

# MANUAL OF YACHT AND BOAT SAILING AND ARCHITECTURE

DIXON KEMP

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## A.

### Aboard--

Inside a ship or on the deck of a ship. "Come aboard, sir," is a sailor's way of reporting himself on board after leave of absence. To run or fall aboard a vessel is for one vessel to come into collision with another. A sail is said to fall aboard when, from the lightness of the wind or other causes, it ceases to blow out. To haul the boom aboard is to haul the boom in by the mainsheet from off the lee quarter.

### About--

Having tacked. "She's about!" she is going to tack or has tacked. "Ready about" is the signal given for the men to prepare to tack the ship. "About ship!" or "Bout ship !" is the order given to tack, that is to put the vessel on the opposite tack to the one she is on when the order is given to tack. To go about is to tack.

### Abreast--

Synonymous with "Abeam." Side by side. To Breast-- To come abreast.

### Absence Flag--

A rectangular blue flag hoisted below the starboard crosstree to denote that the owner is not on board the yacht. When the owner steps on board the flag is lowered. This is an American custom which is gradually being adopted in Europe. It is a most useful regulation.

**Accommodation.**—

The cabins of a vessel.

**Accommodation Ladder.**--

A side ladder, with platform, for boarding vessels. In the case of yachts, they are usually made to fold up on the bulwarks when the yacht is under way.

**Acker.**—

A tide coming on the top of another tide.

**Ackers' Scale.**--

A graduated time allowance on a tonnage incidence computed by the late Mr. G. Holland Ackers in 1850, long since superseded by other scales.

**A-Cock Bill or Cock Bill.**--

An anchor hanging from the cat head ready to let go. The situation of yards when one arm is topped up as a sign of mourning.

**Across Tide.**--

Crossing the stream of the tide so that it comes broadside on. If a vessel in beating to windward crosses a tide fairly at right angles on one tack, she will stem it on the next or have it stern on, according to whether the tide be lee-going or weathergoing. (See "Weather-tide.")

**Admeasurement.**--

An old-fashioned expression for the builder's tonnage of a ship calculated by length and breadth, and abbreviated O.M. (old measurement) and B.M. (Builder's Measurement).

**Admiral.**--

The highest rank in the Navy. Formerly there were admirals of the red, white, and blue, with the intermediate ranks of vice and rear of the red, white, and blue. When the white ensign was taken exclusively for the Royal Navy in 1857, the red, white, and blue divisions were done away with. Admirals now fly a St. George's Jack, which is a white square flag with red St. George cross in it at the main, fore, or mizen, according to their rank. A vice-admiral has a red ball in the upper (hoist) canton of the flag; a rear-admiral two balls.

**Admiral of the Fleet.--**

An honorary distinction bestowed on admirals for long service, &c. If an admiral of the fleet has a command, he hoists the "union" at the main.

**Admiral of the Royal Yacht Squadron.--**

His Majesty the King is Admiral of the R.Y.S., and flies the St. George's Jack with the Imperial crown in the centre of the cross.

**Admiralty Flag.--**

A red flag with yellow fouled anchor (horizontal) in it, flown by the Sovereign and Lords of the Admiralty.

**Admiralty Warrants.--**

Warrants granted to clubs and the members thereof, granting permission to fly the white ensign, or the blue ensign, or the red ensign with device on it. The Admiralty warrants granted to yachts are of two kinds:

- (1) The Warrant granted to the Club.
- (2) The Warrant granted to the individual Yacht owner who is a member of the Club.

Thus in order that a yacht may have the right to fly X the White Ensign, Y the Blue Ensign, or the Blue ensign with a device, or Z the Red Ensign with a device it is necessary that the club to which the owner belongs must hold Warrant No. 1 and that the owner must obtain through the secretary of the club and hold for his yacht Warrant No. 2. Warrants will only be granted to yachts which are registered according to the provisions of the Merchant Shipping Act.

**Adrift.--**

Floating with the tide. Generally driving about without control. Also a vessel is said to be adrift when she breaks away from her moorings, warps, &c. The term is also applied to loose spars rolling about the deck; sheets or ropes which are not belayed, &c.

**Afloat.--**

The state of being waterborne after being aground. To be on board ship.

**Afore.—**

The contrary of abaft. Towards the forward end of anything.

**Aft.**--

An abbreviation of abaft, generally applied to the stern. To go aft is to walk towards the stern; to launch aft is to move a spar or anything else towards the stern. To haul aft the sheets is to bring the clew of the sail more aboard by hauling on the sheets.

**After.**—

The state of being aft, as after-sail, after-leech, after-side, &c.

**After Body.**—

The part of a vessel abaft her midship section.

**After End.**--

The stern end of a vessel or anything else, or the end of anything nearest the stern of a vessel.

**After-Guard.**--

Men stationed aft to work sheets, &c. In racing yachts, if there be any amateurs on board, they are generally made use of as an after-guard. In merchant ships the ordinary seamen or landsmen enjoy the distinction.

**After-most.**—

A thing or point situated the most aft of all.

**Afternoon Watch.**—

The watch between noon and four o'clock.

**After Part.**—

The stern extremities of a vessel or anything else.

**After Peak.**--

The hold of a vessel near the run. A small cuddy or locker made in the run of a boat aft.

**After Rake.**--

Contrary to fore rake. The rake or overhang the stern post has abaft the heel of the keel. To incline sternwards.

**Aftward.**—

Towards the stern; contrary to forward.

**Against the Sun.--**

An expression used to show how a rope is coiled: from right to left is against the sun, from left to right is with the sun. The wind is said to blow against the sun when it comes from the westward, and to back when it changes from west to east by the south.

**Agreement.--**

The document executed, when a vessel is built, by the builder and the person for whom the vessel is being built. The following is a form of agreement which has been used: [The specification relates to a wood yacht of about 22 tons; deleted, it's very long.]

**Agreement with Crew.--**

A form of agreement provided by the Board of Trade for yacht sailors to "sign articles" on.

**Aground.--**

A vessel is said to be aground when her keel or bottom rests on the ground.

**Ahead.—**

Forward; in advance of.

**Ahoy.--**

An interjection used to attract attention . In hailing a vessel, as "Cetonia Ahoy!"

**A-Hull.--**

A ship under bare poles, with her helm lashed a-lee. An abandoned ship.

**Airtight Cases for Small Boats.--**

By airtight cases are meant cases that will keep out water. The most general form of case is made of zinc, copper, or Muntz metal. Macintosh bags have been used; they are put inside wood lockers, and then inflated, the object of inflation being of course to fill the lockers, and thus practically making the lockers impervious to the influx of water. As any kind of bag is liable to be punctured or otherwise damaged, metal cases are to be preferred -- they should be fitted inside wood lockers. To render a boat unsubmergeable she must be provided

with cases which will displace a quantity of water equal to the weight of the material used in the construction of the boat or which may be on board and will not float. Usually an ordinary fir planked boat will not sink if filled with water, the gunwale just showing above the surface; if, however, she has ballast on board or other weight, she would sink. Also the spare buoyancy would not generally be sufficient to support her crew.

A ton of salt water is equal to 35 cubic feet of the same: now suppose a boat 16ft. long and 6ft. broad weighed 15cwt (3/4 ton) with all passengers, gear, airtight cases, &c., on board, then she would require airtight cases equal in bulk to 26-1/4 cubic feet, as there are 26-1/4 cubic feet of water to 3/4-ton weight. But it may be taken that the wood material used in the construction of the boat, the spars, and wood cases, would be self-supporting. Say that these weighed 5cwt, then 10cwt. (1/2-ton) would remain to be supported; 1/2 a ton is equal to 17-1/2 cubic feet. A locker 6ft. long, 2ft. broad, and 1ft. 6in. deep would contain 18 cubic feet, and so would support the boat with her passengers on board, or prevent her sinking if filled to the gunwale with water. Of course it would be rather awkward to have such a large locker as this in so small a boat, and the airtight spaces are usually contrived by having a number of lockers, some under the thwarts, in the bow end and stern end of the boat, and sometimes above the thwarts under the gunwales.

Some boats are made unsubmergeable by a cork belting fixed outside below the gunwale. One ton of cork is equal to 150 cubic feet of the same, and will support 3-1/4 tons in water. Thus, roughly, cork will support three times its own weight in water. Supposing it is sought to support a boat equal to 10cwt., as stated above; then a belting of cork will have to be used equal to 17-1/2 cubic feet, plus a quantity equal to the weight of the bulk of the cork. Say the boat is 16ft. long, and the measurement round the gunwales will be 32ft. A tube 32ft. long to contain 17-1/2 cubic feet would require to be 10-1/4 inches in diameter. The 17-1/2 cubic feet of cork would weigh (17.5 x 15) 262-1/2lb. equal to 4 cubic feet of salt water, and so an addition would have to be made to the tubing to that extent. Thus, in round numbers, 22 cubic feet of cork would be required to support 10cwt. net. A tube 32ft. long and 11in. in diameter would contain 22.0 cubic feet. The tubes that contain the cork are usually made of canvas and painted. The weight of the canvas tube would have to be added to the general weight to be supported. Solid cork should be used, and not cork shavings, for filling

the tubes; cork shavings get more or less saturated, and lose their buoyancy, and generally have less buoyancy than solid cork, in consequence of the multitude of spaces between the shavings which would admit water.

**A-lee.**--

To leeward. The helm is a-lee when it is put down to leeward. Hard a-lee means that the helm must be put as far to leeward as it can be got.

**All.**--

A prefix put to many words to show that the whole is included, as "all aback," meaning all the sails are aback; "all-ataunto," meaning that the ship is fully rigged and fitted out, with everything in its place; "all hands," the whole ship's company; "all standing," with everything in its place, nothing being shifted, &c.

**All Aback For'ard.**--

A cry raised when a vessel is sailed so near to wind that the head sails lift or shake.

**Alley.**--

The channel made in the after part of a steamship for the propeller shaft is termed the shaft alley. The passage under the bridge deck of a steamer is an alley, or alleyway. (See "Lane.")

**Aloft.**--

Up the mast; overhead. "Aloft there !" is a manner of hailing seamen who may be aloft on the mast, tops, yards, &c.

**Along shore.**—

Close to the shore, by the shore, or on the shore.

**Along the land.**--

To lay along the land is when a vessel can hug or keep close to the land without tacking.

**Along the wind.**--

Sailing along the wind means to sail with the wind from a point to four points free, or with the wind abeam.

*Alongside*--

By the side of the ship. "The gig is alongside, sir," is a common way of informing the owner, master, or other officers that the boat is manned and by the gangway, in readiness to take people off; also said when a boat is brought to the gangway so that passengers can embark.

*Amateur*--

The Y.R.A. has always refused to adopt any definition of an amateur, on the ground that in British yacht racing no such definition is required. The only official declaration by the Y.R.A. on the subject is as following :

"The recognition of a Yacht Club does not necessarily, nor of itself, qualify a member of that club as an Amateur." This declaration by the Council of the Y.R.A. means that if a yacht's skipper were to be elected a member of a recognised yacht or sailing club he would not be thereby qualified to steer a yacht in a race in which the conditions said "Amateur Helmsmen. "

In 1908 the British Olympic Council defined an amateur for the Olympic Yacht races at Ryde and on the Clyde as follows. "No person can be considered an Amateur who has ever been employed for wages in the handling of a sailing yacht (whether racing or otherwise) or of any fore-and-aft rigged vessel."

In 1912 the Swedish Olympic Council employed the following definition in their games at Stockholm "Every member of a recognised sailing club, who never has carried on yacht sailing as a profession, nor during the last five years followed other sailing as a trade, is an Amateur."

Officers in the Navy, gentlemen who are engaged in business as yacht designers and builders or in making sails are always regarded as "Amateurs" in this country and rightly so. (See "Corinthian.")

*America's Cup*--

A much discussed trophy in the possession of the New York Yacht Club. The Cup was originally offered by the R.Y.S. for a race at Cowes on August 22, 1851, the course sailed was round the Isle of Wight; 15 yachts started. The schooner America, built in New York by George Steers and owned by Commodore Stevens, won the Cup, beating the second vessel, the Aurora, by 18 minutes. The America was 170 tons and the Aurora 47 tons; there was no time allowance.

The Cup was not originally a challenge trophy but it has since become such, and has been named the America's cup after the schooner which won it.

**Amidships**--

The middle part of a ship. The middle part of anything. To put the helm amidships is to bring it in a line with the keel. Generally the word has reference to the middle fore-and-aft line of the ship, and to a middle athwartship part of a ship.

**Anchors**--

For small open boats the anchor should weigh 11lb. for every foot of length up to 20ft. For other boats anchors would be chosen according to the total weight of the boat, including her ballast and equipment, &c. thus:

1/2 ton	20 lb.
1 ton	25 lb.
1-1/2 tons	30 lb.
2 tons	34 lb.
2-1/2 tons	38 lb.
3 tons	42 lb.

The size of link of chain would be about 1/4 in. Anchors for small boats, and indeed for all sailing yachts, should be long in the shank, and of the old-fashioned fisherman's pattern.

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A sort of grapnel has been in use many years by fishermen for small boats. E is the shank, D the usual ring, working in an eye (not shown in the engraving), B the bottom pair of claws, A the top pair of claws. The bottom pair of claws are welded on to the shank, but the top pair slide up and down, and it is usual to make the part under the ring D square so that the grapnel can be converted into an anchor by fixing the part A under the ring D by aid of a small key. A small portion of the bottom of the shank, shown by the shaded hues, is wrought square, and through the centre of the top pair of claws is a square hole, as at F. The sketch represents the grapnel lying flat, and in its present position it is, of course, useless as a holdfast; it lies snug.

Before heaving it overboard, take hold of the top pair of claws and slide them up the shank, till you get to the round part when turn them round, and drop them down upon the lower pair of claws on another square. You have now a most effective four-clawed gripper, which will hold like a bulldog. About 1lb. per foot of length would be the weight for an ordinary boat. They are made by Messrs. Blake and Sons, Gosport, or obtainable from most of the ship chandlers or yacht fitters.

**Anchor.** Thomas & Nicholson's Patent (Camper & Nicholson, Gosport).

The patentees claim it to be by far the strongest disconnecting anchor ever yet introduced, and this opinion has been endorsed by many owners of sailing yachts; and with the long but proportionate shank and the convex and elongated palms to have the very maximum of holding power, and may consequently be used considerably lighter than any other anchors.

The two taper bolts at the crown enables any person to disconnect or connect the anchor with the greatest despatch and certainty, as a taper bolt never requires any driving or drifting, inevitable at times with parallel bolts. The anchors are made in all sizes from 6lb. to 27lb.

For all sailing yachts Thomas and Nicholson's anchors are the best examples of a good holder on the old-fashioned stock principle, and a hundredweight anchor of their pattern is, we believe, only 4ft. 6in. in length of shank, with 3ft. spread of arms. The length of shank must exist to get the holding power, and the arms ought not to be shorter than .4 of the shank, nor make a less angle than 50° with the shank.

Camper and Nicholson's, Gosport, make anchors of this pattern to order, up to weights of 1cwt, which will hold a yacht of 20 or 25 tons, and can be stowed in quite a small bundle.

**Anchor.** Gales' Improved Trotman.

This anchor was shown at the Inventions Exhibition, 1890, and the following is the inventor's description of it : "This invention is an improvement upon the class of anchors known as Porter's, Trotman's, and others. In common with those referred to, the shank is so formed and proportioned as to receive at its crown the arms and flukes. Either arm or fluke is so arranged to work from a central point or pivot at the extremity of the shank, that upon its being canted,' instead of taking the pressure or bearing from the pivot, the entire bearing is given as parallel with and on to the shank, thereby giving additional holding power and

strength, and materially helping to relieve the ordinary undue strain upon the fluke and bolt connection. The improved anchor will be found very compact and snug, when berthed, and for yachts, torpedo, and other craft of that class would be found very efficient in shallow water, and specially adapted for vessels of a larger class."

**Anchor.** Sinnette's.

Mr. Sinnette's anchors are of excellent proportions, and the arms are of the length and angle most suitable for holding. The spread of the arms is much the same as Thomas and Nicholson's; but being hinged, the spread, when the bills touch the shank for stowing, is only 1ft. in a hundredweight anchor. The usual objection to hinged anchors is that the crowns are weakened but the long record of service of Trotman's and Porter's has shown that the objection is not a serious one. With regard to Sinnette's, the crown joint is so exceptionally strong that the objection may be said not to exist at all.

A shows the anchor as prepared for use by removing a contra tapered bolt the arms can be closed, as shown in B; the bolt is then replaced to lock the arms in the position shown, so there is no chance of fingers being injured through the arms opening and shutting. Thomas and Nicholson's anchor has also a tapered pin and tapered hole to receive it; this plan is found to answer much better than the parallel pin, which will always jam more or less, and require something to hammer it out with. The stock is also unpinned, and stows alongside the shank as shown.

In another form of this anchor the arms are not locked when in use, but only for stowing. The arms have back flukes, and the upper arm falls on to the shank when the lower one is in the ground. It thus becomes a non-fouling anchor with all the advantages of a Trotman in that respect, but with more compactness for stowing.

C shows yet another form of the anchor, the shank being jointed as well as the arms, the whole being made immensely strong.

D shows this anchor stowed. For facility in shifting about through hatchways or doors, nothing could beat this anchor in compactness, and it ought to be a great favourite among owners of small yachts.

**Anchor.** Wasteneys Smith's Stockless.

This anchor is recommended by the patentees for the following reasons: It takes immediate hold; cannot foul; requires no stock; can be 20

percent lighter than other anchors; always cants properly; great strength; easily worked; lies flat on deck; stows in small space; easily tripped.

**Anchor, Mushroom.**--

This is a kind of moorings or anchor shaped like a mushroom, which holds well for moorings in mud or sand.

**Anchor Shackle.**—

A shackle which connects the chain with the anchor.

**Anchor, Tripping an.**--

If an anchor is let go on very firm holding-ground, or on ground where the anchor is likely to get foul, a tripping line is made fast to the crown of the anchor; to the other end of the line a buoy is made fast, and when the anchor is "wanted" it can be broken out of the ground by hauling on the tripping line if it cannot be got by hauling on the cable.

Another plan is to "scow" the anchor by bending the end of the cable to the crown instead of to the ring or shackle. The cable is then "stopped" to the ring by a yarn. When the cable is hauled upon the stop breaks, and, of course, the cable being fast to the crown, the anchor is readily broken out of the ground. A boat should not be left moored with her anchor "scowed," as, if any unusual strain came upon the cable, the stop would break, and the boat would probably go adrift. The trip line should be used in such cases.

**Anchor Watch.**--

A watch kept constantly on deck when a ship is at anchor, to be ready to veer out or take in chain, or to slip, make sail, give warning to the hands below, &c., if the vessel be in danger of collision or other mishaps. One hand may keep an anchor watch, and call up the officers and crew if necessary.

**Answer.**--

To repeat an order after an officer; thus, if the order be to the helmsman "No more away," he will repeat, "No more away, sir" ; or to the jib-sheetman, "Check the jibsheet," he will answer, "Check the jib-sheet, sir." Thus the crew should always "answer every order to show that they comprehend".

**Answer Her Helm.--**

A vessel is said to answer her helm when she moves quickly in obedience to a movement of the rudder. Long, deep vessels, and full quartered vessels which have not a long clean run to the rudder, are slow to answer their helm. A vessel cannot "answer her helm" if she has not way on through the water, hence "steerage way."

**A-Peek or Peak.--**

An anchor is said to be a-peak when the cable has been so much hove in as to form a line with the forestay; "hove short" so that the vessel is over her anchor. Yards are a-peak when topped by opposite lifts.

**Apostles.--**

Seaman's slang for knightheads, bollards, &c., for belaying warps to. They formerly had carved heads to represent the upper part of the human body.

**Apron.--**

A piece of timber fitted at the fore end of the keel at its intersection with the stem and up the stem.

**Arch Board.--**

The formation of the counter across its extreme aft end, being a continuation of the covering board, and covers the heads of the counter frames.

**Ardent.--**

A vessel is said to be ardent when she gripes or shows a tendency to come to against a weather helm.

**Areas of Circles.--**

The area of a circle is found by multiplying ....

**Arms.--**

The extremities of anything, as yard arms.

**Ashore.--**

A vessel is said to be ashore when she is aground. To go ashore is to leave the ship for the land.

**A-stay**--

Synonymous with a-peak.

**Astern**--

Towards the stern. To move astern; to launch astern; to drop astern. An object or vessel which is abaft another vessel or object. Sailors never use the word "behind" to represent the position of being astern.

**Astrolabe**--

An ancient instrument for measuring the altitude of the sun, superseded by the quadrant and sextant.

**A-taunto**--

With all the masts on end, and rigging completely fitted.

**Athwart**--

Transversely, at right angles to fore and aft; across the keel. Athwartship is thus across the ship from one side to the other. Athwart hawse is when one vessel gets across the stem of another.

**A-trip**--

When the anchor is broken out of the ground or is a-weigh. A topmast is said to be a-trip when it has been launched and unfiddled.

**Avast**--

Stop, cease, hold, discontinue. As avast heaving (stop heaving), avast hauling (stop hauling), &c.

**Awash**--

Level with the surface of the water.

**Away**--

A general order to go, as "away aloft" for men to go into the rigging; "away aft," for the men to move aft, &c. "Gigs away there," or "cutters away there," or "dinghys away there," is the common way of giving the order to get the boats ready and manned. "Away with it," to run away with the fall of a tackle when hauling upon it. "Away she goes," said of a vessel when first she moves in launching. "Away to leeward," "away to windward," "away on the port how," &c.

**A-Weather.--**

The situation of the helm when it is hauled to windward. To haul a sail a-weather is to haul the sheet in to windward instead of to leeward, to form a back sail, to box a vessel's head off the wind or put stern way on her. Generally to windward.

**A-Weigh.--**

Said of the anchor when it is a-trip or broken out of the ground. The anchor is weighed when hove up to the hawse pipe.

**Axioms for Yachtsmen** (from an American).--

**Don't:** stand up in a boat; don't sit on the rail of a boat; don't let your garments trail overboard; don't step into a boat except in her middle; don't stand up in a boat before you are alongside; don't pull under the bows of a ship -- it looks green, and the consequences might be fatal; don't forget to "in fenders" every time you shove off; don't forget that a loaded boat keeps headway longer than a light one; don't make fast with a hitch that will jam; don't lower away with the plug out; keep the plug on hand by a small lanyard to it, so that it cannot be "led astray" and have to be hunted up when needed.

**Do:** hoist your flags chock up -- nothing betokens the landsman more than slovenly colours; do haul taut all your gear; do see that no "Irish pennants" are flying adrift aloft; do have a long scope out in a gale; do see that your crew keeps in its place and does not boss the quarter deck; do keep your men tidy and looking sailor-like; do keep to leeward of competing yachts when you are not in the match yourself.

**Aye Aye, Sir.--**

The response made by seamen when an order or direction is given them, to show that they understand and will obey.

**B.**

**Back.--**

To back a sail, is to haul the sheet to windward.

**Back and Fill.--**

To luff up in the wind, and then fill off again. Often a vessel is worked up a narrow channel with a weather tide by backing and filling: that is,

the helm is put down slowly, and the vessel kept moving until she is nearly head to wind; the helm is then put smartly up, and the vessel filled again. Care must be always taken to fill before the vessel loses way. Figuratively, to back and fill is to blow hot and cold, or assent and dissent, or to go backwards and forwards with opinions.

**Backing**--

Timber fitted at the back of other timbers.

**Backstays**--

The stays that support the topmast with a beam or stern wind. The topmast shrouds or rigging.

**Backwater**--

The water thrown back when waves strike a wall or other solid object. The water that appears to follow under the stern of a ship. To back water is to move the oars of a boat so that the boat moves astern instead of ahead.

**Baffling Wind**--

A wind that is continually shifting its direction, so that it is difficult to keep the sails full or steady; more frequently used when the vessel is close or nearly close hauled.

**Bag**--

Sails are said to bag when they do not sit flat.

**Bagpipe**--

To bring the sheet of an after-sail, such as the mizen, forward to the weather rigging, so that the sail forms a bag, or back sail: when head to wind useful to put stern way on a vessel.

**Balance Lug**--

A lug sail with a boom and yard. About one-twelfth of the sail is on the fore side of the mast, and thus "balances" on the mast, requiring no dipping when going about; apparently adapted from the Chinese lug sail.

**Balance Reef**--

In gaff sails a hand with reef points or eyelet holes for lacing, sewn from the throat to the clew. The reef is taken in by lowering the jaws down to the boom and lacing the sail along the reef band to the boom. Sometimes the gaff end is lowered down to the boom end; in which case the reef band is laced along the gaff.

**Bale**--

To throw water out of a vessel or boat by buckets or balers.

**Baler or Bailer**--

A small basin-like vessel, used for throwing water out of a boat.

**Balk**--

A hewn tree; a piece of timber for masts, &c.

**Ballast**--

Dead weight carried to assist the stability of a vessel. A ship is said to be in ballast when she has no merchandise on board, but only sand, gravel, mud, or rubbish as ballast. A yacht in marine parlance is always "in ballast."

**Ballast, To Keep Clean or Sweeten**--

The ballast of an old vessel should be removed every other season, scrubbed, and whitewashed with hot lime, or coated with black varnish, paraffin, or red lead. The hold of the yacht should at the same time be thoroughly cleansed and black varnished, distempered, or red leaded, or coated with one of the patent paints. A mixture of two-thirds Stockholm tar and one-third coal tar boiled together will make a good composition for the ballast and the inside of a vessel below the floor. Many vessels are regularly hauled up every year, and of course their ballast is taken out and stored. The ballast of a new vessel generally requires cleansing when she is laid up, as the soakings from the oak frames make a very unpleasant odour.

**Ballast Bearers**.

**Ballast, Shifting**--

To put ballast (usually duck shot in bags) in the weather side of a vessel during sailing. This practice for many years has been strictly forbidden

in yacht racing, and if a man were known to practise it he would be at once debarred from racing under Y.R.A. rules. Shifting ballast is of course forbidden on account of its extreme danger.

**Balloon Sails.**--

Balloon canvas is a term applied to sails of large dimensions, made of light cotton canvas.

The chief balloon sail is the spinnaker used for sailing when the wind is aft. A balloon jib used to fill up the whole space from the bowsprit end, masthead, and mast at deck; a balloon foresail is hanked to the forestay, but the clew extends some distance abaft the mast; in a schooner a balloon maintopmast staysail has an up and down weather leech extending below the lower corner of the sail, which is hanked to the maintopmast stay. It is sheeted on to the end of the main boom. A balloon jib topsail or "Yankee" jib topsail is a useful sail; all modern balloon head sails are cut very high in the clew, so that the lead of the sheet nearly makes a right angle with the luff of the sail. Balloon jibs have long gone out of fashion. They were succeeded by "bowsprit spinnakers," whilst the bowsprit spinnaker, a low-footed sail, has in turn given place to the higher clewed balloon jib topsail. A balloon topsail is another name for a jackyard topsail, or a topsail set with two yards. The upper or "topsail yard" is a vertical continuation of the topmast. The "lower" yard or jackyard is parallel with the gaff and should act as a direct continuation or extension of it. In setting a jackyard topsail a certain amount of "drift" or "space" should be left between the gaff and the lower yard so that there may be play to take up the slack of the sheet.

A modern jackyard topsail should set as flat as a card. Formerly, the foot yard was short and the head yard was of great length -- as long as could be stowed on the deck of a yacht -- and the sail, very heavy to hoist, was quite unfit for close-hauled work. As the hoisting of these heavy yards was an operation of so much labour, they fell into disuse for some years between 1873 and 1888. After that date the sail was reintroduced with a comparatively short head yard and longer foot yard, after a pattern designed in American waters. The sail had consequently as much area as the old fashioned "balloon topsail," and the combined weight of head yard and foot yard was about half that of the old yard; beyond this, as the sail was well peaked, it sits and stands well on a wind in moderate breezes. In the present century with the introduction of hollow yards the area of the sail has been further increased, and the

extreme lightness of yards has enabled the modern balloon topsail to be carried efficiently in fresh and even strong winds.

**Bamboo Spars.**--

In small boats these are often used on account of their lightness. They vary much in strength, and should be from 10 to 20 percent greater diameter than solid wood spars.

**Bare Poles.**--

With no sail set. With all the sails furled or stowed at sea for scudding before a heavy gale, or sometimes for lying to.

**Bargee.**—

A slang term for the crew of a barge.

**Bar Harbour.**--

A harbour that has a bank or bar of sand or gravel at its month, so that it can only be entered at certain hours of the tide.

**Bark.**--

A general term for a vessel.

**Barque.**--

A three or four masted vessel, square rigged on all but the mizzen mast.

**Barquentine.**--

A vessel square rigged on her foremast, and fore-and-aft rigged on her two other masts.

**Barra Boats.**--

Vessels of the Western Isles of Scotland, with almost perfect V section.

**Barrel or Drums.**--

The part of a capstan, windlass, or winch round which the cable or rope is wound whilst heaving. Sometimes termed the drum.

**Base Line.**--

In naval architecture a level line near the keel, from which all heights are measured perpendicularly to it. Generally in yacht designs the load

waterline, as shown so a Sheer Plan, is made the base line, and all depths and heights are measured perpendicularly or at right angles to it.

**Batten.**--

A long piece of wood need to lash to yards or booms to strengthen them. Thin pieces of hard wood fitted to spars to prevent their being chafed or cut. Thin splines of wood used by draughtsmen to make curved lines. A general term for a thin strip of wood. Battens are fitted to sails to keep the leach flat.

**Batten Down.**--

Putting tarpaulins over hatches or skylights, and securing them by iron bars or wood battens.

**Beach.**--

A shore. To beach is to lay ashore, or strand.

**Beach Boats.**--

Flat floored boats that can be readily beached.

**Beacon.**--

Stake, boom, or post put on a sandbank or shoal as a warning for vessels.

**Beacon Buoy.**--

A buoy with a cross, ball, or triangle, &c., on the top.

**Beam.**--

A timber that crosses a vessel transversely to support the deck. The breadth of a vessel. "Before the beam" is forward of the middle part of a ship. The wind is said to be before the beam when the ship makes a less angle than 90° with the wind. A beam wind is a wind that blows at right angles to a vessel's keel. "Aft the beam" is towards the stern.

**Beam and Length.**--

The proportion a vessel's beam bears to her length varies according to her type. In sailing yachts it is found that for cruising a good proportion is about three and a-quarter to three and a half beams to waterline length.

**Beam Ends.**--

A vessel is said to be on her beam ends when she is hove down on her side by the wind or other force, so that the ends of her deck beams are on the water, or her deck beams perpendicular to the water. However, in sea parlance, a ship is said to be on her beam ends when knocked down by a squall to say 45 degrees, so that when a ship is described as being on her "beam ends" the meaning need not be taken literally.

**Beam Trawl.**--

A trawl whose mouth is extended by a long spar or beam, as distinct from the otter trawl, which is distended by boards.

**Bear, To.**--

The direction an object takes from a ship expressed in compass points or by points in the vessel; as in reference to another vessel she bears S.E. or W.S.W., &c., or on the port bow, or weather bow, port beam or weather beam, port quarter or weather quarter, &c.; or two points on the weather bow or port bow, &c.

**Bear a Hand There !** --

An admonition to hurry.

**Bear Away, or Bear Up.**--

To put the helm to windward and keep the vessel more off the wind. Generally used in close-hauled sailing when a vessel begins to alter her course by sailing off the wind.

**Bearers.**--

The beams which carry the cabin floor or platform of a yacht, termed platform bearers.

**Bearings.**--

The direction between one object and another; generally the direction of an object on land to a ship. The widest part of a vessel which may either be above or below water. A vessel is said to be on her bearings when she is heeled over, so that her greatest breadth is in the water.

**Bearings by Compass.**--

An object is said to bear, so many points on the port or starboard bow, or port or starboard quarter, or port or starboard beam as the case may

be; or an object may be said to bear E.N.E. or E. or W., &c., from the point of observation.

The usual plan of taking a bearing is to stand directly over the binnacle, and notice which point on the compass card directly points to the object. A more accurate way of taking bearings may be followed thus on each quarter-rail abreast of the binnacle, have a half compass plate of brass fixed, or mark off compass points on the rail, and let two opposite points (say north and south) be in direct line or parallel with the keel. A pointer or hand, eight or nine inches long, must be fitted to the plate, to ship and unship on a pivot; move tire pointer until it points directly to the object, then read off the number of points it is from the direction of the ship's head. Next observe the direction of the ship's head by the binnacle compass; if the ship's head points N., and the pointer showed the object to be, say, four points away westerly from the direction of the ship's head, then the object will bear N.W., and so on. If very great accuracy be required, and if the ship be yawing about, one hand should watch the binnacle compass, whilst another makes the observations with the pointer.

An object is said to bear "on the bow" if its direction in relation to the ship does not make a greater angle with the keel of the vessel than 45°. If the direction of the object makes a greater angle than that it would be said to bear "before the beam" ; next on the beam, then abaft the beam, on the quarter, right astern.

**Beat.**--

To beat to windward is to make way against the wind by a zigzag course, and frequent tacking.

**Beating to Windward.**--

**Becalm.**--

To deprive a vessel of wind, as by one vessel passing to windward of another.

**Becalmed.**--

In a calm; without wind.

**Becket.**--

A piece of rope used to confine or secure spars, ropes, or tackles. Generally an eye is at one end; sometimes an eye at either end; or a knot at one end and an eye at the other.

**Beef.**--

Manual strength; generally the weight of the men hauling on a rope. "More beef here" is a request for help when hauling. Probably the term originated with the casks of beef used for food on shipboard.

**Before the Beam.**--

Towards the bow or stem of a vessel.

**Before the Mast.**--

A term used to describe the station of seamen as distinguished from officers. Thus a man before the mast means a common sailor, and not an officer. The term owes its origin to the fact that the seamen were berthed in the forecabin, which is usually "before the mast."

**Before the Wind.**--

Running with the wind astern.

**Behaviour.**--

The performance of a ship in a seaway or under canvas is generally termed by sailors her "behaviour."

**Belay That.**--

An order given whilst men are hauling on a rope, &c., to cease hauling and make fast to the last inch they have got in. Also slang for cease talking or fooling.

**Belay, To.**--

To make fast a rope or fall of a tackle. In hauling upon a rope the signal to cease is usually, "Belay!" or "Belay there!" "Belay that !" or "Avast hauling ! Belay!"

To belay the mainsheet in small boats where the sheet travels on a horse through a block. The block will travel on the horse by a thimble eye strop; the sheet will be spliced to the clew cringle in the sail and rove through the block. Bring the fall of the sheet down to the pin under the stern seat, round which pin take a single turn then take a bight and jam

it between the sheet and the seat, and a slight pull will release the sheet. The sheet can be belayed in the same fashion by a turn taken under a thole pin in the gunwale; or a bight of the fall can be taken and made fast round the sheet above the block by a slippery hitch. A through pin is fitted into the transom as shown. The fall of the sheet is brought round the pin outside the transom, then round the pin inside the transom, and a bight jammed in between the transom and sheet.

**Belaying Pins**--

Pins in racks, in cavels, spider hoops, &c., to make fast ropes to.

**Belaying the Binnacle**--

A slang term applied to the acts of a greenhorn or sham sailor who uses unseamanlike terms, or misapplies well known terms, or makes unseamanlike or impracticable suggestions.

**Bell Buoy**--

A buoy with an iron cage upon top of it, containing a bell which is struck by a hammer or hammers moved by the heave of the sea.

**Bells**--

The manner of keeping time on board ship by striking a bell every half hour. Thus one bell is a half hour, as half-past twelve; two bells one o'clock; three bells half-past one, and so on until eight bells are struck, which would be four o'clock. One bell would then be begun again and proceed up to eight o'clock. Thus eight bells are struck every four hours, the duration of a watch. Except in the afternoon when, to change the order of the watch, one bell is struck at six p.m., dividing the time from 4 p.m. to 8 p.m. into two dog watches of two hours each.

**Below**--

A general term for the under-deck space. To go below is to descend from the deck to the cabin, or to under the deck. A seaman always goes "below," and never "downstairs." It is considered very green and landsman-like to hear a person on board a vessel speak of going "downstairs" for below, or upstairs for "on deck."

**Below! or Below There !**--

A mode of hailing or attracting the attention of the crew below by those on deck.

**Bend.**--

To fasten a rope to another I to fasten a rope to a spar; to bend a sail to a yard, &c. A knot, a mode of fastening a rope to a spar, &c.

**Bends.**--

The wales of a ship. Stout planks on the side of a ship.

**Beneaped.**--

Aground for want of water, owing to neap tides. The rise and fall of neap tides during quarter moons are lees than during the full and change; consequently, if a vessel got ashore during a high water spring tide she might have to remain all through the neap period.

**Bermudian Rig.**--

The mast of a Bermuda rigged boat is very long, and is often placed far forward with a considerable rake aft, and the sail set upon it is of the well-known sliding gunter shape. The objection to the rig before hollow spars were invented is the long heavy mast placed in the eyes of the boat, and although the sail stands well when hauled in on a wind, yet off the wind it causes some trouble, as it is often very difficult except in very strong breezes-to keep the sail from falling on board.

**Berth.**--

A place to sleep in; a cabin. Employment.

**Berthed.**--

The situation of a ship when anchored.

**Berthon's Logs, or Speed Indicators.**--

A log invented by the Rev. E. Berthon. A tube passes through the keel, and the water rises in this tube in proportion to the speed of the vessel through the water. A simple mechanical contrivance of weight, line, and pulley serves to indicate the speed on a dial.

**Bevel.**--

In shipbuilding, the departure from the square a timber is made to take to suit the inclination of a plank. An oblique edge of a piece of timber or plank.

**Bevelling Board.**--

A piece of wood used by ship builders on which the angle of the bevels for timbers are marked in lines.

**Bibs.**--

Pieces of timbers fastened to the hounds of ships' masts to support the trestle trees.

**Bight.**--

A loop or part of a rope doubled so as to form a loop, thus:

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or, the deepest part of a bay.

**Bilge.**--

The round in a vessel's timbers where they begin to approach a vertical direction.

**Bilged.**--

A vessel is said to be bilged when her framing is broken in, or damaged along her bilge by grounding, or falling down when shored up by the side of a wharf.

**Bilge Keels.**--

Pieces of timber or steel plates (sometimes termed rolling chocks) fitted longitudinally on a vessel's bottom, so that she may take the ground readily and not damage her bottom. Bilge keels, however, now fulfill different offices and are fitted to large ships to assist in checking their rolling. Nearly all beach boats are fitted with bilge keels, and to some extent they prevent a boat making lee way; of course only the lee bilge keel can so operate to any useful extent, and the effectiveness of this one would be interfered with by the disturbed state of the water near it. Bilge keels, if very deep, would affect very greatly a boat's handiness in tacking; also the lee one would assist in heeling the boat to an extent dependent upon the force of the lee way, and the area of the bilge keel; on the other hand, bilge keels will tend to check the sudden heeling of a boat, for the same reason that they cause the process of rolling to be more slowly performed, because they have to move a body of water. In steel and iron built steam yachts, bulb iron bilge plates are often fitted and check the rolling.

**Bilge Kelsons.**--

Stout pieces of timber fitted inside a vessel in a fore-and-aft direction along the bilge to strengthen her.

**Bilge Strakes.**--

Thick plank worked longitudinally in the ceiling of a vessel inside along the bilge, or over the heads and heels of the frames, to strengthen her-used instead of bilge kelsons, and through fastened.

**Bilge Water.**--

The water inside a vessel, which in flat-floored crafts may rest in the bilge.

**Bill.**--

A point of land; also the extreme points of the flukes of an anchor.

**Bill Boards.**--

Pieces of wood fitted to the head of a vessel to protect the plank from the fluke of the anchor.

**Bill of Health.**--

A document wherein it is certified that the condition of the crew is healthy or otherwise. Hence a clean bill of health means that all the crew are free from disorders, and a foul bill of health the contrary.

**Bill of Lading.**--

A document setting forth the cargo of a ship, certified by the master.

**Bill of Sale.**--

A document by which a vessel is transferred from one owner to another. A "Bill of Sale" must be produced before a register can be transferred. Forms of Bill of Sale can be procured from Waterlow and Sons, printers and stationers, London, E.C.

There are several points to which attention should be given before concluding a purchase. Wages form a prior claim on every vessel. It is therefore essentially necessary that a purchaser should satisfy himself that no claims of this description exist; or he may find, after he has completed his purchase, that he has some further large amount to pay before he can call the ship his own. In 1890 a case occurred in which the mortgagee of a large steam yacht, after taking possession, had to

defend an action in the Admiralty Court, brought by the late master for wages and necessary payments, and eventually had to pay a large sum to settle these claims. It should also be seen, before a purchase is completed, that possession of the yacht can be given, and that she is in the hands of no shipbuilder who has a lien upon her and a right to detain her for work done. With regard to yachts, of course claims for salvage seldom arise; but it is just as well to remember that, if they do exist, they form a claim against the vessel.

As to the sale of yachts, very little need be said, but there are one or two simple rules which it is absolutely necessary to follow. A vendor should never, under any circumstances, give up possession of his vessel until he has the purchase-money in hand. A breach of this rule has not infrequently produced rather serious consequences. In 1890 an owner sold his vessel to an apparently rich man, and very weakly gave him possession. He had to sue for the purchase-money, and to get the sheriff to seize and sell the yacht again, at a considerable reduction in price, before he was paid. Fortunately for him, he did get his money eventually, although the purchaser became bankrupt within a few months after the transaction.

It is necessary to be very guarded in dealing with foreigners. A case occurred, some few years since, in which an American gentleman bought a schooner yacht, and was given possession before payment of the purchase-money. The purchaser thereupon proceeded to get under way for America, and neglected to pay for the ship. The owners pursued him in a tug and brought him back to Cowes; thus securing the vessel, but not the money.

Another rule which should be observed is never to send a vessel out of the country to a foreign purchaser until payment has been made in England. An owner may find it a very difficult matter to enforce payment in a foreign court. The purchaser may raise difficulties and objections to the yacht after she has got abroad, and the owner may have to bring his yacht home again, with the expenses of his crew and his outfit to pay.

Another point with regard to which vendors require to be careful is the commission payable on a sale. Few sales are effected nowadays without the intervention of an agent, and it is an ordinary practice to put a yacht into the hands of several agents for sale. A purchaser frequently writes round to every well-known agent for a yacht likely to suit him, and perhaps he gets particulars of the same vessel from three or four different agents. It is often very difficult to say which of them first

introduces the vessel to him, and who is entitled to receive the commission on the sale. It is not an uncommon occurrence for two or three claims to be made for commission on the same vessel; and it is very needful for the owner, before he completes his contract, to satisfy himself on this point, and to make sure that he will not be called upon to pay more than one commission on the sale of his yacht.

**Billy Boy**--

A bluff, round-ended vessel, common in the north, often rigged as a cross between a ketch and schooner, usually with a single square topsail.

**Binnacle**--

A case wherein the compass is contained.

**Bird's Nest**--

**Birlin**--

A rowing and sailing boat of the Hebrides.

**Bitter End**--

The end of a cable left abaft the bitt after the turns have been taken. Sometimes the anchor is shackled to the "bitter end" when the used end has become much worn. The extreme end of a rope.

**Bitts**--

Stout pieces of timber fitted in the deck to receive the bowsprit; also stout pieces of timber fitted in the deck by the side of the mast, to which the halyards are usually belayed.

**Black Book**--

A book kept at the Admiralty, or said to be, wherein is recorded the offences of seamen. Several yacht clubs have kept "black books," but they have been of little use, as owners showed a disinclination to insist that no man should be engaged in his yacht who was on the "black book."

**Blacking Down**--

Painting or tarring the rigging, or sides of a ship.

**Black Jack.**--

The black flag hoisted by pirates.

**Black Leading a Boat's Bottom.**--

It was formerly a common practice to black lead the bottom of boats, especially for match sailing, and the custom is still much followed. There were several methods of getting the lead on, and the following is as good as any:

First scrape the bottom clean of old paint, tar, &c., and stop open seams, nail holes, shakes, &c. Then put on a thin coat of coal tar, reduced by turpentine or naphtha until quite liquid. When dry and hard put on another coat, and if the boat is a large one this second coat should be put on by "instalments." When nearly dry, but yet sticky, put on the black lead, in fine powder. To get the powder on a dabber must be used; a sponge tied up in a soft piece of cotton cloth is the best thing for the purpose. Care must be taken not to attempt to put on the black lead in the sun or the tar will come through. On the other hand, if the tar is hard the black lead will rot "take hold." When the whole is thoroughly dry and hard, polish up with the ordinary brushes used by housemaids for grates.

**Black Paint.**--

A good mixture for the outside of a boat is thus made: to 6lb. of best black paint add half pint of good varnish and 1/2-lb. of blue paint.

Or, black 9lb; raw linseed oil 1 quart; boiled linseed oil 1 quart; dryers 1/2-lb.

For an iron yacht : 1cwt. of Astbury's oxide paint; 6 gallons of boiled linseed oil; 1 gallon of turpentine; 3 gallons of varnish; 21 lb. dryers.

*(Messrs Astbury's, King-street, Manchester.)*

**Black Varnish.**--

Modern racing yachts are generally coated on the bottom with a mixture known as black varnish. When the varnish is well mixed and put on by a skilful man it is generally considered the best bottom for racing. In hot weather, however, a black varnished bottom must be wiped off, touched up, and repolished (about every two weeks) or it will become slimy.

**Blackwall Hitch.**--

A hitch used to jam the bight of a rope to a hook, &c.

**Blade.--**

The flat part of an oar or screw propeller.

**Bleaching.--**

An American plan for bleaching sails is as follows:

Scrub with soap and fresh water on both sides, rinse well, then sprinkle with the following solution : slacked lime, 2 bushels; draw off lime water and mix with 120 gallons water and 1/4-lb. blue vitriol. This also preserves the sails.

**Blind Harbour.--**

A harbour whose entrance cannot readily be made out from a distance.

**Blisters.--**

Unsightly blisters on paint are generally caused by putting new paint upon the top of old, or using very thick paint. The old paint should be burnt or scraped off.

**Block.--**

A pulley. A single block has one sheave; double, two; three-fold or treble, three; and so on.

**Black and Block.--**

Chock-a-block. Two-blocks. When the blocks of a tackle are hauled close together. A vessel is said to take her main sheet block and block when the boom is hauled so much aboard that the two blocks come close or nearly close together.

**Blow, A.--**

A gale of wind.

