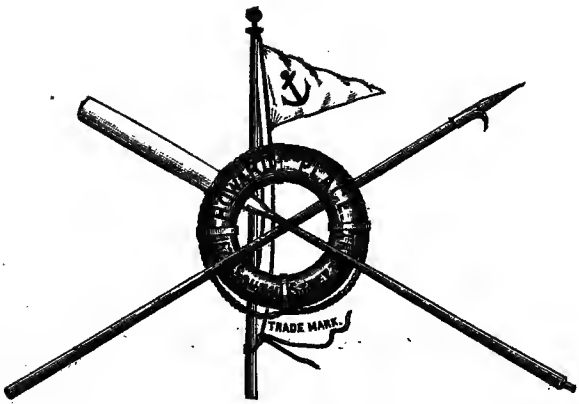

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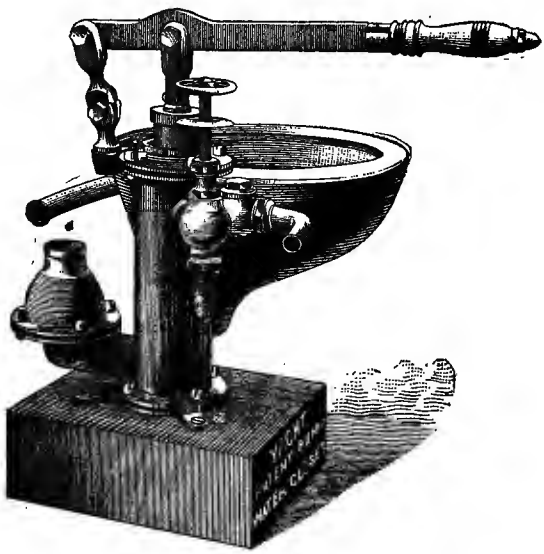

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