**Blue Jackets.--**

Sailors.

**Blue Peter.--**

A blue flag with a white square in the centre; hoisted at the fore truck as a signal that the vessel is about to go to sea, and five minutes before the start of a race.

**Blue Water.**--

The open sea or ocean.

**Bluff.**--

A wall-like headland.

**Bluff-bowed.**--

Very full bowed, thus: xxx

**B.M.** --

Abbreviation for builders' measurement or tonnage, the formula for which is  $((L - 3/5 B) \times B \times 1/2 B) / 94$ . The length is taken from the after side of the sternpost in a line with the rabbet of the keel to a perpendicular dropped from the fore side of the stem on deck. This is "length between perpendiculars." O.M. is sometimes used, that being an abbreviation for "Old Measurement," which is the same as B.M.

**Board.**--

In beating to windward a board is the time a vessel is on one tack and the distance she makes on that tack.

Thus it may be a long board or a short board. Working to windward by a long board and a short board is when a vessel can more nearly lie her course on one tack than on another.

Thus, suppose the wind be S.W., and the vessel's course from headland to headland S.S.W., and the vessel can lie four points from the wind; then on the starboard tack the vessel will head S., or two points off her course; on the port tack she will lie W., or six points off her course.

The long board will be the one on the starboard tack.

A vessel is said to make a good board when the wind frees her on one tack; a bad board when it heads her. A stern board is to get stern way on whilst tacking.

To board a ship is to enter upon her deck, generally supposed to mean without invitation.

"By the board." To fall close by the deck. A mast is said to go by the board when it breaks by the deck and falls overboard.

**Board and Board.**--

Vessels are said to work board and board when they keep in company and tack simultaneously.

**Boat Builders' Union.**--

An association of boat builders, founded 1821, and called the "Sons of Sincerity Society of Ship-Boat Builders." Their place of meeting is the "City Arms," near Stepney Station, London. If any person desired to obtain a boat builder to assist in building a boat it could be done through this union.

**Boat Chocks or Skills.**--

Pieces of wood with a score in them to take the keel of boats when they are lifted in upon deck.

**Boat Hook.**--

A wood pole with a metal hook and prong at one end; sometimes with two hooks. A yacht's gig has two boat hooks—one for the use of the bowman, another for the stroke; by these means a boat is held alongside the stops of a jetty or by the gangway of a vessel, &c.

**Boat Keeper.**--

The man left in charge of a boat when the other part of her crew go on shore.

**Boat's Crew.**--

Men told off to always man a particular boat, such as the gig, cutter, or dinghy of a yacht.

**Boats' Etiquette.**--

It the person in charge of a yacht's boat desires to salute a passing boat containing an admiral, captain, commodore, or other person of consequence, he directs the crew to lie on their oars as the boat passes, and to raise their hats or caps. The owner on leaving his yacht with a party is the last in the boat and the first out; and on leaving the shore is last to get into the boat and the first to board the yacht. This is the custom in the Royal Navy (the senior officer taking the place of the owner), in order that the admiral, captain, or other person might not be kept waiting alongside, which might be an unpleasant situation in bad weather. Thus the saying "the captain is the last in and the first out of a boat."

**Boatswain.**--

An officer who takes charge of a yacht's gear, and it is his duty to superintend all work done upon the spars, rigging, or sails. He also takes charge of all spare gear and sails, and sees that everything on deck and above deck is neat, clear, and ship-shape. He must in every sense of the word be a thorough seaman, and must know how all work upon rigging and sails should be done. As he has constantly to handle the sails and rigging, he necessarily has a knowledge of their condition, and it is his duty to report all defects in the same.

**Boatswain's Call.**--

A whistle consisting of a hollow ball and a tube leading to a hole in it.-- By varying the sounds the men are "piped" to their work just the same as soldiers are ordered by the sound of a bugle. The pipe is seldom met with in English yachts, except in some of large size, and the boatswain has little to do with giving orders.

**Bobstay.**--

The stay from the bowsprit to the stem.

**Body.**--

Part of a vessel's hull, as fore-body, middle-body, and after-body. A vessel is said to be long-bodied when the fullness is carried well towards the ends ; short-bodied when the fore-and-aft lines taper very suddenly; a long-body thus means a great parallel length of middle-body.

**Body Plan.**--

A plan which contains the cross sections of a vessel. The midship section or largest section is generally shown on the right-hand side of the middle line of the body plan; sometimes on both sides.

**Bollard.**--

A stout timber to fasten ropes and warps to.

**Bollard Timbers.**--

The bollard timbers of a vessel are the same as the knightheads; originally the knightheads were carved figures of knights (fitted near the foremast to receive the windlass), hence the name knightheads.

**Bollock Blocks.**--

Two blocks in the middle of a topsail yard of square rigged vessel, used in hoisting.

**Bolsters.**--

Pieces of hard wood bolted to the yoke or lower cap on the mast for the rigging to rest upon. They are sometimes covered with leather or sheepskin with the hair on, or raw hide, to prevent the rigging chafing.

**Bolt.**--

A fastening of metal. An eye bolt is a bolt with an eye in it used to hook blocks, &c., to.

A ring bolt is a bolt with an eye and a ring in the eye. An ear bolt or lug bolt is a bolt with a kind of slot in it to receive the part of another bolt, a pin keeping the two together and forming a kind of joint. Bay bolts are bolts with jagged edges to prevent their drawing. A bolt applies to a roll of canvas.

**Bolt Rope.**--

The rope sewn round the edges of sails. It is made of the very best quality hemp, dressed with Stockholm tar. A fore-and-aft sail is roped on port side, a squaresail on aft side. There is the weather (luff) rope, leech rope, toot rope, and head rope. Steel wire is used for the luff ropes of all racing sails.

**Booby Hatch.**--

A hatch on coamings used to give greater height in the cabin of small yachts, and which can be removed. It is also called a "coach roof."

**Boom.**--

A spar used to extend the foot of sails. To top the boom is to make sail and away. To boom off is to shove off a wharf, bank, &c., by the aid of spars. Stakes of wood used to denote a channel through shoal water are termed booms.

**Boom Irons.**--

Iron bands on square yards, with eyes, in which studding sail booms travel.

**Boomkin**--

A short boom of great strength, usually written "bumpkin."

**Bonnet**--

An addition to a sail by lacing a short piece to its foot; common in America and on some fishing vessel, not often seen in British yachts.

**Bore**--

A sudden tide wave, which rolls along rapidly at certain times on some rivers, and makes a great noise.

**Boreas**--

The north wind. An old sailor's saying is, "as cold as Boreas with an iceberg in each pocket." Popularly the god that rules the wind, as Aeolus is supposed to do.

**Bore Away**--

Did bear away. Said of a vessel that alters her course in a leewardly direction, as "she bore away."

**Bore by the Head**--

A vessel is said to bore by the head when she, whilst passing through the water, is depressed by the head.

**Boring**--

Forcing a vessel through loose ice in the Arctic seas.

**Boss**--

A slang American term for sailing master, or chief in command, or the manager or master of any business or show.

**Both Sheets Aft**--

When a square-rigged ship has the wind dead aft, so that the sheets lead aft alike, with the yards square.

**Bottom**--

Usually understood as the part of a vessel below the water line or bilge.

**Bottomry**--

The hull or bottom of a ship pledged as security for a loan. If the ship be lost the money is lost unless the lender has covered himself by other means.

**Bound**--

Encased with metal bands. Also referring to the destination of a vessel. Wind-bound means that a vessel is in a port or at an anchorage because the wind is unfavourable for her to proceed. Formerly square-rigged ships were everlastingly windbound, i.e., waiting in port because the wind was adverse; now they go out and look for a fair wind, and generally can sail so well on a wind that waiting for a fair wind would be considered an unpardonable piece of folly.

**Bow**--

The fore part of a vessel ; forward of the greatest transverse section. In taking bearings an object is said to be on the bow if its direction does not make more than an angle of 45° with the line of the keel.

**Bower Anchor**--

The anchor in constant use.

**Bow Fast**--

A warp for holding the vessel by the bow.

**Bowing the Sea**--

Meeting the sea bow on or end on, or nearly end on, as in close-hauled sailing. When the sea runs the with the wind.

**Bowline Haul**--

The foremost man in hauling on a bowline sings out, "One! two ! ! three ! ! ! haul ! ! ! !" the weight of all the men being thrown on the rope when the "haul" is shouted out. This chant is sometimes varied, thus :

*Heave on the bowlin'*

*When the ship's a rollin'-*

*Heave on the bowlin',*

*The bowlin' haul !!!*

The origin of this probably is from the fact that when the ship takes her weather roll the sails lift and so some of the bowlines become slack and can be got in.

Bowline Knot.--



**Bowlines**--

Ropes made fast to cringles in the weather leech of square sails, to pull them taut and steady when sailing on a wind. The bowlines usually lead into a bridle.

Sailing on a bowline means sailing on a wind when the bowlines would be hauled taut ; hence the phrase "sailing on a taut bowline." Sailing on an easy bowline means sailing with the sails well full, and the bowlines eased up a little, so that the vessel is not quite "on a wind" or close hauled.

**Bow-lines**--

Continuation of buttock lines, showing the outline of vertical fore-and-aft sections in the forebody. Generally the whole line is termed a buttock line.

**Bowsing**--

Hauling with a will upon a rope.

**Bowsprit**--

A spar projecting from the bow of a vessel. A running bowsprit is one that can easily be reefed in like a cutter's. Sometimes when a bowsprit is reefed in by the fids it is wrongly said to be housed ; a bowsprit is housed when run close in to the cranse iron. A standing bowsprit is one fitted in a shoe.

**Bowsprit Bitts.**--

Timbers fitted into carlines on the deck to take the bowsprit.

**Bowsprit Cranse.**--

The iron cap at the bowsprit end, to which the gear is spliced or shackled.

**Bowsprit Shrouds.**--

The horizontal stays from the bowsprit to the sides of the vessel.

**Boxhauling.**--

In tacking a ship to make her turn on her heel by hauling the head sheets aweather, and getting sternway on. Practised by square-rigged ships, sometimes in working narrow channels.

**Bowing off.**--

Assisting to pay a vessel's head off the wind by hauling the head sheets a-weather.

**Bow Scarf.**--

A method of joining two pieces of timber by letting each into the other one-half its own thickness; sometimes termed a butt scarf.

**Box the Compass.**--

To call over all the points of a compass in regular order. To understand the compass points and subdivisions.

**Braced Sharp Up.**--

Said of a square-rigged ship when the weather braces are slacked up and the lee ones hauled in taut so as to trim the sails as close to wind as possible.

**Braces.**--

Copper, gunmetal, or brass straps fitted round the main piece of rudder or rudder-post and fastened to the sternpost. -- Strengthening pieces of iron or wood to bind together weak places in a vessel. -- Ropes used in working the yards of a ship.

**Brace-up and Haul Aft!** --

The order to trim sails after a vessel has been hove to with sails slack.

**Brails.**--

Ropes fast to the leeches of fore-and-aft sails and leading through blocks on the mast hoops. ; need to haul or truss the sail up to the mast instead of lowering it and stowing it.

**Breach.**--

A breaking in of the sea. A clean breach is when a wave boards a vessel in solid form, and sometimes makes a clean sweep of the deck, taking crew, boats, and everything else overboard. To make a clean breach over a vessel is when the sea enters one side and pours out the other.

**Break Aboard.**--

When the crest of a wave falls aboard on the deck of a vessel.

**Breakers.**--

Casks for containing water. Also the disturbed water over reefs, rocks, shoals, &c.

**Breakers Ahead!** --

The cry when breakers are sighted close ahead.

**Break Off.**--

In close-hauled sailing, when the wind comes more from ahead so as to cause the vessel's head to break to leeward of the course she had been sailing. Not to be confused with "fall off," which means that the vessel's head goes off farther away from the wind.

**Break Tacks.**--

When a vessel goes from one tack to the other.

**Breaming.**--

Cleaning off a ship's bottom by burning the excrescences thereon. Sometimes when a vessel is not coppered small worms will eat into the plank. It is usual then to scrape her bottom, coal tar her, and then bream her off by fire in basket breaming irons.

**Breast Fast.**--

A warp fastened to a vessel amidships to hold her.

**Breasthook.**--

A strong > shaped wood knee used forward to bind the stem, shelf, and frame of a vessel together. Breasthooks are also used in other parts of a vessel. They are now usually made of wrought iron.

**Breeze.**--

Small coke fuel, to be bought cheap at gasworks.

**Breeze, A.**--

In sailor's parlance, a strong blow of wind; but generally a wind of no particular strength, as light breeze, gentle breeze, moderate breeze, strong breeze, &c.

**Breeze of Wind.**--

A strong wind.

**Breeze-up.**--

The wind is said to "breeze-up" when it increases fast in strength from a light wind.

**Breezy Side.**--

The windward side of an object.

**Bridles.**--

The parts of moorings to hold on by; many ropes gathered into one.

**Brig.**--

A two-masted vessel, square-rigged on both masts.

**Brigantine.**--

A two-masted vessel, differing from a brig by being only square-rigged forward. In the Cotton MSS. is preserved, under date Sept.18 (Henry VIII), an account of Ships of the King's Majesty between Gravesend and Erith. "The Great Henry" is among the number, and "Brygandyn, clerk of the ship, doth say that before the said ship be laid in the dock that her masts be taken down and bestowed in the great storehouse at Erith," &c. It is supposed by Charnock that Brygandyn invented the brigantine rig.

In the Harl. MSS. Edward VI occurs the following: "The two gallies and brigandyne must be yearly repaired."

**Bring To, or Bring Her To.--**

To luff or to come close to wind. To anchor.

**Bring to Wind.--**

To luff a vessel close to the wind after she has been sailing off the wind.

**Bring Up.--**

To come to anchor.

**Bring Up all Standing.--**

To come to anchor, or to a stop suddenly without notice, or without any sail being lowered. To anchor without lowering sail.

**Bristol Fashion.--**

In the best manner possible, Bristol shipbuilding and seamen formerly having a great reputation for excellence.

**Broach To.--**

To come to against the wind and helm.

**Broad Pennant.--**

The swallowtail flag of a commodore.

**Broadside On.--**

When a vessel moves sideways, or when she is approached by an object at right angles to her broadside.

**Broken Water.--**

When waves lose their form by breaking over reefs, rocks, or shallows, or by meeting waves from another direction, termed a cross sea.

**Broom at the Masthead.--**

A signal that a boat or vessel is for sale. The origin of the custom appears to be unknown; but it is ingeniously argued that brooms were hoisted as a signal that a man wanted to make a clean sweep of his vessel; or the custom may have arisen from the common practice of selling brooms in the streets.

**Brought To.--**

After a vessel has been sailing off a wind when she is brought to wind, or close to wind. Anchored.

**Brought Up.--**

At anchor.

**Brought Up with a Round Turn.--**

Figuratively, suddenly stopped: as for instance, when a rope is being payed out rapidly, if a turn or bight catches round some object and checks the paying out of the rope.

**Bucklers.--**

Blocks of wood used to stop the hawse pipes.

**Builder's Certificate.--**

A document given by the builder of a vessel to the owner when she is handed over, setting forth the builder's name, the name of the ship, place of building, manner of building, rig, dimensions, tonnage, N.M., and concluding with the following declaration:

"This is to certify that [I or we] have built at\_A\_, in the county of\_B\_, in the year\_C\_, the vessel\_D\_. The measurement, tonnage, and description of which are given above.

As witness my hand, this -- day of --

Signed, --"

This document must be produced when application is made for registration.

**Builder's Measurement.--**

**Bulkheads.--**

The athwartship partitions which separate a vessel into compartments, cabins, &c. Fore and aft partitions are also termed bulkheads. In yachts it is not customary to employ watertight bulkheads.

**Bull's Eye.--**

A block without a sheave, and with one hole in it. They are usually iron bound.

**Bulwark.**--

The side of a vessel above the deck.

**Bumboat.**--

A boat used by shore people to carry provisions on sale to ships.

**Bumpkin.**--

**Bunk.**--

A bed or place to sleep in in a cabin.

**Bunt.**--

The middle part of a sail. To gather up the bunt is take hold of the middle part of a sail and gather it up.

**Bunting.**--

Woollen stuff of which flags are made.

**Bunter.**--

A kind of tackle.

**Bunt Lines.**--

Ropes attached to sails to haul them up by.

**Buoy.**--

A floating mark.

**Buoyancy.**--

The quality of floating or being supported or borne up by a fluid. A vessel is buoyant in proportion as she is bulk for bulk lighter than the fluid she is supported in

**Burden or Burthen.**--

Supposed to mean the quantity in tons of dead weight that a vessel will carry. The quantity would be the difference between the weight or displacement of the ship when light and the weight or displacement of the ship when she was laden as deeply as prudent.

**Burgee.--**

A triangular or square flag flown at the truck as a kind of pennant. A commodore's pennant is a "swallowtail" burgee. A vice commodore's burgee has one white ball in the upper corner or canton of the hoist ; a rear commodore's, two balls placed vertically.

**Burgee, Etiquette of.--**

It is considered etiquette, if a yacht is on a station where there is a club established, and her owner is a member of the club, that the flag of that particular club should be hoisted as the yacht arrives on the station, although the owner maybe the commodore, or vice, or rear-commodore of another club. Frequently, however, in such a case the burgee is merely run up on arrival and then lowered and the commodore's pennant re-hoisted.

But if the yacht has two or more masts, a flag-officer can fly his pennant at the main, and another club burgee at the mizen or fore. If several yachts are lying at an anchorage where there is no club, the yachts will fly the burgee of the senior flag-officer present; but if there be two flag-officers of equal rank present, then the flag of the one whose club is senior by virtue of the date of its Admiralty warrant will be flown. In the Royal Navy, if two or three ships are cruising in company, the title of commodore is given by courtesy to the senior captain present ; but the rank does not seem very well defined, as, although an "appointed" commodore is said to rank next to a rear-admiral, yet he cannot fly his broad pennant in the presence of a "superior captain" without permission. In the case of the Yacht Navy, the senior officer would mean the one of highest rank; and where, in the case of clubs, the rank of the flag-officers is equal, seniority depends upon the date of the Admiralty warrant of the club which conferred the rank, and not upon the length of service of the officer but a vice-commodore of a senior club does not take precedence of a commodore of a junior club.

By the same rule when several yachts are present belonging to clubs that have no Admiralty warrants, the date of the establishment of the several clubs would decide the seniority of flag-officers of equal rank, but clubs with Admiralty warrants always rank before those without.

When the Royal Yacht Squadron was first established, members : flew private signal flags, continuing : their crest or other device, and the fashion has, during the last few years, been much revived. Owners of

yachts with more than one mast fly such a flag at the fore when the owner is on board, club burgee always at the main.

If a yacht has only one mast the flag can be flown from the cross trees. During meals American yachtsmen sometimes hoist a "dinner napkin", i.e., a square white flag at the fore or from the cross trees.

The Cambria in the Atlantic race flew her racing flag at the main, and the Royal Harwich Yacht Club burgee at the fore.

See "Yacht Etiquette" farther on.

When a yacht wins a club prize, it is etiquette to hoist the winning flag under the burgee of the club giving the prize if the owner is a member; he should also do the same when going on to another port if a winning flag is hoisted. The rule cannot, however, be observed if there be several prizes and different clubs involved.

**Burton**--

A tackle composed of two single blocks; a double Spanish burton consists of two single and one double block.

**Butcher's Cleaver Plate**--

This plate was devised to get a greater area of board immersed without increasing its extreme dimensions, and thereby increasing the surface for friction. The plate had an iron bar, C, two or three feet long riveted thereon; and pivoted by the bar. A is a portion of the keel. B is the plate. C is an iron bar riveted to the plate at D, and pivoted in the keel at E, and lifted by a jointed bar bolted at I.

The effective lateral resistance for any given plane would be considerably increased if one edge of the plane made a large angle with the direction of its motion ; and for this reason a square plate is not so effective as a triangular one.

**Butt**--

The joining or meeting of two pieces of wood endways. Butt and butt means that two planks meet end to end, but do not overlap.

**Butt End**--

The biggest end of a spar.

**Buttock**--

The after-part of a vessel from her run upwards.

**Buttock Lines.**--

Planes in a fore-and-aft direction, showing the outline of vertical fore-and-aft sections in the after-body.

**By and Large.**--

Backing and filling, which see.

**By the Board.**--

To fall overboard; as when a mast breaks short off at the deck.

**By the Head.**--

When the vessel is trimmed or depressed by the head so that her proper line of flotation is departed from.

**By the Lee.**--

To bring a vessel by the lee is when nearly before the wind she falls off so much as to bring the wind on the other quarter ; or the wind may shift from one quarter of the vessel to the other without the vessel altering her course.

**By the Stern.**--

The contrary to being down by the head.

**By the Wind.**--

Close hauled; hauled by the wind.

**C.**

**Cable.**--

A rope or chain by which a vessel is held at anchor.

The length for a cable, according to the Admiralty, is 120 fathoms. The length of a cable for a yacht varies from 45 fathoms for a 10-tonner to 150 for a 300-tonner. A yacht of 60 tons should, however, have at least 75 fathoms.

**Cable's Length.**--

A measure of one-tenth of a sea mile, 600 feet, 101 fathoms, or 203 yards.

**Caboose**--

The cooking room or kitchen of a merchantman. Also the "galley fire" or cooking stove of a yacht or ether vessel.

**Cage Buoy**--

A buoy with an iron framework upon the top. Formerly "cages" were put on poles in intricate channels, and for two hours about the time of high water at night fires were lighted in them.

**Call**--

**Callipers**--

An instrument consisting of a "straight edge" beam with two legs, used for measuring the breadth of yachts, packages of merchandise, &c. Metal bowlegged compasses called callipers are used for measuring the diameter of spars.

**Calm**--

Stillness of the air. Stillness or smoothness of the sea. An unrippled sea. Dead calm, stark calm, flat calm, clock calm, glass calm, glass smooth sea, &c.

**Cambered**--

When the keel of a vessel has its ends lower than its middle, thus xxx . Opposed to rockered.

**Canoe**--

A kind of boat used in many parts of the world and distinct from row boats, as they are propelled by paddles, with the crew facing forward. There are paddles of one blade and two blades. Some canoes carry many occupants, some only one. They are variously built and usually sharp ended.

**Canoe Hatch**--

The double lines C are carlines, supposed to be seen through the hatch which is screwed to the two doffed ones; the ends of the latter are made to slide in a groove in the coamings. The middle carline is fastened to the deck and prevents the latter sliding too far, and stops the water getting into the well should any find its way under the hatch carline. A channel should be made round the rim of the well so that the person

sitting therein could fit an apron or waterproof into it after the fashion of the Esquimaux.

A preferable plan is to have the hatch and the frame on which it slides separate, so that it will fit over the rabbets round the coamings; then if the canoe upsets, the hatch will float off and free the canoeist.

**Cant Frames.--**

The frame in the bow and quarter of a vessel that are not square to the keel.

**Canvas.--**

**Canvas Back.--**

A term applied to boats covered with canvas to keep out the seas; also applied to yacht sailors who are fond of a salting.

**Canvasback Duck.--**

A wild duck common in America, and highly esteemed for the table.

**Canvas Boats.--**

These are boats made of canvas and used by the Galway fishermen, particularly at Dingle. The ribs of the boats are made of wood hoop, such as may be got off casks ; outside the ribs battens are nailed in a fore-and-aft direction; a keel to which the ribs are also nailed is rounded up at the ends to form stem and stern post. The canvas is about two feet wide, and runs fore-and-aft. There is an inwale and gunwale as usual at the top of the ribs, the canvas going between the two. These boats are usually 20ft. by 4ft. They are very light, one man carrying them easily. They are manned by a crew of four, each man using a pair of oars. A lug sail is carried off the wind. These boats get through a great deal of rough water by aid of the eight oars they are propelled by.

**Canvas Canoes.--**

Such a boat was built by Capt. J. Richards, R.N., in 1878, for the river Avon, 12ft. long, 3ft. wide, and 15in. in depth. She has a frame of American elm, fastened with rove and clenched copper nails and wire ; her floor is nearly flat, formed of 3/4-in. white pine wood, lined inside with sheets of cork to fill up the spaces between the timbers, and form a level and solid platform within. Above the floor and outside the timbers (which are 6in. apart, and twenty-three in number), instead of the

planking of an ordinary boat, there are stout fore-and-aft stringers of American elm three inches apart, outside all of which is stretched the thick No. 1 canvas skin of the outer boat. The principal materials required are keel of 1in. square ash ; gunwale, 1in square ash ; crosspieces of gunwales, 1in. square ash ; keel chafing pieces, 3/4-in by 1/2-in. ash ; fore-and-aft stringers, 1/2-in. by 1/4-in.; bilge stringers, 3/4-in by 1/2-in. ; twenty-three timbers, 3/4-in. square.

Within this structure and securely attached to it, although quite distinct from it, there is an inner canvas boat, 8ft. long and 2ft. wide (having a separate gunwale), in which the crew sit on the floor.

The deck space between the gunwale and coaming is entirely covered in by canvas, supported on a strong framework of wood and cane; and, being under ordinary circumstances quite secure from wet, was intended by Capt. Richards for the stowage of bedding, clothes, and provisions of the crew.

The gunwale and the coaming are strongly braced together, and the ends of the gunwale are additionally secured to the stem and sternpost by strong iron plates, with eyebolts above, in which are rove stout ropes, to moor the boat with when afloat, or suspend her to trees like a hammock whenever her crew may desire to sleep in that position.

The coracle is fitted with a couple of small light wheels and iron axle (weighing only about 12lb., and movable at pleasure in about a couple of minutes), which when attached to her keel afford her the locomotive advantages of a porter's truck.

The twelve-foot coracle weighs about 90lb., and draws three inches of water when light; but, with her crew of two men and her gear on board, she drew five inches forward and seven aft. An inch of this, however, is due to her false keel, which, with bilge pieces, give some lateral resistance when under sail in a seaway.

The entire structure was well saturated with boiled linseed oil, and then painted.

The inner boat can be disengaged at the gunwale, and removed altogether in about four minutes. One of the principal advantages claimed for this "double-shell boat" consists in the fact that the outer boat may be stove in without rendering her unserviceable or wetting her crew; and so long as the outer boat is intact, a sea may be accidentally shipped in the inner boat without dangerously affecting the stability of the vessel; and should both the outer and inner boats be swamped with water, the cork floor and cushions will, nevertheless, still afford her the properties of a life buoy sufficient for her crew.

The builders of these boats were Messrs. Hill, Canon's Marsh, Bristol. Price 6£ 10s. Carriage by rail 1d. per mile.

**Cap.**--

A figure of 8 iron band fitted to the masthead, bowsprit end, for jib boom, &c. Sometimes the yoke is termed the lower cap.

**Capful of Wind.**--

A puff of wind soon passing away.

**Capstan.**--

A mechanical contrivance for raising the anchor, said to have been introduced in Queen Elizabeth's reign. Sir Walter Raleigh says: "The shape of our ships have been greatly bettered of late. We have contrived the striking of the topmast, added the chain pump, devised studding sails, top gallant sails, sprit sails, and topsails. We have also lengthened our cables, and contrived weighing of the anchor by the capstan." Capstans very compact ill form are now made for yachts instead of the cumbrous windlass. The capstans most generally in use on board yachts are those manufactured by Reid and Co., Paisley; Cantelo, Southampton; W. White and Sons, Vectis Works, Cowes; Atkey, Cowes; Harfield and Co., Mansion House Buildings, E.C.; Blake and Sons, Gosport; and Simpson and Strickland, Dartmouth. The Reid, Cantelo, White, and Atkey capstan have winch heads so that they can be used without capstan bars.

**Capstan Bar.**--

Bars of wood by which the capstan is turned, and so made to wind up the anchor or raise any weight.

**Capstan Driven by a Motor.**--

The practical difficulty about applying an ordinary motor engine to a capstan with a common clutch gearing is that the motor runs at a high speed, and the sudden violent strain coming on the chain from the capstan with great force and shock is apt to break down the motor. Capt. E. du Boulay has invented a system which it is claimed will overcome this difficulty by means of a reducing gear which the firm, Thellusson and Co., Cowes, have patented. The illustration we give (Fig. 17) of the arrangement shows how it can be applied to a vessel. M is the main motor, driving the capstan C through the reducing gear B

and shafting S. The use of the capstan in the ordinary way by hand is not interfered with. The makers of this motor capstan are Pascall and Atkey, the yacht fitters, of Cowes, and they have fitted one of them to a 17-ton fishing yacht which was built at Southampton.

**Capstan for a Trawl.**--

A capstan for a trawl for a yacht of twenty or more tons is made at the Mount's Bay Foundry, Cornwall.

**Card.**--

The dial of a compass upon which the points are marked.

**Cardinal Points.**--

The compass points, E., W., N., and S.

**Careen.**--

To heel, to list, to haul over for cleaning the bottom.

**Carlins.**--

Pieces of timber fitted between the deck beams in a fore-and-aft direction.

**Carry Away.**--

The breakage of a spar, rope, &c.

**Carry Canvas.**--

A vessel is said to carry her canvas well if she does not heel much in strong breezes.

**Carvel Built.**--

Built with the plank flush edge to edge, and the seams caulked and payed.

**Cast.**--

Said of a ship when she fills on one tack or the other after being head to wind. Used generally on getting under way, as cast to port, &c. The word is variously used, as to cast anchor, to cast off a rope.

**Catamaran.**--

A small raft common in the East Indies. A double boat in use in America.

**Cat Block.**--

The block used in catting the anchor.

**Cat Boat.**--

A boat with one sail, like a Una boat.

**Catch a Turn.**--

To take a turn quickly with a rope round a belaying pin, or bitt, or cavel.

**Cathead.**--

Timber or iron projection from the how of a vessel by which the anchor is hoisted up to the rail, after it has been weighed to the hawse pipe.

**Catspaws.**--

In calms, when the water is rippled here and there with passing airs of wind, it is said to be scratched by catspaws. A "catspaw" is also a bight doubled in a rope.

**Caulking.**--

Driving oakum into the seams of a vessel.

**Caulking Iron.**--

A kind of blunt chisel used for driving oakum into the seams.

**Caustic Soda.**--

A mixture of three parts of caustic soda to two of unslacked lime is a good detergent. The soda is boiled in the water, and then the lime added. The mixture should be applied hot, and be of the consistency of thick whitewash. In applying it great care should be exercised so as not to allow it to touch the hands. A brush of vegetable fibre should be used, as the composition will destroy hair. Caustic soda is used for cleaning off old paint or varnish; the mixture should be put on nine or ten hours before it is scraped off if a very clean job is desired. If it is a deck that has to be cleaned it is desirable to damp it with fresh water before an application of the mixture; hence it is a good plan to apply it

on a dewy morning. Mahogany should not be cleaned with this compound, which turns it black. A mixture of two parts soda and one part soap, simmered together and applied hot, is sometimes used. Carson's "Detergent" (La Belle Savoyard, London), is an excellent substitute for caustic soda, but care should be taken in using it for decks, as it injuriously affects marine glue.

**Cavel** (sometimes spelt kavel or kevel).--

Stout pieces of timber fixed horizontally to the stanchions on bitts for belaying ropes to.

**Ceiling**.--

The inside planking of a vessel.

**Centre-Board** (a Temporary).--

The dimensions of a board for an 18ft boat are 6ft. long, 1ft. 10in. deep, and 1-1/2in. thick. The board is to be about 1ft. 6in. shorter on its under side than on its top side, the fore end sloping aft, and the aft end sloping forward; but the slope at the fore end is nearly double that at the aft end.

**Centre-board** (deflecting).--

All boards of a fixed pattern are more or less in the way, and "the American Goodrich deflecting centre-board" was invented to do away with all inboard casing and make a board of less draught accomplish as much as a deep one could. It is an ingenious, but rather unpractical, arrangement, not to be recommended.

The "board" consists of a thin sheet of stiff metal, swung to the keel by a long binge, and can be rotated at will by applying force to a lever at the after end. The metal plate is 30in. long and 9in. deep for canoes, and 36in. long with 10in. depth adapted for row-boats and general use. The end of the shaft ships into a small lug socket on the keel. It is held in place by turning up a screw in the back of the after box, driving the forward end home into the lug. To remove or unship, it is only necessary to back out the screw, draw back the board until the shaft drops out of the forward lug, then pull forward until clear of the box also. To control the angular position of the blade, a lever is introduced inside the canoe. The top of the after box has an opening with a forked slide slipping over the slot. This slide is pushed clear, the lever then slipped into the middle hole of three in the shaft end. If the board is to be kept plumb, draw to the forked slide, so that the prongs grasp and

hold the lever up and down. Leakage is prevented by having the shaft closely fit in the box. When so nipped, the blade is vertical, the same as is the case with an ordinary centre-board, and in this condition the canoe is prepared to sail in light airs, or before the wind, as it is impossible to trice up the blade. Being small, very thin, and with sides as smooth as you wish to finish them, no appreciable resistance will be experienced.

When heeling to a press of sail, or in beating up against the wind, the angle of the blade may be changed quickly to suit the demands of each tack. This is effected by shoving back the forked slide, and then pushing the lever up to windward, retaining it there by a small hook and eye supplied for the purpose. When going about, throw off the hook moves in a sideways direction; thus, an ardent pressure would be brought upon the upper side of the lee bilge keel, and this pressure would assist in a small degree in heeling the vessel.

**Centre-plate** (dagger).--

This portable plate is in much use in America for very small shallow boats and canoes.

**Centre-plates** (the strains and stresses of).--

Fig. 22 shows a boat heeled by a force represented by the arrow A, and this force also drives the vessel to leeward in the direction of the arrow. The motion in this direction is resisted, more or less, by the pressure of water on the hull and on the board B. This pressure is represented by the arrows CC. If, now, for the board we substitute a heavy metal plate, it is obvious that the weight of this D plate will act in the direction of the arrow E (Fig. 23).

The stress of the plate D acts in an exactly opposite direction to the board B. But, supposing the weight D exactly balanced the pressure CC on B, the board would have no straining effect whatever, but would rest free in its case as represented by F (Fig. 24).

This condition of equilibrium is only likely to endure momentarily, but the illustrations show how a heavy board may tend to reduce the strains on the keel and case. Of course the worst strains occur when a vessel is rolling in a seaway, whether she be before the wind or on a wind; and often it has been found dangerous to keep a board lowered when the vessel is hove-to, owing to the pressure set up by CC, which is much greater when a vessel is hove-to than it is when she is making high

speed through the water ; and also owing to the rolling, which is always more or less apparent in disturbed water.

At the time the inquiry was held into the loss of the *Captain* someone raised the question as to whether keels and bilge keels would add to stiffness under canvas ; it was properly pointed out at this inquiry that, so far as keels or bilge keels of wood are concerned, they tend to decrease statical stability, but on account of the resistance they offer to motion in the water they would check the sudden inclination of the vessel due to a sudden application of wind force by increasing time "amount of work to be done" in heeling ; in other words, they would increase the dynamical stability. However, as further pointed out at the inquiry, the lee bilge keel will have a tendency, when the vessel is sailing with a steady wind pressure, to cause an increase of heel beyond that due to the actual pressure on the sails. A vessel when sailing with the wind abeam or forward of the beam, makes more or less leeway, or moves in a sideways direction; thus, an ardent pressure would be brought upon the upper side of the lee bilge keel, and this pressure would assist in a small degree in heeling the vessel.

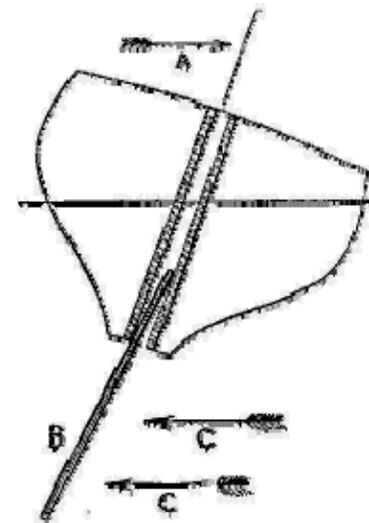


FIG. 22.

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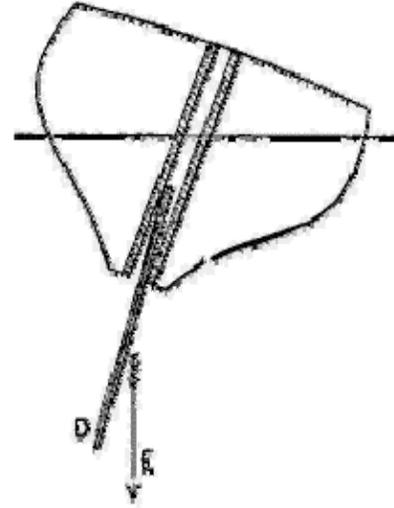


FIG. 28.

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23

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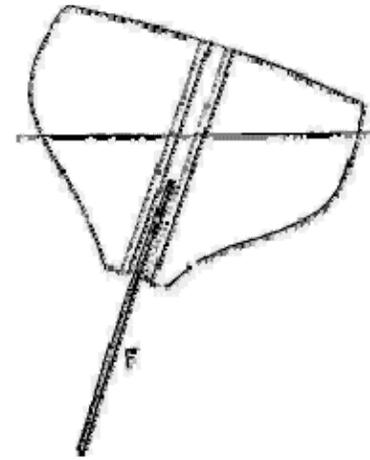


FIG. 24.

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24

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It is quite a common belief that a centreboard, irrespective of its weight, somehow increases stiffness; but such is not the case. It is also sometimes thought that a metal centreplate will enable a broad, shallow boat to carry as much canvas as can be got on her. This is a very great mistake, and we know from two or three examples that the effect of a centre-plate weighing nearly half a ton on a 25ft. boat, with a 11ft. beam, and about 1ft. 9in. draught amidships, is extremely small on the stability ; and a "skimming dish," if fitted with a metal centre-plate, could not in consequence dispense with her live ballast "hiking" out on the weather gunwale.

Certificate.-- See "Master's Certificate."

Chain Locker.--

The compartment in the bow of a vessel wherein the mooring chain is stowed.

Chain Pipe.--

Iron pipe on the deck through which the cables pass into the lockers.

Chain Plates.--

Iron braces on the side of a ship to which the shrouds are attached with the screw lanyards of the rigging above.

Challenge Cups.--

Cups which when won subject the yacht to be challenged to race for it again. Unless there is any stipulation to the contrary, a yacht can be altered during the period she holds the cup and still be eligible to defend it.

Channel Deep.--

Said of a yacht when she is heeled over until her lee channels are under water.

Channel Plates.--

Braces secured to the sides of vessels and extended by pieces of timber termed channels. The rigging screws are shackled to the channel plates.

Channels.--

Originally strong pieces of timber fixed on the side of a ship inside the chain plates to give greater spread to the rigging. The timber is now superseded by steel construction.

During the existence of the old tonnage rule up to 1887 the channels of yachts were much increased in width in order to give the necessary spread to the rigging in consequence of the narrowness of the hull compared with the height of the mast. But even with this extra spread it was found difficult to keep the mast in its place ; and in fact it could not have been done, but for the steel wire rope shrouds. These were set up bar taut and the drift of lanyard between the dead eyes was very short compared with what it once was.

From 1893 until 1910, when yachts were given more beam, outside channels were generally dispensed with altogether.

In some of the latest yachts (1911, 1912) owing to their great height of sail plan in proportion to their beam, there has been a tendency to return to the old practice of building outside channels. The new channels, to which powerful steel rigging screws holding the wire shrouds are attached, are scientifically constructed of steel.

Check, To.--

To check a sheet is to ease it a little. To check a vessel's way as by a warp, or by backing a sail. To check a tide is to keep a vessel from her course, in order to allow for the influence or drift of a tide. A vessel is said to check the tide when it throws her to windward. To check a vessel with the helm is to prevent her altering her course. (See "To Meet.")

C.  
Cheek - Cutter.

Cheek Blocks.--  
A sheave fitted on a spar inside a sort of cleat, as the cheek block for topsail sheet on the end of a gaff.

Cheeks of the Mast.-- The hounds.

Cheering.--  
It is an old custom in yacht racing for the losing yacht as soon as possible after the finish of a race to cheer the winner. The etiquette is as follows : The master of the losing yacht says to his crew: "Now, boys, give the Istria a cheer" ; his crew then line up on the side nearest that vessel and the mate hails : -"Istria, Ahoy ! hip, hip, hip, hurrah ! hip, hip, hip, hurrah! hip hip, hip, hurrah!" Then the winning yacht's crew similarly line up and hail the losing yacht and respond with three cheers given in the same way. The vanquished crew then give a single "hip, hip, hurrah!" to "come up with," or finish off. (See "Man Ship.") Sometimes a little ill feeling between crews may arise in the course of a race, but the owner should not permit any feeling to cause his vessel to omit to cheer a winning vessel.

Chill.--  
In very light winds, if a cloud passes overhead and a puff comes out of it, it is called a chill-probably on account of its coldness.

Chime or Chine.--  
The part of a waterway on the deck of a ship which joins the spirketting. The bilge joint of a barge is also termed a chime or chine.

Chinese Lug.-- A lug sail with battens.

Chips.-- A nickname for a ship's carpenter.

Chock.-- A block or wedge of wood.

Chock a Block.--

Said of two blocks when, in hoisting or hauling, the two blocks of a tackle are brought close together. Generally when two things are brought so close together that they cannot be got closer.

Chock Full.--

Full to the brim. Frequently used in close-hauled sailing to let the helmsman know that the sails are full enough, and he need use no more weather helm. (See "Ramping Full.")

Chock Home.-- Close up.

Choppy Sea.--

A short, steep sea, which makes a vessel continuously pitch and 'scend.

Chuck.-- To throw.

Chuckle-headed.-- Full or bluff in the bow; thickheaded.

Chuck to Windward.--

A weather-going tide is said to chuck a vessel to windward, and the contrary a lee-going tide.

Circumference of a Circle.--

The diameter multiplied by 3.14159 ; in algebra denoted by the Greek letter pi or perimeter.

Clamp.--

A thick strake of wood worked inside a vessel under the shelf.

Clamps.--

A kind of wedge vice, used in boat building ding to hold the plank together. Various contrivances of wood or metal used in fitting up a vessel or in fixing parts in her construction.

Clap on Canvas.--

To put on more canvas. "Clap on here!" is a request frequently made to idlers to assist in hauling on a rope.

Claw.-- To hang well to windward, as to "claw off a lee shore."

Claw to Windward.--

To beat to windward under difficulties. To claw off a lee shore is to boat off and avoid getting stranded.

Clean Full.-- Barely close-hauled when all the sails are full.

Clear for Going Afloat.--

A question often asked when work is being done on deck, and the vessel has to be put about: "Are ye all clear there for going about?"

Cleats.--

Pieces of wood with one or more arms fastened to spars, &c., for belaying to, or to prevent ropes slipping, &c, (See "Thumb Cleats" and "Cruickshanks' Patent Safety Cleats.")

Clench Work (spelt also "clencher," "clincher," and sometimes "clinker.") --

In boat building when the edges of the plank overlap, forming lands.

Clew.--

The lower corners of a square sail ; in fore-and-aft sails only the lower after corner is called the clew.

Clew Lines.-- Clew garnets. Ropes used for hauling up the clews of sails.

Clew Up.--

To haul up a sail by the clew lines for furling, &c. Also used as a slang term for shut up or cease.

Clinch .--

To fasten a rope by a half hitch, and seize the end hack to the other part; a method adopted with very large ropes or hawsers after they have to be bent to rings, &c. in a hurry. To clinch is also to beat the end of a bolt

or rivet until it forms a head; or to turn the end of a nail in so that it will not draw.

Clincher Work.-- See "Clench."

Clinker.--

The hard cinder which forms on furnace bars. Sometimes wrongly used for clincher work in boat building. (See" Clench Work.")

Clinometer.--

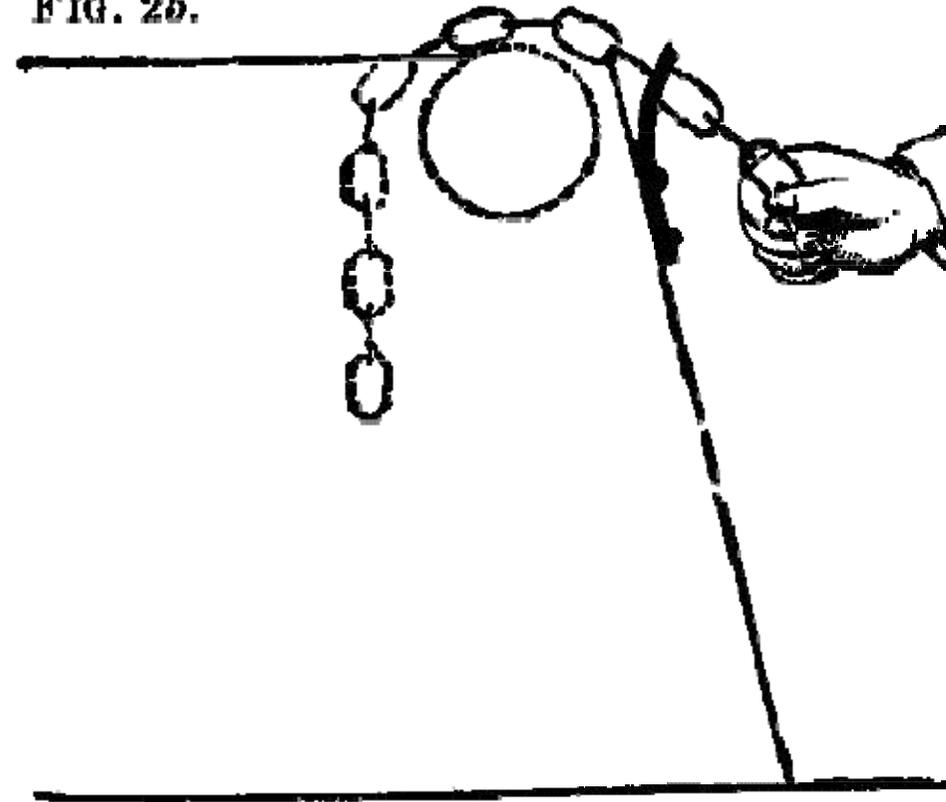
An instrument for measuring the angle of inclination or the extent of heel a ship has under canvas or whilst rolling.

Clip for Chain of Centre-Board.--

Captain F. du Boulay, of the Bembridge Sailing Club, recommends a clip made of galvanised iron as shown in Fig. 25 , and fastened just behind the sheave over which the chain works. One of the crew who has hold of the chain can, lowering his hand, drop the chain into the clip and jam it, but by keeping the chain level he can raise or lower his board freely.

FIG  
25.

**FIG. 25.**



Clip Hook.--

A double hook (hinged below the eye) whose parts overlap when attached to a ring, &c. A hook not much in favour, as it so frequently breaks or gets half detached.

FIG 26.



**FIG. 26.**

Clipper.--

A fine ship ; first applied to the sharp bowed ships that sailed out of Baltimore, U.S.

Clipper Stem or Bow.-- An overhanging stem or prow.

Clock Calm.-- So calm and still that the ticking of a clock could be heard.

Close Aboard.--

Near to, as the land is said to be close aboard when a vessel has approached it very closely.

Close-hauled.--

With all the sheets trimmed flat aft, and every rope that helps extend the sails hauled taut. Hauled as close to the wind as the sails will admit without shaking their luffs. When a square-rigged ship is close-hauled she is about from five to six points off the wind. A fore-and-aft schooner, with everything nicely trimmed for racing, will lie within four and a half points of the wind ; a cutter within four and a quarter points. This, of course, supposes the water to be smooth and the wind of what is known as "whole sail strength." In rough water a vessel cannot be sailed so close ; hi the Atlantic race between the Cambria and Dauntless, the former, although she had head winds for a large part of the time, for two reasons was never hauled up closer than six points; generally there was too much sea to admit of it without being half hove to, and in such long passages it was thought better to sail her along hard on the chance of the wind freeing; or if it headed her she could have been put on the other tack. (See "Wind.") while in wind, push hover over to opposite side, and hook again. Until well settled down to the

work, it is best to keep the lever approximately as desired by bearing against it with the knee or the foot. Should half the angle be sufficient, the lever may be allowed to come hack till it takes against the outer edge of the little sliding cap. When the board is to be got rid of temporarily for paddling or to clear a shoal, it is turned clear up under the bottom, as shown by the dotted line in one of the cuts, by taking hold with the lever in one of the outer holes of the three in the shaft.

Close Reefed.--

When the last reef is taken in, generally the fourth reef; but some modern yachts with laced mainsails have only three reef hands, and it is thought that when the fourth reef is wanted that it is time to set the trysail.

Close to Wind.--

Close hauled. As close to the wind as the sails will bear without lifting.

Clothes.--

The outfit given to a yacht's crew by the owner, consisting of trousers, frocks, caps, shoes, and neckerchief. When the yacht is paid off the men take the clothes with them, but if a man is discharged for misconduct, he is made to leave his clothes behind. Under any circumstances the men have no legal right to the clothes if the owner chose to retain them, as it is only a kind of livery.

Clothes Lines.--

A sail is said to be across a clothes line when it is girted by a rope. Lines used on board men-of-war for drying the sailors' clothes on washing days.

Cloth in the Wind, A.--

When the foremost cloth or luff of a sail is shaking through the vessel being brought too near the wind. A man is said to be three cloths in the wind when intoxicated.

Clove Hitch.--

Two turns of a rope round a spar, &c., the ends coming out under the middle part, one on each side.

Coach Roof.-- See "Booby Hatch."

Coal, Consumption of.--

With engines of the old type a steamer consumed from 4lb. to 6lb. of coal per indicated horsepower per hour. With modern two-cylinder compound engines the consumption is about 2lb. per horsepower per hour; and with three-cylinder engines and 180lb. boiler pressure about 1-1/2lb. Large oil motors consume about 6lb. per b.h.p. hour.

Coal, Stowage of.--

It is usual to allow 40 cubic feet per ton for the stowage of coal in bunkers Oil fuel goes about 44 cubic feet per ton.

Coal Tar.-- See "Varnish."

Coamings.--

A raised frame fitted to and above the deck for the hatches, skylights, &c., to rest upon. Sometimes wrongly spelt combings.

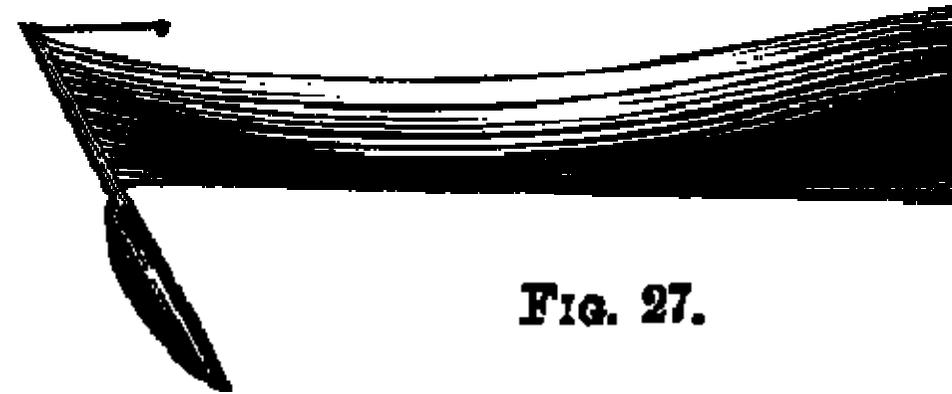
Coated.-- Sails stowed and covered up by the coats.

Coats.-- Painted canvas used to cover sails when they are stowed.

Coble.--

A boat common on the Yorkshire coast. Said to run over a sea very dry. The peculiar deep rudder makes them steer well in a sea.

FIG 27.



**Fig. 27.**

Cock Bill.-- See "A Cock Bill."

Cockpit.--

In a man-of-war, part of the ship below water where the middies were berthed, and where the wounded were attended in time of action. A kind of well in the deck aft, common in American yachts and in most small yachts in this country.

Coil.--

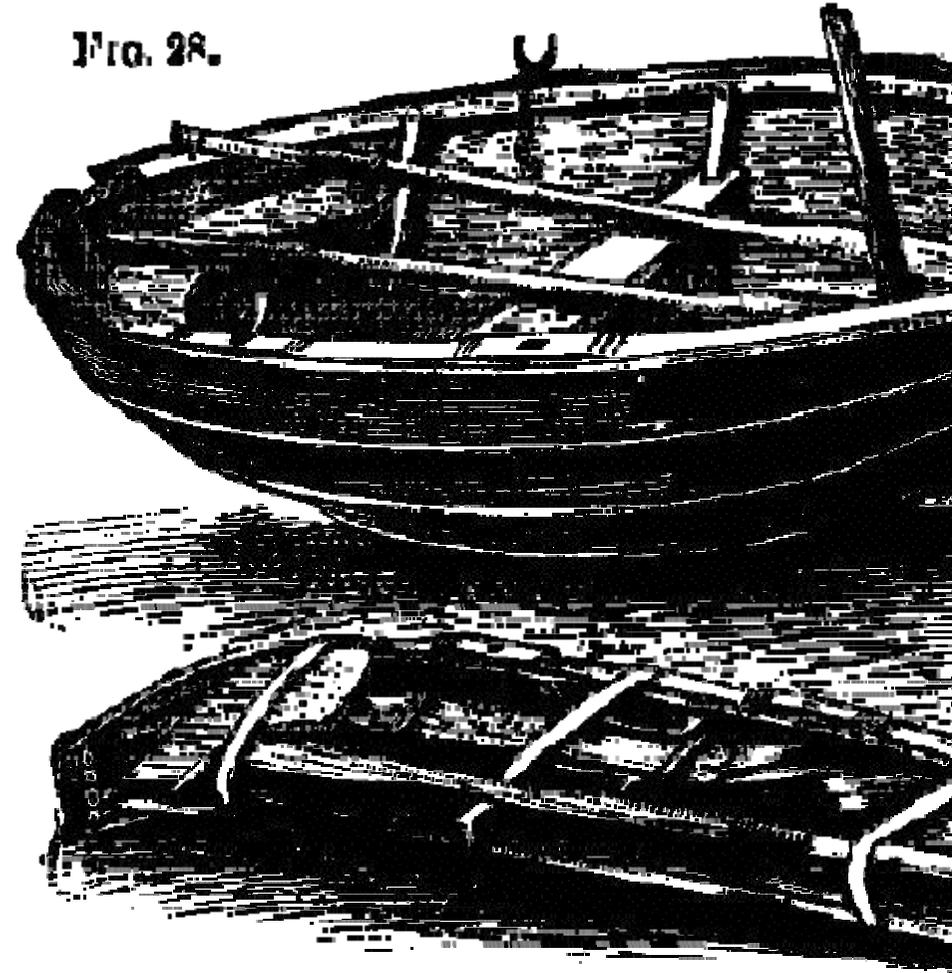
Ropes packed up in rings one over the other. To coil away.

Collapsible Boats.--

The collapsible boat which is best known to the public was invented by the Rev. E. Berthon in 1851, and all sizes of craft of this pattern from 6ft. to 30ft. in length for rowing, sailing, and pontoon work are now made by the Berthon Boat Company at their works at Romsey, Hants.

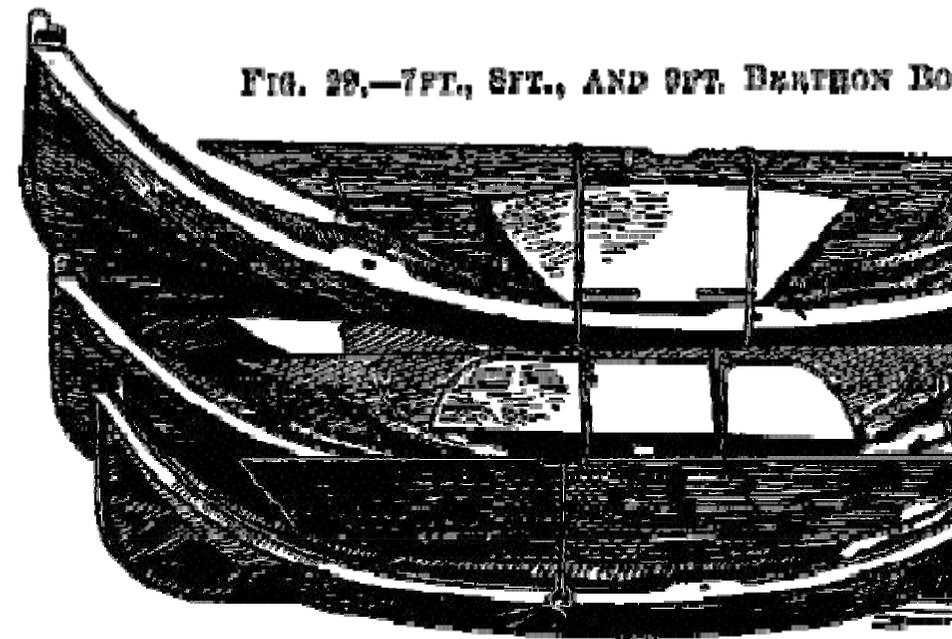
FIG  
28.

FIG. 28.



Berthon boats (Figs. 28 and 29) are made upon longitudinal frames of two skins of canvas. The keel, stem, stern post, gunwale, and longitudinal frames are of rock elm, and the keelson of pitch pine, the canvas skins being coated with a waterproof dressing. The thwarts are

pine, supported by stanchions of American elm. When the boat is extended she is kept open by struts of American elm and iron, which work automatically. Those struts are stopped in iron sockets, whilst their heads are made to fit against the under side of the gunwale. The principal features of the construction of the Berthon type are the double skin of canvas and the longitudinal system of the framework. The manufacturers claim that whilst the longitudinal frames or webs, which are broad and flat, and jointed together at the tops of the stem and stern posts, enable the boat to be folded like the leaves of a book, they also give the craft great elasticity, so that they cannot be stove in in the act of lowering.

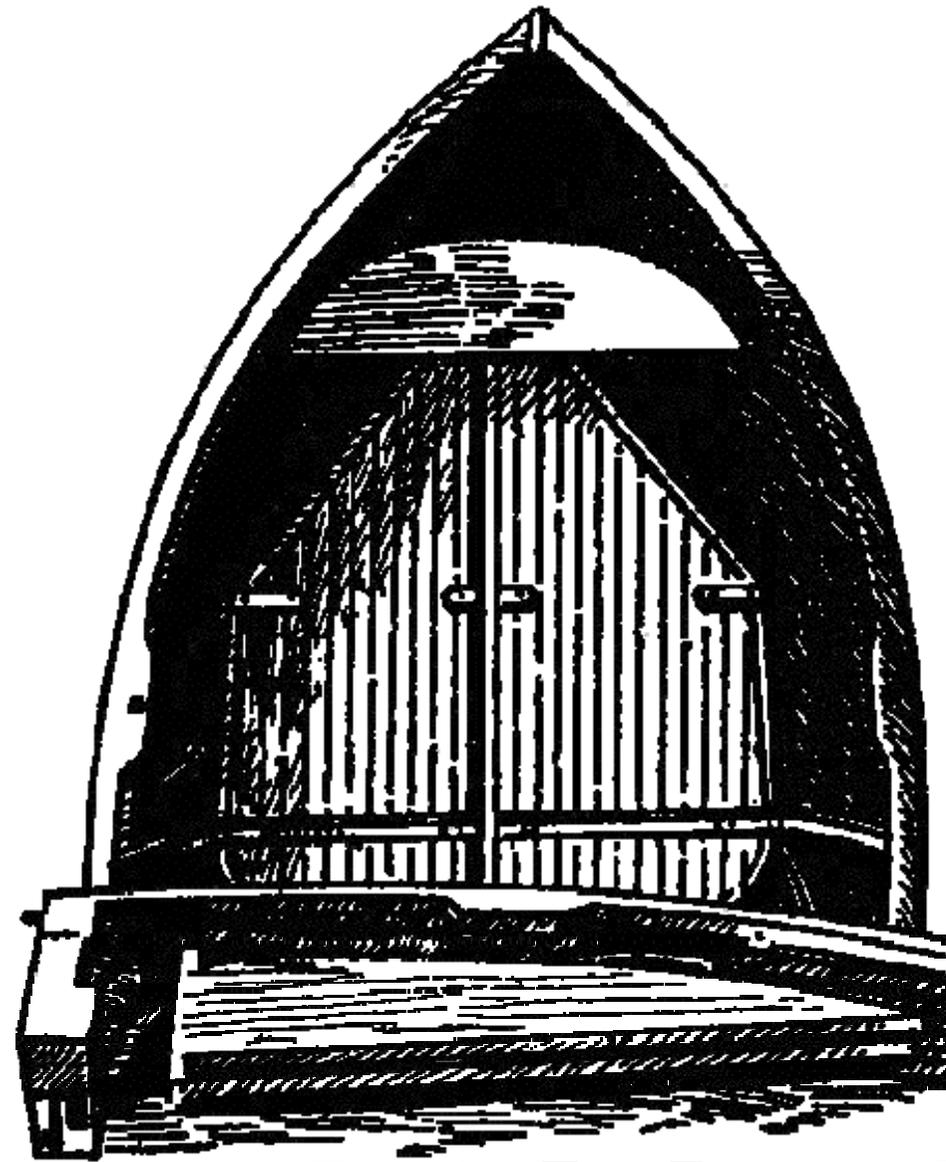


**FIG. 28.—7FT., 8FT., AND 9FT. BERTHON BOAT**

As a proof of this, at Port Elizabeth, the inventor, the late Rev. E. L. Berthon, caused one of these boats, 20ft. long, to be thrown from the taffrail of a ship into the water, but even this severe test did not cause the boat any damage. The Berthon Company occasionally make single-skinned boats, but they do not recommend them, and as the originators of the double-skinned system they claim for it the following advantages: A double-skinned boat when filled with people, if

perforated, will float, whereas a boat with one skin would sink. They presume that whereas a single-skinned boat, if rent, would simply founder, with the Berthon double skins, if a hole is made, there is the loss of buoyancy in one compartment only, and the others are left to keep the boat afloat, as the space between the skins is divided into compartments. From our own experience we can say that the Berthon boats are very carefully made, and the workmanship and materials used in the construction are both excellent. The weight of a dinghy to comply with the Y.R.A. rules would be about 168lb.

A peculiar form of boat made by the Berthon Company is the Duplex (Fig. 30). This is an ordinary Berthon boat constructed on the bi-part principle ; that is to say, the boat is capable of division transversely into two equal parts amidships.



**FIG. 30.—THE BERTHON L**  
**(One half Shut and the oth**

By this means a dinghy can be stowed in a remarkably small space. Indeed, a boat 12ft. long, 4 ft. 2in. wide, and 1ft. 9in. deep, when shut, can be passed through a hatchway or hole 13in. long by 6in. wide, and can, of course, be stowed in a compartment not shorter than half the length of the boat. It is obvious that for transport this division of the weight, as well as the saving of space, must often be of the greatest importance.

Another form of folding boat, and one which, on account of its extreme simplicity and lightness, has become particularly familiar to yachtsmen, is the James boat (Fig. 31).

This type was invented by Capt. E. C. F. James, and first built by him about twenty years ago. They are manufactured by Messrs. Courtney & Birkett, Southwick, Sussex. Unlike the Berthon boat, the feature of the James boat is that she is covered with a single skin of canvas. The canvas skin, however, is stretched upon longitudinal ribs or chimes made of rock elm in a manner which distributes over the entire frame an evenly divided system of strains, and when the boat is ready for use she possesses remarkable elasticity and strength. A yacht's dinghy on the James principle is only 7in. in thickness when closed, and the struts being hinged in their places and connected with each other, are readily opened and closed even on a dark night without the least trouble. The makers of the James folding boats prefer the single to the double skin, and aver that the former possesses the advantage of being impervious to damp, because no moisture can be retained between the skins, as might be the case with a double skinned boat. The rowing and sailing powers of the James boats are really phenomenal -- twice during the season of 1894 matches were held between rival canvas boats, the results of which were published in the Field of June 23 and August 18 in that year.

The first took place in the Channel between a James folding boat, specially designed for the occasion by Mr. Dixon Kemp, a sort of canvas canoe built by Mr. Sayce, and another canvas boat belonging to Colonel Douglas. The course was from Dover to Calais, the stake being £50 aside, and the conditions that the over-all length should not exceed 12ft. 6in., and the ballast not more than 1cwt., the boats either to be rowed, sailed, or paddled. The trio started from Dover at 9 a.m. in a

very light wind, Capt. James rowing his boat, whilst his rivals, Mr. Sayce and Colonel Douglas, paddled away in their canoes. In the afternoon the canoes were well over under the French coast, while the James boat was somewhere in mid-channel. A fresh southwest wind then sprang up, and enabled Capt. James to make a clean board into Calais, and cut off the canoes, which had drifted too far to the westward, and were nipped by the tide and hindered by a choppy sea. After an exciting race, Capt. James finished only five minutes ahead of Mr. Sayce, and won the stakes, whilst Colonel Douglas arrived half an hour later.

After this match the Berthon Boat Company challenged Capt. James to race his folding boat against one of theirs for £100 a side. In this race, which was sailed under Y.R.A. rules, the boats were 12ft. 6in. in length, and the course from Southampton Quay, round the Bell Buoy off Cowes, and back to Southampton. There was a nice breeze from north-north-west, and the pair ran neck and neck down to Netley with the wind dead aft. After a very close race the James boat rounded the lee mark off Cowes fifty-five seconds ahead of the Berthon; in the beat to windward back, however, the James boat obtained a commanding lead, and won by 18-min. 23sec. The race created a good deal of interest at the time, and at Cowes the Prince of Wales and the Duke of York waited in the vicinity of the Bell Buoy to witness the boats round it.

The canvas of which folding boats are made is extremely strong and durable, and although it has been alleged that they are liable to injury by rats and insects when stored for any length of time, there is really no truth in the suggestion. The Berthon Boat Company has supplied the Government with a large number of boats, which have been kept stored for many months in a Government store infested with rats, and although the vermin have actually bred in the folds of the canvas, there has been no instance of any injury having been done to the material. Frequently canvas boats have been driven against rocks and pierheads without receiving serious injury, and it is worthy of note that if a cut or rent is made in the canvas it can easily be mended by a sailmaker, shoemaker, or anyone accustomed to the use of a needle. Of course, every description of canvas boat must be liable under certain circumstances to be torn by snags or other sharp-edged obstructions, and care must be exercised in using them.

FIG. 31.-- The James Folding BOAT.

FIG 32.-- OSGOOD CANVAS Folding BOAT.

Another useful canvas folding boat is the Osgood (Fig. 32). She is said to be very stiff, light, strong, very portable, very light draft, and suitable for broads. This boat folds up concertina-like into small compass. Price of a 12ft. boat, complete with all fittings and receptacle, £9 10s. Osgood boats were made by Von Saal and Co., 9 and 10, Australian-avenue, London, E.C.

Collar.--

An eye or bight of a shroud, stay, or rope to go over the masthead as the collar of the forestay. Also a ring on a bolt.

Collier.-- A vessel employed to carry coal.

Collision.-- When one vessel comes into contact with another.

Colours.-- Flags denoting nationality, ownership, or other identity.

Comb.-- The crest part of a wave.

Comber.-- A big surf-like wave.

Combings.-- See "Coamings."

Come Aboard, Sir.--

A seaman's laconic speech when he reports his arrival on board to an officer in charge after leave.

Come no Nearer.--

An order to the helmsman not to bring the vessel nearer the wind.

Come To.--

To fly up in the wind; to come nearer or closer to the wind; to luff. Generally used when a vessel comes nearer the wind after having falling off the wind.

Come Up.--

Generally to slacken up. Whilst hauling on the fall of a tackle and the order comes, "Avast hauling there!" the hand that has to belay sings out, "Come up behind!"; all hands instantly release the fall, so that the one who has to belay may catch the turn round the belaying pin or cavel without "losing any." (See "Hold on the Fore Side" Mid "Belay.") In slang an admonition to cease fooling.

Come Up, To.--

A vessel is said to come up when the wind frees her so that she can head nearer her course, or look, or point her course. In beating, a helmsman in reporting the progress made by the vessel may say, "She has come up two points this tack, sir," according to the extent of the wind freeing; if the wind came more ahead, he might say she has broken off or fallen off two points, &c.

Come Up With.-- To overtake.

Commodore.--

An officer appointed to take the command of a squadron of ships.

His rank, whilst he holds the appointment, comes next to the captain of the fleet in the Navy list; neither does the Commodore hold precedence of a captain who is his senior, and would cease to hold the advantages of his office should a senior arrive within the limits of his station.

A rank conferred by clubs upon members; and there are Commodores, Vice-Commodores, and Rear-Commodores. Their duties are to see that the laws of the club, especially those that apply to matters afloat, are properly carried out. Commodores fly the broad pennant or swallow tail burgee. (See "Burgee.")

Companion.--

The structure with sliding roof which forms the entrance from the deck to the cabins below.

Compass Bowl.-- The bowl within the binnacle containing the compass.

Compass Card.--

A circle divided into 32 parts, called points; and each part is again divided into 4 parts, and the whole is divided into 360 degrees.

[table]

It is commonly believed that the mariner's compass was introduced into Europe in the fifteenth century, but it seems to have been well known in a primitive form in the twelfth and thirteenth centuries. In one of the popular songs written in the time of King John, it is related that the sailors who went on long voyages to Friesland and the East, knew their way by observing the polar star, but, when the sky was covered with clouds, and they could no longer see the stars of heaven, they had a contrivance which consisted of a needle of iron put through a piece of cork so that one end remained out. This they rubbed with the lodestone, and then placed it in a vessel of water, and the needle pointed without error to the polar star. This formed a primitive but fairly perfect mariner's compass. If an ordinary needle be rubbed on a magnet and gently dropped into a glass of water it will float and point to the north. (See "Fluid Compass.")

Compass Point.-- The 32<sup>nd</sup> part of 360 degrees or practically 11-1/4 degrees.

Complement.-- The full number; the whole ship's crew.

Composition for a Boat's Bottom.--

Day's composition is said to prevent the growth of weeds, barnacles, &c.

The boat should have a coat of common varnish first, and the composition should be applied before the varnish is quite dry. There are many good makes of anti-fouling composition, such as Holzapfell's, Blake's, Jesty's, &c Only a part of the boat should be varnished at a time, or the varnish will dry before the composition can be put on. One gallon carefully put on will cover about 400 square feet or the immersed surface of a 10-tonner. The composition should be kept well stirred whilst being used, as the ingredients are heavy, and soon settle to the bottom. Day's address is Limehouse, London.

Peacock's composition has been used on iron ships with good effect. The composition can be obtained of Messrs. Peacock and Buchanan, Southampton. This composition should be applied in the same manner as Jesty's. Two, three, or four coats of black varnish, or coal tar, should be first put on. The plates of an iron yacht should be thoroughly cleaned of rust &c. before applying the varnish. (See "Coal Tar or Black Varnish.")

The Protector Fluid Company, 8, Leadenhall street, E.C., have a poisonous composition, said to very effectually prevent the growth of barnacles.

Jesty's composition is in great request for coating the bottoms of iron and wooden ships. Before applying it give the vessels one or two coats of coal tar thinned with turpentine; when this has dried on apply a couple of coats of the composition ; a priming of black varnish made by Mr. Jesty is sometimes used instead of coal tar. The composition should not be put on over paint. It must be kept well stirred in the pot whilst it is being applied, as some of its ingredients are very heavy. The Jesty manufactory is at Gosport, Hants.

Blake and Son, of Gosport, manufacture a composition which is in much request.

Compressor.--

A contrivance to prevent the chain cable being veered too quickly, or to stop its veering altogether.

Conduct Money.--

Money kept back from a seaman's wages, but given up in whole at the end of an engagement if the seaman's conduct has been good; generally the amount kept back is 2s. per week, and a fine to that amount is levied for an offence.

Conning.--

Directing a steersman in the use or management of the helm, Telling him how to steer.

Contrary Wind.-- A wind that blows adversely down a vessel's course.

Copper Bottomed.--

The bottom of a ship sheathed with copper. According to Charnock (Vol. III., page 20), copper sheathing was first introduced in the Navy as a remedy against the attacks of worms in 1758. (See "Sheathing.")

Copper Fastened.-- Fastened with copper bolts and nails.

Coracle.--

A small wickerwork boat covered with hide used by the ancient Britons.

Cordage.--

A general term used to denote the rope used in the rigging of a ship.

Corinthian.--

A term in yacht parlance synonymous with amateur. The term Corinthian half a century ago was commonly applied to the aristocratic patrons of sports, some of which, such as pugilism, are not now the fashion. The name was adopted in consequence of the similarity between the fashionable young men of Corinth who emulated the feats of athletes, &c., and their modern prototypes.

The qualifications of a "Corinthian" sailor are variously defined. The Royal Alfred Yacht Club formerly enjoined that in all matches the amateur element shall consist of "members of the club, their sons, or members of a royal, foreign, or recognised yacht club, or naval officers."

This club in 1895 adopted the following qualification: :

"A person shall not be considered an amateur who is, or has been, employed for pay in any capacity on board a yacht or other vessel, commissioned officers of the Royal Navy, Royal Marines, and Royal Naval Reserve excepted ; also officers of the Mercantile Marine if they have never served for pay on board a yacht and are members of a recognised yacht club, but not anyone who is by trade or employment for wages a mechanic, artisan, labourer, or servant."

Anyone who is not, at the time being, working at a trade, or who is not an artisan, mechanic, labourer or menial, is generally regarded as a qualified amateur. A ship's carpenter is reckoned as a paid hand. Sometimes a steward and cook are not but they are not allowed to work in such cases if retained on board.

Some clubs in Corinthian matches do not allow any paid hand to be on board; others only allow yachts of 15 tons and under one paid hand, who is not permitted to touch the tiller. A later and more suitable plan is to have paid hands in the proportion set forth in the Y.R.A. rules. In all Corinthian matches an amateur must steer. (See also "Amateur.")

Corky.--

Light, buoyant, easily set in motion by the waves ; floating with a high side out of the water, &c.

Cornette.-- A swallowtailed flag.

Cot.--

A flat-bottomed boat or punt used for fishing. The cots used on the River Shannon are managed by two men with pole and paddle. They have long overhangs, some sheer, and somewhat slight proportion of beam. Their form is adapted to salmon fishing in rapid, rough shallow water. Particulars of their cost can be obtained from Messrs. Enright, fishing tackle makers, Castle Connell, Ireland. (See "**Wexford Flat-bottomed Boats.**")

Cot.--

The framework hinged to the lining of a yacht in the forecabin to form the bed when hammocks are not slung.

Counter.-- The projecting part of a vessel abaft the sternpost.

Course.--

Direction; the direction in which a vessel moves ; the direction from one point to another point which a vessel has to reach. The distance yachts have to sail in a match at a regatta.

Courses.-- The lower square sails of a ship.

Covering Board.--

The outside dock plank fitted over the timber heads. See "Plank Sheer."

Coxswain.--

The man who steers and has charge of a boat and her crew. Pronounced "cox'n."

Crabbing.--

When a vessel tumbles down under a heavy press of canvas, or when she sags to leeward badly.

Cracking On.-- Carrying a large quantity of sail.

Cracks in a Mast or other Spars, To Stop.--

When the spar is quite dry, run in marine glue; when the glue is hard, scrape out some of it, and stop with putty, coloured to imitate the colour of the wood.

Craft.--

A vessel; also used in the plural, thus a number of craft, or a lot of craft, means a number of vessels.

Crank.--

Not stiff under canvas; a boat that can be heeled or listed very easily ; generally a dangerous boat.

Cranse.--

An iron hoop banded with eyes, fitted to bowsprit ends or the ends of other spars.

Creek.-- An inlet of the sea.

Crests.-- The top edges of waves.

Crew.--

A ship's complement, and including every man employed on board in any capacity whatsoever, distinct from passengers. (See under "Seaman.")

Crimps.-- Agents for engaging seaman; a vocation not in good repute.

Cringle.-- A metal thimble worked into the corners and leeches of sails.

Cripple, A.-- A vessel that does not carry her canvas stiffly.

Cross Chocks.--

Pieces of wood used for filling in between lower futtocks where their heels do not meet on the top of the keel.

Cross-jack.--

The Cross-jack-yard is the lowest yard on the mizen mast. Pronounced "cro'-jack."

Cross Sea.--

Waves that come from divers directions, usually caused by sudden shifts of wind when it is blowing heavily.

Cross-trees.--

The spreaders for topmast shrouds. (See "Spreader" and also "Strut.")

Crow-foot.--

A number of lines attached to one line, and spreading out to support an awning.

Crown of an Anchor.--

The part of an anchor where the arms are joined to the shank.

Crow's Nest.--

A place of shelter at the topgallant masthead for a look out man, used by whalers in northern latitudes.

Crutch.--

The support for a boom when the sail is stowed something in this form :  
A is a wooden support for boom, BB iron uprights ; the upright parts, BB, fit into sockets on the taffrail. Crutches are sometimes made of two cross pieces of wood, thus: X; or an iron Y ; but these forms only admit of the boom being trimmed amidships, whereas with the form shown first the boom may be trimmed port or starboard, leaving more deck space and freer access to the companion when required. In schooners the crutch for the fore boom is generally so formed ; also a similar crutch is used to put the tiller in when the vessel is moored to keep it from flying about, and when by lashing the tiller lines across the vessel to either rail the passage fore and aft would be inconveniently obstructed. A crutch thus: Y is used to support the middle of the boom when' the sail is stowed and not slung by the peak halyards. A crutch is also the metal fork need instead of tholes in a row boat.

Cubic Measure of Water.--

One gallon contains 277.274 cubic inches, or 0.16 of a cubic foot. One cubic foot contains 1728 cubic inches, or 6.233 gallons. One ton of salt water contains 35 cubic feet. One ton of fresh water contains 35.9 cubic feet. A ton weight is equal to 2240lb. (See "Decimal Equivalents" and "Water.")

Current.--

The moving of the water in certain directions. To ascertain the rate or direction of a current when not at anchor or when becalmed, in a fog, or out of sight of fixed objects, see "Drifting."

Cutter.--

A boat heavier than a gig, and used in bad weather when the lighter boat might get swamped.

Cutter.--

A vessel with one mast rigged with mainsail, foresail, jib, and topsail, as shown in the accompanying sketch, and known as the "national rig." A cutter's sails are termed "fore-and-aft" sails, because they are always tacked and sheeted in a fore-and-aft direction by the same corners in contradistinction to sails which are tacked and sheeted from alternate as square sails are. (Fig. 34.)

FIG 34.

Formerly cutters carried a large square sail and square topsail or rafee; but those are now obsolete. A sloop as now understood differs from a cutter in only having one headsail, properly termed a foresail, instead of two headsails -- namely, a jib and a foresail.

D. - E.

D.-- The capital letter D is used by naval architects to denote the displacement or total weight of the yacht and her equipment, generally expressed in pounds or tons.

d.-- The italic letter d is used to denote the difference between the skin girth and the chain girth (approximately amidships) : measured with a tape and expressed in linear measurement generally in feet and decimal feet, or in metres. Hence a big bodied vessel is said to have "a small d measurement" and a fine bodied vessel a "large d measurement." A bulb keeled vessel thus has "large d measurement."

d Tax.-- A system of measurement of yachts by which the d is taxed and by which full bodied vessels are rated less than fine bodied vessels, thus inducing the designer to evolve a full bodied yacht suitable for cabin accommodation. The system was devised by Mr Alfred Benzons, a Danish yachtsman

Dagger Centre-plate.-- See "Centre-plate."

Dagger Knee.-- A piece of timber crossing the frames diagonally.

Dandy.-- A cutter rigged vessel with lug mizen aft set on a jigger-mast.

Darning the Water.-- When a vessel keeps sailing backwards and forwards, as before a bar harbour or pier, waiting for water or orders, &c.

Davit Guys.-- The stays or ropes used to keep the davits steady.

Davits.-- Strong iron stanchions with arms used for hoisting boats, &c

Dead Calm.-- Without a breath of wind.

Deaden-her-way.-- To stop a vessel's way by backing and filling, or by hauling a sail aback, or by yawing her about with the helm, &c.

Dead Eye.-- A circular block, with three holes in it (crow-foot fashion) without sheaves, formerly used to reeve the lanyards through for setting up the rigging.

Dead Flat.-- The midship section. The term is applied to the middle flat of a ship, where she gets no broader and no narrower ; that is, where the cross sections for some distance amidships are of the same size and form thus the side will present a "dead flat" for some distance; unusual in yachts.

Dead Lights .-- Strong shutters made to fit the outside of cabin windows-closed in bad weather. In yachts small circular lights are generally fitted with iron shutters inside or outside.

Dead on End.-- Said of the wind, when it blows straight down the course a vessel wishes to make. (See "Nose-ender," "Muzzler.")

Dead Reckoning.-- The calculation of a ship's position by the log, the courses she has made, lee way, set of currents, &c without an observation.

Dead Rise.-- The approach the floor timbers of a vessel makes to a vertical. In the case of ships, the frames in the after body are called the dead-risings, because they only rise from the keel at a sharp angle, all the middle frames starting out nearly horizontally from the keel. A yacht is said to have considerable dead rise on a very rising floor, when she is more or less of the V form, but really vessels of the T form have the greatest dead rise, as the heels of the floors forming the framing to take the garboards do rise nearly vertically.

Dead Water.-- The water in a vessel's wake, close to her sternpost, that follows the ship.

Dead Weight.-- Concentrated weight in a vessel's pattern, such as a heavy cargo of ore or ballast.

Dead Wood.-- The solid wood worked on top of the keel forward and aft.

Decimal Equivalent.--  
[table]

Deck.-- The platforms supported on the beams of ships. The old three deckers had upper deck, main deck, middle deck, lower deck, and orlop deck, no guns being carried on the latter. Below the orlop deck were the hold platforms, or decks. Yachts usually are said to have only one deck, i.e. the upper deck open to the sky; some large yachts, however, have a lower deck, laid and caulked. Smaller yachts have platform beams upon which the platform rests. The platform is the cabin floor or sole.

Deck Caulking and Stopping.-- See "Marine Glue."

Deck, to whiten.-- Make a mixture of 1-lb. oxalic acid to 1 gallon of water. Damp the deck with this and wash off.

Deep Sea Lead (pronounced "dipse lead").-- A lead of 28-lb. weight attached to a line of 200 fathoms. Now, automatically recording machines are generally used for deep sea soundings. (See "Lead.")

Delivery.-- The quarter wash of a vessel. A yacht is said to have a good delivery if on passing through the water no large waves are raised at

and about the quarters; she is then said to leave the water clean, to have a clean wake, clean delivery, or to run the water very clean aft; to have a sweet run, &c.

Demurrage.-- Compensation paid to the owner of a ship when she has been detained longer than reasonable by a freighter or other person at a port.

Depth, Moulded.-- The terms used in ship and yacht building and relating to the depth of vessels are numerous and occasionally confusing. For instance, there is draught of water aft and draught of water forward, extreme draught and mean draught. In a merchant ship, draught aft and extreme draught would most likely be the same, but in many yachts, the extreme draught is amidships, or nearly so, and the draught at the sternpost is frequently less than the extreme draught. The draught forward in most sailing yachts would be a purely fanciful quantity, on account of there being no straight length of keel forward of amidships to measure the draught from. Beyond this, formerly depth or depth of immersion was used to denote draught; and then there was moulded depth, that is the depth from the load line to the rabbet of the keel ; after this came depth of hold, which in a man of war meant depth from the lower deck, or orlop deck, to the ceiling above the kelsons, and in a merchant or carrying ship, or yacht, the depth from the upper deck.

The term "moulded depth" is now never applied to the depth of immersion, and when the term is used it is always understood to mean the depth as defined by Lloyd's, as follows: "The moulded depth of an iron or steel vessel is the perpendicular depth taken from the top of the upper deck beam at the centre at the middle of the length of the vessel to the top of the floors, except in spar and awning deck vessels, in which the depth is measured from the top of the main deck beam. In wooden and composite vessels the moulded depth is also taken to be the perpendicular depth from the top of the upper deck beam at the centre of the vessel amidships to the top of the floor frame." It will be seen that, even with this excellent definition of moulded depth, it may mean a great many things in the case of yachts with very hollow floors and great dead rise, or in the case of yachts with box keels the same as Vanduara, Galatea, and Wendur have. However, there is one definite

point to start from in all cases, and that is the "top of the upper deck beam at the centre."

Depth of a Yacht, to Measure.-- Very frequently it is necessary to know accurately the external depth of a yacht from rail to keel, or her draught from load line to keel. The following simple plan is a ready means of obtaining such depth and draught:

To obtain the depth take a straight-edged bar of wood (see e e, Fig. 35) which will be placed across the rail, at right angles to the keel. A small chain, f f, will be passed under the bottom of the yacht, and one end will be made fast on the bar at g, so that the chain just touches the bilge; the chain will be drawn tight, and the other end made fast to bar at h. The distance g h must be accurately measured on the bar, as also, when removed, must the length of the chain which passed from g under the yacht to h. (To obtain the points for the measurement of the chain, it would be found convenient to fasten a small piece of cord or yarn at the points g and h, immediately under the bar, before the chain is cast off.)

Having obtained these measurements, it will be an easy matter to find the depth i j. The distance g h can be laid off to scale, divided in the centre by a perpendicular, i j; half the length of the chain will then be laid off from g and It to intersect the perpendicular, as at j; the distance from i to j on the bar, measured by the scale, will be the depth required. The draught of water of the yacht will of course be found by subtracting her height out of water, from load line to rail, at the points where the depth was taken. If no scale be at hand, the depth can readily be found by calculation. Take half the length g h, which call k l (Fig. 35), and half the length of the chain, which call k m; subtract l from k m; multiply the remainder by the sum of k m and k l added together; the square root of the product will be the required depth. Expressed in algebraic language:

[formula]

Say k m is 10ft., added to k l 7ft., make 17ft. ; next 7 subtracted from 10 leave 3 and 3 multiplied by 17 make 51. The square root of 51 is 7.1, which would be the required depth. The mean draught would be found by taking the actual draught at several (say 4) equidistant intervals, commencing at the heel of the sternpost and ending at the stem; add

these draughts together, and divide the sum by the number of measurements taken, including those at stem and sternpost. If the forefoot is very much rounded away, the measurement at the stem will be 0, but in counting the number of measurements, that for the stem must be included. The Barrow Corinthian Yacht Club formerly included mean depth in their tonnage rule, and adopted, on the suggestion of Mr. R. S. White, the following plan for obtaining depth at any point without calculation. (See Fig. 36.)

A is the keel batten, graduated from centre, in feet and tenths, with slots marked C, at each end, to slide the side or depth battens to the exact beam of yacht.

B B. Side or depth battens, graduated at upper part in feet and tenths from top of keel batten, and secured to keel batten with thumbscrews marked D.

The manner of working is as follows:

Having obtained exact beam of yacht, set the depth battens B B at this distance apart on keel batten A, by means of thumbscrews D tightly screwed up. Dip the keel batten under keel until opposite marks on gunwale, where depth is required to be taken; then bring it close up to keel, and take readings off depth battens B B, until they correspond on each side--this being depth of yacht, keel to gunwale, in vertical line, as shown in sketch.

If the measurements have to be taken in a tideway, the batten A must be kept close up to keel to prevent its driving aft.

Depth of Hold.--In a single-deck vessel, the height between the keelson and deck.

Derelict.-- A vessel abandoned at sea. It is said that an owner's rights are not also abandoned if any live animal be left and found on board.

Derrick.--A kind of crane.

Deviation.-- A movement of the compass needle due to local attraction, principally met with in iron or composite ships, and distinct from variation.

Dhow.-- A large Arab vessel, usually lateen-rigged.

Diagonal Braces.-- Strengthening straps of iron that cross the frames of a vessel diagonally.

Diagonal Lines.--Lines which cross the sections of a vessel shown in the body plan, in a diagonal direction with the middle vertical line.

Diameter of Circle.-- Circumference multiplied by 0.31831.

Diminishing Strakes.--The strakes immediately above and below wales being the thickness of the wale on one edge, and diminishing to the thickness of the plank or' the other.

Dinghy.--A small boat of Bombay, with a settee sail. Also a small skiff, or punt, carried by yachts. (See "Portable Dinghy.")

Dinghy-man.--The man who has charge of the dinghy of a yacht, whose duty it is to go on shore on errands, &c.

Dip.--The inclination the compass needle makes towards the earth in high latitudes.

Dip the Ensign, To.--To lower the ensign as a salute, or token of respect. (See "Dipping the Ensign.")

Dipping Lug Sail.-- A sail hoisted by a halyard and mast hoop traveler. The sail is set to leeward of the mast, and the tack is usually fast to the stem or on the weather bow. In tacking or gybing the sail has to be lowered and the yard shifted to the other side of the mast. A plan has been proposed to perform this dipping by the aid of a topping and tripping line instead of by lowering the sail (see the sketch Fig. 37); but the balance lug, which requires no dipping whatsoever in tacking, is to be preferred to the best dipping arrangement. (See "Penzance Luggers" and "Split Lug.")

## FIG 37

### Dipping the Ensign and Burgee.--

The ensign is lowered or dipped as a means of saluting a commodore, &c., or member of a club. The junior member should be the first to dip. Sometimes, if no ensign is flying, the burgee is dipped ; but this strictly is contrary to the etiquette of the Royal Navy. It is usual to " dip" on passing a man-of-war or Royal yacht. A Royal yacht never answers the salute by dipping her ensign. Strictly it is etiquette for the blue ensign to dip to the white ; and red to the blue or white.

A club burgee. being a personal flag, is usually lowered half mast high in the case of death as well as the ensign. (See " Ensign," "Etiquette," "Saluting," &c.

### Discharge Ticket.--

A formal document given to seamen when they are discharged.

Dismantled.-- Unrigged: without sails or spars.

Dismasted.-- When a vessel loses her mast by violence or accident.

### Displacement.--

The quantity or weight of water a vessel displaces, which, in weight, is always equal to the total of her own weight, with everything on board.

### Displacement per inch of immersion.--

It is often necessary to know how much weight would have to be put into a yacht to sink her an inch or more deeper in the water or lighten her to a similar extent. Roughly, this can be ascertained by the following rule :  
Multiply the length on the load line by the breadth on the load line and divide the product by 600.

$(L \times B / 600)$

The quotient will be the weight in tons or fractions of a ton. This rule would not hold good if the yacht were lightened more than three or four inches or deepened to that extent. The rule is based on the assumption that the area of the load line is .7 of the circumscribing parallelogram. That is to say, the length and breadth multiplied together and again

multiplied by .7 will (approximately) give the area of load line. Divide this product by 12, and the area is reduced to cubic feet, and divide again by 35 and the answer will be given in tons or fractions of a ton. By this rough rule the displacement per inch at any part of the hull of the vessel (if the measurements are taken at the part) can be found approximately  
 $(LxB \times 0.7 / (12 \times 35)) = (LxB / 600)$

Distemper.--

Powdered colour mixed in strong glue size and applied hot. Sometimes the part to be covered is first coated with lime whitewash. A yellow distemper for funnels is thus made: 6lb. glue made into size and whilst hot added to 2/3 cwt. yellow ochre, 1/3cwt. whiting, reduced to proper consistency by warm water.

Divisions.--

The portions of a fleet ; as the starboard port, and centre divisions, the admiral in command always occupying the centre division. Prior to 1856, there were red, white and blue divisions, but now, as only the white or St. George's ensign is recognised, the divisions by colour have been done away with. (See "Admiral.")

Dock.--

A general name for a place to receive ships for repair or cleaning A ship is said to dock herself when placed in a soft tidal bed of mud (t she buries herself in it more or less. A dry dock is a basin into which a ship is floated and the gates closed upon her ; the water is then pumped out and the ship left dry, supported on a framework and by shores.

Dockyards.--

Places where ships are built ; usually, however, confined to Government yards.

Dog Shores.-- Pieces of timber used in launching ships.

Dog Vane.--

A light vane made of bunting, silk, or feathers, to show the direction of the wind, and sometimes put on the weather rail or topsail yard.

Dog Watches.--

The divided watch between four and eight in the evening ; thus the first dog watch is from four to six, and the second from six to eight. (See "Watches.")

Doldrums.--

The state of being becalmed. Parts of the ocean where calms are prevalent.

Dolphins.-- Stout timbers or stone pillars placed on wharfs to make fast warps to.

Dolphin Striker.--

The perpendicular spar under the bowsprit end by which more spread is given to the stay of the jib-boom. In a modern yacht the dolphin striker is a steel strut or spreader fitting into a socket in the stem, and it acts as a spreader to the bobstay. (See "Spreader" and "Strut.")

Dory.--

A flat-bottomed deep boat much used by American fishing schooners. (See Fig. 38.) The American schooner Ingomar in 1904 carried a number of dorys on deck in her passage across the Atlantic, and the late Captain Charles Barr considered them good sea boats, but said that Scandinavian and American sailors were more accustomed to them and could handle them better than English crews.

Captain Barr considered that every sailing yacht making an ocean passage should have ample boat accommodation for all persons on board, and by means of dorys this could easily be effected.

The dory is an awkward-looking flat bottomed boat, and some of the schooners carry as many as a dozen of them. They are of the proportions of an English dinghy, and of different sizes, so that several stow one within the other. They are of light construction, and are easily lifted by a rope becket at bow and stern. The sternmost becket is shown in the engraving, also the score for sculling the boat.

Double-banked.--

When men sit on the same thwart to row oars from different sides of a boat. Double-banked frigates were two deckers, with the upper deck ports disguised.

Double Block.-- A block with twin sheaves.

Double Dutch.-- - confused way of speaking. (See "Preventive Man.")

Double Gimbals.-- See "Gimbals."

Doubling Plank.-- To put one thickness of plank over the other.

Douse or Dowse.--

To lower away suddenly, to take in a sail suddenly. "Dowse the glim."  
to pint out a light.

Dove-tail Plates.-- Plates in form like a dove's tail.

Dowel.--

A hard wood or metal pin used for connecting timber or the edges of plank.

Downhaul.-- A rope used for hauling sails down.

Down Helm.-- An order to put the helm to leeward and cause the vessel to luff.

Down Oars.--

The order given for the crew of a boat to let fall their oars after having them on end in the boat. See "Let Fall" and "Give Way."

Down Wind.--

Sailing in the direction of or with the wind - before the wind ; with tine wind astern.

Down Wind Down Sea.--

The sea will subside when the wind does ; or the sea will go down when the wind Is blowing the same direction as a tidal current, &c.

Drag.-- The increased draught of water aft compared with the draught forward.

Drag, To.-- To scrape the bottom; to search the bottom with grapnels.

Draught of Water.--

The depth of a vessel to the extreme underside of the keel measured from the load water line.

Draw.--

A sail is said to draw when it is filled by the wind. To let draw is to ease up the weather sheet of a sail after it has been hauled to windward, and trim the lee sheet aft.

Draw her to.--

In sailing large to bring a vessel closer to wind.

Dress.--

To dress ship is to hoist flags from deck to truck; or from bowsprit end to truck and taffrail. Sometimes referred to as dressed "rainbow fashion."

To dress copper is to lay or smooth down wrinkles by going over it with a flat piece of hard wood and a hammer.

Drift.-- To float about with the tide or current.

Drift.-- The distance between two blocks of a tackle ; or the two parts of one thing.

Drifting.--

In a calm in the case of being out of sight of land. or in a dense fog. but not out of soundings, if it is desired to know the direction of the current or tide, (drop a pig of ballast or lead line overboard with enough line out to just reach the bottom. Then watch the direction in which it drags.

Drive.-- To move to leeward by the force of the wind or drive without control.

Dry rot.-- The decay timber is subject to often through imperfect ventilation.

Duck.--

Light canvas of which boat sails and balloon sails are made. To duck is to dive under water

Ducks.--

A sailor's white suit of duck. "They are all black ducks," an expression of derision used by yacht hands on the East coast towards their mates if they sit on deck with their heads up" when racing, instead of lying flat on the weather rail in the orthodox fashion.

Duff.--

A sailor's facetious way of pronouncing dough, hence plum duff for plum pudding. Duff is sometimes applied to "soft tack" or fresh bread as distinct from biscuits.

Dumb Cleat.-- A thumb cleat.

Dump.--

A nail used in fastening plank to the timbers, as distinguished from a through-bolt.

Dungaree or Dongaree.--

A blue linen or cotton cloth in use in India now much used for rough or working suits given to yacht sailors.

Dunnage.--

Loose material such as cork, bamboo, shavings, ferns, coir &c., used to jam in between a heavy cargo such as casks, iron, &c.

Dynamometer.-- An instrument to measure forces.

E.

Earings.--

Ropes used to fasten the corners of the heads of sails to the yards, by the cringles. The upper corners of sails are frequently termed earings. (See "Reef Earings.")

Ears of a Bolt.--

The lugs or upper projections of a bolt with a score in it, into which another part is fitted and held by a through pin so as to form a joint like that of a gooseneck.

Ease Away.--

The order to slacken a rope, &c.; to ease off a sheet, to ease up a sheet, are synonymous terms, and mean to slacken. (See "Check.")

Ease the Helm.--

The order given when sailing against a head sea to ease the weather helm, and by luffing meet the sea bow on, and at the same time deaden the ship's way so that the sea and ship meet less violently. Generally to put the helm amidship, or more amidship after it has been put to port or starboard.

Eating a Vessel out of the Wind.--

When two vessels are sailing in company, and if one soaks or settles out to windward of the other she is said to eat her out of the wind. In reality, to make less leeway.

Eating to Windward.--

A vessel is said to eat to windward when she, apparently, soaks out to windward of her wake.

Ebb.-- The receding of the tide.

Eddy.-- Water or currents of air apparently moving in circles.

Edge Away.-- To gradually keep a vessel more off a wind after sailing close hauled.

Edge Down on a Vessel.--

To bear away towards a vessel to leeward, so as to approach her in an oblique direction.

End for End.-- To shift a spar, rope, &c., by reversing the direction of the ends.

End On.--

Said of vessel when she has an object bearing in a line with the keel, directly ahead of the how. On approaching a mark or buoy it is said to be end on if it is directly ahead of the vessel, the bowsprit will then

point to the object, hence it is sometimes said that an object is "right on for the bowsprit end."

Ensign.--

A flag flown as a distinguishing mark of nationality. The red ensign, with "Union Jack" in the upper corner of the hoist, is the English national flag, and flown by merchantmen by law ; but the ensign of the Royal Navy is white with red St. George's cross in it besides the Jack in the corner: this is called "St. George's ensign." Prior to 1856 the red (highest in rank), white, and blue ensigns were used in the Royal Navy, and there were Admirals of the Red, Admirals of the White, and Admirals of the Blue; and there were Vice and Rear Admirals of the red, white, and blue. A fleet was divided into red, white, and blue divisions, according to the rank of the Admirals who commanded. In 1855 the red ensign was allotted to the British Mercantile Marine, the blue ensign to the Royal Naval Reserve, and the white ensign to the Royal Navy. However, the white and blue ensigns had always been reserved for the exclusive use of H.M.'s navy, and other vessels could not use either without an Admiralty warrant.

In the Royal Navy it was etiquette, when an Admiral was on board his ship, to fly the white ensign from the main truck, Vice-Admiral from the fore truck, and Rear-Admiral mizen truck. Admirals now fly St. George's Jack (which see) from the main, fore, or mizen, according to rank. A Union Jack is carried at the stem head or bowsprit end (all ships of the Royal Navy now so carry a Jack). When a council of war is being held on board a flagship, the white ensign is displayed in the main, fore, or mizen shrouds, according to the rank of the Admiral. If there is to be an execution after a court martial, the white ensign is hoisted on the main, fore, or mizen yard arm. Ships of the Royal Navy at the approach of Royalty, or whilst saluting, "dress" ship, by hoisting St. George's ensigns at the fore, main, and mizen trucks.

By the Merchant Shipping (Colours) Act, 1889, it is enjoined that "a ship belonging to any subject of Her Majesty shall, on a signal being made to her by one of Her Majesty's ships, and on entering or leaving any foreign port, and, if of 50 tons gross tonnage or upwards, shall also, on entering or leaving any British port, hoist the proper national colours, or, in default, incur a penalty not exceeding 100£." The term "proper national colours" for all ships is defined as the red ensign,

"except in the case of Her Majesty's ships or boats, or in the case of any other ship or boat for the time being allowed to wear any other national colours in pursuance of a warrant from Her Majesty or from the Admiralty." Thus, if a yacht is allowed to fly the blue or white ensign as a proper national colour, her owner may incur a penalty every time he enters or leaves a British port without flying such blue or white ensign.

If an ensign other than the red be flown by any vessel without a warrant from the Admiralty, a penalty of 500£. may be inflicted, and any Custom House or Consular officer or officer in the Royal Navy on full pay may board the vessel and seize the flag. Although the red ensign has been assigned to the mercantile marine, no device can be put in it other than the Jack without the permission of the Admiralty.

The jurisdiction of the Admiralty only extends to flags flown afloat, and any ensign or flag can be hoisted on flagstaffs on shore.

When a warrant is granted to a club to fly the white, blue, or the red ensign with a device, this warrant does not of itself entitle a member of the club to fly either ensign on board his yacht; before he can legally do so he must also obtain a warrant from the Admiralty through the club secretary. A warrant must be obtained for each club he belongs to, if he desires to fly the flags of the clubs. When the yacht is disposed of, the warrants must be returned through the club secretary to the Admiralty, and if the owner obtains a new yacht he must get fresh warrants.

Prior to 1858 the Royal Western Yacht Club of Ireland flew the white ensign with a wreath of shamrock in it. In 1847, the privilege of flying the white ensign was accorded to the Royal St. George's Yacht Club, Kingstown, but was afterwards rescinded upon a representation by the Royal Yacht Squadron that that club by its warrant of 1829 (prior to 1829, the R.Y.S. flew the red ensign)--had the exclusive privilege of flying the white ensign. In 1853 an application was made in Parliament to know if the R.Y.S. had that exclusive privilege. The first Lord of the Admiralty said it had not, inasmuch as the privilege had also been extended to the Royal Western of Ireland in 1832, and was still enjoyed by that club. (But it does not appear that the Royal Western ever applied for a separate warrant for a yacht to fly the white ensign.) In 1858 the Royal St. George's Yacht Club (also the Holyhead) again applied for permission to fly the white ensign; the permission was not

granted, and the Admiralty informed the Royal Western that they were no longer to use it; on making search at the Admiralty, it was found that in 1842 a decision was come to that no warrant should be issued to fly the white ensign to any club besides the Royal Yacht Squadron; and the clubs affected by the decision were informed of it accordingly, but the Royal Western of Ireland was not interfered with, because up to that time no application for separate warrants from the club for yachts to fly the ensign had been received; and further, in 1853, the Royal Western obtained permission to continue to use the ensign.

The decision made in 1842 was at the instance of Lord Yarborough (commodore of the R.Y.S.). He then set no special value on the white ensign except that he wished it to be confined to the yachts of the R.Y.S. to distinguish them from the yachts of other clubs.

Accordingly copies of the Admiralty minute were sent to the clubs using the white ensign (Royal Thames, Royal Southern, Royal Western of England, Royal Eastern, Holyhead, Wharncliffe, and Gibraltar), but, oddly enough, for the reason already stated, the Royal Western of Ireland, by an oversight, was omitted, and that club continued to use the ensign until the mistake was recognised by the Admiralty in 1857-8.

At that date the white ensign was adopted as the sole flag of the Royal Navy, and naturally the Admiralty were obliged to be more particular in granting warrants for flying it than they were in 1842; however, the Royal Yacht Squadron, which had always been under the special patronage of the Royal family, was considered worthy of the privilege. The privilege to fly it is cherished and coveted, and other distinguished yachting nations like Austria-Hungary, Italy, Spain, Denmark, Portugal, Sweden, Norway, and France have each given one yacht club the privilege of flying the naval flag of the country. A notable exception is Germany, although the Emperor is Commodore of the German Imperial Yacht Club. In America, as in France, the naval colours are the same as those of the mercantile marine, and a special ensign has been accorded to yacht clubs -- all using the same and enjoying the same privileges. In Russia this has also been done, the yacht club ensign being something like our white, but with blue instead of red cross.

Our Admiralty refuse to allow any imitation ensigns, and this is quite right. Some years ago the Royal Cork Yacht Club applied for

permission to use a green ensign, on the plea that the red, white, and blue were already appropriated by other clubs. The Admiralty replied they might (at that time) choose which of the three national ensigns they pleased, but the creation of a new colour could not be sanctioned. (See "Admiralty Warrants," "Royal and Recognised Clubs," "Burgee," "Dipping the Ensign," &c.)

Ensign for Hired Transports.--

The blue ensign with Admiralty anchor (yellow) in the fly.

Ensign, Hoisting of.--

Ensigns and burgees are hoisted every morning at eight o'clock (9 AM from September 30 to March 31), and hauled down at sunset. It is a slovenly habit to hoist and haul down colours at irregular hours. At sea it is only usual to hoist colours when passing another vessel.

Ensign of Naval Reserve.-- The blue ensign.

Ensign of the Colonies.-- The blue ensign with arms or badge of colony in it.

Ensign of the Customs.-- -The blue ensign with crown in fly.

Entrance.--

The fore part of a vessel, the bow. A good entrance into the water means a long well-formed bow.

Entrance Money.--

The money demanded by clubs from yacht owners, who enter their vessels for match sailing at regattas.

Entry.-- The record that a yacht is engaged for a particular match.

Equipment.--

The complete outfit of a vessel including everything used in her handling, working, and accommodation. The inventory comprises the equipment.

Esnecca.--

A kind of yacht of the twelfth century. According to Diez, "Dictionary of the Romance Languages," the word is old French, esneque or esneche, "a sharp prowed ship."

Etiquette.--

See "Saluting," "Ensign," "Boats," "Burgee," "Commodore," "Admiralty Warrants," &c.

Even Keel.--

Said of a vessel when she is not heeled either to port or starboard, also when her keel is horizontal, that is when she is so trimmed that her draught forward is the same as aft.

Every Stitch of Canvas Set.-- When all available canvas that will draw is set.

Extreme Breadth.--

The greatest breadth of a vessel from the outside of the plank on one side to the outside of the plank on the other side, wales and doubling planks being included and measured in the breadth.

Eye Bolt.-- See "Bolts."

Eyelet Holes.--

Small holes worked in sails for lacings, &c., to be rove through.

Eyes of Her.--

The extreme fore end of the ship near the hawse pipes, which are the "eyes of her."

Eyes of the Rigging.--

The loops spliced into the ends of shrouds to go over the mast, and for the rigging screws.

Eye Splice.-- The end of a rope turned in so as to form an eye.

F. G.

Fag End.--

When there is "nothing left of the rope but the end." The frayed-out end of a rope.

Fairing a Drawing.--

A process by which the intersections of curved lines with other lines in the body plan, half-breadth plan, and sheer plan are made to correspond. A fair curve is a curved line which has no abrupt or unfair inflexions in it.

Fair Lead.--

When the fall of a rope leads fairly, without obstruction, from the sheave hole. Also a "lead" made for a rope through a sheave hole or through any other hole.

Fair Leads.--

Holes in plank, &c., for ropes to lead through, so that they lead fairly and are not nipped or forced into a bight.

Fairway.--

The ship's course in a channel. The navigable channel of a harbour as distinct from an anchorage in a harbour. A harbour master's duty is to see that the fairway is kept clear, and that no vessels improperly anchor in it. A fair way is generally buoyed.

Fair Wind.--

A wind by which a vessel can proceed on her course without tacking; it may range from close-hauled point to dead aft.

Fake, A.--

One of the rings formed in coiling a rope. The folds of a cable when ranged on deck in long close loops. To fake is to arrange in folds.

Fall.--

The loose end of the rope of a tackle, the hauling part of a tackle; also applied generally to the tackle of the bobstay and the topmast backstays, &c.

Fall Aboard.--

One ship sailing or driving into another. A sail is said to fall aboard when the wind is so light that it will not stay blown out.

Fall Astern.--

To drop astern. When two vessels are sailing together, if one fails to keep company with the other by not sailing so fast.

Fall Off.--

To drop away from the wind; when a vessel is hove to she is said to fall off if her head falls to leeward, in opposition to coming to; also when a vessel yaws to windward of her course and then falls off to her course or to leeward of it. Not used in the sense of breaking off, which means when the wind comes more ahead and causes an alteration in the direction of a vessel's head to leeward of a course she had previously been sailing.

Fall To.-- To join in hauling, to commence work.

Falling Tide.-- The ebbing tide.

False Keel.--

A piece of timber fitted under the main keel to deepen it or protect it when taking the ground.

False Tack.--

A trick sometimes practised in yacht racing when two vessels are working close hauled together, and one has been "weather bowing" the other every time they went about. To be rid of this attention the crew of the vessel under the lee quarter of the other makes a sudden move as if about to tack; the helm is put down and the vessel shot up in the wind; the other vessel does the same and probably goes on the opposite tack; if she does so the former vessel fills off on her original tack, and the two part company. To shoot up in the wind and fill off on the same tack again.

Fashion Timbers.-- The timbers which form the shape or fashion of the stern.

Fast.-- Made fast by belaying. (See "Breast Fast," "Bow Fast," "Quarter Fast.")

Fastenings.--

The bolts, nails, &c., by which the framing and planking of a vessel are held together.

Fathom.--

A sea measure of six feet. To fathom a thing is to arrive at the bottom of it, to understand it.

Fay, To.--

To join pieces of timber together very closely Plank is said to fay the timbers when it fits closely to it.

Feather Edge.--

When a plank or timber tapers to a very thin edge, "tapering to nothing."

Feathering.--

Turning an oar over on its blade as it comes out of the water.

Feeling her Way.-- Proceeding by sounding with the hand lead.

Feel the Helm.--

In close hauled sailing when a vessel begins to gripe or carry weather helm. Also generally, when a vessel begins to gather headway so that she can be steered, or 'feel her helm'.

Feint.-- To pretend to tack. (See "False Tack.")

Fender.--

A sort of buffer made of rope, wood, matting, cork, or other material to hang over the side of a vessel when she is about to come into contact with another vessel or object.

Fend Off.--

To ward off the effects of a collision by placing a fender between the vessel and the object which is going to be struck.

Fetch.--

In close hauled sailing when a vessel arrives at or to windward of any point or object, as "she will fetch that buoy in two more boards" or "she will fetch the mark this tack" &c.

Fetch Away.--

To slip or move without intention. To fetch sternway or headway is when a vessel begins to move ahead or astern.

Fid.--

A square iron pin used to keep topmasts and bowsprits in their places.

Fiddled.--

When the fid has secured the topmast or bowsprit in its proper place.

Fiddle Block.--

A long fiddle-shaped block with one sheave above another. (See "Sister Block" and "Long Tackle Block.")

Fiddle Head.--

The curved part of the knee at the upper fore part of the stem in schooners, turned upwards aft like the curly part of a fiddle head. A scroll head turns downwards.

Fill, To.--

When a vessel has been sailed so close to wind that the sails have shaken, and the helm being put up the sails are "filled" with wind. In getting under way after being hove to a vessel is said to fill, or to have been "filled upon."

Fillings or Filling Timbers .--

Pieces of wood or timbers used to fill various spaces that may occur in ship building.

Fine.--

To sail a vessel "fine" is to keep her so close to the wind that her sails are on the point of shaking; considered sometimes good sailing if done with great watchfulness. Too fine means too near the wind.

Fish, To.--

To strengthen or repair a damaged spar by lashing a batten or another spar to it.

Fisherman's Bend.-- See "Knots."

Fisherman's Walk.--

When there is very little deck room, "Three steps and overboard."

Fishing Tackle .--

The lines, hooks, sinkers, &c., used by fishermen. Messrs. Hearder and Son, of 195, Union-street, Plymouth, publish a book giving a full description of all the lines, nets, &c., necessary for a yacht, with instructions for using the same. The book can be had on application to Messrs. Hearder.

Fitted Out.--

When a vessel is "all-a-taunto," which see. A vessel ready to proceed to sea.

Fitting Out.--

Getting a ship's rigging, sails, &c., into place after she has been dismantled.

Flag Officer.--

An Admiral, Vice-Admiral, ore Rear-Admiral; also the Commodore, Vice. Commodore, or Rear-Commodore of a club.

Flags.--

Pieces of bunting of various forms, colors, and devices, such as ensigns, jacks, burgees, &c.

Flag Signals.--

See "Signals"

Flags, the size of.--

The size of the racing flags usually carried is as under :

Tons ft-in ft-in

5 1-6 by 1-0

10 1-9 by 1-2

20 2-3 by 1-9

40 2-9 by 2-0

60 3-0 by 2-3

100 3-6 by 2-9

150 4-0 by 3-3  
200 4-6 by 3-9  
and above 200 tons the same.

The burgee of a yacht 45ft. long over all would be 2ft 6in in the fly, and 3/4in for every foot of length of the yacht up to 130ft. over all. The ensign would be 6ft. for a 45ft. yacht, and 1-in. for every additional foot of length of time yacht up to 130ft. over all.

Flare.-- To project outwards, contrary to tumbling home.

Flashing Lights.-- See "Signals"

Flat Aback.--

In square rigged ships when all the yards are trimmed across the ship, with the wind ahead so as to produce sternway.

Flat Aft.--

When sheets are trimmed in as chose as the vessel will bear fore close hauled sailing.

Flat Floored.--

When the bottom timbers ore floors of a vessel project from the keel in a more or less horizontal direction.

Flatten in Sheets.-- To haul in the sheets.

Fleet, To.--

To overhaul a tackle or separate the blocks after they have been hauled close together.

Floating Anchor.--

Although floating anchors are continually referred to in old writings as a means whereby many ships have been enabled to ride out very heavy gales in comparative ease, we seldom hear of their being used now, except in yachts. No doubt many a ship has been lost through getting broadside on to the sea, whereas they might have kept bowing the sea by such a simple contrivance as a floating anchor. However, masters, it would seem, prefer to heave-to, as they like to keep their vessels under command. In a very heavy sea and gale a floating anchor may be of

very great service, and no doubt if a vessel can be kept bow to the sea, she will feel the violence of it in a much less degree than she would if hove-to, when she might be continually flying-to against the sea after falling off.

FIG 39.

FIG 40.

Many plans for floating anchors have been used, the simplest being thus made; three spars, in length about two-thirds the beam of the vessel, were lashed together by their ends in the form of a triangle; over this triangle a jib made of stout canvas was lashed. Then to each corner of the triangle a rope was made fast: the ends of these ropes were then bent to a hawser, and thus formed a kind of bridle. A weight was attached to one corner of the triangle to keep it in a vertical position ; veer out the hawser and ride to 30, 50, or 70 fathoms, according to the sea.

But the old plan, given in "Falconer's Marine Dictionary" (date 1789), is the most approved (see the diagram, Figs. 39, 40); k, m, n, o, are the ends of two iron bars formed into a cross, and connected by a stout bolt, nut, and pin at their intersections s. At each end of the bars is a hole through which a strong rope is rove, hauled taut, and well secured. Thus a square is formed, and over the square a piece of stout canvas is laced to the roping. Four stout ropes are made fast to the iron bars, and make a sort of bridle or crow foot, the other ends being bent to a ring x. The ends should be well seized or "clinched." The hawser is bent to this ring to ride by. To prevent the anchor sinking, a buoy, B, is made fast attached to one corner with 6 or 7 fathoms of drift; this buoy will also prevent the anchor "diving" (as it would, like a kite flies into the air) when a strain is brought upon it. The buoy rope p should lead on hoard; h is the hawser to which the vessel is riding, A is the anchor, and B the buoy.

To get the anchor on board haul in on the line p; this will bring the anchor edgeways, and it can then be readily hauled in. (See also "Oil at Sea.")

Floating Dock.--

Upon lakes, where there are no tides, and no convenience for hauling a yacht up, a floating dock may be of service to get at a yacht's bottom. The dock would be rectangular in form, of which |  | might be a transverse section, and its size would depend upon the weight of the yacht that had to be decked. The weight of the yacht can roughly be arrived at thus :

length on load line, multiplied by beam on load line, multiplied by draught of water to rabbet of keel; the product in turn being multiplied by the fraction 0.3.

The decimal .3 is used, as that fairly allows for the quantity cut away from the cube in modelling. Say the yacht is 40ft. long, 8ft. broad, and 6ft. deep to the rabbet in the keel, then  $40 \times 8 \times 6$ , equal to 1920 cubic feet. 1920 multiplied by 0.3 is equal to 576 cubic feet. There are 35 cubic feet of salt water to one ton, and 576 divided by 35 is equal to 16.4 tons. (There are 36 cubic feet of fresh water to one ton.)

A dock 50ft. long, 16ft. broad, and immersed 2ft., would (omitting of course the reduction by the factor .3, as the dock would be a cube) be equal to 45 tons; the weight of the dock made of 4-inch deal, would be, if the sides were 10ft. deep, about 20 tons; this would leave a margin of 25 tons for floating at 2ft. draught. A false bottom and sides 2ft. deep would have to be made in the dock; also a door at one end hinged from its lower edge, level with the top of the false bottom, and rabbeted at the sides To get the yacht in the dock lower the door and fill the false bottom and sides with water until the dock sank low enough to be hauled under the keel of the yacht; then close the valve which lets the water in, shut the door, and pump the water out of the false bottom and sides (a hose for the pump should be used in case the dock sank). The yacht should be shored up from the sides of the dock before she took any list. With caution such a contrivance could be used for floating a deep draught yacht over shallows from one lake to another, or through canals ; in such cases, if the draught of water for going over the shallows were not limited to 2ft., it would be well to keep the false bottom full or partially full of water.

Flood Tide.-- The rising tide, contrary to ebb.

Floors.-- The bottom timbers of a vessel.

Flotsam.--

The cargo of a wreck that may be floating about or liberated from the wreck.

Flowing Sheet.--

In sailing free, when the sheets are eased up or slackened off.

Flowing Tide.-- The rising tide, the flood tide.

FIG. 41.

Fluid Compass.--

A compass card in a basin of fluid, usually spirit, used in rough weather because the card should not jump about. In a small yacht a good and steady compass is an essential part of the outfit, and if there be any sea on the usual compass card and bowl are perfectly useless to steer by. The fluid compass then becomes necessary, and frequently a "life boat" compass, which costs about 5£, is used. A more yacht-like looking liquid compass, however, is one sold by most yacht fitters, price about 6£ 6s., shown by Fig. 41. The extreme height is only 1ft. 2in., and the card remains steady under the most trying circumstances of pitching and rolling. Spirit is usually used in the compass bowl in the proportion of one-fourth to three-fourths water; or glycerine in the same proportion; or distilled water can be used alone. A grain of thymol is said to prevent the spirit, &c., turning brown. (See "Binnacle and Compass.")

Flukes.--

(Pronounced "flues" by seamen). The barb-shaped extremities of the arms of an anchor.

Flush deck.-- When the deck has no raised or sunken part.

Fly.--

The part of a flag which blows out; the opposite side to the hoist; the halyards are bent to the hoist.

Flying Jib.--

A jib set in vessels on the flying jib boom. There is then the jib, the outer jib, and flying jib, or inner jib, jib, and flying jib; probably called flying jib because unlike the others it is not set on a stay. A yacht's jib topsail is sometimes termed a "flying jib " but, being set on a stay, this is incorrect.

Flying Light.--

Said of a vessel when she has been lightened in ballast so as to float with her proper load-line out of water.

Flying Start.--

In match sailing a start made under way. In the old days yachts started from anchor or from moorings. This practice has long since been abandoned, and all starts in yacht races are flying starts. (See "Yacht Racing Rules.")

Flying To.--

When a vessel, in sailing free, luffs suddenly, or comes to suddenly; also after tacking, if a vessel's head is kept much off the wind, and the helm be put amidships, the vessel will fly to, i.e. fly to the wind quickly. A vessel that carries a hard weather helm will fly to directly the tiller is released.

Fly up in the Wind.--

When a vessel is allowed to come head to wind suddenly.

Foot.-- The lower edge of a sail. (See "Forefoot.")

Fore.-- Front; contrary of aft; the forward part.

Fore-and-aft.-- Running from forward aft, in a line with the keel.

Fore-and-aft Rig.--

Like a cutter or schooner; without yards, with all the sails tacked and sheeted in a line with the keel.

Fore-body.--

The fore part of a ship which is forward of the greatest transverse section.

Forecastle.--

The space under deck before the mast allotted to the seamen.

Fore Deck.--

The deck before the mast.

Fore Foot.--

The foremost part of the keel at its intersection with the stem under water.

Fore Guy.--

The stay of a square sail boom or spinnaker boom which leads forward.

Foremast.--

The mast which occupies the most forward position in a vessel.

Fore Peak.--

The forecastle, a space decked over forward in a small boat to stow gear in.

Fore-rake.--

The rake the stem has forward beyond a perpendicular dropped to the fore end of the keel.

Fore-reach.--

When one vessel reaches past or sails past another; generally applied in close hauled sailing. Thus it is frequently said that one vessel "fore-reaches but does not hold so good a wind as the other" ; meaning that she passes through the water faster but does not or cannot keep so close to the wind. A vessel is said to fore-reach or head-reach fast that is noted for great speed when sailing by the wind. (See "Head Reach.")

Foresail.--

In square rigged ships the large lower sail set on the foremast; in cutters the triangular sail or jib foresail set on the forestay; in fore-and-aft schooners the gaff sail set abaft the foremast.

Foresheet.-- The sheet of the foresail.

Foresheet horse.--

An iron bar for the foresheet to work upon.

Fore-staysail.--

The jib foresail set on the forestay of schooners; properly "stay-foresail."

Fore-topman. - In a schooner yacht a man stationed aloft to work the fore-topsail tack and sheet in going about.

Foretopmast.--

The topmast over the foremast.

Foreyard.--

The yard on the foremast for setting the foresail in square-rigged ships.

Forge Ahead.--

When a vessel that is hove to gathers way; generally when a vessel moves past another.

Foul.--

Entangled, not clear. To touch another yacht.

Foul Anchor.--

When an anchor gets a turn of the cable round its arms or stock; when imbedded among rocks, &c., so that it cannot be readily recovered. Also a pictorial anchor with a cable round the shank, &c.

Foul Berth.--

When two vessels which are anchored or moored have not room to swing without fouling each other. If a vessel is properly moored and another fouls her berth she is held liable for any damage which may ensue.

Foul Bottom.--

A rocky bottom; also the bottom of a ship when it is covered with weeds, &c.

Foul Hawse.--

When moored if the cables get crossed by the vessel swinging with the tide. (See "Hawse.")

Frames.--

The timbers or ribs of a vessel.

Frapping.--

A rope put round the parts of a tackle or other ropes which are some distance apart, to draw them together and increase their tension or prevent them overhauling. Frequently a frapping is put on the parts of the head sheets, especially on the jib topsail sheet, to draw them down to the rail, and thus bring a strain on the leech and foot.

Frapping a Ship.--

Passing a chain cable or hawser round the hull of a ship to keep her from falling to pieces when she is straining in a heavy sea. Formerly common with timber ships.

Free. -Not close hauled. When a vessel is sailing with a point or two to come and go upon. The wind is said to free a vessel when it enables her to check sheets so as to be no longer close hauled. Also when it enables a vessel that is close hauled to lie nearer her course, as "the wind frees her."

Freeboard.--

The side of a vessel which is above water.

French Nautical Terms.

Fresh Breeze.-- See "Wind."

Freshen.-- To alter the strain upon a rope.

Freshen Hawse.--

To veer out or heave cable, so that a different part will take the chafe of the hawse pipe.

Freshen the Nip.--

To shift a rope, etc., so that its nip, or short turn, or bight, may come in another part. In slang, to quench a desire for drink.

Full.--

When all the sails are filled with the wind and quite steady.

Full Aft.-- When a vessel is said not to taper sufficiently aft.

Full and Bye.--

Sailing by the wind or close hauled, yet at the same time keeping all the sails full so that they do not shake through being too close to wind. Generally a vessel does better to windward when kept a " good full and bye" than when nipped or starved of wind.

Full and Change.-- Phases of the moon.

Full Bowed.-- The same as bluff bowed.

Funeral Salute.-- See " Salutes."

Furl.-- To roll a sail up on a yard, etc.

Futtocks.--

The timbers which abut above the floors called first, second, and third futtocks. This should properly be written foothooks.

G.

Gaff.--

The yard to which the head of a fore-and-aft sail is bent. (See "Jaws.")

Gaff Topsail.--

The topsail set over a gaff sail, such as the topsail set over a cutter's mainsail. Sometimes the sail has a head yard, and sometimes not.

Galley.--

A long narrow rowing boat propelled by six or eight oars. A boat a little longer and heavier than a yacht's gig.

Galley or Galley Fire.--

The caboose, or kitchen of a vessel.

Gallows.--

Frames of oak erected above the dock in ships to carry spare spars on or the spanker boom instead of a crutch.

Gammon Iron.--

An iron hoop fitted to the side of the stem, or on top of the stem, as a span-shackle, to receive and hold the bowsprit.

Gammoning.--

The lashings which secure the bowsprit to the stem piece, and are passed backward and forwards in the form of an X, over the bowsprit. Now generally chain is used. In yachts, an iron band or hoop, called the gammon iron or span-shackle, is fitted to the stem, through which the bowsprit passes.

Gangway.--

The opening in the bulwarks, or side, through which persons enter or leave a vessel. Used generally as a passage, or thoroughfare of any kind. "Don't block the gangway," is a common admonition to thoughtless people who stand about in passages or thoroughfares, to the impediment of passers.

Gangway Ladder.--

The steps hung from the gangway outside the vessel. Sometimes there is also a board, or kind of platform, called the "Gangway Board." (See "Accommodation Ladder.")

Gant-line.--

A whip purchase; a single block with a rope rove through it. A gant-line is used to hoist the rigging to the masthead on beginning to fit out.

Garboard.--

The strake of plank next above the keel into which it is rabbeted and bolted.

Garland.--

A strop put round spars when they are hoisted on board.

Garnet.--

A kind of tackle used for hoisting things out of the hold of vessels; also used for clewing up square sails.

Gaskets.--

Pieces of rope, sometimes plaited, by which sails when furled are kept to the yards. The pieces of rope by which sails are secured when furled, such as the tyers of the mainsail, by which that sail, when rolled up on the boom, is secured. (See "Tyers.")

Gather Way.--

When a vessel begins to move through the water, under the influence of the wind on her sails, or under the influence of steam. (See "Steerage Way.")

Gawlor or Gowler.--

An open boat which can either be rowed or sailed, common to Portsmouth watermen. They are very skillfully handled by the watermen, and go backwards and forwards to Spithead and elsewhere in all kinds of weather, and seldom meet with mishaps. They are sharp sterned, like the bow, and are rigged with sprit, mainsail, and mizen, and a foresail. They have no boom to the mainsail.

Get a Pull.-- To hand on a sheet or tack or fall of a tackle.

Getting Soundings Aboard.-- Running aground.

Gig.--

A long boat of four or six oars kept for the owner of a yacht. In gig races a boat should not be considered a gig if she has less than 1ft. of breadth for every 7ft. of length, and 3/4-in. depth amidships for every foot of length. At the regatta held at Itchen ferry by yachtmasters a "gig must not exceed 28ft. in length, and be in the proportions of 28ft. long, 4ft. broad, and 1ft. 8in. deep." A boat could be shorter if these proportions were maintained.

Gilling.--

To gill a vessel along is to sail her very near the wind, so that very little of the weight of the wind is felt on the sails which are kept lifting and only have steerage way kept on the vessel. A vessel is generally "gilled" (pronounced "jilled") through heavy squalls or very broken water.

Gimbals.--

The cross axles by which compasses, lamps, &c., are swung on board ship. Often called "double gimbals." In Fig. 42 a a are the axles of the outer ring R, and x x of the inner ring M.

Girt.--

To moor a vessel so that she cannot swing by tide or wind. To draw a sail into puckers; to divide the belly of a sail into bags as by a rope.

FIG 42.

Girt-line.-- (See "Gant-line.")

Girth.--

The measurement round the vessel. The girth is generally measured at a station 0.55 from the fore end of the L.W.L. It is taken in two separate ways--i.e., by skin or by chain. The skin girth is taken by following the skin surface of the plank or body right round under the keel, from gunwale to gun. wale. The chain girth is taken at the same place and between the same points with the string, tape, or chain pulled taut. The difference between the two girths is called the "d" measurement. (See also "d.")

Give Her.--

A general prefix to an order, as "Give her sheet"; "Give her the jibheaded topsail;" "Give her chain," &c.

Give Her the Weight of It.--

An admonition to a helmsman to sail a vessel a good heavy full when close-hauled.

Give Way.--

The order to a boat's crew to commence rowing or to pull with more force or more quickly.

Giving the Keel.--

Heeling over suddenly and bringing the keel near the surface; vessels that are not very stiff under canvas are said to "give the keel."

Glass.--

The term by which a sailor knows the barometer. Also a telescope, and the sand glass used to denote half-hours on board ship, or the half-minute or quarter-minute glass used when heaving the log.

Glass Calm.--

When it is so calm that the sea looks like a sheet of glass. (See "Clock Calm.")

Glue for Paper.--

For joining paper, cardboard or model work, or similar articles, a good glue can be made thus: dissolve 2oz. of the best transparent glue in 1/4pt. of strong cider vinegar. Let it simmer slowly by placing the dish containing it in a dish of boiling water. When it has become liquid, add 1oz. of highest proof alcohol, and keep it tightly corked. If cold, heat in hot water when needed for use.

Go About.-- To tack.

Go Ahead !-- The order to the engineer of a steam vessel. Also "Go astern;" "Easy ahead;" "Easy astern;" "Stop her!"

Go Down.-- To sink. To go down below.

Going Large.-- The same as sailing with the wind free. (See "Large.")

Going Through Her Lee.--

When one vessel overtakes and passes another vessel to leeward; considered to be a very smart thing for a vessel to do if they are close together and of equal size.

Good Conduct Money.--

A douceur of one shilling or more a week given to men at the end of a season for good behaviour, and withheld for the week in which any offence or offences were committed. (See "Conduct Money.")

Good Full.--

Same as "Clean Full," or little fuller than "Full and By."

Gooseneck.--

An iron jointed bolt used to fix the end of booms to the mast, &c.

Goose Wing, To.--

A schooner "goose wings" when dead before the wind by booming out the gaff foresail on the opposite side to the mainsail. An uncertain operation, and a practice not now in much use, as the introduction of spinnakers has made it unnecessary. (See "Wing and Wing.")

Goose Wings.--

The lower part or clews of sails when the upper part is furled or brailed up; used for scudding in heavy weather.

Graduated Sail.--

A sail whose cloths taper towards the head from the foot upwards; so that a whole cloth forms the luff as well as the leech. Manufactured by Gordon, of Southampton, and Summers and Hewitt, of Cowes.

Granny Knot.--

An insecure knot which a seaman never ties, but which a landsman is sometimes seen to do when trying his hand at reef knots. (See "Knots.")

Grapnel.--

A grappling iron with four claws used to moor small boats by or to drag the bed of the sea.

Gratings.--

Open woodwork put in the bottom of boats, in gangways, &c.

Graving.-- Cleaning a vessel's bottom.

Graving Dock.--

A dock which can be emptied of water by opening the gates as the tide falls, and its return prevented as the tide rises by closing the gates. Used for clearing the bottoms of vessels, repairing the same, &c.

Gravity.--

Weight. The centre of gravity is the common centre of a weight or weights.

Great Guns.-- A heavy wind is said to "blow great guns."

Green Hand.--

A landsman shipped on board a vessel, and who has yet to learn his duties.

Green Horn.--

A conceited simpleton, incapable of learning the duties of a seaman.

Green Sea.--

The unbroken mass of water that will sometimes break on board a vessel as distinct from the mere bucketfulls of water or spray that may fly over her. Such bodies of water always have a green appearance, while smaller quantities look grey, hence, we suppose, the term.

Gridiron.--

A large cross framing over which a vessel is placed at high water in order that her bottom may be examined as the tide falls.

Grin.--

A vessel is said to grin when she dives head and shoulders into a sea and comes up streaming with water.

Gripe.--

The fore part of the dead wood of a vessel; the forefoot.

Gripe, To.--

A vessel is said to gripe when she has a tendency to fly up in the wind, and requires weather helm to check or "pay off" the tendency. (See "Weather helm.")

Grommet or Grummet.--

A ring formed of a single strand of rope laid over three times. Used for strops, &c. (Fig. 43) .

Grounding.--

The act of getting aground or taking the ground as the tide falls.

FIG 43.

Ground Sea, Ground Swell.--

The swell that may be seen along shore sometimes, whilst in the offing the sea is calm.

Ground Tackle.--

The moorings, anchors, chains, &c., used in securing a vessel.

Ground Ways.--

The blocks on which a vessel is supported whilst she is being built.

Gudgeons.--

Metal eye bolts fitted to the stern post to receive the pintles of the rudder. (See "Braces.")

FIG. 44.

Gunter or Sliding Gunter (See Figs. 44 and 45).--

Not to be confounded with the modern gunter lug which is really a cross between a high-peaked gaff sail and a Clyde lug. It has jaws on the heel of the yard or gaff, which is usually curved. Either one or two halyards are used.

Gunwale.--

In small boats the timber which fits over the timber heads, and is fastened to the top strake. (See "Inwale.")

Gunwale Under.-- Heeling until the lee gunwale is in the water.

Guy.-- A rope used to steady or support a spar.

FIG 45.

Gybing (also spelt jibing).--

To keep a vessel so much off the wind that at last it blows on the opposite quarter and causes the sails to shift over. The opposite of tacking, which is to come to the wind until it blows on the opposite bow of the vessel to the one on which it has been blowing.

Gyvers.-- Tackles.

H.

Hail.--

To speak to a ship at sea by signals or otherwise. To attract the attention of a ship by singing out "Ship ahoy!" or "Neptune ahoy." To "hail from" a locality is to belong to a particular place by birthright.

Half-breadth Plan.--

A drawing showing the horizontal sections or waterlines of a vessel by halves.

Half-breadths.--

The width of horizontal sections at particular points; also half-breadths on diagonal lines.

Hall-mast High.--

Hoisting a burgee or ensign only halfway up as a mark of respect to a person who has recently died.

Halyards or Halliards.-- Ropes for hauling up sails, yards, &c., by.

Hammock.-- A canvas bed swung to the deck beams.

Hand.-- To hand a sail is to stow, furl, or take in; hence a sail is said to be "handed" when either of these operations has been performed.

Hand.-- A man. A member of a ship's crew.

Handing a Sail.-- To hand a sail is to stow it or take it in.

Hand Lead.-- See "Lead."

Handle Her.--

The act of controlling the movements of a vessel. An admonition to the crew to be smart in working the sheets in tacking or gybing. Also a steamboat master is said to "handle" his vessel in bringing her alongside a wharf, pier, &c.

Hand Masts.--

Certain spars of Riga fir the girth of which is expressed in hands of 4in. Thus a mast which was 6-1/2 hands, or 6-1/2 x "4in." in circumference

would be 26in. in girth, or about 8-1/2 in. in diameter. (The circumference is the diameter multiplied by 3.1416.)

Hand over Fist.-- See "Hand over Hand."

Hand over Hand.--

Hauling on a rope by one hand at a time and passing one hand rapidly over the other to haul. A very rapid way of hauling, hence anything done rapidly is said to be done "hand over hand."

Hand Sail.-- See "Sailing on Skates." .

Handsomely.--

Steadily; with care. Not too fast nor yet too slow, but with great care; cleverly. As "Lower away handsomely." In easing up a sheet, if the man is likely to let it fly, the master or mate will sing out, "Handsomely there !" meaning that the man is to ease up the sheet carefully, not letting too much run out, nor yet letting it come up with a jerk, nor yet allowing it to run away with him.

Handspike.-- A bar of wood, used as a lever.

Hand Taut.--

As tight or taut as a rope can be got by the hand without swigging upon it.

Handy.--

A vessel is said to be handy when she answers her helm quickly, and will turn in a small circle, or go from one tack to the other quickly.

Handy Billy.--

A watch tackle kept on deck for general use to get a pull on whatever is required, such as sheets, tacks, or halyards.

Hang.--

To lean towards. To hang to windward is to make but little leeway. "Hang on here!" an order for men to assist in hauling.

Hanging Compass.--

A compass suspended under the beams with the face of the card downwards; termed also a "Telltale Compass."

Hanging Knee.--

Knees that help keep the beams and frame together ; one arm is bolted to the under side of a beam, the other to the frame.

Hank for Hank.-- Slang for "tack for tack."

Hanks.--

Rings or hooks made of rope, wood, or iron for fastening the luff of sails to stays. Iron rings are usually used for the stay foresail; iron spring hooks for the balloon foresail and jib topsail.

Various ingenious contrivances have been invented for securing sails to stays, &c., and Ramsay's patent keys are much used. Mr. Delap has adapted these for yacht purposes,

FIG 46.

FIG 47.

and the first shown (Fig. 46) is for the fore staysail, the circular part travelling on the stay. Fig. 47 is for mast hoop attachments. The luff of the sail would be passed into the jaws, and then the key pushed through an eyelet hole and turned.

Fig. 48 is a sheet shackle to supersede the usual toggle. The form of the head of the key precludes the possibility of its fouling any gear.

Mr. J. W. Collins, writing on the rig of fishing boats, says that a method adopted by the American fishermen for bending and unbending their riding sails would, doubtless, be well suited for the fore-and-aft-rigged English drift net boats. The "riding sail" referred to is a small three-cornered sail, which is bent to the mainmast when a schooner is riding at anchor, to keep her steady and head to the wind. The sail is set temporarily, and it is therefore desirable that the arrangements may be such that it can be bent or unbent with as little delay as possible. For this purpose ordinary mast hoops are used; but about one-quarter of

their length (where they are joined together) is sawed out, leaving square ends, to each of which is fastened an iron hook.

Fig. 49 shows how the hoops are fitted, and Fig. 50 shows how the thimble toggles are attached to the luff of the sail at regular intervals. The thimbles are slipped over the hooks on the ends of the hoops. The sail can be bent almost as fast as it can be hoisted.

Harbour Master.--

An officer whose duty it is to see that vessels are properly berthed and moored in harbours. His authority cannot be disputed with impunity, as, in nine cases out of ten, if a dispute with a harbour master gets into court the decision will be for the harbour master.

FIG. 48.

Harbour Watch.--

The watch kept on board a vessel at night when she is riding to an anchor in harbour; the anchor watch.

Hard.--

A landing place, usually made of gravel, piles, &c., across mud, as the "Common Hard," Portsea, where the small boats land and take in passengers.

Hard Down.--

The order to put the helm hard-a-lee. Also the tiller may be put hard-a-port; hard-a-starboard; hard-a-weather; hard up.

Hard In.-- Sheets are said to be hard in when a vessel is close-hauled.

Hard Up.-- The tiller as far to windward as it can be got for bearing away.

Harpings.--

Pieces of timber or battens that are fitted around the frames of a vessel in an unbroken line to keep the frames in their places before the plank is put on.

Harpoon.--

A weapon like a spear with a flat, barbed, sharp head; the other end has a socket into which the wooden part is fitted, the whole making a long spear. The line is attached to the iron and the wooden part of the shank. The coil of rope is 130 fathoms. Modern harpoons are fired from a small cannon.

Harpooner.--

The Bowman of a whale boat, who throws the harpoon or fires the gun.

Harpoon log.--

This is generally known as "Walker's" log, and is different from Massey's, inasmuch as the blades which give the rotation are attached to the part which holds the wheel work. In Massey's log the rotation is attached to the part containing the works by a piece of cord a yard or so long; the cord of course revolves with the spinning of the fly, and imparts motion to the wheel work.

FIG. 49.

FIG. 50.

Harpoon Sounding Machine.--

A contrivance on the principle of the patent log such as Walker's, used for taking deep soundings. As the machine sinks the fly or fan blades rotate, and register by the aid of wheel work the distance sunk.

Hatches or Hatchways.--

Openings in the deck. In a yacht there is usually the fore hatch used by the crew, and the sail room hatch aft. Generally the coverings for hatchways are termed hatches, but strictly this is inaccurate, and the correct term would be hatch covers.

Hatchway Coamings.--

The raised frame above the deck upon which the hatches or hatch covers rest.

Haul.-- To pull on a rope.

Haul Aft the Sheets.-- The order to haul in the sheets for close-hauled sailing.

#### Haul Her Wind.--

To become close-hauled after sailing free. Generally to sail closer to the wind when sailing free. Haul to the wind. Haul on the wind.

#### Hauling up a Small Yacht.--

The yacht should first be lightened of all movable weights such as ballast and spars and general outfit.

This having been done, four 2-1/2-in. or 3-in. deal planks must be provided, with four rollers 5ft. or 6ft. long and 3-1/2-in. diameter. The yacht should then be cradled with a very stout rope or reliable piece of chain, which should be lowered so far as the rabbet of the garboard strake, and be supported at that level by small lines under the quarters and at the bow above the forefoot, where the ends should be firmly secured with a lashing.

A crab winch with a large double and single block is commonly used for heaving up, which must be firmly fixed by driving posts into the ground. On an inland lake, the first part of the business is the most difficult, for as the water will not leave the boat to allow adjustment of the preliminaries, the boat must be made to leave the water; and to do this, the deals, which will do the duty of ways, must be got under her by loading the ends at the under sides. Two of the rollers should be made of sinking wood, and the yacht having been laid on her side, she should be hauled in until aground, and being still waterborne, the first roller can then be introduced under her, and shortly a second and third, when she can be hauled out of the water as the rollers travel on the deals.

Greased planks must also be placed under the bilge. Four men should turn the winch handles, and not less than two must attend the rollers to watch and keep them square on the ways, which is done by striking the ends of them with a maul or small sledge hammer when they commence getting out of square. If the yacht is to be continually kept on this inland lake, it might be worthwhile to have an iron carriage made for her, consisting of an oblong frame of the length of a third of her load waterline, with 6in. iron wheels, with edges or rims.

Edge rails for this can be nailed to the four deal ways, and a stout oak or elm plank could be bolted to the framework of the carriage. This plank

should be, say, a foot wide and 2-1/2in. thick, and about 6in. longer each side than the extreme breadth of the vessel, which should be provided with legs cut with tenons or having bolts to go through holes or sockets in this plank. The legs should be secured to the vessel's sides with through bolts, with either lever or butterfly nuts on the inside, screwing on against a metal plate. When this little temporary railway is once obtained, hauling the yacht up will be a very simple matter, and she may remain on one deal's length of it as long as required.

There should be a hole in the forefoot, and also at the same level close to the sternpost, by which the yacht can be lashed square on the carriage, as soon as she is far enough out of the water; and when in the desired position she can be shored up by four shores, one under each quarter, and others under each bow, and a portion of ballast might be put on board, unless she has already sufficient lead or iron on her keel to steady her against violent gusts of wind, which have very great power on the side of any craft in an exposed position, and against which provision must be made.

If such a carriage as above described is made, the rails will, of course, be carefully adjusted to the correct width, so that the wheels will travel easily on them, and about a foot from each end of the deal ways an iron plate should be screwed with socket holes to receive a clamp or sleeper bar, the ends turned down to form tenons to go into these socket plates, which will keep the rails and deals square with each other. By shifting the after pair of rails as required, it is evident that the yacht may be removed any reasonable distance on flat or nearly flat ground, with facility.

Haul Round a Mark, Point, &c.--

When a vessel in sailing free has to come closer to the wind as her course alters round a point, buoy, &c. By hauling in the sheets the vessel will sometimes luff sufficiently without any help from the helm.

Haul the Boom Aboard !-

An order to get the main boom hauled in on the quarter for close-hauled sailing.

Haul Up.--

To hoist a sail. A vessel is said to "haul up" when she comes, or is brought nearer the wind or nearer her course if she has been sailing to leeward of it. Haul up a point, haul up to windward of that buoy, &c.

Hawse Bags.--

Canvas bags filled with oakum, used in a heavy sea to stop the hawse holes, and prevent the admission of water. Wooden hawse plugs are generally used in a yacht.

Hawse Pipe.--

The pipes in the hawse holes in the hull through which the cables pass.

Richard Falconer, in his Dictionary published at the end of the last century says, there are some terms in the sea language which have also immediate relation to the hawse, as :

"A bold hawse," signifies the holes are high above the water. [This would be equivalent to saying that the ship was high at the bows.]

"Veer out more cable" is the order when a part of the cable which lies in the hawse is fretted or chafed, and by veering out more cable another part rests in the hawse.

"Fresh the hawse" is an order to lay new pieces upon the cable in the hawse to preserve it from fretting. [The above two terms are applied to hemp cables.]

"Burning in the hawses" is when the cables endure a violent stress.

"Clearing the hawses" is the act of disentangling two cables that come through different hawse.

"To ride hawse full" is when in stress of weather a ship falls with her head deep in the sea, so that the water runs in at the hawse.

"Athwart hawse" is when anything crosses the hawse of a ship close ahead, or actually under and touching the bows; as "she fell athwart our hawse, and her aide was stove in."

"Cross hawse," when the cables out 'of different holes cross on the stem as an X. Distinct from "clear hawse," which is when each cable leads direct to the anchor from its hawse hole.

"Foul hawse," when the cables are crossed in any way by the ship swinging round.

Hawser.-- A large rope laid up with the sun or right-handed.

Hawse Timbers.--

The large timbers in the bows of ships in which the hawse holes are cut.

Head.--

The fore part of a vessel. The upper part of a sail. "By the head" means pressed or trimmed down by the head, in contradistinction of "by the stern." To head is to pass ahead of another vessel.

Head Earings.-- The earings of the upper part of a squaresail, &c.

Heading.--

The direction of a vessel's head when sailing. Generally used when sailing close hauled, as "she headed S.E. on port tack, and N.E. on starboard tack." In such cases it is never said she "steered S.E.," &c., as practically the vessel is not steered, but her course alters with the wind. A vessel "steers" such and such a course when she is sailing with the wind free.

Headland.-- A high cliff or point.

Headmost.-- The first in order.

Head Reach.--

In sailing by the wind when a vessel passes another either to windward or to leeward. A vessel is said to "head-reach" when she is hove to, but forges ahead a knot or two. (See "Fore-reach.")

Head Rope.-- The rope to which the head of a sail is sewn.

Head Sails.-- A general name for all sails set forward of the foremost mast.

Head Sea.--

The sea met when sailing close-hauled. In the case of a steamship she may meet the sea stem on.

Heed Sheets.-- The sheets of the head sails.

Head to Wind.--

When a vessel is so situated that the wind blows no more on one bow than the other; when her head is directly pointed to the wind.

Head Way.-- When a vessel moves ahead through the water.

Head Wind.--

A wind that blows directly down the course a vessel is desired to sail. A foul wind. To be headed by the wind is when the wind shifts so that a vessel cannot lie her course, or puts her head off to leeward of the course she had been heading.

Heart.--

A sort of deadeye made of lignum vitae with one large hole in it to pass a lanyard through turn after turn instead of through three holes, as in an ordinary deadeye. They are something like a heart in shape, and the lower one is iron bound; the stay goes round the upper one either by a spliced eye or an eye seizing; also used for jib sheet.

Heart Thimble.--

A thimble shaped like a heart put in the eye splices of ropes. These are usually made solid for rigging screws.

Heave.--

To bring a strain or drag upon a capstan bar, purchase, &c. To throw, as "heave overboard."

Heave About.-- To go into stays to tack.

Heave Ahead.-- To draw a vessel ahead by heaving on her cable, warp, &c.

Heave and Pawl.--

In heaving on the windlass or capstan to give a sort of jerking heave, so that the pawl may be put in, and so prevent "coming up," or the cable flying out again. Also, in heaving on the mast winches "heave and pawl" is generally used in the sense of "belay;" that is stop heaving at the next fall of the pawl.

Heave and Rally.--

An order to encourage the men to heave with energy when there is a difficulty in breaking the anchor out of the ground.

Heave and Sight.--

A call given after the anchor is off the ground, and when it is known to be near the surface on account of the muddy condition of the water it is making in consequence of the mud on the flukes. Literally it means one more heave and you will see the anchor above water.

Heave and Stand to your Bars !-

An order given after heaving until the vessel is over the anchor to give another heave as the bow descends with the sea and then stand fast, as in all probability the next time she scends, or lifts, her head with the sea she will break the anchor out of the ground.

Heave and Weigh.-- The last heave of the capstan that breaks the anchor out.

Heave Down.--

To careen a vessel by putting tackles on her mastheads from a hulk or wharf, and heeling her so as to get at her aide which was under water for repairs, &c. A vessel is said to be hove down by a squall when she does not right immediately.

Heave in Stays.-- The same as heave about.

Heave Short.--

To heave on the cable until the vessel is over the anchor, or the cable taut in a line with the forestay, so that with another heave, or by the action of the sails, the anchor will be broken out of the ground.

Heave the Lead.-- The order to cast the lead for sounding.

Heave the Log.-- The order to throw the log ship overboard to test the rate of sailing.

Heave To.--

To so trim a vessel's sails aback that she does not move ahead. The same as "lie to" or "lay to" as sailors call it. If the gale be a fair one the ship usually scuds before it; if a foul one she heaves to.

Heel.--

The lower after end of anything, as heel of the keel, heel of the mast (the fore part of the lower end of a mast is called the toe), heel of a yard, heel of the bowsprit. The amount of list a vessel has.

Heeler.-- A heavy puff that makes a boat heel.

Heel Rope.-- The rope by which a running bowsprit or topmast is hauled up or out.

Heel, To.-- To incline, to careen, to list over, to depart from the upright.

Height.-- A distance measured in a vertical direction, as height of freeboard, &c.

Helm.--

The apparatus for steering a vessel, usually applied only to the tiller. The word is derived from Saxon helma or healma, a rudder; German helm, a handle and a rudder.

Helm's A-lee.--

The usual call made in tacking or in going about, as a signal for the crew to work the sheets, &c. The helm is a-lee when the tiller is "put down" or to leeward. (See "Lee Helm" and "Weather Helm.")

Helm Port.-- The rudder trunk in the counter.

Helm, to Port the.--

To put the helm or tiller to the port side, and thereby bring the vessel's head round to starboard. If a wheel is used besides a tiller the action of turning the wheel to port brings the vessel's head round to port, as the tiller is moved by the chains to starboard. Thus with a wheel, when the

order is given to port the wheel is turned to starboard. The rule observed in French war ships and merchant ships, since 1876, is this : The order to "port" means to turn the vessel's head to port; and the order to "starboard" to turn the vessel's head to starboard.

Helm, to Put Down the.--

To put the tiller to leeward and thereby bring the vessel to the wind, or luff; the contrary action to putting up the helm.

Helm, to Put Up the.--

To bring the tiller to windward, so that the rudder is turned to leeward, and consequently the head of the vessel goes off to leeward or "off the wind."

Helm, to Starboard the.-- To put the tiller the way opposite to port.

Helm, to Steady the.--

To bring the helm or tiller amidships after it has been moved to port or starboard, as the case may be.

Helmsman.--

The man who steers a vessel. If a man can sail a vessel well on a wind he is generally termed a good "helmsman," and not steersman.

Hermaphrodite Brig.--

A two-masted vessel, square-rigged forward, and fore-and-aft canvas only on mainmast, usually called a brigantine.

High and Dry.--

The situation of a vessel that is ashore when the ebb tide leaves her dry.

High Water: Full and Change.--

On all coast charts the time of high water at the full moon and new moon is set down, the time of high water at the full moon and new moon always occurring at the same hour throughout the year; therefore, if the time of high water at full and change (new moon) is known, and the age of the moon, the time of high water for any particular day can be roughly calculated, about twenty-five minutes being allowed for each tide.

#### Hipping.--

To make a vessel broader on the beam about the waterline. It is an American term, and became generally known in England in connection with the celebrated American yacht Sappho. After her defeat by the English yacht Cambria, in the match round the Isle of Wight in 1868, she was taken to New York and hipped; that is, her planking was stripped off amidships, and each frame backed with timber, so that the vessel might be made to have more beam about the waterline. The backing is "faired" to the frames and then planked over. Sometimes, if it is not sought to give the vessel more than five or six inches more beam, the hipping is accomplished by a doubling of plank; in such cases a rabbet is cut for the edges of the new plank in the old plank; the seam is then caulked and payed. If the new planks were worked to a feather edge water would get underneath, and it might soon bring about decay.

#### Hire of a Yacht.--

The hire of yachts varies from 30s. per ton per month to 40s. per ton. Usually the owner pays all wages, including those of the steward and cook, unless the hirer specially desires to engage his own cook and steward; also often provides for the mess of the master and mate. The crew always provision themselves; the owner clothes the crew. The hirer pays insurance. The exact details of hiring are usually a matter of special arrangement. Sometimes at the end of a season, if a yacht is already fitted out, she may be hired for a less price per month. When a yacht is wanted on hire, the best plan is to advertise.

For a form of agreement, which can, of course, be varied, see the section which follows.

Hiring a Yacht (Agreement for).-- Memorandum of Agreement made and entered into between \_\_\_\_, owner of the yacht \_\_\_\_, of or about tons \_\_\_\_ y.m., and hereinafter termed the owner, on the one part, and \_\_\_\_ hereinafter termed the hirer, on the other part, whereby the said owner agrees to let and the said hirer agrees to hire the said \_\_\_\_ yacht \_\_\_\_ for the period of \_\_\_\_ calendar months from the \_\_\_\_ day of \_\_\_\_ to the \_\_\_\_ day of \_\_\_\_ for the sum of \_\_\_\_ as rent to be paid in the manner following, that is to say, the sum of \_\_\_\_ on the signing of this agreement, receipt of which sum is hereby acknowledged, and the balance at the expiration of the said term of hire, less any sum or sums advanced to the captain on account of current wages for himself and

crew, which said advances the owner hereby authorised to be made and the hirer agrees to make if required, but not to exceed the total sum of \_\_\_ during the aforesaid period.

The owner agrees to provide an efficient crew to manage and navigate the said yacht, consisting of master, mate, , and to clothe them and pay them their wages, but the hirer agrees to find his own steward and to pay him his wages. The owner agrees to leave such glass, crockery, and such linen as the yacht is provided with for the hirer's use, but the hirer agrees to find his own plate and cutlery.

The hirer agrees to pay for any damages or losses in or about the said yacht which shall not be recoverable under the clauses of the policy of insurance, which shall include the twenty pounds damage clause and the naval collision clause.

The hirer agrees to take over the said yacht at the port of \_\_\_ on the said

\_\_\_ day of \_\_\_ , she being in all respects ready for sea, and to redeliver her at the expiration of the said term of \_\_\_ at the port of \_\_\_ in the like good order as that in which he received her, reasonable wear and tear only excepted, provided always that in the event of the said yacht meeting with any accident to her hull or machinery whereby the hirer is deprived of her use for a period of not less than forty eight hours, or if the hirer is deprived of the use of the yacht through any strike, mutiny, or disaffection on the part of the crew, such accident, strike, mutiny, or disaffection not being brought about by any act or order of the hirer, the owner agrees to allow an extension of the said term for the like number of days the hirer has been deprived of the use of the said yacht from the causes named, but in the event of the hirer not requiring the use of the yacht for such extended period \_\_\_ after the said \_\_\_ day of \_\_\_ , then a pro rata return of rent shall be allowed to him by the owner for such number of days as the hirer may have been deprived of the use of the yacht from the causes named.

It is further agreed that the hirer shall have the option of extending the said term of hire and to pay for the same at the rate of \_\_\_ , providing he gives the owner \_\_\_ weeks' notice of his intention of so extending the time; and, in all cases of such extension, the conditions named herein shall remain in force, and the owner shall not be bound to extend

the time beyond the fortnight named unless he mutually agrees with the hirer so to do.

The hirer agrees to pay all harbour and dock dues, and for bills of health and all customhouse charges and pilotage, and to find and pay for all consumable stores, such as water, coal, oil, cotton waste, and the like, and generally to defray all current expenses in working the yacht during the period of hiring.

Signed, \_\_\_\_ Witness, \_\_\_\_

Hitch.--

A mode of fastening a rope. There are many kinds of "hitches," such as Blackwall hitch, timber hitch, clove hitch, rolling hitch, &c. A hitch is also a short tack or board made in close-hauled sailing.

Hogged.--

The situation of a vessel when she rises higher in the middle part than at the ends; the opposite of sagged.

Hogging Piece.--

A piece of timber worked upon top of the keel to prevent its hogging or rising in the middle.

Hoist.--

The length of the luff of a fore-and-aft sail, or the space it requires for hoisting. The hoist of a flag is the edge to which the roping is stitched.

Hoisting the Pennant.--

A commodore is said to hoist his pennant when he goes on board the first time, as his pennant is then hoisted.

Hoist, To.-- To raise anything by halyards or tackles, &c.

Hold.--

The interior of a ship ; generally understood to mean the space in which cargo, &c., is stowed away.

Hold a Good Wind.-- To sail close to the wind.

Hold her Head Up.--

A vessel is said to "hold her head up" well that does not show a tendency to fall off.

Holding On.-- To continue sailing without altering a course or shifting sail.

Holding On to the Land.--

To keep the land aboard in sailing; not departing from the land.

Holding Water.--

Resting with the blades of the oars in water to check a boat's way or atop her.

Hold On.--

The order given after hauling on a rope not to slack any up, as "Hold on all that."

Hold On the Fore Side.--

If, when hauling on the fall of a tackle, some of the hands have hold of it on the tackle side of the belaying pin, the hand that has to belay sings out, "Hold on the fore side" to those in front of him, and "Come up behind" to those behind. The hands on the fore side thus hold the fall and keep it from running through the blocks whilst it is being belayed. (See "Come Up.")

Hollow Lines.--

The horizontal lines of a vessel that have inflections.

Hollow Masts.--

Hollow wooden masts are prohibited under the International Rules in the classes above 10 metres (32.8ft.), and hollow metal masts are prohibited in all classes up to 23 metres (75.4ft.) inclusive. Racing yachts of 10 metres and under use hollow wooden masts.

Hollow Sea.-- When the waves have a short, steep, and deep trough.

Hollow Spars.--

All racing yachts use hollow spars-boom, gaff, spinnaker-boom, topsail yard and jackyard, and topmast are constructed of hollow wood. The

tree is sawn down the middle and the centre scooped out, the parts are generally turned end for end, so as to reverse the grain, and then glued together with cement. Fife, of Fairlie; Robertson, of Sandbank, Argyllshire; Camper and Nicholson, Gosport; Aldous, Brightlingsea; Hollwey, of Dublin; and Turk, of Kingston-on-Thames, are makers of hollow wooden spars for racing yachts.

Home.--

Any operation that is completely performed, as "sheeted home" when the clew of a sail is hauled out to the last inch, &c. An anchor is said to come home when it breaks out of the ground.

Hood.-- A covering for skylights, sails, &c.

Hood Ends.--

The ends of the plank which are fitted into the rabbet of the stem or stern post; termed also the hooded ends, meaning probably that they are "housed" or covered in by the rabbet.

Hooker.-- A small coasting craft.

Hoop.-- See "Mast Hoop" and "Spider Hoop."

Horizontal Lines.--

The curved lines on the Half breadth Plan which show the water lines, the plane of each section being parallel to the horizon.

Horizontal Keel.--

A plate of iron fitted to the underside of a boat's keel, a fore-and-aft view showing thus [fig] The plate should be made of iron plate of from 1/8in. to 3/8in. in thickness. For a boat 12ft. long the plate should be 8in. wide at the middle (so as to project about 3in. on either side of the keel), and 8ft. long, tapering each end to the width of the wood keel, to the underside of which it is screwed. The wood keel should extend at least 3in. below the garboards to render the plate effective. It is necessary that the plate should be kept horizontal, or in other words, in the same plane as the horizon; inasmuch as if the keel dips forward or aft the tendency of the plate will be to draw the boat either by the head or stern. A horizontal keel will increase a boat's weatherliness, but not to the extent of a centre board. The deeper the wood keel of the boat is

the more effective the horizontal plate will be, as it will clear the eddy water along the garboards, and prevent the possibility of the bilge of the boat as she heels over being lower than the keel. However, if a very deep keel is necessary to make the horizontal plate effective, it may be as well to have another inch or so, and dispense with the plate altogether. The plan does not appear to have met with much favour.

Horns.--

The projections which form the jaws of gaffs or booms. The outer ends of the crosstrees are sometimes termed horns.

Horn Timbers.-- Timbers which help support the counter.

Horse.--

A bar of iron or wood, or a rope for some part of a vessel's rigging to travel upon, such as the mainsheet.

Hounds.--

The projections on a mast which support the lower cap, cross trees, and rigging.

House.--

To lower a topmast down within the cap. Sometimes in old racing yachts a topmast was fitted with one reef to shorten it about 3 feet. This plan was adopted to set a very large balloon topsail, but had very little to recommend it. Modern racers do not house their topmasts.

Housing of a Mast.-- The part under the deck.

Hove Down.--

Said of a vessel that is very much careened or heeled by the wind or other cause.

Hove her Keel Out.--

Said of a vessel that heels over, so as to show her keel. (Generally used only as a figure of speech.)

Hove in Sight.--

To come into view; said of a sail that appears above the horizon or round a headland; also of the anchor when it comes above water.

Hove in Stays.--

Said of a vessel when she tacks, often meaning that a vessel tacks suddenly.

Hove Short.--

When the cable is hove in so that there is but little more length out than the depth of water.

Hove-to.--

The condition of a vessel with her head sails aback, so as to deprive her of way. Vessels hove-to on port tack should fill or get way on, if approached by a vessel on the starboard tack; but if the vessel on port tack can, by hailing or otherwise, make the other vessel understand the situation, the latter should give way; this is the custom of the sea, but there is no statutory regulations concerning the point.

Hoy.-- A small vessel. Also an abbreviation of "Ahoy."

Hug the Land.-- To sail along as close to a weather shore as possible.

Hug the Wind.-- To keep very close, or too close to the wind.

Hulk.-- A vessel whose seagoing days are over, but is still useful as a store ship, &c.

Hull.-- The ship, as distinct from her masts and rigging.

Hull Down.--n the sea when only a vessel's spare appear above the horizon.

Hull, To.-- To strike the hull with shot, &c.

Hull-to, or A-hull.--

With all sails furled and the helm lashed to leeward, leaving the waves to do their worst.

I. J.

Immersed.--

Underwater. The opposite of emersed, which means taken out of water. The "wedge of immersion" is the part of a vessel put into the water when she heels over. The wedge of emersion is the part taken out of the water. Sometimes termed the "in" and "out" wedges.

In.--

The prefix to a curt order to take in a sail, as "In spinnaker," "In squaresail," or "In boats," &c.

In and Out Bolts.--

Bolts that pass through the skin and frame of a vessel through and through.

In Board.-- Inside a vessel's bulwarks, being the opposite to outboard.

In Bow.-- In rowing, the order to the bow man to throw up his oar and be ready with the boat hook, to help bring the boat alongside.

Inclination.-- Heeling from an upright position. Synonymous with careening and listing.

In Haul.-- A rope used to haul sails on board, as the inhaul of a jib or spinnaker.

In Irons.-- A vessel is said to be in irons when she is brought head to wind, and, having lost her way, will not fall off on one tack or the other.

Initial Stability.-- The resistance a vessel at the first moment offers to being heeled from the upright position, as distinct from the resistance she may offer to being further heeled when inclined to considerable angles. Thus beamy boats are said to have great initial stability, because they resist powerfully, being heeled to small angles; narrow vessels, on the other hand, are readily heeled at first, but may offer greater resistance, as they are farther heeled, whereas a beamy boat's resistance may rapidly decrease as she gets over to large angles of say 30°.

Inlet.-- A creek. A pipe to admit water to the hold.

Inner Jib.-- The jib next the forestay sail in schooners where two jibs are carried.

Inner Post.-- A piece of timber sometimes worked inside the sternpost.

Inshore.-- Close to the shore.

Insurance.--

Yachts are generally insured against fire, but probably not more than half are insured against the risks of the sea when in commission. The rates vary from 5s. to 10s. 6d. per cent. par month on the amount insured, according to the nature of the voyage, the condition of the

yacht, and the time of year. Also if the owner desires a £20 damage clause in the policy a higher rate must be paid, so also if the yacht is insured against the risks of yacht racing.

Compared with ordinary shipping insurances, the risks on yachts are very light. They are, almost without exception, well found, sufficiently manned, and perfectly seaworthy; and, as a rule, they avoid bad weather as much as possible. Except in rare cases, a yachting skipper is not compelled to drive on in the face of heavy weather. He is not generally tied to time in making a passage, and his owner does not look askance at him if he lies in harbour a few days waiting until an improvement takes place in the weather.

As a general rule, serious casualties to yachts are not frequent, and total losses are, fortunately, rare. Of course, with the largely increased number of yachts afloat, they do now and then happen, and the wreck of the Nyanza, of the Clarissa, and the Caterina, and the sad accident by which Lord Cantelupe lost his life, are instances in point. But still it must be admitted that these cases are exceptional, and, compared with ordinary shipping misfortunes, very uncommon.

It is a very common idea that it would be possible to insure yachts at a lower rate than they are at present insured, with profit to the underwriters, and the system of mutual insurance has been successfully introduced for small yachts. However, in these days of competition, it may be safely assumed that the present rates are not too remunerative. There can be no doubt whatever that of late years owners have become more awake to the effect of their policies, and are more prone than formerly to make a claim when any mishap occurs.

Serious casualties are, fortunately, rare ; but it will be readily understood that when a yacht does meet with even a slight accident the cost of repairs can hardly be compared with that arising from a similar mishap to a merchant vessel. A yacht owner is not content with mere patchwork repairs, he wants, and he is entitled to have, his vessel made as good as she was before the damage was sustained. If he has a small piece knocked out of his rail he probably wants it replaced, and if a plank or two be badly chafed he wants them taken out and new ones put in, instead of being simply planed down, or having the damage passed over altogether, as it would likely be in a trading vessel. Then it must be borne in mind that all yachting work is of a far more expensive and highly finished kind than ordinary ships' work. These facts must be remembered by the owner in estimating what is a fair premium on his policy.

Possibly underwriters do not, in considering the premiums, sufficiently distinguish between really first class yachts and those which are becoming the worse for wear. To a vessel in first rate condition a stranding, unless in a very exposed position, often means no damage at all, whilst to an old vessel it very probably means recaulking and new copper. Once insured, an owner may feel satisfied that any claim which he may send in will be fairly and even liberally dealt with. The form of policy which is adopted is certainly a rather antiquated kind of document, and to the uninitiated appears hardly suited to meet the requirements of yacht owners. It seems, however, to be well understood between underwriters and owners what the intention is, and the latter will find but little difficulty in obtaining payment for any fair claim which they may present.

The requirements of a yacht owner with regard to a policy are well understood, and any Lloyd's agent or respectable broker will see that it is put into proper form. It is usual and right to have a twenty-pound clause inserted, as the three percent clause is hardly suitable to meet the class of accidents to which yachts are liable. It is, of course, not essential that every policy should contain a collision or running-down clause, otherwise an owner may be called upon to pay some heavy sum for damage caused to another vessel, and by this clause the underwriters undertake to pay three-fourths of any sum which the assured may become liable to in the case of a collision.

Time policies are usually adopted by yacht owners, and are no doubt most convenient for them. It is, however, very necessary, in the case of an extended voyage, for the owner to leave instructions with his agent or broker to renew the policy in case the voyage is not completed at the time anticipated. An owner must bear in mind that, if he wishes to recover the full amount of his loss, he must insure his vessel up to her full value ; and if, as he sometimes does, he declares her value, he must insure on that amount. In case an accident occurs, there are various steps necessary for him to take. The master must make a deposition before the Receiver of Wreck, and note a protest before a notary. If the damage is considerable, it is advisable for him, and for some of the crew, to extend the protest before a notary ; or, if the accident happens abroad, before a British Consul. Such protests must give a full account of the manner in which the damage sustained occurred, and must clearly show that it arose from the perils insured against. It is also advisable to give notice to the nearest Lloyd's agent, and to call in Lloyd's surveyor to examine and report on the damage sustained, as his

report will always be respected by underwriters, and as considerably less difficulty will arise in obtaining payment of a claim based on the report of a Lloyd's surveyor than on the report of any casual surveyor who may be consulted. An owner must always bear in mind, when any accident occurs, even although he be fully insured, that it is his duty to do everything which lies in his power to save loss to his underwriters, and in case of a collision, if he be not in fault, he must do all he can to enable his underwriters to obtain payment from the colliding vessel. A question often arises where a vessel is very seriously damaged, either stranded or sunk by a collision, whether or not she is to be considered as a total loss. It must be borne in mind by owners that if the vessel is not actually gone, underwriters always have the right to repair her at their own expense and hand her back to the owner if they think fit to do so.

Losses are of two kinds, either a total loss or a constructive total loss. In the latter case, if the owner has reasonable grounds for supposing that the repairs of the vessel will amount to more than her full value, he must send a notice of abandonment to the underwriters, which they must accept or decline within a reasonable time. If they accept it, they must of course pay on a total loss—they having the benefit of any salvage which may be made. If they decline to accept it, they must be prepared to bear the expense of restoring the vessel to her former condition. An owner must always remember that, though insured, it is his duty to act in every case as though he were uninsured, and when he presents his claim, he must be in a position to prove that he has used every reasonable exertion to prevent loss to his underwriters.

The following risks are not covered under an ordinary marine insurance policy, i.e., sums which an owner may become liable for in respect of:

1. One-fourth of the damage inflicted on another vessel by collision.
2. Injury to docks, wharves, piers, jetties, banks, buoys, &c., or the removal of any wreck or obstruction.
3. Loss of life or personal injury on board or near his vessel and life salvage (if not recoverable under the ordinary policy).
4. Law costs in defending any action in respect of a claim under paragraphs 2 and 3, provided such defence he made with underwriters' consent.
5. Costs or expenses properly incurred by an owner in connection with Board of Trade inquiries and coroner's inquests.

These liabilities can be insured against, but it is a condition of the insurance that the vessel shall also be insured under an ordinary policy

containing the usual collision clause, and that the value insured shall be not less than the value insured under such ordinary policy.

Some very grave questions may arise if an owner acts as his own sailing master, and manages or controls his yacht when underway.

In about 1625, limitation of the liability of shipowners came in as to British ships on the ground of public policy and as necessary for the encouragement of shipping, but not in any marked or effectual way until about 1734, and in the reign of George III an Act was passed, "that it was expedient to encourage the owning of British ships," and for such end limited the owners' liability in collision to the value of ship and freight. In 17 & 18 Victoria, c.104, the same limit was carried on as to damages recoverable in respect of loss of life or injury, and placed the value at £15 per ton of the wrongdoing ship. Difficulties were found in working these enactments, and in the result the Act (25 & 26 Victoria, c.63, s.54) was passed, and is continued by the Act of last year, placing the limit at £15 where there was loss of life, and at £8 per ton otherwise. There is, of course, no longer in these days the same ground for passing Acts of Parliament as in 1625, but the present state of shipping, the risks of the seas, and questions of freight earning and of insurance have not caused the Legislature to, as yet, find fault with the statutory limitation of liability.

The Act which gives the limitation of liability does so upon a term which is extremely hard upon yacht owners and upon the large class of coaster owners who command their own vessels, and it is a subject which demands serious consideration and amendment by the Legislature. The objectionable term is in section 54 : "The owners of any ship, whether British or foreign, shall not in cases where all or any of the following events occur without their actual fault or privity, that is to say . . ." &c. So that the benefit of limitation given by the Act to the owner who remains ashore, or who is too ignorant of seamanship to be found in "fault or privity to" the collision, is denied to the expert owner who takes charge of his own craft, even though he be a Board of Trade certificated master mariner or a naval officer; and yet, so far as Acts of Parliament at present go, an owner may place his gardener on board his yacht as captain, and if such gardener has told his master that he knows how to command the craft, it would be difficult to satisfy a court that the owner was actually in fault by such appointment for a subsequent collision at sea.

The present certificate as master issued by the Board of Trade confers no benefit or exemption upon a yacht owner, and undoubtedly if an

owner holds such certificate of competency he, being on deck before and at the collision, could not obtain the limitation of liability in any event.

**In the Wind.--**

When sailing close hauled, if a vessel comes to nearly head to wind she is said to be "all in the wind."

**In Wale.--**

The clamp or strake of timber inside the top strake of a small boat, generally termed the gunwale.

**Irish Pennants.--** Loose ends of ropes, &c., hanging about a vessel's rigging or sails.

**Iron Moulds.--** Diluted oxalic acid will remove iron moulds from sails; but the instant the iron mould is removed the part should be well rinsed or soaked in fresh water, or it will be rendered rotten.

**J.**

**Jack.--**

The Union Jack. The national British flag, used by the Navy and Army. It originally only had the red St. George's cross on a white field. Upon the accession of the Scotch King James to the English throne, St. Andrew's cross on a blue ground was added, and the flag was thereupon termed the "Union Jack" and National Flag, "For the Protestant religion and liberty." The red cross of St. Patrick was added (over the white St. Andrew's cross) upon the union with Ireland 1801. (See "Union Jack" and "St. George's Jack.")

**Jack, Hydraulic.--**

A mechanical contrivance used for the same purpose as a screw jack.

**Jack in the Basket.--**

A boom or pole with a cage on the top used to mark a shoal or bank.

**Jack Screw or Screw Jack.--** A powerful screw used for moving heavy weights.

Jack Stay.--

A rod of steel shaped as a railway metal, or a rope, usually wire rope, for sails or yards to travel on. Also the steel railway or wire rope stay on the boom of laced sails on which the hanks or lacings are attached.

Jack Yard.--

The small yard on the foot of large topsails to extend them beyond the gaff. Termed also jenny yards and foot yards.

Jack Yard Topsail.-- A modern racing topsail set on two yards. (See "Balloon Sails.")

Jam.--

In belaying or making fast a rope to close up or jam the turns together. To clinch the hitch of a rope by passing the end through a bight. (See "Wind Jamming.")

Jaws of a Gaff.--

The horns at the end of the gaff which half encircle the mast. A rope called a "jaw rope," or jaw parrel, is fitted to the ends of the horns, and, passing round the mast, keeps the gaff in its place. Wood beads are rove on the rope to make it slide easily on the mast.

Jenny Yard.-- See "Jack Yard."

Jettison.-- To throw cargo overboard.

Jetsam.--

Goods thrown overboard in heavy weather to lighten the ship. (See "Flotsam.")

Jib.--

The outer triangular sail set on the bowsprit. A cutter usually carries six jibs: balloon jib, No.1, 2, 3, 4, and 5 jib, the latter being the storm or spitfire jib.

Jibb or Jibe.-- See "Gybe."

Jib-boom.-- The spar beyond the bowsprit in schooners upon which the outer jib is set.

Jib Foresail.-- In schooners the stay-foresail. (See "Fore-staysail.")

Jibheader.--

An abbreviation of the term jibheaded topsail. A thimble-headed topsail. The triangular topsail of a fore and aft vessel.

Jib Stay.-- In schooners the stay to which jibs are hanked.

Jib Topsail.--

A triangular headsail made of light canvas set upon the topmast stay above the jib.

Jib Traveller.--

The iron hoop, with hook and shackle, on the bowsprit to which the jib tack cringle is hooked.

Jigger Mast.-- The mizen mast of yawl or dandy.

Joggle.--

In the shipwright's craft, carpentry, and masonry, a notch or notches forming a box scarf to enable two pieces of wood, &c. to fit together. The heels of timbers are sometimes joggled to the keel in this manner.

Joggles.-- Notches cut in a boat's timbers for the plank to fit into.

Join Ship.-- To come on board a vessel, or to enter as a seaman on board.

Jolly Boat.--

A yacht's boat larger than a dinghy, and not so large as a cutter. Used by a merchant ship much the same as a dinghy by a yacht.

Jolly Roger.--

A pirate's flag. A white skull and cross bones on a black field.

Jumpers.--

A short frock made of duck worn by sailors. The main stays of schooners when they lead forward to the fore deck.

Junk.--

A Chinese ship. Also old rope. Also old salt beet as tough and hard as old rope.

Jury.--

A makeshift or temporary contrivance, as jury mast, jury rudder, jury bowsprit, &c. which may be fitted when either has been lost or carried away.

K. - L.

Kamsin.--

A south-westerly wind which is said to blow on the Nile for fifty days during March and April. The simoom.

Kedge.--

The smallest anchor a yacht carries, used for anchoring temporarily by a hawser or warp. To kedge is to anchor by the kedge, or to carry the kedge anchor out in a boat and warp ahead by it.

Keg.-- A small cask, or breaker.

Keel.-- The fore-and-aft timber in a vessel to which the frames and garboard strake are fastened.

Keel.-- An awkward-looking north-country boat with one lugsail forward.

Keel Haul.-- A mode of punishment formerly in use in the Royal Navy. A rope, passed from yardarm to yardarm underneath the bottom of the ship. A man with a weight attached to his feet was made fast to one part of the rope and hauled from one yardarm to the other, passing underneath the bottom of ship. Keel hauling is never practised now, but in punning language is sometimes referred to as "undergoing a great hardship" of some kind.

Keelson or Kelson.-- An inside keel fitted over the throats of the floors.

Keep her Full.-- When close hauled, an admonition not to keep too close to the wind.

Keep her Off.-- An order to sail more off the wind; to put the helm up. To keep off is to keep away from the wind.

Keep your Luff.-- An admonition to keep close to the wind. In match sailing, an order given when a vessel is being overtaken by one coming up from astern not to give way and allow the vessel to pass to windward. It is an old maxim in close-hauled sailing, "keep your luff

and never look astern" meaning that if you sail as close to the wind as possible the overtaking vessel must take her passage to leeward or risk a collision by trying to force a passage to windward.

Kentledge.-- Rough pig iron used as ballast.

Ketch.-- A two-masted vessel, something like a yawl, but with the mizen stepped ahead of the stern post, and not abaft it as a yawl has it. Ketches were formerly common in the Royal Navy for yachts and bomb boats. A rig now much used for large cruising yachts. It is handier than a schooner, except in very large yachts. The Y.R.A. rules enjoin that the distance between the masts shall be half the length of water line, and the smaller sail of the two gaff sails must be aft.

Kevel or Cavel.-- Large pieces of timber used for belaying ropes to, such as the horizontal piece which is bolted to the stanchions aft to belay the main sheet to.

Key Model.-- A model made by horizontal layers or vertical blocks, showing either the water lines or vertical sections of a vessel.

Kit.-- A sailor's belongings in the way of clothes, &c. which he carries in his bag or keeps in his locker.

Kittiwake.-- A kind of seagull.

Knees.-- Pieces of timber or iron shaped thus - L - used to strengthen particular parts of a ship. A hanging knee is the one fitted under the beams; a lodging knee is a knee fitted horizontally to the beams and shelf, or to the mast partners or deck beams. Floor knees are V-shaped, like breast-hooks.

Knight Heads.-- Strong pieces of timber fitted inside and close to the stem to bear the strain of the bowsprit. Called also "bollard timbers." The name is said to be derived from the windlass bits, the heads of which formerly were carved to represent the heads of knights.

Knot.-- A division of the old log line bearing the same relation to a nautical mile as the period of the sand glass did to an hour. It is frequently but erroneously used to indicate a sea mile or nautical mile, therefore to say that a vessel has a speed of 8 knots an hour is not correct. The Admiralty mile is 6080ft, a statute mile is 5280ft. A sea mile = 1.1515 statute mile.

KNOTS CONVERTED INTO FEET PER SECOND.

[chart]

Knots, Hitches, Bends, and Splices.-- -

A Short Splice:

Unlay the strands to an equal distance from each end of the rope. Intertwine the ends as shown in Fig. 51, and draw all close up together.

Take one end of the rope in the left hand close up to the unlaied strands, and with it the unlaied strands of the other end of the rope; grasp these firmly, or, if more convenient, stop them with a piece of yarn. Take one of the strands (which are free), pass it over the strand (belonging to the other end of the rope) next to it, under the next strand and out, and haul taut. Pass each of the three strands in the same way, and then the three other strands, and the splice will be made as shown in Fig. 52. The operation can be repeated, or the ends can be seized with spun yarn round the rope. If the ends are stuck again, it is usual to taper each strand so as to make a neater job of it.

#### An Eye Splice:

Unlay the strands of the rope and bring a part of the rope between the strands so as to form an eye (see Fig. 53.) Put one end through the unlaied strand of the rope next to it ; the succeeding end passes in an opposite direction over the strand and through under the next strand. The remaining end goes under the strand on the other side. Taper the ends and work them through the strands again, and serve.

#### Single Wall Knot (Fig. 54):

Unlay the end of a rope, hold it in the left hand, take a strand A, and form into a bight, holding it tight in the left hand to the standing part of the rope. Pass B round A, C round B, and up through the bight of A; haul taut. To crown, lay one end over the top of the knot, lay the second over that, the third over the second, and then under the bight of the first.

#### Sheet Bend (see Fig. 55):

Useful for bending two ropes together, or bending a rope to a cringle.

#### Bend for Hawser (Fig. 56).

#### Midshipman's Hitch (Fig. 57):

Is made by taking half a hitch with the end of a rope A round the standing part B, C ; then taking another turn through the same bight ; when jammed together, another turn may be taken round C or stopped to it. Used for putting a tail block on to the fall of a tackle, shroud, &c. For a "Rolling Hitch," used for the same purpose, see Fig. 106.

Magnus Hitch (see Fig. 58).-- Useful for bending ropes to spars, &c.

Bowline Knot (Fig. 59):

Take a convenient part of the end of a rope and form the bight A, then the large bight B; pass the end through the bight A, then round the standing part F, and down through the bight A, and haul taut.

FIG 60.

Running Bowline Knot (Fig. 60):

After the bight A is made, take the bight B round F (which is the standing part), then up through A, round the standing part, and down through A as before (see also "Clove Hitch," "Fisherman's Bend," "Timber Hitch," and "Blackwall Hitch").

L.

Labour.--

A ship is said to labour when she pitches and rolls heavily, causing her frame to work.

Lacing.-- To pass a rope through the eyelets of a sail and round a spar, &c.

Laid.-- The make of a rope, as cable laid, hawser laid, single laid, laid with the sun, &c.

Land.-- To go from a vessel to the shore ; also to place anything. The outer edge of the plank of a clincher-built boat. The term "land" is used to mean the coast.

Land Boats.-- Fig. 61 shows the sail and construction of the modern sand boat or land boat. It has bicycle wheels and pneumatic tires. Such a boat has been constructed by Messrs. Thorneycroft, of Southampton. (See also "Sailing on Land.")

Land Fall.-- The point or part of a coast a vessel first sights after being at sea. To make a good landfall is to sight the land at the point calculated, "under the bowsprit end," as it is termed.

Land Lubber.-- A person living on land and unacquainted with the duties of a seaman; also an awkward loutish country sort of person who on board ship cannot get into the ways of a seaman.

Landsman.-- Men who have just joined a ship to train as seamen.

Lane.-- A lane of wind is a current of air that travels in a narrow space and does not spread. Also ocean tracks for steamships. On board ship the order to "Make a lane there," when a lot of men are standing together in passages or gangways, is an order for them to stand on one side so that others can pass.

Lanyards or Laniards.-- Hopes rove through dead eyes, &c., by which shrouds and stays are setup.

Larboard.-- The left side. In consequence of frequent blunders occurring through "larboard" being misunderstood for "starboard" or vice versa', "port," as a distinctive sound, was introduced instead of larboard.

FIG 61.

Larbolins.-- The men composing the port watch. (See "Starbolins.")

Large.-- With the wind abeam or abaft the beam. "She is sailing along large" means that the ship has the wind abeam or between the beam and the quarter.

Lash.-- To lace, to bind together with a rope.

Lashing.-- A lacing or rope to bind two spars together, or sails to a spar, &c.

Lateen Sail.-- A large triangular sail, with the luff bent to a yard. It has no gaff.

Lateral Resistance.-- The resistance a vessel offers to being pressed broadside on through the water. This resistance is assumed to be governed by the area of the plane bounded by the waterline, stem, keel, and rudder. (See the section on "Yacht Architecture")

Launch.-- The largest boat carried by a ship. To launch is to move an object, as "launch a spar forward," to launch a ship.

Launching a Boat Across a Flat Shore.-- In making a truck to launch or beach a boat on a sandy or loose gravelly shore, the truck should run on rollers in preference to wheels, as the latter will sink into the sand or gravel, and render the transit very laboursome.

Lay.-- Used by sailors instead of the neuter verb "to lie" as "lay to" for lie to, "lay her course" for lie her course, "lay up" for lie up, &c. or "she lays S.W." for lies S.W. This use of the active verb is sometimes justified by an appeal to the well-known naval song

"Twas in Trafalgar's Bay

We saw the Frenchmen lay.

But, whether right or wrong, a sailor will never be brought to say, "there she lies" for "there she lays", or "she's going to lie up" for "she's going to lay up."

Lay along the Land.-- When a vessel can just keep along a weather shore close-hauled, or when she lays along a lee shore.

Lay her Course.-- A vessel is said to lay her course when sailing close-hauled, if her head points nothing to leeward of it.

Laying Up.-- Dismantling a yacht after the season's racing or cruising is over. It is always much the best plan to have a mod dock dug for the yacht to lie in, as then the bottom will not foul, and if the vessel be coppered, she will haul out quite clean; on the other band, if she lies afloat, weeds and barnacles will accumulate on the bottom. It is much the practice now to haul vessels up high and dry during the winter months; this is an excellent plan, and greatly assists in preserving the hull. The ballast is removed, and the inside of the hull below the platform coated with red lead, black varnish, or a mixture of two-thirds Stockholm tar to one-third of coal tar; black varnish or red lead is, however, to be preferred. The mast may be taken out before the vessel is hauled up, and with the other spars housed. In case the mast be not removed, all the rigging should be lifted over the mast, and the yoke taken off as well, so that no accumulation of damp may rot the masthead. The copper should be scrubbed and coated with a mineral oil such as paraffin. (See "Limber Boards.")

Lay in Oars.-- An order given to a boat's crew to toss their oars and lay them in board; generally curtly spoken "Oars." To "lay on your oars" is an order for the men to cease rowing, but not to toss their oars up; to rest on their oars.

Lay of a Rope.-- The way the strands of a rope are laid ; right or left laid ; close laid, &c.

Lay Off.-- To transfer the design of a vessel to the mould loft full size. This is never written or spoken "lie off."

Lay Out.-- To move out, as to lay out on a yardarm, also to make a good forward and backward reach in rowing.

Lazy Guy.-- The guy used to prevent the main boom falling aboard when a vessel is rolling, with the wind astern.

Lazy Tack.-- A running bight put on the tack cringle of a topsail, and round a stay to keep the sail from blowing away whilst it is hoisted,

Leach.-- The after up and down edge of a sail.

Lead.--

A long weight or "sinker," of 7lb., 14lb., or 28lb. The line is "marked" thus :

Fathoms.

2 a piece of leather in two strips.

3 ,, leather three strips.

5 ,, white calico.

7 ,, red bunting.  
10 ,, leather with a hole in it.  
13 ,, blue serge.  
15 ,, white calico.  
17 ,, red bunting.  
20 ,, two knots.

There are usually 5 fathoms beyond this unmarked. In heaving the lead, if the vessel has headway, the lead must be cast ahead, so that when it touches the bottom the vessel is directly over it.

If the first white mark is just awash when the lead is on the bottom, the leadsman sings out, "By the mark five." If it is less than five, say 4-3/4 he sings out "Quarter less five," and not 4-3/4. If 1/4 or 1/2 more than five, he sings out "and a quarter five," &c.

There are no marks for 1, 4, 6, 8, 9, 11, 12, 14, 16, 18, and 19 fathoms, and these numbers are called "deeps"; in sounding, the leadsman has to estimate the depth, as, for instance, between 5 and 7 marks, and will sing out, "By the deep 6."

The deep-sea lead, pronounced "dipse lead," weighs from 28lb. to 35lb., and has a much longer line. Up to 20 fathoms it is marked the same as the hand lead-at 30 fathoms 3 knots, at 40 fathoms 4 knots, and so on; the intermediate "fives" being marked by a piece of leather or a small strand with a knot in it; 100 fathoms is marked by a piece of bunting, and then commence the knots:

1 knot = 10 fathoms, and so on. In sounding with the deep-sea lead the vessel is usually hove to.

#### Lead Ballast.--

Bricks of lead cast from moulds to fit inside the frames of a vessel without resting on the plank. Sometimes lead has been run into a yacht in a molten condition. When this has been done, the frame and plank have been first smeared with wet clay in order that the wood might not be injured. The vessel should be well caulked before the lead is run in. If molten lead is run into an iron or steel plated vessel, fires should be lighted underneath the keel to heat the plates, or otherwise the plates

may be injured. The objection to running lead into a vessel is the extreme difficulty of getting it out again.

In casting a lead or iron keel, 1/8-in. per foot is allowed each way for shrinking.

Lee.-- The opposite side to that from which the wind blows.

Lee Board.--

A very old-fashioned contrivance to cheek leeway. The board is usually trapeziform, and hung from the gunwale on either side. When sailing to windward it is dropped on the lee side to prevent lee way, hence the term "lee board."

FIG 62

The board in length should be about one-fifth the length of the boat, and at its broadest part two-thirds its own length in breadth, and its narrowest one-third its own length. If the board is fixed to an open boat, the gunwale should be strengthened at the point of attachment by a piece of timber worked inside at the back of the boat's timbers. For a boat 17ft. long this strengthening piece should be at least 5ft. in length by 6in. in depth, and be of 1-3/4in. thickness. The board will be pivoted at its narrow end by an inch bolt; the neck of the bolt which passes through the board should be square, and a square iron plate should be fitted each side of the board, through which plates the bolt will pass.

FIG 63.

The round part of the bolt will pass through the gunwale and strengthening piece; the bolt will be tightened up by a thumb nut, and, to prevent the latter working into the strengthening piece, it will be best to have an iron plate inside over the hole in the gunwale. The board should be made of inch stuff, with two through bolts of 3/8-in galvanised iron rod, or of 1/4-in iron plate.

A good lee board (see Figs. 62 and 63) can be made of a board about 16in. by 2ft., suspended over the side of the boat (the top of the board being level with the keel) by two irons, which reach up the side over the gunwale, and are turned up along the midship thwart, to which they are fastened by means of two thumb screws; at the lower end two screw

bolts connect the irons with the board; if necessary, one might be fitted on each side of the boat.

The advantages over the ordinary leeboard are that it is not unsightly, is always held parallel to the keel without straining the side, and two turns of the thumb screws will disconnect it in a moment from the boat. If these irons be fixed to different thwarts, a long board might be fitted in the same way; but a deep board is to be preferred.

Lee, By the.--

In running nearly before the wind, when a vessel runs off her helm so much as to bring the wind on the opposite quarter to which the boom is; a very dangerous proceeding, as if there be no boom guy a sudden gybe, or a gybe "all standing," may be the result. For safety, the helm should be put down the instant a vessel begins to run off. In match sailing, in running for a mark, yachts are often brought by the lee through a shift of wind, and frequently they are kept so, if a spinnaker or squaresail be set, and if near the mark, to save a gybe, every precaution being of course taken to prevent the main boom coming over, by hauling on the guy or pressing against the boom; this risk, however, should only be hazarded in very light winds.

Lee-going Tide.--

The tide that is running to leeward in the direction of the wind. The opposite to weather-going tide, which see.

Lee Helm.--

The helm put to leeward to luff, or to keep a vessel to or by the wind. Also synonymous with slack helm. If the centre of effort of the sails is much forward of the centre of lateral resistance, the vessel will have a tendency to fall off, and will require the helm to be put to leeward to keep her close to wind. The tendency can be checked by reducing the head sail, or by hardening in the sheets of the after sail and easing the sheets of the head sail. A vessel that requires lee helm will be an awkward one, and in a heavy sea a dangerous one to work to windward. The contrary to "weather helm," which see.

Lee Scuppers.--

Inside the lee bulwarks by the scupper holes. To be always in the lee scuppers is to be always in disgrace.

Lend a Hand Here.-- An order to a person to assist.

Let Fall.--

In rowing an order for a boat's crew to drop oars (after they have been on end) into the rowlocks, tholes, or crutches.

Let Go and Haul.--

In tacking a square rigged vessel the order given to let go the lee braces and haul in on the others.

Let Her Feel the Weight of It.--

An order to keep a vessel more off the wind, and not allow her sails to shake. (See "Give Her the Weight.")

Lewis.-- See "Mooring Rings."

Life Belts.--

Appliances for support in the water. The cork life belts of the National Lifeboat Institution (6s. each), John-street, Adelphi, are the most highly recommended.

Life Buoy.--

Usually a painted canvas ring stuffed with solid cork. When in the water, by placing the hands on the buoy it turns up over the head. The arms are then put through it, and it forms a fine support under the armpits and, of course, encircling the body. This is a great improvement on the old-fashioned ball buoy, with rope bights on it. A life buoy should have an outside diameter of 30in., and contain from 12lb. to 15lb. of solid cork, and float for twenty-four hours whilst suspending 32lb. of iron. Cork shavings, granulated cork, &c., should not be used.

Light Eye.--

A bright white look in the sky above the horizon, sometimes betokening that a breeze may be expected from such a quarter.

Lights.--

The lights which all vessels must exhibit between sundown and sunrise. (See "Side Light.") The modern type of paraffin lamp will burn through a long night without any attention being required to the wick, and

except during very strong winds the ventilation does not require any alteration, and owing to the use of good reflectors and dioptric lenses the candlepower for a given size of lamp has been enormously increased.

FIG 64  
PARAFFIN SIDE LIGHT WITH PRISMATIC LENS

The dioptric lens was copied from that used in lighthouses, and its function is to collect all the rays of light from the reflector and burner and throw them out (within the prescribed bearings) in one horizontal plane, just high enough above the sea level to catch the eyes of those navigating other vessels.

Captain du Boulay says: "This condensing of all the light rays into a horizontal plane is all very well for steamers, but when sailing vessels are moving along steadily heeled over by their canvas, the plane of illumination is heeled over also, so that although right ahead perhaps the full candlepower is obtained, yet on certain bearings the intensity of the light will diminish and may be almost totally obscured, thus infringing the Board of Trade rule which clearly states that all shiplights are to show an unbroken light over a prescribed arc of the horizon.

The dioptric lens, then, confining as it does the illumination to one horizontal plane, is all very well for fixed lights on shore and for steamer lights, and it may be used for riding lights on sailing vessels, but it is not so suitable for side lights on the latter craft, for directly they lay over in a breeze the plane of illumination becomes inclined ; so that on certain bearings the light may be almost invisible at the sea level owing to the eye of the observer being either above or below the plane, and a better form of lens for these lights is that known as the prismatic, where the surface of the globular glass screen is cut into a number of concave hexagon shaped facets.

With a view to getting some authentic information on this question and other similar matters some very interesting experiments were carried out in 1902 on the Government ranges on the sands at Shoeburyness with various ship-lights as made by some of the leading manufacturers, the intensity and visibility of each light being carefully ascertained on various bearings, and especially so when the light was heeled over

laterally to 5°, 10°, 15°, and 20°, and the experience thus gained has had very beneficial results on the modern development of the lamps used on vessels.

In order to get over this difficulty of the heeling effect, whilst not sacrificing the many advantages of the dioptric lens, it is customary in the larger-sized vessels to mount the lamps in gimbals inside a sort of miniature lighthouse or turret, so that the plane of illumination is kept horizontal in spite of the movements of the hull, and Messrs Chance, of Birmingham, make a specialty of this type of lamp with lenses on true dioptric lines of lighthouse glass, accurately curved, ground, and polished, and this is probably the last word in ship-lights at the present moment, where there is ample room for the turrets on board.

For smaller vessels, or where expense has to be considered, the dioptric lens is generally supplanted by the prismatic lens, that is to say, the surface of the glass is cut into a number of concave hexagon-shaped facets, the result being to enormously increase the apparent size of the light, whilst the illumination is not confined to one horizontal plane."

Limber Boards.--

Plank covering the floors of a vessel near the keelson. In yachts built with iron knee floors it is a common practice to fill up all cavities along the keel or hogging piece, fore deadwood and apron, and deadwood aft, with cement, after coating the wood with Stockholm tar.

Limber Clearer.--

A small chain which is kept rove through the limber holes in the floors at the side of the keelson, to allow the bilge water to flow freely to the pumps; occasionally the chain is worked backwards and forwards to clear the holes. This contrivance is seldom met with in yachts.

Line.-- Formerly a general name for a rope or cordage.

Liner.-- An old line of battle ship. Now used to describe a large passenger ship.

Lines.--

A general term applied to the drawing or design of a vessel as depicted by fore-and-aft lines and cross sections. A vessel is said to have "fine lines" when she is very sharp fore-and-aft.

List.--

A vessel is said to list when from some cause -- shifting of ballast or cargo or weights -- she heels over.

Listing.--

A narrow strip of plank, usually 4in. in width, cut out of the plank of a ship throughout her whole length, in order that the condition of her frames or timbers may be examined.

Lizard.--

A piece of rope with a thimble eye spliced in one end, used in setting square sails; sometimes the lizard is of two or more parts with a thimble in each, the whole being spliced into one tail.

Lloyd's.--

Lloyd's is an association of marine underwriters in the City of London.

Its name is derived from a Coffee House kept by Mr. Edward Lloyd in Tower Street in the 17th century, where underwriters met to transact business. In 1692 Lloyd's Coffee House was removed from Tower Street to Lombard Street; and in 1774, Lloyd's left the Coffee House in Lombard Street for premises in the Royal Exchange, where it has since remained. The wars which lasted from 1775, with but short pauses till 1815, tended to attract marine insurance to Great Britain from all parts of the world, and raised Lloyd's to the high position it has since held.

Candidates for election as members are required to satisfy the Committee as to their means, and in all cases to deposit in the names of trustees a sum of not less than £5000, as additional security for liabilities incurred on account of marine and transport risks. The aggregate amount thus placed at the disposal of the Committee of Lloyd's is very large, but in no way represents the total capital possessed by the Underwriting Members of Lloyd's.

The deposits and guarantees provided by Underwriting Members of the Corporation as security for their underwriting liabilities exceed £7,000,000 sterling.

Lloyd's is also an immense organisation for the collection and distribution of maritime intelligence, which is published daily in "Lloyd's List." This paper, originally established in 1696 as "Lloyd's News," dates from 1726, and is the oldest newspaper in Europe with the exception of the "London Gazette." The Intelligence Department has developed continually under the influence of steam and electricity, and this process keeps pace with the opening of new ports and increased means of communication. The information is supplied by Lloyd's Agents on every coast in the world, who, in written lists, or by telegram, report the arrival and departure of, and casualties to, vessels within their districts. In this connection the value of Lloyd's Signal Stations is very great, not only to underwriters but also to merchants and shipowners, as it is frequently an advantage that a vessel should be intercepted off the coast and ordered to its port of destination. Shipowners in this way often have the earliest intimation of the arrival of their ships. Vessels arriving off outlying signal stations often bring important intelligence as to derelicts and wrecks passed on their voyages, as well as information of vessels in distress requiring assistance, and overdue vessels arriving on long voyages are reported at these stations. Not one vessel in ten bound to ports in the United Kingdom from distant ports arrives at her terminal port without first being reported from one of Lloyd's Signal Stations. At some of these stations wireless telegraphy apparatus has been installed.

Lloyd's Agent.--

Lloyd's has Agents in all parts of the world. The duties of these Agents so far as they concern yacht owners may be broadly defined as follows:

In case of shipwreck to render to masters of vessels any advice or assistance they may require.

Lloyd's call attention to the fact that, in all cases when owners have to make claims for loss or average on their policies, it very much facilitates settlement by their underwriters if they report immediately to Lloyd's Agent at the port of arrival, with a view to his conducting the necessary surveys and assessing the damage sustained.

Lloyd's Agent when called upon to intervene in case of damage to vessels with a view of granting a certificate of sea damage, has the power to appoint a surveyor, who should sign his certificate as "Surveyor to Lloyd's Agent," and in every case the signature of the surveyor must be authenticated by that of Lloyd's Agent. In case of damage to a yacht the Committee of Lloyd's prefer that the choice of a surveyor should fall upon the Surveyor to Lloyd's Register whenever there is one stationed at the port.

It is also the duty of Lloyd's Agent to report by telegraph direct to Lloyd's (Royal Exchange, London. E.C.) all casualties which may occur to vessels within his district.

It will be seen that the Surveyor to Lloyd's Register is employed by preference to make, on behalf of Lloyd's Agent, surveys on ships when Lloyd's Agent is called upon by ship. owners or others interested to conduct a survey of a ship or to certify to damage to vessels.

Lloyd's Register.--

This Society (71, Fenchurch St., E.C.) must not be confused with Lloyd's. The Society-whose proper title is LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING -- is a Society voluntarily maintained by the shipping community. Its principal functions so far as yachtsmen are concerned are :--

(a) The survey and classification of yachts, &c. (both new and old) and the yachts of the International Rating classes.

(b) The annual publication of a Register of Yachts, a Register of American Yachts, Rules for the Construction of Ships and Machinery and Yachts, &c. The two Registers of Yachts contain, in addition to the names, classes, and detailed information relating to yachts classed by the Society, the names, dimensions, &c. of British and foreign yachts, and of American yachts respectively, together with much other matter relating to yachts and yachting and particulars of all the Racing Yachts of the International classes.

(c) The supervision of the testing of anchors and chains under the provisions of the Chain Cables and Anchors Acts.

(d) The supervision of the testing, at the manufactories, of the steel intended or use in the construction of ships and boilers.

(e) The survey of refrigerating machinery and appliances.

Lloyd's Surveyor.-- The duties of a Surveyor to Lloyd's Register may be briefly defined as follows :-

1. To carry out and report to the Committee all surveys (during construction and afterwards) required on vessels, or their engines and hollers, under the Society's rules, with a view to the classification of vessels in the Register Book, or the maintenance of their classification therein.

2. In cases of damage (whether to classed or unclassed vessels) to hold special surveys at the request, or with the consent, of the owners, masters, or agents, to ascertain the extent of damage and to recommend the necessary repairs.

3. To carry out tests of steel, large forgings and castings, &c at manufactories.

4. To make measurements and surveys (on both classed and unclassed vessels).

Under the first and last heads the Yacht Owner will often find it a great advantage to employ a Lloyd's Surveyor whose services (to examine a yacht and make a fair report upon her condition or construction) can always be obtained for a moderate fee upon application to the Secretary of Lloyd's Register, 71, Fenchurch Street, London, E.C. (See also "Yacht Register.")

Lead-water-line.-- The line of flotation when a vessel is properly laden or ballasted.

Lead-water Section.-- The horizontal plane at the line of flotation.

Lob Sided.-- Larger or heavier on one side than on the other.

Locker.-- A small cabin, or cupboard, or cavity to stow articles in.

Log Board or Log Slate.--

The slate on which the hourly occurrences in navigating a ship-her speed, canvas, courses, the strength of wind, direction of wind, and general condition of weather-are set down.

Log Line and Ship.--

An ancient contrivance for testing the speed of a ship. The line is attached to a board (termed the ship), and is marked for knots every 47ft. 3in. but an allowance is made for the following wake). According as the number of knots which run out in 28sec. by the sand glass, so is the speed of the vessel. There is a drift of some feet between the log ship and the first knot, the glass being turned as the first knot takes the water. number of knots run out in the 28sec. marks The the speed of the vessel. Massey's or Walker's log are now constantly towed, but the log line and ship are regularly used on hoard large steamers. (See "Harpoon Log.")

Log Official.-- See "Official Log."

Long Beat.-- A ship's launch; usually carvel built.

Long Leg and a Short One.-- In heaving to windward, when a vessel can sail nearer her course.

FIG 65

intended course on one tack than another. Thus, say her course is E and the wind S.E. by E. she would lie E. by N. one tack, which would be the long leg and S. by E. on the other, which would be the short leg. (Fig. 65.)

Long Shore.-- A contraction of along shore.

Long Tackle Blocks.--

A double block with one sheave above the other, as a fiddle block, which see. Used for the runner tackle, &c.

Look.--

The direction a vessel points when sailing by the wind. As, she "looks high," "looks up well," "looks a high course " &c.

Lookout, The.--

The men stationed on the bow, &c. to watch the approach of other ships or to seek the land, &c.

Loose.-- Adrift; to unloose, to unfurl ; to loose tyers of a sail, &c.

Lose her Way.--

Said of a vessel when she loses motion or gradually comes to a stop.

Lose His Number at Mess.-- (Slang) To die.

Lower.--

To cause a thing to descend-as to "lower the topsail," &c. An order given to ease up halyards, as "Lower," "Lower away!"

Lower Masts.-- The masts that are next the deck.

Lubber's Hole.--

The opening in the top of a square rigged vessel, by which seamen get into the top instead of by the futtock shrouds.

Lubber's Point.--

The black line or stroke in the front part of a compass basin, by which the direction of a vessel's head is told. The lubber's point is always in a line parallel with the vessel's centre-line.

Lucky Puff.-- A puff that "frees" a vessel in close hauled sailing.

Luff.--

To come nearer the wind. To "spring your luff" is to luff all the ship is capable of, without making her sails shake.

Luff and Touch Her.--

To bring the vessel so near the wind that the head sails begin to shake a little.

Luff of a Sail.-- The weather edge of a sail. (See "Weather Cloth.")

Luff Tackle.--

A tackle composed of a single and double block, the standing part of the rope being fast to the single block.

Luff upon Luff.--

One luff tackle hitched to the fall of another so as to make a double purchase.

Lugger.--

A vessel rigged with lug sails like the fishing boats of this country and France.

Lug-Sail Boat.-- A boat with a lug sail. (See "Dipping Lug.")

Lug-Sheet.--

Term used in a racing schooner for the sheet attached to the clew of the foresail. In a modern racing schooner the foresail sheet is on the boom of the foresail in the usual way and the foresail sheet runs on a horse on deck forward of the mainmast, but the clew and leech of the foresail extend beyond the fore boom end, abaft the mainmast, and an extra sheet called the "log. sheet" is attached to the clew of the sail and is bowsed down or hauled well aft, being run through a fair lead on deck on the lee quarter. It is sheeted home by means of a double tackle.

Lurch.--

When a vessel is left unsupported at the bow, stern, or amidships, so that she makes a sudden dive forward, or by the stern, or a heavy weather or lee roll.

Lutings.--

Stoppings of white lead, putty, tar, varnish, &c. for seams and joins in tanks, &c.; sometimes used with a strip of canvas as a kind of caulking.

Lying To.-- The condition of a ship when hove to. (See "Trying" and "Lay.")

M.

Mackerel Sky.--

A sky streaked with fine clouds, something in the manner of the stripes on the back of a mackerel.

Mackerel Tailed.--

A boat with a very sharp or fine after body. "Cod's bead and mackerel's tail" or "full forward and fine aft," once supposed to represent the form of least resistance.

Made.--

Built, as built mast, &c., meaning that the mast is not made of one piece of timber, but by several pieces bound together like a cask. A term of reproach to a boat builder when applied to his work, in contradistinction to the regular term "built."

Main.--

The open ocean. The principal, as mainmast, main boom, main stay, main sail, &c.

Main Breadth.--

The extreme breadth of a vessel. Main Course.-- The main sail of a square rigged ship.

Main Keel.-- The keel proper, and not the keelson or false keel.

Mainsheet.--

The rope or tackle which holds the aft clew of the main sail, or main boom. A good arrangement of mainsheet for a small boat with boom to the sail is to make fast one end of the sheet to one end of the quarter knee, or near thereto (so that the sheet is clear of the helms. man), take the other end through a thimble eye in a strop round the boom and down through another thimble eye strap in the other quarter knee; the hauling part can be made fast by a turn and bight above the second thimble. This arrangement would do for a 10ft. or 12ft. boat, but in one of larger size a block should be stropped to the boom and quarter knees instead of the thimbles. (See "Belay.")

Mainsheet Horse.--

A mainsheet horse is frequently used in small boats, and for racing craft in large yachts as well. Less mainsheet is required on a wind when the lower block travels on a horse, and therefore the boom cannot lift so much and assist in throwing the sail in a bag. In a seaway, however, there is some advantage in having more drift between the blocks than would be very likely given if a horse were used. For small boats, to obviate the shifting of the mainsheet from side to side in tacking, the

horse is of advantage. The foresheet can travel on a horse if the boat be decked or half decked.

**Mainsheet Slip.--**

The Navy mainsheet slip is usually fitted to the gunwale, with a lanyard on the ring which holds the tongue to slip the sheet if necessary. This slip can also be fitted to a mainsheet horse, but practically the hitch at a answers all the purpose, as the lanyard has to be manipulated by the hand just the same as any ordinary tongue and ring attachment has. (Fig. 66.)

**Maintopman.--**

The mainmast headman of a schooner to pass the lacing of a topsail, keep the topsail yard clear, &c.

**Make Fast.--** To securely belay a rope or join two ropes.

**Make Beady There.--**

An order sometimes given to prepare to tack or lower a sail, as "Make ready for going about there !" the " there" referring to the crew.

**Make Sail.--**

To set sails. To add to sails already set. To shake out reefs to commence sailing after laying to.

**Make Stern Way.--**

To drive astern as a vessel sometimes will in tacking by getting in irons or through the head sails being thrown aback.

**Making the Land.--** After losing sight of the land to approach and sight it.

**Making Water.--**

Leaking. A vessel is said to make no water if she is so tight that none ever gets through her seams, &c., into the hold.

**Man.--**

To apply manual power to anything, as "Man the capstan," "Man the boat," &c.

Man Overboard.--

A shout of alarm made on board ship when a man gets overboard by accident. In such cases it is not usual to wait for orders, lint everyone joins in if he sees he can be of service in throwing a life. buoy, helping to launch a boat, jumping over. board. &c.

Mansard.--

An architectural term, but used in America for a booby hatch or raised deck. A mansard roof to a house is a light structure above the masonry. It took its name from Mansard, a French architect of the 17th century.

FIG 66

Man Ship.--

An old-fashioned custom in the Navy of mustering the crew along the bulwarks to cheer upon parting company or meeting another ship after racing. Losing yachts man the weather deck or bulwarks and cheer a victorious yacht, a custom probably derived from the practice in "fighting days" of one war ship cheering another which was an enemy. (See "Cheering.")

Marine Glue.--

This composition is said to be composed of 1 part indiarubber, 12 mineral naphtha or coal tar heated gently, and 20 parts of shellac, mixed with it. The composition is now usually employed to stop the seams of decks after they are caulked. The old fashioned plan was to use white lead putty for the stopping and indeed it is at this present time occasionally used the objection to it is that it dries as hard as a cement and cracks, the result being that water gets into the caulking, rots it, and then leaky decks are the consequence. Moreover, hard putty is very difficult to get out of the seams without damaging the edges of the plank, and then in re-stopping ragged ugly seams are the result. Marine glue, on the other band, can easily be renewed, and the edges of the plank remain uninjured.

In using marine glue the following practice should be observed : In driving the oakum or cotton thread (the latter is sometimes preferred as it can be laid in finer strands, a matter of consideration if the plank is closely laid) into the seams, the caulking iron Should be dipped in naphtha and not in oil, as, if the sides of the plank are touched with the

latter the glue will not adhere ; naphtha, on the other hand, dissolves the glue and assists in closely cementing the seams. The plank should be quite dry when the glue is applied, or it will not adhere to the sides of the seams. The glue should be dissolved in a pot, and applied by lip ladles used for paying, two being kept going; or the glue can be melted in the lip ladles. Great care must be taken that the glue is melted slowly, as if it be melted over too fierce a fire it will be spoilt. A little of the liquid glue can be usefully mixed with the other as it assists in keeping it dissolved. The glue that runs over the sides of the seams should be cleaned off with a broad sharp chisel and remelted. It is not advisable to scrape the surplus glue off the seams, as it cannot be so removed without leaving a ragged, unsightly surface. The manufacturer of this marine glue is Mr. Jeffry, Limehouse. A cheaper marine glue, not easily spoilt in melting, is made by the Waterproof Glue Company, Landport, Hants.

Mariner.--

A sailor. Two hundred years ago it was spelt "maryner," and appears to have only been applied to men who were perfect as seamen. Thus, from a muster roll made in the seventeenth century, we find so many men set down as maryners" and so many as "seafaring men."

Marks.--

The pieces of leather, &c., on a lead-line (see "Lead.") In sounding it is usual to say, "By the mark," &c., if the depth of water accords to a mark; if there be no "mark," as between three and five fathoms, the leadsman says, "By the deep four," &c. (See "Lead.")

Marle.--

To hitch spun yarn round a rope to secure its parts, or round a hank of yarn to secure it. (See "Selvagee.")

Marline Spike.--

An iron implement tapering to a sharp point, used to open the strands of rope for splicing, to turn eye bolts, &c.

Marlingale.--

A strut or spreader for the bobstay, formerly termed a dolphin striker on big ships.

Mast Carlines or Carlings.--

Pieces of timber fitted fore and aft between the beams to support the mast, &c.

Master.-- The captain of a ship. (See "Seaman.")

Master's Certificate.--

Certificates known as "Yacht Master's Certificates" are granted by the Board of Trade to owners of yachts of British Registry.

The examination for these Certificates is purely voluntary, and is confined to persons who command their own seagoing pleasure yachts. A Master of a yacht who is not also the sole owner, or who is under 21 years of age, is not eligible for examination.

Only one description of Certificate is issued, whether the yacht is foreign-going or cruises within the home trade limits.

The Certificate will not entitle the holder to command any vessel except the pleasure yacht or yachts, of which he is at the time the sole owner.

Candidates are not required to have served any specified time afloat, as it is believed that their sea knowledge will be sufficiently tested by the examination they will have to pass in seamanship.

A candidate for examination is required to produce a statutory declaration to the effect (1) that he is sole owner of the yacht; (2) that the yacht is seagoing; (3) that it is not to be used for trading purposes. He will also be required to fill up the usual form of application, and pay the fee of £2 at a Mercantile Marine Office.

In all other respects the regulations relating to examinations of Masters of foreign-going ships will apply in these cases.

#### EXAMINATION IN NAVIGATION

The examination in navigation for a Yacht Master's Certificate is precisely the same as that prescribed for an Ordinary Master's Certificate, except that in the civil duties of a shipmaster the Master of a yacht will only be expected to possess a knowledge of what he is required to do by the Merchant Shipping Act.

The regulation relating to an Ordinary Master's Certificate is as follows :A Candidate for an Ordinary Master's Certificate will be required to work out any twelve of the nautical problems prescribed for the grades of Second and First Mate that may be given him by the Examiner, in addition to the chart paper, the cyclone paper, and the oral subjects prescribed for the grades of Second and First Mate. He will also be required :-

- (a) To find the latitude by the altitude of the Polar star at any time.
- (b) To find the latitude by the meridian altitude of the moon.
- (c) To find the magnetic bearing of any fixed object when at sea or at anchor from bearings of the object taken with the ship's head on equidistant compass points, and to compute the deviation therefrom; to construct a deviation

curve upon a Napier's diagram which will be furnished by the Examiner, and show that he understands its practical application ; to give satisfactory written and oral answers to certain practical questions as to the effect of the ship's iron upon the compasses, and the method of determining the deviation, and show how to compensate the deviation by magnets and soft iron by the aid of Beall's Compass Deviascope.

- (d) To find on a chart the course to steer by compass in order to counteract the effect of a given current, and find the distance the ship will make good towards a given point in a given time ; and to work out practically the correction to apply to soundings taken at a given time and place to compare with the depth marked on the chart.

He will be required to answer viva voce questions on the following subjects :-

- (e) The law as to the engagement and discharge and management of the crew, and the entries to be made in the official log.
- (f) How to prevent and check an outbreak of scurvy on board ship.
- (g) The law as to load-line marks, and the entries and reports to be made respecting them.
- (h) Invoices charter party, bills of lading, Lloyd's agent, nature of bottomry, bills of exchange, surveys, averages, &c.
- (i) The prevailing winds and currents of the globe.
- (j) The trade routes.
- (k) Tides.

#### EXAMINATION IN SEAMANSHIP. -

The candidate must give satisfactory answers as to his knowledge of making and taking in sail, and as to the management of a yacht under

canvas in moderate and in stormy weather. He must have a thorough knowledge of the rule of the road at sea as regards both steamers and sailing vessels, their regulation lights and fog and sound signals; and be able to describe the signals of distress, and the signals to be made by ships wanting a pilot, and the liabilities and penalties incurred by the misuse of these signals. He must also understand the use and management of the rocket apparatus in the event of his vessel being stranded. He must be able to mark and use the lead and log lines; to cant a vessel on a lee shore; to moor and unmoor a ship; to keep a clear anchor, and to carry out an anchor. He must know how to keep his vessel out of the trough of the sea in the event of accident; how to rig rafts and jury rudders, &c.; and what steps to take if his vessel is disabled or unmanageable and drifting towards a lee shore. He will also be examined as to his resources for the preservation of the crew in the event of wreck. He must also possess a knowledge of the measures he should adopt for preventing and checking an outbreak of scurvy on board; and be prepared to answer any other questions relating to the management of a yacht either steam or sailing which the Examiner may ask.

EXTRA MASTER OF YACHT.-- An Extra Certificate will be issued to the owner of a yacht who either holds, or is qualified to be examined for, a Yacht Master's Certificate, subject to examination in navigation as prescribed for an Extra Master's Certificate, and examination in seamanship as prescribed for a Yacht Master's Certificate, but the Candidate for an Extra Certificate will be expected to show a more extensive practical knowledge than is required of a Candidate for the Yacht Master's Certificate.

NOTE.-- An Extra Master's Certificate entitles the holder to go to sea as Master of any vessel sailing or steam.

The examination is voluntary and intended for such persons as wish to prove their superior qualifications and are desirous of having Certificates of the highest grade granted by the Board of Trade.

The extra examination may take place when the applicant is qualified to go up for examination for an Ordinary Master's Certificate, or at any time subsequent to his having passed the examination for that Certificate.

Master Mariner.--

A master of a vessel who has a master's certificate of competency. An old fashioned term. A "master mariner is popularly known as a captain"

among yacht sailors ; but a master is only a self-dubbed captain. Master is the correct term, and the only recognised one in law. Yacht masters are not required to hold the Board of Trade certificate of competency.

**Master Mate.--**

A mate certificated as master. This was originally written "master's mate," and meant a person appointed to assist the master of a man of war in carrying out his duties.

**Masthead.--**

The part of a mast above the hounds. To masthead is to hoist anything up to the truck, &c.

**Masthead Light.--**

The white light which power vessels are required to exhibit at the masthead when under way. (See "Side Lights.")

**Masthead Man.--** In yacht parlance, the man who goes aloft to lace a topsail, &c.

**Masthead Pendants.--** The pendants and runners which help support the mast.

**Mast Hoops.--**

The hoops to which the luff of fore and aft sails are seized to keep the sail to the mast.

**Mast Rope.--**

The heel rope by which a topmast is sent up and lowered; sometimes termed heel rope.

**Match.--**

In competition as yachts in a race. Formerly all contests between yachts were termed matches. Of late years the term race has been more generally applied to such encounters.

**Mate.--**

An officer next in command to a master.

**Maul.--** A heavy hammer used by shipwrights.

Meaking Iron.-- An implement used to extract old caulking from seams.

Measurement.--

Formerly written admeasurement. The computation of a vessel's tonnage by certain rules. (See " Tonnage.")

Meet Her.--

When a vessel begins to fly to or run off the wind, to stop her doing so by the helm. Generally to check a vessel's tendency to yaw by using the helm.

Meet, To.--

To meet a vessel with the helm is after the helm has been put one way to alter her course to put it the other way to stop the course being altered any further. This is also called "checking with the helm."

Mess.-- The number of officers or men who eat together. Disorder; entanglement.

Metre.--

1 Metre = 3.280899 feet, 1 Square Metre = 10.7643 square feet. To convert linear feet into metres multiply by 0.30479 or 0.305; to convert linear metres into feet multiply by 3.28 ; to convert square feet into square metres multiply by 0.0929 ; to convert square metres into square feet multiply by 10.764.

Racing yachts of the International Classes are measured in England in feet and tenths of feet and metres are not used by the Y.R.A. or by British designers.

The metre system is only used on the Continent. Nevertheless in 1906, when the International Rules were agreed to, in concession to foreign countries England agreed to the Class Limits being fixed in metres. Thus we have classes of 23; 19; 15; 12; 10; 9; 8; 7; 6 and 5 metres, the equivalent in English being:

75.46; 62.33; 49.21; 39.37; 32.80; 29.52; 26.24; 22.96; 19.68 and 16.40 feet.

This figure approximately represents the length on waterline of the yacht; thus a 15-metre yacht is about 49.21 feet on L.W.L. The reader will therefore see that no change whatever has been effected in English yachting by the adoption in 1906 of metres for yacht measurement, because for all calculations our designers still employ the old English unit, the "foot." English designers, however, have never used feet and inches but always employ feet and tenths the decimal scale being easier to work. The effect of the adoption of the Metric standard has been to make English class limits work out at an odd figure, thus instead of a 1-rater or 24 footer we now have a "22.96 footer" which is a 7-metre boat.

**Metre-Boat.--**

A slang term for a small racing yacht built to the International Rules ; just as a "Rater" implied a "1-Rater" or "24 footer" or such craft; so a "Metre Boat" now implies a similar boat of the International class.

**Middle Body.--** The middle third of a vessel's length.

**Middle Watch.--** The watch between midnight and 4 a.m.

**Mildew.--**

Sails if rolled up when they are damp frequently mildew, and it is almost impossible to get the stains out entirely. New sails suffer most in this respect, as the "dressing" not being entirely washed or worked out of them will ferment and cause the mildew. The stains can be partly removed by scrubbing the sail with fresh water and soap; then rub the sail with soap and sprinkle or rub whiting over it; leave the sail to dry and bleach in the sun, and repeat the process more than once if necessary. Both sides of the sail should be scrubbed. Chloride of lime and other caustics and acids would remove mildew, but would almost certainly make the canvas rotten. If chloride of lime be used only the clear liquor should be allowed to touch the sail, and the latter should be well rinsed in fresh water afterwards (see " Bleaching "). If sails are stowed whilst damp or wet, they should be hoisted again as soon as possible for drying or airing.

**Mile.--** See "Knot."

**Missing Stays.--** To fail in an attempt to tack, or to go from one tack to the other.

Mizen Bumpkin.--

A short spar that extends from the taffrail aft for the lower block of the mizen sheet to be hooked to. Most modern yachts have this bumpkin generally crooked downwards, the reason given being that the downward crook shows up the sheer of the yacht. A more practical reason, however, can be given, and that is, if a bobstay is used, a more effective purchase is obtained for it.

Mizenmast.-- In a ship the after mast. So also in a yawl or ketch.

Mizen Staysail.--

A sail set "flying" from a yawl's mizenmast head to an eye bolt on deck forward of the mizenmast. Generally set with a quarterly wind.

Moment.--

A weight or force multiplied by the length of the lever upon which it acts. Sail moment generally means the area of sails and the pressure of wind upon them multiplied by the distance the centre of effort is above the centre of lateral resistance, which represents the length of lever.

Momentum.--

A force represented by a weight and the velocity with which it is moved.

Moon.--

Sailors say there will be a moon at such and such a date, meaning that there will be a new moon or full moon, from which the time of high water is calculated.

Moor.-- To anchor by two cables.

Mooring Rings.--

The rings by which the chain is attached to large stones used for moorings. Sometimes the bolts that hold these rings pass clean through the stone, and are secured underneath, but a more secure plan than this is that known as a "Lewis." In the engraving a is the ring or shackle, b a bolt with a screw nut and linch pin; c c movable parts of the bolt; d the key or wedge. When the key is in its place the cavities, if any, can be filled with lead or sulphur.

FIG 67.

Morning Watch.-- The watch from 4 AM to 8 AM

Morse Code.-- See "Signals."

Mosquito Fleet.--

A term applied to small racing yachts at some ports. In 1894 the American Corinthian Mosquito Fleet claimed to have originated the term, and was referred to as follows; "The application of that insectism to yachts or boats was first made by an association in Barnegat Bay, U.S.A. It has not yet been adopted in England. and is one of those crazy Americanisms which are permitted because we love novelty above good taste." Dr. Grant, of New York, then correctly pointed out that the term has been used in England for many years, and traces the origin of the word to *masca fly* and *qicito* diminutive or little, hence mosquito or little fly: As a matter of fact, a "mosquito fleet" has been in existence for many years on the Devonshire coast, the great port for them being Dartmouth.

In the regatta programme of the Royal Western Yacht Club for 1866, the third event is scheduled as follows :

"Prize of 6£. for the Mosquito Fleet of Pleasure Boats."

There were nine entries, and Mr. R. Martin's Swallow was the winner, with Mr. Lander's Bantam second, Mr. Hudson's Butterfly third, and Mr. C. Hamilton's Boomerang fourth. It is not certain when the term Mosquito Fleet first came into use in this country; but in 1859 "Vanderdecken," in an article published in Hunt's Yachting Magazine , said, "The Mosquito Fleet may be justly esteemed the nursery for our yachtsmen ; the little yacht leads on to the handy 25, the flying 50, and the stately schooner of 200 tons."

Moulded.--

The depth a timber is made between its curved surfaces as distinct from its siding, which is the thickness between its flat surfaces.

Moulded Breadth.-- The greatest breadth of a vessel without the plank.

Depth.-- See " Depth."

Moulds.--

Curves used by draughtsmen. The skeleton frames made by shipwrights to cut the frames by.

Mourning Ribband.--

A blue ribbon or stripe run round a yacht's side, instead of a gold or white one, to denote mourning. Mourning is also denoted by flying an ensign or burgee half-mast.

Mousings.--

Yarns wound round the jaws of hooks to prevent them becoming detached.

'Mudian Rig.-- A contraction of "Bermudian rig."

Muslin.-- A slang term given to the sails : generally applied to balloon sails.

Muzzle.-- To seize an unruly sail and press the wind out of it in lowering.

Muzzler.--

A strong wind which blows directly down a vessel's intended course. Synonymous with "nose-ender."

N. O.

Nail-sick Clench-built Boat.--

This is when the nail fastenings have become loose in a boat so that she leaks. Mr. J. C. Wilcocks recommends that the boat should have the whole of her ballast taken out; let her then be thoroughly cleaned out and laid on her sides, with sufficient weight to keep her so until the water begins to come over the gunwale. A man should be inside with some chalk or white paint, and mark every leak which becomes visible, first on one side, then on the other; or the boat can be hauled up and filled with water and marked outside. If the boat be decked, any recesses behind bulkheads or in the counter must be carefully

examined, and marked in the same manner. After all the leaks have been discovered, let her be dried, and every nail examined; the lands or joinings of the planks should also be tried with the blade of a very thin knife. Any rivets which have worked very loose must be cut out, and replaced with nails and reeves of a larger size, and through the chief parts of the bottom it will probably be necessary to put an additional nail between every two originally driven. Many of the old nails which are only a little slack should again be hardened by a few taps on the inside, a boy holding on against the head of the nail on the outside. After this work has been thus gone through, melt a pound of pitch in a gallon of boiling Stockholm tar, and give her a good coat inside up to the level of the inside of the lockers that is to say, as high as it can be done not to interfere with the paint. The garboard strake fastenings, and also those of the hood ends, must also be examined, and will be certain to require careful caulking. In tarring the boat inside, the ledges or lands should be quite filled up with the boiling stuff.

Narrowing.--

The wind is said to "narrow" when it blows at a smaller angle from ahead, or 'shorten,' which term refer to.

Navigation.-- Text Books on this subject for yachtsmen :

(1.) Navigation for Yachtsmen. (In 1 vol. Horace Cox, Bream's-buildings, E.C. 15s.) By Lieut. Vincent J. English, R.N.

(2.) Self-Instruction in Navigation. (In 3 vols. Macmillan & Co., St. Martin's street, London.) By the Earl of Dunraven.

Neaped.--

The situation of a vessel that gets ashore during high water at spring tides, and as the tides get shorter every day towards the neap tides she cannot be floated off till the next spring tides. Generally termed be-neaped.

Neap Tides.--

The tides which occur between new and full moon; spring tides being at or near the new and full moon.

Near.-- Very close to the wind, so that the sails shake or lift.

Near the Wind.--

Close to wind ; generally used in a sense to convey the meaning that the vessel is too near the wind, as "She's near forward," meaning that the head sails are shaking or lifting. (See "Nip.")

Nettles.--

Small lines or ropes used to support hammocks when they are slung under the beams. Also reef points are sometimes termed nettles.

News.--

The intimation conveyed sternly to the watch below to turn up when they do not obey the first summons, as "Do you hear the news there, sleepers ?"

Niggling.-- Sailing close to the wind or too close.

Nip.--

A short bight in a rope, such as the part that goes round a sheave, &c. To nip a vessel is to sail her very close, or too close, to the wind.

Nippering.-- Joining a rope by cross turns.

Neck.-- The weather corner of a gaff sail. The throat.

No Nearer.--

An order given to a steersman not to luff any more, or not to bring the vessel any closer to wind. When sailing free a course is frequently given to the steersman thus, W.S.W. and no nearer; or S.E. and no nearer, which may be varied "Nothing to windward of W.S.W.," &c.

Nosebag.--

A name given to a jib, generally meaning a jib that is too big for the after sail; or a jib that bellies out into a bag.

Nor'-wester.-- A stiff glass of grog, usually rum.

Nose-ender.-- Dead on end. A wind which blows directly down a vessel's intended course, involving a dead beat. (See "Muzzler.")

Noose.-- A slip knot or running bight in a rope.

Number.--

The number of a ship in the registry kept by the Registrar-General of Shipping; hence when a ship "makes her number" she hoists the signal flag denoting her number so that her name may be read. Also the number of a seaman on a ship's book. "To lose the number of the mess" is to fail to appear at mess through desertion, drowning, or sudden death.

O.

Oars !-An order given to cease rowing and toss up the oars. (See "Lay in Oars.")

Off.--

The opposite to near (which see), as "Off the wind." "Nothing off" is an order given to a helmsman to steer nothing to leeward of a particular course, or to sail nothing off the wind, but to keep the vessel full and by. (See "No Nearer.")

Off and On.-- Beating along a shore by a board off and then a board on.

Offing.--

Away from the land, seaward. To make an offing is to sail away clear of the land.

"Off She Goes !"--

The shout raised when a vessel begins to move down the ways at launching.

Oilskins.--

The waterproof clothing worn by sailors, &c. The following is said to be a good dressing for them: Dissolve in one and a quarter pint rain water 6oz. common yellow soap over a slow fire; when dissolved, boil and stir in five pints of boiled linseed oil, in which 8oz. of patent driers have previously been mixed. Let the mixture simmer for a quarter of an hour, and then apply it hot, rubbing well in with a hard brush. Two coats at first and one every season. If the oilskins become sticky the paint must be got off by a mixture of soap and soda and soaking and hard scrubbing. Liquid ammonia one part to twenty of water and soap, all applied hot, form, it is said, a good mixture for removing the

dressing. The oilskins must be well dried before coating them again. Sticky oilskins may often be put right by rubbing powdered talc over them. (See also "Waterproofing.")

#### Oil on Troubled Waters.--

There is no doubt that the use of oil for smoothing down broken water or preventing wave crests breaking was known to the ancients. Aristotle supposed that the thin film of oil prevented wave formation, by reducing the friction of the wind on the water surface. There is no doubt that this friction is the primary cause of wave formation, and if the whole water surface were covered with oil, possibly the wave formation would be reduced ; but this in no way accounts for the fact that the spreading of oil on a small portion of a disturbed water surface will suddenly arrest the breaking of waves. (See the article "Waves.") Actually what the oil does is to prevent the waves rising into cusps and then falling to pieces. Also, when these cusps are formed, waves rise to great-or, as it may be termed, unnatural heights. If the height of the waves much exceeds a certain proportion to the length, the wave crest becomes deformed, and finally breaks. It is the broken water the broken water has actual motion-and not the undulations, which does the harm, and the oil, we suppose, owing to its greater viscousness, prevents waves rising into the deformed conditions which bring about their disruption. It should be clearly understood that broken water-whether it is a wave tumbling to pieces in mid-ocean or on the shore in the form of surf--has actual motion relative to the earth, and represents a great force. In the case of unbroken waves, the undulations only move; that is to say, the wave motion travels, but not the water. An unbroken wave will pass under a boat and leave her in exactly the same position relative to the earth; but if she be struck by a broken wave, she may be hurled a considerable distance, or, if she resists the force, she may be greatly damaged.

On account of the importance to navigators of a knowledge of the use of oil to prevent heavy seas from breaking on board, the Hamburg Nautical School offered a prize for the best essay on the subject, and it was won by Capt. R. Karlowa, of the Hamburg - American Steamship Company, whose paper is here condensed.

FIG 68

FIG 69

## FIG 70

In the diagrams, the arrows denote the direction of the wind and sea; the flowing lines indicate the spreading oil.

Scudding before a gale (Fig. 68), distribute oil from the bow by means of oil-bags or through waste-pipes ; it will thus spread aft and give protection both from quartering and following seas. If only distributed astern (Fig. 69) there will be no protection from the quartering sea.

Running before a gale, yawing badly and threatening to broach-to (Figs. 70 and 71), oil should be distributed from the bow and from both sides, abaft the beam. In Fig. 70, for instance, where it is only distributed at the bow, the weather quarter is left unprotected when the ship yaws. In Fig. 71, however, with oil-bags abaft the beam as well as forward, the quarter is protected.

Lying-to (Fig. 72), a vessel can be brought closer to the wind by using one or two oil bags forward, to windward. With a high beam sea, use oil-bags along the weather side at intervals of 40 or 50 feet.

In a heavy cross-sea (Fig. 73) as in the centre of a hurricane, or after the centre has passed, oil-bags should be hung out at regular intervals along both sides.

FIG. 71

FIG. 72.

FIG. 73.

FIG. 74.

FIG. 75.

FIG. 76

Steaming into a heavy head-sea (Fig. 74), use oil through forward closet-pipes. Oil bags would be tossed back on deck.

Drifting in the trough of a heavy sea (Figs. 75 and 76), use oil from waste pipes forward and bags on weather side, as in Fig. 72. These answer the purpose very much better than one bag at weather bow and one at lee quarter, although this has been tried with some success (Fig. 76).

Lying-to, to tack or wear (Fig. 77), use oil from weather bow.

Cracking on, with high wind abeam and heavy sea (Fig. 78), use oil from waste-pipes, weather bow.

Towing another vessel in a heavy sea, oil is of the greatest service, and may prevent the hawser from breaking. Distribute oil from the towing

vessel, forward and on both sides. If only used aft, the tow alone gets the benefit (Fig. 79.)

At anchor in an open roadstead, use cilia bags from jib-boom, or haul them out ahead of the vessel by means of an endless rope rove through a tail-block secured to the anchor chain (Fig. 80).

A vessel hove-to for a pilot (Fig. 81), should distribute oil from the weather side and lee quarter. The pilot-boat runs up to windward and lowers a boat, which pulls down to leeward and around the vessel's stern.

FIG. 77.

FIG. 78.

The pilot-boat runs down to leeward, gets out oil-bags to windward and on her lee quarter, and the boat pulls back around her stern, protected by the oil. The vessels drift to leeward and leave an oil-slick to windward, between the two.

There are many other cases where oil may be used to advantage -- such as lowering and hoisting boats, riding to a sea anchor, crossing rollers or surf on a bar, and from lifeboats and stranded vessels. Thick and heavy oils are the best. Mineral oils are not so effective as animal or vegetable oils. Raw petroleum has given favourable results, but not so good when it is refined. Certain oils, like cocoa-nut oil and some kinds of fish oil, congeal in cold weather, and are therefore useless, but may be mixed with mineral oils to advantage. The simplest and best method of distributing oil is by means of canvas bags about one foot long, filled with oakum and oil, pierced with holes by means of a coarse sail-needle, and

held by a lanyard. The waste-pipes forward are also very useful for this purpose.

It should be noted that oil has little or no effect on the broken water due to surf breaking on a shore; and the experiments made on the broken water, on bars of harbour entrances, show that the condition of the water cannot be much modified by oil; the wave breaking is, in such cases, mostly governed by the depth of the water. The deeper the water, the greater the effect of the oil in modifying the wave breaking.

If a bar harbour has to be entered on a flood tide a boat could discharge oil so that it would run in ahead of her. On an ebb tide, the oil could be distributed by some apparatus in connection with the shore.

"A wave-smoother," made by The Storm Anchor Co., Campbell-road, Bow, is shown by Fig. 82 as intended for lifeboats. It is a sail made of stout canvas, with a buoyant wooden yard on top, and a tube made of

strong galvanised steel at bottom, large enough to contain from one to two gallons of oil. This tube acts at once as a sinker and yard: it is a self-distributor when in the sea, and a safe and strong receptacle for oil. The central figure shows it hanging in beackets under the boat's thwart, whence it may be thrown overboard, and will then commence acting instantly, as storm anchor and wave-smoother. Its four guys should be made fast to about 60 feet of the boat's painter, and veered ahead. It will not fail to keep the boat's head to the sea; and the oil, rising to the surface, will most effectually calm down the breaking and high topping waves before they burst on the boat. By this system the boat will require little, if any, personal management, as the anchor and the oil acting together will render the terrible disaster of capsizing very remote.

FIG. 81.

If used for scudding, it should be tightly furled and towed astern by the four guys; but when the seas rise high, boats should be hove to. If kept suspended under athwart it can never be trodden on and burst, as it would be in any other place by a body of people hurriedly springing into a boat. When overboard it will discharge oil at a uniform rate, and make one gallon go as far as five applied in any other way.

FIG. 79.

FIG. 80.

Vegetable oil mixed with one half fish oil and one-tenth weight of tow or oakum, is recommended.

Another wave-smoother is made by the "Mermaid" Wave Subduer Company, 19, Castle-street, Liverpool.

FIG. 82.

Attempts made to still the waves for ships to have a comparatively smooth passage with a bead sea have not been very successful. In 1888, trials were made on board the North German Lloyd liners with rockets containing oil fired ahead of the ships in the teeth of a gale. It was said that five rockets--we presume in instantaneous succession--were fired 900ft. ahead of the ship dead to windward in a gale, and that from 1500 sq. ft. to

Oil on Troubled Waters-continued.

2000 sq. ft. were covered with the oil liberated from the rockets. If the oil from these five rockets covered an area of, say 2000 sq. ft., the area would be more or less circular in form, with a diameter, say, of 50ft. Thus we assume that the oil spread out 25ft. in all directions whilst the ship was travelling 900ft. ; we further assume that the speed of the ship would be, in a gale about 15 knots, equal to 1516ft. per minute; thus the oil, whilst the ship traversed 900ft., would only have thirty-six seconds to spread in; or, in other words, a rocket would have to be fired every seven seconds to make an oily path for a ship travelling at the rate of 15 knots, It should be noted that the oily path would be no broader than the ship, and that keeping in it would be like walking a chalk line under the influence of very exuberant spirits. We do not think such a streak as this would be of much value to a ship, even if she could keep actually in it, or just to leeward of it.

To make a continuous oily path for a ship travelling at the rate of 15 knots, five rockets would have to be fired every seven seconds. Thus, forty-three rockets would have to be fired per minute, 2580 per hour, and 61,920 per twenty-four hours. If the ship travelled at the rate given, she would be about eight days on a voyage; and if rockets were required the whole time, 495,360, or practically half a million, would have to be fired. These could not possibly be manufactured and fired a distance of 900ft. under a cost of 6d. each, or a total cost of 12,384£, a sum probably more than double the average amount of passage money per voyage. We do not, therefore, think that the luxury of having an oily track across the Atlantic is yet within range of things practicable.

O.M.-- See "B.M."

On.--

In the direction of, as "on the bow," "on the beam," "on the quarter," "on for that buoy," &c.

On a Bowline.--

Close-hauled. Generally applied to the square rig when a ship has her bowlines hauled taut to keep the leeches of the sails from shaking when she is close-hauled.

On on Easy Bowline.-- Not quite close-hauled; a good full.

On a Wind.-- Close-hauled; not off the wind.

One-Design Class.--

A number of boats built precisely alike; the design, construction, and sails being exactly similar. Boats are built in this manner, by mutual arrangement, for racing purposes, and afford excellent sport because, all things being equal, the steersman and crew showing most knowledge of seamanship are likely to secure the prize. The drawback to a one-design class is that when once the form of boat is stereotyped it cannot be improved, and thus were all competitive sailing conducted on the one-design class principle the science of yacht architecture would remain at a standstill.

On End.--

A mast is said to be on end when in its place; literally, standing on its end. Generally applied to topmasts.

One, Two, Three, Haul !--

A cry raised by the foremost hand in hauling on a tackle. All hands throw their whole weight and strength on the rope or fall at the word "Haul!"

Open.-- Upon sailing round a point or headland when an object comes into view.

Opposite Tacks.--

When of two vessels one is on the port tack and the other on starboard tack. Cross tacks.

Ordinary Seaman.--

On board a man-of-war a young sailor not yet efficient in his duties so as to entitle him to the rank of A.B.

Outer and Inner Turns.--

In bending a sail to a yard, the outer turns haul the sail out taut along the yard, the inner turns secure the sail.

Outhaul.--

A rope or tackle by which a sail is hauled out on a spar, as distinct from an inhaul by which it is hauled inboard.

Outrigger.--

A contrivance of some sort for extending a sail or stay outboard. A name for a kind of rowboat which has the rowlocks extended beyond the boat's side by iron rod brackets.

Over-canvassed.-- Too much canvas.

Overfalls.--

The rough water caused by the tide pouring over a rough or precipitous bottom.

Overhang.--

The portions of the hull which project beyond the waterline fore and aft.

Overhaul.--

To overtake another vessel; to loosen the parts of a tackle; to ease up, to slacken, or free the fall of a tackle ; to slacken or "lighten up" a rope.

Overlay.--

When any part, spars and sails included, of one vessel covers or overlaps any part of another vessel. Technically in a yacht race yachts are not considered overlapping within the meaning of the rules (1) unless they are sailing approximately the same course or nearly in the same direction (2) unless they are close enough together for risk of collision to be involved.

For instance, if A were found to be covering B by a line drawn at right angles across a chart, and A and B were a quarter of a mile apart, this would not be an overlap. Moreover, if A and B were sailing different ways on opposite tacks the question of an overlap would never be involved. Questions about "Overlaps" are often discussed by yachtsmen when speaking of racing, because under the rules an overlap often governs the right of way, but it should always be remembered the term "overlap" only begins to apply when A and B come within range of risk of collision and when they are sailing in the same direction. When the risk of collision ceases, or before it begins, the overlap obviously ceases

to have any importance, because when no such risk exists, the sea being free property, A and B may sail anywhere they please.

Over-masted.-- Masts that are too large or long for a vessel.

Over-rigged.--

Generally more rigging, spars, and canvas than a vessel will properly bear.

Over-set.-- To cause a capsize.

Overshoot a Mark.--

To go up to a mark with too much way on so that the vessel shoots past it.

Over-reach or Overstand.--

To stand so long on a reach that upon tacking the vessel can fetch much farther to windward of a mark than was necessary or desirable.

Overtake.--

To approach a vessel that is sailing ahead. The "rule of the road" is that an overtaking vessel must keep clear of the vessel she overtakes; the vessel so overtaken must, however, keep her course steadily. In competitive yacht sailing this rule is somewhat different, as it allows the vessel that is overtaken to alter her course to windward to prevent the other passing her to windward; she must not, however, alter her course to leeward to prevent the overtaking vessel passing on her lee side.

P. Q.

Paint.--

Oil colour used for preserving wood and iron.

Painter.--

A rope spliced to a ring bolt in the bow of a boat to make fast by at wharves, steps, or other landing places. "To let go the painter" is figuratively to depart.

Palm.-- The guard and thimble used by sail makers. Also the fluke of an anchor.

Paltry.--

A wind is said to be paltry which is light and intermittent, or varying a great deal in direction and force; baffling.

Parbuckle.--

To roll a spar, cask, &c., by placing it in the bight of a rope, one end of which is fast, the other hauled upon.

Parcel.--

To cover a rope with strips of canvas painted or otherwise. The canvas is wound round the rope and stitched or "served" with marline.

Parrel or Parral.--

Ropes or irons used to secure yards at the slings to the mast; rope parrels are commonly rove through balls of wood, so that they hoist easily on the mast. Parrels are used on the jaws of a gaff. An eye is usually spliced in either end of a parrel.

Part.--

To break, to burst asunder, as the "fore stay parted about half way up to the eye."

Partners.--

A strong frame of timber fixed between the deck beams to receive and support the mast, termed mast partners, but some times termed carlines.

Pass.-- To reeve, as pass a lacing or earing. Also to hand a thing one from another.

Passage.--

A voyage. To carry a person from one place to another is to give a passage.

Passengers.--

A vessel of any description cannot, according to statute, have on board more than twelve passengers without taking out a licence. However, the opinion of the judges was expressed on the point in the Court of

Queen's Bench in April, 1889. It appears that the owners of the steam tug Era were summoned before the Ipswich magistrates for carrying a party of friends, twenty-one in number, on a pleasure excursion on the river Orwell, she not having a passenger certificate in accordance with the 318th section of the Merchant Shipping Act, 1854. For the defence it was contended that the steamer was not plying within the meaning of the statute, and the magistrates declined to convict. The Board of Trade then took the case to the Court of Queen's Bench. The court without hesitation decided that the magistrates were right not to convict, and the Lord Chief Justice, in the course of his judgment, said: "If the owner of a yacht took a party up and down a river for amusement, surely it is too clear for argument that such a case would not be within the Act. The case was not really within the meaning of the Act, and it would be straining the meaning of the Act to say that the steamer was in any reasonable sense plying." Mr. Justice Hawkins concurred, and stated it was not shown that the Era was plying at the time she took the party for an excursion on the Orwell. In spite of this judgment the Board of Trade in 1892 sanctioned a vexatious prosecution of the owner of the yacht Myrtle. But if the statute does not apply to an ordinary steamship like the Era when she is not plying, it cannot apply to a yacht. Judgment was given against the owner of the yacht, who was too late with his appeal.

Paul or Pawl.--

An iron stop used to prevent the back recoil of the barrel of a windlass, &c.

Pawl Bitt.--

A long timber from the deck to the keelson forming one of the bowsprit bitts.

Pay.--

To run hot pitch and tar, or marine glue, &c., into seams after they are caulked.

Paying off Pennant.--

A long streamer flown when a man-of-war is being paid out of commission.

Pay Off.--

When a vessel's head goes off to leeward by virtue of the head sails being put aback or the helm being put up.

Pay Out.-- To veer or slack out chain or rope.

Peak.--

The upper after corner of gaff sails, gaff topsails, lugsails, &c. A sail is said to have a great deal of peak when the gaff or yard makes a small angle with a vertical. A low peak means a fiat-headed sail. (See "Fore Peak.")

Peak Downhaul.--

A rope rove through a single block at the gaff end to haul upon when lowering the mainsail.

Peak Halyards.-- The halyards by which the peak of a sail is hoisted.

Peak Purchase.-- A tackle attached to one end of the peak halyards.

Pendant.-- A stout rope to which tackles are attached.

Pennant or Pendant.--

A long white streamer with a St. George's cross at the hoist, used only by ships of the Royal Navy. It is said to owe its origin to the following incident : a Dutch Admiral hoisted a broom at his masthead as a symbol that he would sweep the English from the sea; the English Admiral retorted by hoisting a long streamer to denote that he would whip the Dutch off the sea; the English Admiral more nearly succeeded in his object than the Dutchman did. A Commodore has a broad pennant or swallow tail flag. (See "Burgee," "Hoisting Pennant," and "Irish Pennants," "Paying off Pennant.")

Peter.-- See "Blue Peter."

Peter Boat.--

A small fishing boat, sharp at both ends, formerly common at the mouth of the Thames and Medway.

Petticoat Trousers.--

An ancient garment worn by sailors, now only used by fishermen; a kind of kilt often made out of a blanket or oilskin.

Fig.-- A heavy mass of iron or lead.

Pile Driving.-- Pitching heavily and frequently in a short steep sea.

Pilot.--

A person who takes charge of a ship in narrow or dangerous channels, and, who from his local knowledge of the same, can, or ought to, avoid the dangers of stranding. (For pilot signals see "Signals.")

Pintles.--

The metal hooks by which rudders are attached to the gudgeon sockets.

Pipe.-- To summon men to duty by a whistle from the boatswain's call.

Pipe Up.-- The wind is said to pipe up when it increases in strength suddenly.

Pitching.--

The plunging motion of a vessel when she dives by the head; the opposite motion to 'scending, which is rising by the head and sinking by the stern.

Planking.--

The outside skin of a vessel; plank laid on the frames or beams of a vessel whether inside or outside.

Plank Sheer.--

The outside plank at the deck edge which reaches the timber heads, and shows the sheer of the vessel. Also the same as covering board.

Platform.-- The floor of a cabin. (See "Deck.")

Ply to Windward.--

Plying to windward is synonymous with beating to windward.

Points.-- See "Reef Points."

Point the Yards.--

To brace them up sharp when at anchor, so that they shall not feel the full force of the wind.

Point, To.--

A vessel is said to point well when she lies very close to the wind. A term more used in America than in this country. Out point, to point higher, &c.

Pole.-- The part of a topmast about the shoulders.

Pole Mast.--

A long mast without a topmast, but with a long "pole" or piece above the hounds.

Poop.--

The raised part of a vessel at her extreme after end. To be pooped is when running before the wind a sea breaks in over the stern.

Poor John.-- Dried hake, which is a coarse fish caught on the west coast.

Port.--

The left hand side, the opposite to starboard. Formerly also termed larboard; but Falconer says, in his dictionary (1789), that larboard should never be used in conning the helm, owing to the possibility of its being mistaken for starboard. To port the helm is to put the tiller to port so that the vessel's head goes to starboard. The term "port" is of uncertain origin, but it occurs in Arthur Pitt's Voyage, 1580. It was authoritatively adopted in the Royal Navy at the beginning of the present century.

Portable Dinghies.--

Numerous plans have been suggested for the construction of portable dinghies for small yachts, the best known perhaps being one adopted by Biffen, the well known bent builder, in 1858. The boat was divided longitudinally into halves, each half being a complete boat, the longitudinal bulkheads coming as high as the thwarts; three iron clamps were fitted to one half of the keel, into which the other half of the keel was fitted. The top part of the bulkheads were kept together by

thumbscrews inserted above the water line. The boat was 9ft. long, and 4ft. broad; in shape she did not differ from an ordinary dinghy when put together. She was used in a 6 tonner, and when not in use one half was stowed on either side of the cabin below. It was said that this boat could be put together in half a minute. In 1862 Biffen built a similar boat which was net so well recommended, on account of the multiplicity of fastenings. The obvious objection to such contrivances is of course the trouble of putting the parts together when the boat has to be used. (See "Berthon's Collapsible Boats" and "Stowing a Punt.")

Port Lights.--

Circular or square glass lights in the sides of a vessel. (See "Dead Lights.")

Ports and Portholes.--

Square holes in the side of a ship for the guns, &c.

Port Sills.--

The bottom framing of a port hole to which the lower half-port or shutter is hinged, also the frame to which the upper half-port is attached.

Pram Bow.--

A form of bow employed in modern sailing yachts reintroduced in modified form about 1892 and gradually exaggerated until 1900. A modified form of pram bow is the best form for lifting the head of the vessel over the seas and is suitable for cruising as well as racing yachts. In a pram bow the profile is a convex curve like the line of a mussel's shell and the transverse half sections are somewhat similar convex curves meeting at the stem. In a modified pram bow, or mussel bow, the angle of the curves of the transverse half sections at the stem is sharp or acute, and in the extreme pram bow, or spoon bow, the angle at the stem is obtuse or bluff or even obliterated until the transverse bow section is U shaped.

Pram or Praam.--

A dinghy or boat with a shovel bow, used in Holland and the Baltic.

Preserving a Boat.--

All small boats, if possible, should be hauled out of water or beached when not in use. Whenever the varnish or paint becomes worn, the boat should be recoated.

Press of Sail.-- All the sail a vessel dare carry.

Preventers.--

Additional ropes, stays, tackles, &c. used to prevent spars being carried away if their proper stays give out, as preventer backstays for the topmast, preventer bobstay, &c. A preventer is also any rope or lashing used to prevent something giving way.

Preventive Man.--

An old fashioned name for a coast guard man, whose duty it is to prevent or detect the landing of smuggled goods.

Privateer.--

An armed vessel, privately owned, carrying a licence or "letters-of-marque" from the Government empowering her to make war on the enemy's ships. In no way to be confounded with a pirate, although in some instances such vessels may have degenerated into pirates. Privateering is not permitted under our present laws.

FIG 83.

Privateer's Flag.-- The Union Jack with a red border.

Protest.--

A declaration that a yacht has not conformed to sailing rules; also a term used by the Commissioner of Wrecks in case of a wreck being reported.

Puddening.-- A sort of fender made of old rope, for a boat's stem, &c.

Puff.--

A gust of wind. A free puff is when it enables a vessel to luff; a foul puff when it breaks her off.

Puncheon.-- A certain sized cask.

Puncheons.--

A part of the framework of a deckhouse. It is a kind of pilaster morticed into the coaming, and is the principal support of the deckhouse roof.

Punt.-- A small boat or dinghy. (See "Stowing a Punt.")

Punt Building.--

The following are directions for building a fishing punt as shown by Fig. 83 :-

Take for the sides two 1in. planks 16in. wide and 14ft. long; for the ends use 2in. plank. Cut the stern-piece 30in. long at bottom, and 40in. at top; cut the bow piece 12in. long at bottom, and 20in. at top; then cut a centre piece 12in. wide, 40in. long at bottom, and 50in. long at top: put these pieces in position, and securely nail the sides to them; this can be readily done by bringing the planks into place by means of a rope, twisted by a short lever. After the sides are thus secured true up the bottom edges, and plank crosswise with three-quarter inch plank one eighth of an inch apart; caulk these seams with oakum or cotton, and pitch the whole bottom, and 2in. or 3in. up the sides. A keel 1in., 2in., or 3in. deep can then be nailed on, depending on the depth of the water where the boat is to be used. For seats nail a plank across each end, and one for the rower over the middle piece; two rowlocks, about 6in. above the sides of the boat, complete the job. These can be made of plank, set up en end, and fastened to the inside of the boat. A common carpenter can make such a boat in about two days, and, if planed and painted, it looks well. The ends ought to incline outwards about 3in. to the foot. No. 1 shows the skiff completed, but with a stern piece adapted for steering with an oar; No. 5 is a diagram of the stern piece; No. 4 the bow piece; No. 2 the middle piece, and No. 3 the rowlock. By putting in two pieces in the middle the required distance apart, and perforating the cross planking between them, a well would be readily formed.

Mr. A. V. FitzHerbert thus describes his plan of building a punt (Fig. 84):

For the stem.-

Take a piece of red pine 3in. by 4in., and 2ft. long. Groove it out to receive the side boards, which should be white pine 1in. Each side of

boat made of 1ft. wide plank next bottom, and a 6in. plank above it, making total depth when planed down about 17in., or a trifle less.

The centre mould or bulkhead of 1in. plank, 1ft. wide, should be cut 44in. wide on top, and 40.5in. along the bottom. The stern, also of 1in. plank, must be 30in. at top, and 24in. at bottom, by 17in. high, or half an inch higher. Fix the centre mould firmly upright on a bench, then nail the lower side planks on to it, at 6ft. 6in. from the stern.

Next put in the stem, first of all fitting it to take the curve of the planks, and give it a slight slope aft. The planks had better be fastened with screws to it. Next fit in the stem, with a fair slope forward. The sides can be brought close together to meet the stem by tying a rope round them. Care must be taken to keep stem in line with centre of stern and centre mould. Having fastened in stem, centre, and stern beards, turn the boat upside down, and place the sides, stern, and centre moulds level, to receive the bottom, which must be new laid on across the boat, of inch boards nailed on like the top of a box, fitting well together at their inside edges, but slightly open at the outside to admit of caulking. After putting on the bottom, turn the boat rightside up, fit in ribs, of strips of boards, 1in. by 2in., and 17in. long. Nail them upright to the sides, with one end resting on the bottom of the boat, about 2ft. apart; then put on the top board, and the hull is made. Along the bottom put two parallel keels about 3in. deep by 1in. to 1.5in., and 15in. apart. Their use is, first, to keep the bottom boards together; and secondly, to act as runners when dragging the boat from one place to another.

Put one wide seat in the stern, a seat to lift in and out 6ft from the bow, and a movable seat for rowing or sliding, commencing at 5ft. 4in. from stern, and moveable for one yard forward; this can be done by fastening a piece of 3in. pine to each side level with top of lower plank, and 1in. above this, and parallel with it, another lighter piece to keep the seat down.

There are two sets of rowlock chocks, the after set for rowing when alone, the forward set for use when there are two in the boat.

FIG 84.

The after rowlock chock is made of 3in. by 4.5in red pine, grooved to a depth of 2in. to let in the side of the boat to which it is screwed; it is 20in. long, and has three holes for the rowlocks, the centre one 4ft. 10in. from the stern of boat.

The forward rowlock chock is 7in. by 3in., red pine, also grooved, but has an iron bracket underneath to support it, and two holes for the rowlock, one further from the centre of boat than the other; the centre of chock is 7ft. 7in. from the stern.

Purchase.-- A tackle; any contrivance for increasing mechanical power.

Put About.-- -To tack. To put about another vessel is to cause her to tack.

Put In.-- To call at a port or harbour.

Put Off.-- To leave, as to leave a ship's side or the shore.

Pykar.-- An ancient English boat used for fishing.

Q.

Quarter Deck--The deck abaft the main mast where the crew are not allowed unless duty calls them there.

Quarter Fast.-- A warp or rope made fast to the quarter; a quarter spring.

Quarter Master.-- A petty officer who steers on large vessels and sees that the orders of the officer of the watch are properly executed, &c.

Quarter Timbers. Large pieces of timber secured to the transom frame, to help form the counter.

Quarter Watch.-- When the two watches are subdivided into four watches, so that only one quarter of the crew is on deck at one time; sometimes observed in light weather.

Quarter Wind--The wind that blows on the quarter, or four or more points abaft the beam but not dead aft. (See "Compass.")

Quarters.-- That part of a yacht or ship nearest the stern.

R.

R Class.-- The expression that a yacht is classed R, or the letter R placed against a yacht's name, denotes that she has been built to the special class "R" at Lloyd's or a foreign classification society, and that she is of sound and seaworthy construction. Lloyd's Register of Shipping established a new class "R" for yachts of the international rating classes in 1906, and over 600 yachts have now been classed R ; before 1906 the only yacht class was A. (See "A1," and also "Yacht Register" and "Rules.")

Rabbet or Rebate.-- An angular channel or groove cut in the keel, stem, or sternpost, &c. to receive the edges or ends of the plank.

Race.-- A competition between yachts. A strong current or tide running over an uneven bottom producing overfalls. (See "Overfalls.")

Racing Flags.-- The size of racing flags will be found under the head of "Flags."

Racking.-- A rope or seizing used to lash the parts of a tackle together, by taking several turns, so as to keep them from running through the blocks, whilst the fall is cast off for some purpose, or whilst one hand belays the fall made fast to some fixture by one end and then passed round and round a rope to hold the latter by.

Raffee.-- A square topsail set flying on the foretopmast of schooners, and formerly often set on cutters and ketches above the squaresail. Sometimes this topsail is triangular in shape, like a scraper.

Rail.-- The timber fitted on to the heads of the bulwark stanchions. Called also "top rail."

Rainbow Fashion.-- A ship dressed with flags from the jibboom end over the trucks to the taffrail.

Raising Iron.-- A sort of chisel for removing ; the paying and caulking from seams.

Raising Tacks and Sheets.-- To lift the clews of lower square sails before tacking or wearing.

Rake.-- To lean forward or aft from the vertical, as raking masts, raking sternposts, raking stem, &c.

Rakish.-- A vessel that has a look of speed about her, probably originating from the fast schooners of former days that had raking masts.

Ramp.-- In close-hauled sailing, to sail a vessel along a heavy full without easing up the sheets.

Ramping Full.-- Every sail bellying, full of wind--not too close-hauled.

Range.-- Scope. To range is to sheer about when at anchor; to range the cable, to place a lot on deck in fakes ready for veering out.-- To give a range of cable is to veer out enough in letting go the anchor to bring the vessel up without causing much strain to come on the bits.-- To go near to, as to range up to windward, to range up alongside, &c.

Rap Full.-- The same as ramping full.

Rate of a Chronometer.--

The daily loss or gain of a chronometer in relation to mean time.

Rater.-- A term used to imply a small yacht or boat of the type commonly in vogue in the smaller classes of the Yacht Racing Association. Hence 8-metre yachts, 7-metres, and 6-metres' may be called "raters" ; 18ft., 24ft., and 36ft. linear rating yachts were called "raters." The word had its origin under the first rating rule, from 1887 to 1895, and was applied to "half-raters," "1-raters," "2-1/2-raters," and "5-raters." It can only be regarded as a slang term (See also "Metre Boat.")

Rating Rules.-- See under "Time Allowance" and "Tonnage."

Ratlines or Ratlins.-- The small lines which cross the shrouds horizontally, and form the rungs of a ladder. Not generally used in yachts of 40 tons and under.

Rattle Down.-- To fix ratlines to the shrouds.

Reaching.--

Sailing by or along the wind. A "reach" is the distance sailed between tacks, and means the same as board. To "reach" another vessel is to pass her. In reaching a schooner of 150 tons, say, will pass a cutter of 100 tons; that is, will "fore-reach" her, hat the cutter holding a better wind will generally keep the weather gauge. A " reach" is a distance a yacht can sail from point to point without tacking, and may he sailed with

sheets eased up. Broad reach is with the boom well off the quarter. A reach is also the distance from bend to bend in a river or channel. Sailors mostly pronounce the word "ratching." (See "Head Reach," and "Fore Reach.")

Ready About !--The order given to prepare for tacking.

Ready, All !--Everybody make ready.

Rear Commodore.--

The third flag officer of a yacht club, who has no duties in the presence of the Commodore or Vice-Commodore. He has two white balls in the upper corner of his pennant.

Receiver of Wrecks.--

An officer to whom in case of damage or wreck the facts must be reported.

Recognised Yacht Club.--

A club included in the list of "Recognised Yacht Clubs" published in the year book of the Yacht Racing Association for the current year, or a club recognised by one of the National Authorities forming the International Yacht Racing Union. A term very frequently used by yachtsmen. Formerly it was a general condition that "a member of a Royal yacht club shall be on board" each yacht competing in a match, who is responsible for the due observance of the sailing rules. Often the rule required that a member of the particular club under whose auspices the match was being sailed should be on board. All clubs, however, have not the right to be styled "royal," and the word "recognised" yacht club became introduced as an equivalent for "royal." Since the establishment of the Yacht Racing Association the term "recognised" is alone contained in the rules. No one seems to have known exactly what "recognised" meant, but the terms "Recognised Yacht Club" and "Recognised Sailing Club" are now synonymous, and their definition is now generally accepted by yachtsmen as it is given above.

The term conveys the implication that the yacht club or sailing club is one of high repute, and that it does not admit professional skippers or yacht hands to its membership; generally all "Royal" yacht clubs and those holding Admiralty Warrants are "Recognised." On the other hand,

there are several "Recognised" clubs on the list of high repute which are not "Royal" clubs, and which do not hold an Admiralty Warrant.

A club desirous of obtaining recognition by the Y.R.A. should make an application to the Secretary of that body. The application must be supported by a member of the Y.R.A., and accompanied by a book of the applicant club's rules and a list of their members. A club, when recognised by the Y.R.A., must pay a subscription of 2£ 2s. per annum to that body, and is entitled to representation on the Y.R.A.

Reef.--

To shorten sail by reefing. Also to shorten a spar, as to take a reef in the bowsprit.

Reef Band.-- A strip of canvas sewn across the sail in which the eyelet holes are worked to receive the reef points. Not always met with in yacht sails.

Reef Cringles.-- The large cringles in the leeches of sails through which the reef pendants are rove and tacks or sheets hooked.

Reef Earing .-- See "Reef Pendant."

Reefing Gear.-- See page 413.

Reef Knot.-- "Seamanship," farther back.

Reef Pendant (called also "reef earing").--

A short and strong rope (with a Matthew Walker knot in one end). One end of the pendant is passed up through a hole in the cleat on one side of the boom and stopped by the knot in the end. The other end is then passed through the reef cringle in the sail and down through the sheave hole on the other side of the boom. Reef pendants are rove on opposite sides.

Reef Points.--

Short pieces of rope attached to sails to secure the folds rolled up when reefing.

Reef Tackle.-- The tackle hooked to the reef pendants.

Reeve.-- To put a rope through a hole of any kind.

Register.--

A certificate of a vessel's register granted by the Board of Trade and registered by the Registrar-General of Shipping. It is not a document of title of ownership.

Registry.--

A register of all British ships kept by the Registrar-General of Shipping. When a ship is registered, the following documents must be produced: (1) Certificate of Board of Trade measuring officer. (2) Certificate of Board of Trade Surveyor; in the case of yachts this certificate is not required. (3) Builder's certificate, or, if the builder's certificate cannot be obtained, a document setting forth all that is known of the vessel. (4) Declaration of ownership. All vessels, yachts, or otherwise of 15 tons N.M. and over must be registered. Yachts, however, of less than 15 tons can be registered, and it is advisable to have them so registered for the sake of holding the certificate of register, obtaining the Admiralty warrant, and being able to prove nationality when visiting foreign ports. The name of a vessel once registered cannot be altered except with the sanction of the Board of Trade. A certificate of registry is a mere copy of the register kept at the port of registry, and of itself is not a document of title. A quantity of useful information on the registry of ships will be found in a book by Messrs. C.F. Jemmett and R.A.B. Preston. entitled "A Treatise on the Law Relating to Pleasure Yachts," published by Sweet and Maxwell, 3 Chancery-lane, London, W.C.

Render.--

To slacken or ease up. A rope is said to render when it slackens up or slips from a belaying pin or cavel.

Resistance.--

According to Beaufoy, a plane moved normally at a rate of 10ft. per second meets with a resistance of 112.5lb. per square foot. The resistance varies as the square of the velocity at low speeds. Generally understood to mean the resistance a vessel meets with from the friction of the water on her skin and from the waves she makes.

Ribbands.--

Long pieces of plank or timber, usually three-sided, and sometimes called harpings, secured to the frames of a vessel in a fore-and-aft direction, when she is building, and representing the dividing lines or geodetic lines.

Ribs.-- The frames or timbers of a ship or boat.

Ride.-- To rest at anchor or to be held by an anchor.

Ridge Ropes.-- The ropes rove through the eyes of metal stanchions fitted in the top rail.

Riding Down.-- When men go aloft and hang on the halyards and assist by their weight in hoisting sails.

Riding Light.--

The white globular lantern hung on the forestay of vessels when riding at anchor. (See 'Rule of the Road Rules Concerning Lights.')

Riding Turn.--

When the last turn of a rope crosses or rides over the previous turn on a bollard &c. to jam it.

Rig.--

The arrangement of a vessel's spars, rigging, and sails, as schooner rig, cutter rig, lugger rig, &c. To rig is to fit the spars with rigging, &c. To rig out is to fit out.

Right Away.--

In the direction of. An American term for quickly out of hand, or move ahead.

Right Hand Rope.-- Rope laid up or twisted with the sun.

Right, to.-- To bring a vessel back to the upright position after she has been heeled.

Ring Bolt.-- A bolt with an eye and a ring through the eye.

Ring Tail.-- The studding sail of a gaff sail.

Rings.-- Brass or yellow metal rings used in place of rooves for bolt clinching.

Rising Floor.--

Distinct from fiat floored or fiat bottomed ; sharp bottomed. (See "Dead Rise.")

Risings.-- Stringers fitted inside small heats to strengthen them and support the thwarts.

Roach.--

The curved part of the foot of a sail : formerly the allowance made for the bellying of a sail.

Roadstead.-- An open anchorage.

Roaring Calm.-- An Equatorial calm.

Roaring Forties.--

This term originated with the tearing winds which blow in the South Atlantic between lat. 30° and 50° S.

Rockered Keel.-- A keel whose ends curve upwards thus  (See "Cambered.")

Rolling.-- The transverse motions of a ship when amongst waves.

Room and Space.--

The distance from the centre of one frame to the centre of another.

Roove.-- See "Ruff."

Rope.--

Ropes are of three kinds; three-strand, four-strand, and cable-laid. A number of yarns twisted together forms a strand. Three-strand rope (see Fig. 85) is laid righthanded, or with the sun (sometimes termed hawser-laid). Four-strand rope (see Fig. 86) is also laid with the sun (sometimes termed strand-laid). Four-strand rope is usually

FIG 85  
FIG 86  
FIG 87

used for sheets and shrouds, pendants, and generally for standing rigging. All rope comes under the general term of cordage. Cable-laid rope (see Fig. 87) consists of three "'three-strand' right-hand laid ropes laid up together into one these ropes are laid left-handed against the sun. Right-hand laid rope must be coiled with the sun ; cable-laid rope is coiled against the sun.

Rough-tree Rail.-- The top rail fitted to the stanchion above the bulwarks.

Round In.-- To haul in on a rope.

Round To.--

To bring by the wind. To come up head to wind. A vessel is said to "go round , when she goes about.

Rowed Turn.--

To pass a rope twice round a pin or cleat so as to make a complete circle.

Rove.--

The condition of a n rope that has been passed through a sheave hole or through any aperture.

Rowlocks.--

The fittings on the gunwale to receive the tholes or crutches for the oars.

Royal.-- The sail next above the topgallant sail.

Royal Standard.--

The flag of the Sovereign nod Royal family. It is always flown at the main. When the Sovereign is on board, the standard is flown at the main, and the Admiralty flag (a red ground with fouled anchor) at the fore, and Union Jack at the mizen.

Royal Yacht Club.--

A club which has obtained permission from the Home Office to use the prefix "Royal." - An Admiralty warrant obtained from the Admiralty does not confer the title; but a Royal yacht club that has not also the Admiralty warrant can only fly the red ensign, and this can have no device. A club with an Admiralty warrant takes precedence of a club which has only a Royal warrant. (See "Recognised Club.")

Rudder Trunk.--

The trunk fitted in the counter to receive the rudder post into which the tiller is fitted.

Ruff or Roove.-- A small, slightly conical ring of copper placed over boat nails before clinching in boat building.

Rules of the Road .--

Every yachtsman should have some knowledge of the Rule of the Road at Sea so that he may know the "Right of Way." The beginner should first of all commit to memory the following four verses by the late Mr. Thomas Gray, C.B. :-

1. Two Steam Ships meeting

When both side Lights you see ahead  
Port your helm, and show your RED.

2. Two Steam Ships passing.

GREEN to GREEN or, RED to RED-  
Perfect safety-Go ahead !

3. Two Steam Ships crossing

Note.-This is the position of greatest danger; there is nothing for it but good look-out, caution, and judgment.

If to your starboard RED appear,

It is your duty to keep clear:

To act as judgment says is proper;

To Port-or Starboard-Back-or, Stop her!

But when upon your Port is seen

A Steamer's Starboard Light of GREEN,

There's not so much for you to do,

For GREEN to Port keeps clear of you.

4. All Ships must keep a good look-out.

Both in safety and in doubt.

Always keep a good look-out;

In danger, with no room to turn,  
Ease her! Stop her! Go astern!

The next thing for the yachtsman to remember is never to put to sea without having on board "Lloyd's Calendar" for the current year; this book, price is., published at Lloyds, Royal Exchange, E.C., gives fully the regulations at present in force (under the Merchant Shipping Act) for preventing collisions at sea. These Rules were revised by an Order in Council on Oct. 13, 1910. The following are the chief Steering and Sailing Rules under the Merchant Shipping Act, 1913.

#### SCHEDULE I.

##### PRELIMINARY

These Rules shall be followed by all vessels upon the high seas and in all waters connected therewith, navigable by sea-going vessels.

In the following Rules every steam vessel which is under sail and not under steam is to be considered a sailing vessel, and every vessel under steam, whether under sail or not, is to be considered a steam vessel.

The words "steam vessel" shall include any vessel propelled by machinery.

Rules of the Rood-continued.

A vessel is "under way" within the meaning of these Rules, when she is not at anchor, or made fast to the shore or aground.

##### RULES CONCERNING LIGHTS, &c.

The word "visible" in these rules, when applied to lights, shall mean visible on a dark night with a clear atmosphere.

Art. 1. The rules concerning lights shall be complied with in all weathers from sunset to sunrise, and during such time no other lights which may be mistaken for the prescribed lights shall be exhibited.

Art. 2. A steam vessel when under way shall carry :

(a.) On or in front of the foremast, or if a vessel without a foremast, then in the fore part of the vessel, at a height above the hull of not less than 20ft and if the breadth of the vessel exceeds 20ft., then at a height above the hull not less than such breadth, so, however, that the light need not be carried at a greater height above the hull than 40ft, a bright white light, so constructed as to show an unbroken light over an arc of the horizon of 20 points of the compass, so fixed as to throw the light 10 points on each side of the vessel, viz., from right ahead to 2 points abaft the beam on either side, and of such a character as to be visible at a distance of at least five miles.

(b.) On the starboard side a green light so constructed as to show an unbroken light over an arc of the horizon of 10 points of the compass,

so fixed as to throw the light from right ahead to 2 points abaft the beam on either side, and of such a character as to be visible at a distance of at least two miles.

(C.) On the port side a red light so constructed as to show an unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to 2 points abaft the beam on the port side, and of such a character as to be visible at a distance of at least two miles.

(d.) The said green and red side lights shall be fitted with inboard screens projecting at least 3ft. forward from the light, so as to prevent these lights from being seen across the bow.

(e.) A steam vessel when under way 'nay carry an additional white light similar in construction to the light mentioned in subdivision (o). These two lights shall be so placed in line with the keel that one shall be at least 15ft. higher than the other, and in such a position with reference to each other that the lower light shall be forward of the upper one. The vertical distance between these lights shall be less than the horizontal distance.

Art. 3. A steam vessel when towing another vessel shall, in addition to her side lights, carry two bright white lights in a vertical line one over the other, not less than 6ft. apart, and when towing more than one vessel shall carry an additional bright white light 6ft. above or below such lights, if the length of the tow, measuring from the stern of the towing vessel to the stern of the last vessel towed, exceeds 600ft. Each of these lights shall be of the same construction and character, and shall be carried in the same position as the white light mentioned in Article 2 (o), except the additional light, which may be carried at a height of not less than 14ft. above the hull.

Such steam vessel may carry a small white light abaft the funnel or aftermast for the vessel towed to steer by, but such light shall not be visible forward of the beam.

Art. 4. (o.) A vessel which from any accident is not under command, shall carry at the same height as the white light mentioned in Article 2 (e), where they can best be seen, and, if a steam vessel, in lieu of that light, two red lights, in a vertical line one over the other, not less than 6ft. apart, and of such a character as to be visible all round the horizon at a distance of at least two miles and shall by day carry in a vertical line one over the other, not less than 6ft. apart, where they can best be seen, two black balls or shapes, each 2ft. in diameter.

(b.) A vessel employed in laying or in picking up a telegraph cable shall carry in the same position as the white light mentioned in Article 2 (a), and, if a steam vessel, in lieu of that light, three lights in a vertical line one over the other, not less than 6ft. apart. The highest and lowest of these lights shall be red, and the middle light shall be white, and they shall be of such a character as to be visible all round the horizon, at a distance of at least two miles. By day she shall carry in a vertical line one over the other, not less than 6ft. apart, where they can best be seen, three shapes not less than 2ft. in diameter, of which the highest and lowest shall be globular in shape and red in colour, and the middle one diamond in shape and white.

(C.) The vessels referred to in this Article, when not making way through the water, shall not carry the side lights, but when making way shall carry them.

(d.) The lights and shapes required to be shown by this Article are to be taken by other vessels as signals that the vessel showing them is not under command and cannot therefore get out of the way.

These signals are not signals of vessels in distress and requiring assistance. Such signals are contained in Article 31.

Art. 5. A sailing vessel under way, and any vessel being towed, shall carry the same lights as are prescribed by Article 2 for a steam vessel under way, with the exception of the white lights mentioned therein, which they shall never carry.

Art. 6. Whenever, as in the case of small vessels under way during bad weather, the green and red side lights cannot be fixed, these lights shall be kept at hand lighted and ready for use; and shall, on the approach of or to other vessels, be exhibited on their respective sides in sufficient time to prevent Collision, in such manner as to make them visible, and so that the green light shall not be seen on the port side nor the red light on the starboard side, nor, if practicable, more than 2 points abaft the beam on their respective sides.

To make the use of these portable lights more certain and easy, the lanterns containing them shall each be painted outside with the colour of the light they respectively contain, and shall be provided with proper screens.

Art. 7. Steam vessels of less than 40, and vessels under oars or sails of less than 20. tons gross tonnage, respectively, and rowing boats, when under way, shall not be obliged to carry the lights mentioned in Article 2 (a) (b) and (C), but if they do not carry them they shall be provided with the following lights.

1. Steam vessels of less than 40 tons shall carry:

(a.) In the fore part of the vessel, or on or in front of the funnel, where it can best be seen, and at a height above the gunwale of not less than 9ft a bright white light constructed and fixed as prescribed in Article 2 (a), and of such a character as to be visible at a distance of at least two miles.

(b.) Green and red side-lights constructed and fixed as prescribed in Article 2 (b) and (C), and of such a character as to be visible at a distance of at least one mile, or a combined lantern showing a green light and a red light from right ahead to 2 points abaft the beam on their respective sides. Such lantern shall be carried not less than 3ft. below the white light.

2. Small steamboats, such as are carried by sea-going vessels, may carry the white light at a less height than 9ft above the gunwale, but it shall be carried above the combined lantern, mentioned in sub-division 1 (b).

3. Vessels under oars or sails, of less than 20 tons, shall have ready at hand a lantern with a green glass on one side and a red glass on the other, which, on the approach of or to other vessels, shall be exhibited in sufficient time to prevent collision, so that the green light shall not be seen on the port side nor the red light on the starboard side.

4. Rowing boats, whether under oars or sail, shall have ready at hand a lantern showing a white light, which shall be temporarily exhibited in sufficient time to prevent collision.

The vessels referred to in this Article shall not be obliged to carry the lights prescribed by Article 4 (a), and Article 11, last paragraph.

Art. 8. Pilot vessels, when engaged on their station on pilotage duty, shall not show the lights required for other vessels, but shall carry a white light at the masthead, visible all round the horizon, and shall also exhibit a flare-up light or flare-up lights at short intervals, which shall never exceed fifteen minutes.

On the near approach of or to other vessels they shall have their side-lights lighted, ready for use, and shall flash or show them at short intervals, to indicate the direction in which they are heading, but the green light shall not be shown on the port side, nor the red light on the starboard side.

A pilot vessel of such a class as to be obliged to go alongside of a vessel to put a pilot on board, may show the white light instead of carrying it at the masthead, and may, instead of the coloured lights above mentioned, have at hand ready for use a lantern with a green

glass on the one side and a red glass on the other, to be used as prescribed above.

A Steam Pilot vessel exclusively employed for the service of Pilots licensed or certified by any Pilotage authority or the Committee of any Pilotage District in the United Kingdom when engaged on her station on pilotage duty and in British waters and not at anchor shall in addition to the lights required for all Pilot boats carry at a distance of eight feet below her White Masthead light a red light visible all round the horizon and of such a character as to be visible on a dark night with a clear atmosphere at a distance of at least 2 miles and also the coloured side lights required to be carried by vessels when under way.

When engaged on her station on pilotage duty and in British waters and at anchor she shall carry in addition to the lights required for all Pilot boats the red light above mentioned but not the coloured side lights.

When not engaged on her station on pilotage duty she shall carry the same lights as other steam vessels.

Pilot vessels when not engaged on their station on pilotage duty, shall carry lights similar to those of other vessels of their tonnage.

#### FISHING VESSELS AND BOATS.

Art. 9. Fishing vessels and fishing boats, when under way and when not required by this Article to carry or show the lights hereinafter specified, shall carry or show the lights prescribed for vessels of their tonnage under way.

(a.) Open boats, by which is to be understood boats not protected from the

Rules of the Reed continued.

entry of sea water by means of a continuous deck, when engaged in any fishing at night, with outlying tackle extending not more than 150 feet horizontally from the boat into the seaway, shall carry one all-round white light.

Open boats, when fishing at night, with outlying tackle extending more than 150 feet horizontally from the boat into the seaway, shall carry one all-round white light, and in addition, on approaching or being approached by other vessels, shall show a second white light at least 3 feet below the first light and at a horizontal distance of at least 5 feet away from it in the direction in which the outlying tackle is attached.

(b.) Vessels and boats, except open boats as defined in sub-division (o), when fishing with drift nets, shall, so long as the nets are wholly or partly in the water, carry two white lights where they can best be seen. Such lights shall be placed so that the vertical distance between them

shall not be less than 6 feet and not more than 15 feet, and so that the horizontal distance between them, measured in a line with the keel, shall be not less than 5 feet and not more than 10 feet. The lower of these two lights shall be in the direction of the nets, and both of them shall be of such a character as to show all round the horizon, and to be visible at a distance of not less than 3 miles.

Within the Mediterranean Sea and in the seas bordering the coasts of Japan and Korea sailing fishing vessels of less than 20 tons gross tonnage shall not be obliged to carry the lower of these two lights; should they, however, not carry it, they shall show in the same position (in the direction of the net or gear) a white light, visible at a distance of not less than one sea mile, on the approach of or to other vessels.

(c.) Vessels and boats, except open boats as defined in sub-division (a), when line fishing with their lines out and attached to or hauling their lines, and when not at anchor or stationary within the meaning of sub-division (h), shall carry the same lights as vessels fishing with drift-nets. When shooting lines, or fishing with towing lines, they shall carry the lights prescribed for a steam or sailing vessel under way respectively.

Within the Mediterranean Sea and in the seas bordering the coasts of Japan and Korea sailing fishing vessels of less than 20 tons gross tonnage shall not be obliged to carry the lower of these two lights; should they, however, not carry it, they shall show in the same position (in the direction of the lines) a white light, visible at a distance of not less than one sea mile on the approach of or to other vessels.

(d.) Vessels, when engaged in trawling, by which is meant the dragging of an apparatus along the bottom of the sea-

1. If steam vessels, shall carry in the same position as the white light mentioned in Article 2 (e), a tricoloured lantern so constructed and fixed as to show a white light from right ahead to two points on each bow, and a green light and a red light over an arc of the horizon from two points on each bow to two points abaft the beam on the starboard and port sides respectively; and not less than 6 nor more than 12 feet below the tricoloured lantern a white light in a lantern, so constructed as to show a clear uniform and unbroken light all round the horizon.

2. If sailing vessels, shall carry a white light, in a lantern, so constructed as to show a clear uniform and unbroken light all round the horizon, and shall also, on the approach of or to other vessels, show where it can best

be seen a white flare-up light or torch  
in sufficient time to prevent collision.

All lights mentioned in sub-division  
(d) 1 and 2 shall be visible at a distance  
of at least 2 miles.

(e.) Oyster dredgers and other vessels  
fishing with dredge-nets shall carry and show the same lights as  
trawlers.

(f.) Fishing vessels and fishing boats may at any time use a flare-up  
light in addition to the lights which they are by this Article required to  
carry and show, and they may also use working lights.

(g.) Every fishing vessel and every fishing boat under 150 feet in  
length, when at anchor, shall exhibit a white light visible all round the  
horizon at a distance of at least one mile.

Every fishing vessel of 150 feet in length or upwards, when at anchor,  
shall exhibit a white light visible all round the horizon at a distance of  
at least one mile, and shall exhibit a second light as provided for vessels  
of such length by Article 11.

Should any such vessel, whether under 150 feet in length, or of 150 feet  
in length or upwards, be attached to a net or other fishing gear, she shall  
on the approach of other vessels show an additional white light at least  
3 feet below the anchor light, and at a horizontal distance of at least 5  
feet away from it in the direction of the net or gear.

(h.) If a vessel or boat when fishing becomes stationary in consequence  
of her gear getting fast to a rock or other obstruction, she shall in  
daytime haul down the day-signal required by sub-division (k); at night  
show the light or lights prescribed for a vessel at anchor; and during  
fog, mist, falling snow, or heavy rain-storms make the signal prescribed  
for a vessel at anchor. (See sub-division (d) and the last paragraph of  
Article 15.)

(i.) In fog, mist, falling snow, or heavy rain-storms, drift-net vessels  
attached to their nets, and vessels when trawling, dredging, or fishing  
with any kind of drag-net, and vessels line fishing with their lines out,  
shall, if of 20 tons gross tonnage or upwards, respectively, at intervals  
of not more than one minute make a blast; if steam-vessels, with the  
whistle or siren, and if sailing vessels with the fog-horn; each blast to  
be followed by ringing the bell. Fishing vessels and boats of less than  
20 tons gross tonnage shall not be obliged to give the above-mentioned  
signals; but if they do not, they shall make some other efficient sound  
signal at intervals of not more than one minute.

(k.) All vessels or boats fishing with nets or lines or trawls, when under way, shall in daytime indicate their occupation to an approaching vessel by displaying a basket or other efficient signal where it can best be seen. If vessels or boats at anchor have their gear out, they shall, on the approach of other vessels, show the same signal on the side on which those vessels can pass.

The vessels required by this Article to carry or show the lights herein before specified shall not be obliged to carry the lights prescribed by Article 4 (e), and the last paragraph of Article 11.

This Article shall be read and construed as part of the Regulations contained in Schedule I. to the Order in Council, under Section 418 of the Merchant Shipping Act, 1894, made the 27th day of November, 1896, and as if it had formed one of such Regulations and been numbered 9 among the Articles containing the same.

Art. 10. A vessel which is being overtaken by another shall show from her stern to such last-mentioned vessel a white light or a flare. up light. The white light required to be shown by this Article may be fixed and carried in a lantern, but in such case the lantern shall be so constructed, fitted, and screened that it shall throw an unbroken light over an arc of the horizon of 12 points of the compass, viz., for 6 points from right aft on each side of the vessel, so as to be carried as nearly as practicable on the same level as the side lights.

Art. 11. A vessel under 150ft in length, when at anchor, shall carry forward, where it can best be seen, but at a height not exceeding 20ft. above the hull, a white light in a lantern so constructed as to show a clear, uniform. and unbroken light visible all round the horizon at a distance of at least one mile.

A vessel of 150ft or upwards in length, when at anchor, shall carry in the forward part of the vessel, at a height of not less than 20, and not exceeding 40, feet above the hull, one such light, and at or near the stern of the vessel, and at such a height that it shall be not less than 15ft lower than the forward light, another such light.

The length of a vessel shall be deemed to be the length appearing in her certificate of registry.

A vessel aground in or near a fairway shall carry the above light or lights and the two red lights prescribed by Article 4 (a).

Art. 12. Every vessel may, if necessary in order to attract attention, in addition to the lights which she is by these rules required to carry, show a flare-up light or use any detonating signal that cannot be mistaken for a distress signal.

Art. 13. Nothing in these rules shall interfere with the operation of any special rules made by the Government of any nation with respect to additional station and signal lights for two or more ships of war or for vessels sailing under convoy, or with the exhibition of recognition signals adopted by shipowners, which have been authorised by their respective Governments and duly registered and published.

Art. 14. A steam vessel proceeding under sail only, but having her funnel up, shall carry in daytime, forward, where it can best be seen, one black ball or shape 2ft. in diameter.

SOUND-SIGNALS FOR FOG &c.

Art. 15. All signals prescribed by this Article for vessels under way shall be given:

1. By "steam vessels" on the whistle or siren.

2. By "sailing vessels and vessels towed" on the fog-horn.

The words "prolonged blast" used in this Article shall mean a blast of from four to six seconds duration.

A steam vessel shall be provided with an efficient whistle or siren, sounded by steam or some substitute for steam, so placed that the sound may not be intercepted by any obstruction, and with an efficient fog-horn, to be sounded by mechanical means, and also with an efficient bell.\* A sailing vessel of 20 tons gross tonnage or upwards shall be provided with a similar fog-horn and bell.

In fog, mist, falling snow, or heavy rainstorms, whether by day or night, the signals

\*\* In all cases where the rules require a bell to be used a drum may be substituted on board Turkish vessels. or a gong where such articles are used on board small sea-going vessels.

Rules of the Road -- continued.

described in this Article shall be used as follows, viz. :

(a.) A steam vessel having way upon her shall sound, at intervals of not more than two minutes. a prolonged blast.

(b.) A steam vessel under way, but stopped and having no way upon her, shall sound, at intervals of not more than two minutes, two prolonged blasts, with an interval of about one second between them.

(c.) A sailing vessel under way shall sound, at intervals of not more than one minute, when on the starboard tack one blast, when on the port tack two blasts in succession, and when with the wind abaft the beam three blasts in succession.

(d.) A vessel when at anchor- shall, at intervals of not more than one minute, ring the bell rapidly for about five seconds.

(e.) A vessel when towing, a vessel employed in laying or in picking up a telegraph cable, and a vessel under way which is unable to get out of the way of an approaching vessel through being not under command, or unable to manoeuvre as required by these rules shall, instead of the signals prescribed in sub-divisions (a) and (c) of this Article, at intervals of not more than two minutes, sound three blasts in succession, viz., one prolonged blast followed by two short blasts. A vessel towed may give this signal, and she shall not give any other. Sailing vessels and boats of less than 20 tons gross tonnage shall not be obliged to give the above-mentioned signals, but if they do not, they shall make some other efficient sound signal at intervals of not more than one minute.

#### SPEED OF SHIPS TO BE MODERATE IN

FOG &c.

Art. 16. Every vessel shall, in a fog, mist, falling snow, or heavy rain-storms, go at a moderate speed, having careful regard to the existing circumstances and conditions.

A steam vessel hearing, apparently forward of her beam, the fog signal of a vessel, the exact position of which is not ascertained, shall, so far as the circumstances of the case admit, stop her engines, and then navigate with caution until danger of collision is over.

#### STEERING AND SAILING RULES.

Preliminary--Risk of Collision.

Risk of collision can, when circumstances permit, be ascertained by carefully watching the compass bearing of an approaching vessel. If the bearing does not appreciably change, such risk should be deemed to exist.

Art. 17. When two sailing vessels are approaching one another, so as to involve

risk of collision, one of them shall keep out of the way of the other, as follows, viz. :

(a.) A vessel which is running free shall keep out of the way of a vessel which is close-hauled.

(b.) A vessel which is close-hauled on the port tack shall keep out of the way of a vessel which is close-hauled on the starboard tack.

(C.) When both are running free, with the wind on different sides, the vessel which has the wind on the port side shall keep out of the way of the other.

(d.) When both are running free, with the wind on the same side, the vessel which is to windward shall keep out of the way of the vessel which is to leeward.

(e.) A vessel which has the wind aft shall keep cut of the way of the other vessel.

Art. 18. When two steam vessels are meeting end on, or nearly end on, so as to involve risk of collision, each shall alter her course to starboard, so that each may pass on the port side of the other.

This article only applies to cases where vessels are meeting end on, or nearly end on, in such a manner as to involve risk of collision, and does not apply to two vessels which must, if both keep on their respective courses, pass clear of each other.

The only cases to which it does apply are, when each of the two vessels is end on, or nearly end on, to the other; in other words, to cases in which by day, each vessel sees the masts of the other in a line, with her own ; and by night, to cases in which each vessel is in such a position as to see both the side lights of the other.

It does not apply, by day, to cases in which a vessel sees another ahead crossing her own course; or by night, to cases where the red light of one vessel is opposed to the red light of the other, or where the green light of one vessel is opposed to the green light of the other, or where a red light without a green light, or a green light without a red light, is seen ahead, or where both green and red lights are seen anywhere but ahead.

Art. 19. When two steam vessels are crossing, so as to involve risk of collision, the vessel which hits the other on her own starboard side shall keep out of the way of the other.

Art. 20. When a steam vessel and a sailing vessel are proceeding in such directions as to involve risk of collision, the steam vessel shall keep out of the way of the sailing vessel.

Art. 21. Where by any of these rules one of two vessels is to keep out of the way, the other shall keep her course and speed.

NOTE.-When, in consequence of thick weather or other causes, such vessel finds herself so close that collision cannot be avoided by the action of the giving way vessel alone, she also shall take such action as will best aid to avert collision. (See Articles 27 and 29.)

Art. 22. Every vessel which is directed by these rules to keep out of the way of another vessel, shall, if circumstances of the case admit, avoid crossing ahead of the other.

Art. 23. Every steam vessel which is directed by these rules to keep out of the way of another vessel shall on approaching her, if necessary, slacken her speed or stop or reverse.

Art. 24. Notwithstanding anything contained in these rules, every vessel overtaking any other shall keep out of the way of the overtaken vessel.

Every vessel coming up with another vessel from any direction more than 2 points abaft her beam, i.e, in such a position with reference to the vessel which she is overtaking that at night she would be unable to see either of that vessel's side lights, shall be deemed to be an overtaking vessel; and no subsequent alteration of the bearing between the two vessels shall make the overtaking vessel a crossing vessel within the meaning of these rules, or relieve her of the duty of keeping clear of the overtaken vessel until she is finally past and clear.

As by day the overtaking vessel cannot always know with certainty whether she is forward of or abaft this direction from the other vessel, she should, if in doubt, assume that she is an overtaking vessel and keep out of the way.

Art. 25. In narrow channels every steam vessel shall, when it is safe and practicable, keep to that side of the fair-way or mid. channel which lies on the starboard side of such vessel.

Art. 26. Sailing vessels under way shall keep out of the way of sailing vessels or boats fishing with nets, or lines, or trawls. This rule shall not give to any vessel or boat engaged in fishing the right of obstructing a fairway used by vessels other than fishing vessels or boats.

Art. 27. In obeying and construing these rules, due regard shall be had to all dangers of navigation and collision, and to any special circumstances which may render a departure from the above rules necessary in order to avoid immediate danger

#### SOUND SIGNALS FOR VESSELS IN SIGHT OF ONE ANOTHER.

Art. 28. The words "short blast" used in this Article shall mean a blast of about one second's duration.

When vessels are in sight of one another, a steam vessel under way, in taking any course authorised or required by these rules, shall indicate that course by the following signals on her whistle or siren. viz. :

One short blast to mean, "I am directing my course to starboard."

Two short blasts to mean, "I am directing my course to port."

Three short blasts to mean, "My engines are going full speed astern."

NO VESSEL UNDER ANY CIRCUMSTANCES TO NEGLECT PROPER PRECAUTIONS.

Art. 29. Nothing in these rules shall exonerate any vessel, or the owner, or master, or crew thereof, from the consequences of any neglect to carry lights or signals, or of any neglect to keep a proper look-out, or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

RESERVATION OF RULES FOR HARBOURS AND INLAND NAVIGATION.

Art. 30. Nothing in these Rules shall interfere with the operation of a special rule, duly made by local authority, relative to the navigation of any harbour, river, or inland waters.

DISTRESS SIGNALS.

Art. 31. When a vessel is in distress and requires assistance from other vessels or from the shore, the following shall be the signals to be used or displayed by her, either together or separately, viz.:

In the daytime-

1. A gun or other explosive signal fired at intervals of about a minute;
2. The International Code signal of distress indicated by N C. ;
3. The distant signal, consisting of a square flag, having either above or below it a ball or anything resembling a ball;
4. A continuous sounding with any fog signal apparatus.

At night-

1. A gun or other explosive signal fired at intervals of about a minute;
2. Flames on the vessel (as from a burning tar barrel, oil barrel, &c.);
3. Rockets or shells, throwing stars of any colour or description, fired one at a time, at short intervals ;
4. A continuous sounding with any fog signal apparatus.

Rules.--

The Y.R.A. Rules or rules of the Yacht Racing Association, under which all yacht races in this country are held, are fully explained in the body of this work. (See Chapters VIII. and IX.) The official book of Y.R.A. Rules is published by Harrison & Sons, St. Martin's Lane. Price 2s. 6d. annually.

Rules.--

International Rules are the same as Y.R.A. rules. International rules are those of the International Yacht Racing Union known as IYRU Rule.

Rules for the Construction of Yachts.--

Rules published by Lloyds Register of Shipping, 71, Fenchurch Street  
Price 5s. (See "Yacht Register")

Rules for the Construction of Yachts of the International Rating  
Classes.--

Rules published by Lloyds Register of Shipping, 71, Fenchurch Street  
Price 5s. specially for racing yachts classed R (See "Yacht Register" and  
also R)

Run.-- The under part of a vessel aft defined by the buttock lines and  
water lines.

Run.-- To sail before the wind. To come down by the run is to lower or  
overhaul without warning, or suddenly. To run away with a rope is to  
take hold of a fall and haul on it by running along the deck. Among  
sailors an agreement to work a single passage for so much money,  
independent of the time occupied.

Run Down.-- To foul a vessel or other object wrongfully or by accident.

Run Foul Of.-- To get into collision with a vessel or other object.

Run Out.-- To veer out a warp or cable.

Run Over.--

The same as run down. Generally denoting carelessness in bringing  
about a collision.

Runners.--

A rope passed through a single block on a pendant with a purchase at  
one end. Also seamen who sail by the run.

Running Bowsprit.--

A bowsprit that is fitted to run in and out and "reef" like an old cutter's.  
Since 1900 most yachts have their bowsprits fitted in a shoe.

Running by the Lee.--

To run with the boom on one quarter when the wind is blowing on the  
other quarter. A dangerous proceeding. (See "By the Lee.")

Running Off her Helm.--

Said of a vessel if, when sailing, her stern flies up to windward (her head apparently going off to leeward) and lee helm is necessary to bring her to.

Running Rigging.--

The parts of the rigging made to overhaul or run through blocks, as distinct from that set up by lanyards, shackles, &c.

S. - Seam

Saddle.--

A projection over a spar to support another spar, as a saddle on the mast for the jaws of the boom to rest upon in coasters.

Sagging.--

Bending or curved downwards; the opposite of hogging. Sagging to leeward is to make a great deal of leeway.

Sail.--

Often applied to a ship, or an assemblage of ships, as "We saw four sail off Ushant." (See "Sails.")

Sail Coats.--

Covers for sails, usually made of painted canvas. A yacht master named Carey introduced the following plan, but it has not often been adopted: The sail covers fit tight round the blocks, and by the parts overlapping one another at a a (Fig. 88) it is quite impossible that any wet should ever touch the sail ; h shows the opening for the throat halyard block overlapped and laced. (See "Waterproofing.")

FIG 88

Sail Her Along.--

In close-hauled sailing, an order given to the helmsman when he is keeping the vessel too close to wind, meaning that he is to keep her a little off ; sail her fuller or harder or "give her the whole weight of it," meaning the wind, and keep her passing through the water as fast as possible.

Sail Her.--

When lying to if way has to be got on again, the order is to "Sail her"; or, "Let the head sheets draw and sail her !" Also "Sail her" is a general admonition to a helmsman to be very careful in his steering. (See "Fill.")

Sailing Directions.-- Books of pilotage which accompany charts.

Sailing on Land.--

Capt. de Boulay, writing on this subject, has given much interesting information. Any student of old writings and engravings cannot fail to notice that this idea of sailing on hand by insane of a sailing chariot, or land-boat, is a very old one, and this is only what might be expected, for as soon as the wonderful propelling effect of the sail afloat had been realised by mankind it was inevitable that the most daring and progressive spirits should wish to make use of the same means of propulsion for land transport. The idea never seemed to take on very much in England, probably owing to the enclosed and woody nature of this country, as well as to the number of horses always to be met with on the highways; but in works referring to Holland constant mention is made of sailing chariots early in the seventeenth century, and especially about one belonging to a member of the Royal Family, one Prince Maurice, who kept it near the Hague. It was constructed to run on four wheels and carried two sails, the designer being a great mathematician of the name of Stephenus, and although we do not know its actual dimensions, yet it is on record that it often carried from six to ten persons, whilst its speed was over twenty miles an hour.

About this time also a very learned and scientific prelate of the name of Bishop Wilkins constructed a wonderful sailing chariot, whose wheels were supposed to be driven by a sort of horizontal windmill fixed

FIG 89.

on the top of a short mast; but we have no authentic records of the speeds obtained nor the number of passengers carried, and it must be feared that if the good bishop relied on this means of conveyance for visiting his diocese many a church function must have been often postponed from the hour originally fixed for its performance. Those most practical utilitarians, the Chinese, have for centuries probably used the sail as an adjunct to their wheelbarrows, on which so much of the

inland traffic is conveyed along the elevated narrow tracks between the cultivated patches, the sail being set on a short mast right forward and the two trimming sheets being led aft to the handles of the barrow, and many a toiling Chinese coolie has doubtless blessed the inventive genius who first thought of using this cheap and useful aid for the relief of their straining muscles and sinews.

That wonderfully ingenious naval officer, Lieut. Shuldham, also turned his attention to sailing on land as well as afloat, and his craft seem to have been quite practical machines with a good turn of speed. Of course, what all these machines suffered from was the excessive weight which had to be carried, being constructed, as they were, of the best materials then obtainable--i.e., timber and blacksmith's handiwork, but, with the advent of the bicycle, the motorcar, and lastly the flying machine, a new branch of engineering manufacture has sprung up so that nowadays structures, either fixed or movable, can easily be built up of ample strength for their requirements, and weighing only a fraction of what was the permissible minimum a few years back. The introduction of the small racing craft has brought about similar improvements in the spars, rigging, and sails, necessary for the propelling power. It is evident therefore that, by a skilful combination of the foregoing parts, a sailing chariot, or land-boat, can now be built of such lightness and mobility as to be a practical success, given an expanse of smooth, level ground within easy reach.

To the Bembridge Sailing Club, that home of so many novelties in connection with all that pertains to boats, whether motor or sail, must be given the credit for seeing the above possibilities and acting on them ; and the illustrations show a sand-boat built by Mr. R. Stewart Savile, at Bembridge, which has turned out successful. With a good breeze abeam this sand-boat travels along at quite twenty miles an hour, laying up about five points from the wind, so that, as all leeway is absent, it works well to windward, and when lightly laden (as with the owner's children she can be put about without stopping and worked to windward like a boat. Although so light as to be as easily pushed along as a tricycle, her framework is rigid enough to carry two men, being most scientifically constructed as it is of bicycle wheels and tubes and wrought iron gas pipe, stayed and strutted where necessary like a flying-machine. In a structure like this there is room for the development of the highest engineering skill, and Messrs Thornycroft,

of Southampton, construct the boats which cannot fail to afford a good deal of sport and amusement during the hours of low water when sailing in the ordinary way is difficult. As the sand boat can be designed to take the same sails as are used in a sailing-boat, the expense of the latter can be saved, so that the total expenditure can be kept to a very low limit. (See also "Land Boat.")

Sails.-- Sails in this country are usually made of flax in the form of canvas, but several racing yachts since 1886 have had cotton sails. In America nothing but cotton canvas was formerly used; but since 1881 several suits of flax canvas have been sent to America by Messrs. Ratsey and Lapthorn. In 1851 the yacht America came here, and the superiority of the cut, make, and sit of her cotton canvas revolutionised sail making in England. In 1881 the cutter Madge visited America, and her flax sails were considered so superior to those of American yachts that her success was partly ascribed to her English suit of Lapthorn sails. Cotton stretches slightly less than flax. The objection to it is that in case of rain it takes up so much water and becomes very hard, is not so durable as flax, and old cotton sails are fit for little else than the rag merchant, whereas old flax sails fetch a fair price. Fishermen will not buy old cotton sails. Nevertheless, cotton sails are becoming more general every year. They are prettier, more yachtlike, and better in light weather.

The manufacture of sails for yachts in this country has, curiously enough, become a monopoly, nearly every vessel having her canvas made by the firm of Ratsey and Lapthorn, who have houses of business at Cowes, Gosport, Gourock, Scotland, and at New York. The prices charged by the firm are high, but their work is maintained at a very high degree of efficiency, and their cut attains perfection.

If the skippers of yachts could only be taught to understand that new sails must not be stretched by hard pulling either on luff, head, leech, or foot, much trouble would be saved. Yet few skippers will believe this. Modern canvas can be ruined by oversetting. Little force is required to set new sails, and if every day in fine sunny weather the mainsail is set to its natural area and shape on the spars as if spread out on a floor, and the yacht sails about with it so trimmed and set in a nice breeze, it will soon "come out" on the spars to its proper size. If it appears to "come out" slowly in the first few days the skipper must have patience with it, remembering that if he hauls--especially on the foot--it will be ruined.

St. Andrew's Flag.-- A blue flag with white diagonal cross, thus X.

St George's Jack.--

A white square flag with red St. George's cross (right angled, thus +), used by admirals in the Royal Navy. A vice admiral's flag has one red ball, and rear admiral's two (vertically). An admiral flies his flag from the main, vice from the fore, rear from mizen. St. Georges Jack was the English flag before the union with Scotland and Ireland. (See "Admiral" and "Jack.")

St. Patrick's Cross.-- A red diagonal cross, X.

Salt and Fresh Water.--

A cubic foot of salt water weighs 64lb. ; a ton contains 34 cubic feet. A cubic foot of fresh water weighs 62.4lb. ; a ton contains 36 cubic feet : hence salt water bulk for bulk will sustain a greater weight.

FIG 90.

When a vessel goes from salt water to fresh she is sometimes lightened in ballast, in order that she may present the same surface for friction. There will be a loss of stability, and on the whole the practice is of doubtful utility. Regarding the case inversely, if a vessel be loaded down in salt water to the same depth that she has been floating at in fresh water, and driven at the same speed, the resistance will increase in ratio to the superior density of salt water. No exact experiments have been made to ascertain whether a vessel, by floating somewhat lighter in salt than in fresh water, meets with a decrease of resistance. The comparison would be always attended with difficulty, as if there were a difference in the resistance, it would be a very complicated matter unravelling it, as it would be necessary to know how much of the resistance depended on skin friction, and how much on wave making. We are inclined to think that the resistance (taking weight for weight) is a trifle less in salt water than in fresh. By removing weight, so as to float at the same load line as in salt water, the resistance in fresh water would be less, but the question of diminished stability, which removing weight involves, is such a serious matter that removing weight for river sailing cannot be advised. It has been estimated that the difference in L.W.L length of a yacht of shape commonly produced under the

## FIG 91

International Rule in fresh and salt water is approximately as follows:  
Increase of length

Rating -- in Fresh Water.

12 Metres 5.5 Inches

10 "4.5 "

9 "4.0

8 "3.5 "

7 " 2.75 "

6 "2.0 "

A 6-metre boat measured in fresh water was found to have risen from 1/4 to 5/16 of an inch when measured in salt water. The figures given in the table are but a rough estimate, because the increase obviously depends upon the angle that the profile of the stem and stern make with the L.W.L.

Salute.-- A salvo of cannon fired as a mark of respect and honour to a Royal personage, commodore, vice or rear commodore, flag, &c. A Royal Salute is twenty-one guns; admiral of the fleet, seventeen; admiral, fifteen; vice admiral, thirteen; rear-admiral, eleven; commodore (no senior captain being present. See "Burgee."), nine ; captains or other officers are not saluted. A captain or other officers' salute is returned with seven guns.

Among yacht clubs it is usual to salute a flag officer on his first hoisting his flag (swallow-tail burgee) on a club station at the beginning of a season, on his shifting his flag or on his promotion, and when he hauls it down at the end of a season, by eleven guns for a commodore, nine for a vice-commodore, and seven for a rear-commodore respectively. The club ensign is hoisted on the club flagstaff during the salute. It is unusual to salute a vice or rear commodore in the presence of a commodore, and if the commodore and vice or rear arrive together, neither of the latter is saluted. The Royal Cork Yacht Club has, however, a rule that a vice or rear can be saluted after a commodore has returned his salute. A commodore replies to a club salute, or to a salute by a squadron, with one salute of the number of guns he is entitled to. He returns a vice or rear commodore's salute with the guns each is

entitled to, unless he receives a salute from both, then he returns with the number of guns he himself is entitled to. Strictly, however, the rear should not salute the commodore in the presence of the vice unless he obtains permission from the vice to do so. The regulation of the Royal Navy is that no salute is to be fired without permission of the senior officer present, except salutes to the senior officer himself; and, further, if a salute has to be fired, only the senior officer of two or more yachts in company is to fire the salute. It is etiquette for a yacht of a club to return a salute, but a Royal personage does not do so. The practice used to be for a yacht to "salute the flag" on arriving at a station; this practice is still in vogue in America, a junior always saluting first. If a winning yacht is saluted, it should be with five guns. A duke is saluted with fifteen guns, and any other nobleman thirteen.

The rule in the "King's Regulations" for a funeral salute is to fire the number of guns the officer would have been entitled to if alive.

Merchant ships are supposed to salute H.M.S. by striking topsails or any upper sail, such as a royal or top-gallant sail: but the practice is now little observed except by old fashioned seamen, the dipping of an ensign being all that is done. In the old Queen's regulations for salutes, we find the following obsolete instructions:

"If any of Her Majesty's subjects shall so far forget their duty as to attempt to pass any of Her Majesty's ships without striking their topsails, the names of the ship and the master, the port to which they belong, the place from which they came, and that to which they are bound, together with affidavits of the fact, are to be sent to the secretary of the Admiralty, in order to their being proceeded against in the Admiralty Court."

If a merchant ship salutes a naval officer with the guns he is entitled to, the naval officer responds with five guns ; or seven if there are several merchant ships. A merchant ship now usually salutes a man-of-war by dipping the ensign ; the ensign is dipped (almost hauled down) and kept down until the man-of-war responds. This is repeated three times ; but some merchant ships only trouble to dip once, and then of course the man-of-war only responds once. (See "Dipping the Ensign ;" see also the "King's Regulations for the Royal Navy," to be obtained of Messrs. Harrison and Sons., St. Martin's-lane.)

Sand Boat.-- See "Land Boat" and "Sailing on Land."

Save All.-- A water sail; a sail set underneath booms in light weather.

Scandalize a Mainsail.--

The peak is dropped down between the topping lifts until square to the mast and the main tack triced up. Sometimes the throat is lowered also.

Scant.--

When the wind is very bare; when the wind comes so that a vessel will barely lie her course.

Scantlings.--

The dimensions of all kinds of timber used in the construction of a vessel.

Scarph or Scarf, or Scarve.--

A method of joining pieces. of wood by tapering their ends. A box scarph is when the ends are not tapered, but a half thickness cut out of each part so that when put together the parts form only one thickness.

Schooner.--

A fore-and-aft rigged vessel. A topsail schooner has yards. on her foremast, and sometimes on her mainmast, but no courses. It is claimed that the schooner originated in America in 1713 in this way -- One Andrew Robinson (probably a Scotchman), built a vessel at Gloucester, Massachusetts, and as she was launched into the water a bystander said "How she scoons." The sharp-eared Mr. Robinson, with ready wit responded A scooner let her be!" Webster, in his dictionary, says that this. story is well authenticated, because Mr. Moses Prince, eight years later, referred to Mr. Robinson as the "first contriver of scooners, and Moses Prince then went on to say "how mankind is obliged to this gentleman for this knowledge"; but it can be doubted if mankind had felt any considerable benefit from schooners, recollecting the Baltimore clippers. Webster says the man exclaimed, "How she scoons" because the Scotch word "scan" is to skim as a flat stone will when thrown upon the water. Webster says this word "scan" might have been an Icelandic word "skunda," to make haste.

[The German "schhumen," to skim, and French, "écumer," to skim, are also relevant. The term "eskomer," often applied to fast sailers, was

probably an old buccaneer term for their vessels; hence the French "Ecumeur," a corsair or sea rover. The word "eskomer" may have been derived from the Latin "scomber," a mackerel.] The probability is that schooner was derived from the Dutch "schoon," or rather the feminine "schoone," the final "a" being pronounced with a sound of "a" and as a syllable, meaning clean, elegant, fair, beautiful, &c. ; "schoor," a forestay; "schoornen," rowers).

c. Webster, without giving any authority, says that the Danish "skooner," German "schoner," and the Spanish "escuna," were all derived from the English, that is from the Englishman or Scotchman who built the "schooner" in Massachusetts. The Swedish for schooner is "skonare"; but whether that was also derived from the term invented by Mr. Robinson is not recorded by Webster, and altogether the assertion about the derivation is open to very grave doubt. There is no question that this is a very cut-and-dried story about the bystander and Mr. Robinson, and most people will incline to the belief, in spite of the evidence of Mr. Moses Prince, that the word schooner is of Dutch origin. In the seventeenth century, according to Charnock, they had a number of two-masted vessels called "schoots" ; and in old English chronicles of the fifteenth and sixteenth century we find ships called "schippes," and shipmasters "schippers," now skippers; and most likely there were schooters from schoots, and schooners from schoon. The mere fact of Mr. Robinson exclaiming "a schooner let her be" does not prove that the term did not exist before his exclamation was made, but rather shows that the term was a familiar one, and, as previously said, most people will believe that it is of Dutch origin.

Mr. Robinson's claim to be the inventor of the rig can also be very well disputed, as there is no doubt that the rig was an adaptation of the brigantine which had its origin as follows. In the Cotton MSS. is a note of the ships Henry VIII. possessed, and, in reference to the "Great Henry Grace à Dieu," as she is therein called, which was built at Erith, is the following: "being in good reparation, caulking except, so that she may be laid in dock at all times when the same shall be ready, and Brigandyn, the clerk of the ship, doth say, that before the said ship shall be laid in the dock, it is necessary that her mast be taken down and bestowed in the great store house at Erith." Now this Brigandyn was the inventor of the brigantyne rig; and in the Harl. MSS. in a passage relating to the state of Edward VI.'s navy is the following: "Item, the

two gallies and the brigandyn must be yearly repaired." This brigandyn was as a matter of certainty named after "Brigandyn, the clerk of the ship" ; and in Charles II.'s reign there were five of them in the Royal Navy, named Discovery, Dispatch, Diligence, Shark, and Spy, of about 80 tons. The rig, as depicted in old prints, represents them with a fore-and-aft main, and fore sail and square topsails, much the same as the topsail schooners of a later date.

In the Navy List of 1800 we find no brigantines, but the names of about seventy brigs and the names of about fifty schooners. The oldest of these schooners appear to have been built at New York in 1764, and between that year and 1777 (the year of hostilities with the American Colonies), the British Government bought eighteen schooners, and most likely all in America, where also many of the brigs came from, though most were built in England. There is not the smallest doubt that the English settlers in America had done much to improve both the rig and build of the brigantines and in reference to this matter Charnock (1800 edition) says:

"On account of the constructors' attention being directed almost solely to one point, and owing to a certain portion of skill which they possessed, and had derived from a long experience in the art of building, with regard to swiftness only, the heavy sailing vessels employed in the purposes of British commerce fell before them an easy prey. - - - The American marine, however, soared not, but with very few exceptions, in its private capacity beyond the classes of brigs and schooners, those of the former denomination proving particularly destructive. Their dimensions were enlarged far beyond those limits which it had been customary to give vessels in that class, and their force on many occasions exceeded the greater part of the British sloops of war, nearly equalling some of the minor frigates. In defiance of the common prejudice then entertained against long and narrow vessels, the American builders ventured their opposition ; and the success which attended the principles they introduced, materially differing from the practice of any country at that time, proved their superior skill in the construction of corsairs.

In the early days of English yachting. many gentlemen attempted to emulate the famous American brigs and schooners, the latter almost invariably being rigged with square topsails, until about 1840. The one

point of sailing, however, which Americans had studied, "sailing close by the wind," seems to have been much neglected, and when the *America*, schooner, built in 1850, arrived in England in 1851, we had not a schooner which was fit to compete with her. The *America* was designed by Mr. G. Steers (the son of a Devonshire shipwright, who learned his trade at Dartmouth, Plymouth, and Guernsey) on principles expounded by the late Mr. Scott Russell from about the year 1834, and exemplified in a few English yachts, notably in the *Mosquito*, built in 1847. The fault of Mr. Scott Russell's designs, as exemplified in the *Titania*, was the short hollow entrance he attempted to demonstrate his theory by, although he kept the midship section well aft. This was not apparent in the *America*. But the genius of George Steers, the Devonshire naval architect, appears to have died with him in 1856, as certainly there were no American yachts built since which can claim any improvement on that famous vessel, until the time of the late Edward Burgess. From *America's* day, and especially in the sixties and seventies, up to 1880, the schooner rig was very popular in this country, then until 1898 there came a period when it was in disfavour.

After a lapse of many years, the schooner rig has once more attained its old popularity, and it is of interest to record that several magnificent vessels have recently been built which in every respect bear comparison with the well-known schooners of the sixties and seventies.

When Messrs. Camper and Nicholson built the 160-ton schooner **Amphitrite**, in 1887 she proved to be the last schooner-rigged yacht of the old school, and subsequently this class of vessel, which had been falling into disfavour since the last season of Sir George Laupson's *Miranda*, became almost defunct. In 1896 Mr. J.M. Soper designed the 175-ton schooner **Charmian**, but she did not attract much attention, and it was not until Mr. G. L. Watson's **Rainbow**, a yacht of 331 tons, was built in 1898 that there was any tendency to revive the schooner rig in British waters. Since that date quite a number of beautiful schooners have been launched, and without exception they have proved useful vessels for cruising and racing. **Gleniffer**, 496 tons, originally the largest two-masted schooner in the world, designed by Mr. G.L. Watson, and built at Messrs. Henderson's yard, Glasgow, in 1899 ; **Clara**, 185 tons ; and **L'Espérance**, 295 tons ; both these very successful cruisers were designed by Mr. J. M. Soper, and the first-named proved an extremely fast yacht. The fleet of smaller schooners,

such as **Sunshine**, **Roseneath** and **Mystic**, has steadily increased, and, lastly, Mr. W. Fife has contributed the fine racing schooner **Cicely**, of 263 tons, built in 1902.

Since the debut of the late Mr. C. L. Orr-Ewing's yacht **Rainbow**, which in 1898 attained a higher speed on a broad reach than any yacht had preciously accomplished, many fast matches have been sailed by schooners.

The latest additions to the schooner fleet. have been **Meteor IV**, 400 tons; **Germania**, 366 tons, built in Germany; **Waterwitch**, by Fife ; and **Margarita**, now building, 1913, by Camper & Nicholson, for Mr. Whitaker. The American schooners **Ingomar**, **Elena**, and **Westward** were all wonderfully weatherly vessels. **Elena** and **Westward** are about 96 feet on the waterline. The **Westward**, 338 tons, was designed by Herreshoff to the International Rule, and she was classed 100A1 at Lloyd's, and in 1910, when she appeared in European waters, she defeated the German vessels with ease, being far more weatherly.

Schooners are now raced in European waters under the International Rules, which provide that they must be classed A1 at Lloyd's and be over 23-1/4 metres rating.

They sail on a very simple scale of time allowance, namely, four seconds per metre per mile.

As to the speed they travel in a strong wind it may be said that in 1912 **Germania** reached from the East Princessa buoy to the No Man Fort at a speed of 15 knots.

Sciatic Stay.--

According to old authorities this is synonymous with Triatic stay, which see.

Scope.-- Length or drift of rope or cable.

Score.-- A groove to receive a rope or strop,

Scowing an Anchor.-- When small boats have to anchor on ground known or suspected to be foul, it will always be prudent to scow the anchor (Fig. 92) - Unbend the cable from the ring, and make the end fast round the crown, shank, and flukes with a clove hitch, and bring the

end a back to a, and stop it round the cable with spun yarn or hitches; take the cable back to the shackle and stop it as at b. when the cable is hauled upon by the part of the stop at b; will break, and the fluke of the anchor can be readily lifted out of its bed. Sometimes, instead of scowing the anchor a trip line is bent to the crown and buoyed. (See "Anchor")

FIG 92.

Screens.--

The wood shelves and screens painted red for port side, and green for starboard, in which a vessel's side lights are carried. (See "Side lights.")

Scroll Head.--

The outward curved part of the knee at the upper fore part of the stem, called volute.

Scud.--

To run before a gale of wind with very little canvas set, or "under bare poles."

Scull.--

An oar. To scull is to propel a boat by working an oar over the centre of the transom on the principle of the screw. In fresh water, it is to pull a pair of sculls.

Scuppers.--

Apertures cut in the bulwarks or waterways to clear the deck of water.

Sea, A.--

A wave. A heavy seals when the waves are large and steep. When a quantity of water falls aboard a vessel it is said that "she shipped a sea."

Sea Boat.--

A vessel fit to go to sea. A good sea boat is a relative term, and means a vessel that does not pitch badly or labour in a sea, or does not ship much water, and is, above all things, handy in a sea.

Sea, Depth of.--

The soundings taken during the voyage of the Challenger added greatly to our knowledge of the sea depth. The following conclusions are stated in Moseley's "Notes by a Naturalist on the Challenger":

We are apt to form an erroneous impression as to the actual shapes and distributions of the elevations and depressions on the earth's surface, because only the very tops of the elevations stand above water. The outlines of the various continents and islands with which we are familiar on maps are merely lines marking the height to which the water reaches up. A very small proportion of the elevated masses projects above water, hence from an ordinary map we gain no truer impression of the form of the sculpturing of the surface of the earth itself than we should of a range of mountains if we viewed it when all but its summits were hidden by a flood.

So small a proportion does the mass of dry land elevated above the sea level bear to the hollows on the earth's surface beneath this level, that the cavities now occupied by the sea would contain three times the volume of the earth existing above the sea surface. If the surface of the land and the sea bottom were brought to a complete level, the waters of the sea covering its even face would still have a depth of 1700 fathoms, being reduced in depth by the process only about 800 fathoms.

Although the depth of the ocean is so small in proportion to the vastness of its expanse, the depth is, nevertheless, so great as to be difficult of adequate realisation. The greatest depth as yet ascertained by sounding occurs in the North-west Pacific Ocean; it amounts to about five miles and a quarter.

The average depth of the ocean between 60° N. and 60° S. is about three miles, or 2500 fathoms. The great depth of five miles occurs only exceptionally over very small areas.

No sunlight penetrates the deep sea; probably all is dark below 200 fathoms, at least excepting in so far as light is given out by phosphorescent animals.

At depths of 2000 fathoms and upward the temperature of the water is never many degrees above the freezing point. The conditions under which life exists in the deep sea are very remarkable. The pressure exerted by the water at great depths is enormous, amounting roughly to a ton weight on the square inch for every 1500 fathoms of depth.

Sir C. Wyville Thompson ("Voyage of the Challenger," vol.II, p. 352, London, 1877) gives, among the conclusions arrived at, after the first general survey of the deep sea collections of the expedition, that animal life is present on the bottom of the ocean at all depths, but is not nearly so abundant at extreme as at more moderate depths.

Moseley mentions the dredging of a fish from 2500 fathoms, which had a deep-sea shrimp in its stomach.

Seam.--

The line formed by the meeting of two planks; overlapping parts of canvas in a sail.

Seaman - Slab.

Seaman.--

A man trained in the art of sailing, rigging, and general management of a ship. To make a good seaman a man must have practised the multitudinous details of his art with great diligence, and is then described as an "able seaman" or A.B. To say a man is a "seaman" means that he is thoroughly conversant with every duty of a sailor's life, and can not only "hand, reef, and steer," but can do every kind of work upon rigging, and even use the needle and palm.

The statutes relating to seamen are very numerous, and many of them affect, or can be made to affect, yacht sailors; however, many of the provisions of the Merchant Shipping Acts are rendered inoperative so far as yacht sailors go, because the signing of articles is not imperative.

SAILING MASTERS.

The master, mate, or engineer of a yacht need not possess a Board of Trade certificate, as sect.- 92 of the Act of 1894, which, in effect, provides that no home-trade passenger ship or foreign-going ship shall proceed to sea without having certificated master and mates, does not in any way apply to pleasure yachts.- The Board of Trade have, however, instituted voluntary examinations for persons who command their own pleasure yachts, not, be it observed, for those who are not yacht owners, but who may be desirous of taking charge of a yacht. A yacht owner, passing a satisfactory examination in navigation and seamanship, will be presented by the Board of Trade with a certificate entitling him to

command his own yacht, which is a useless privilege, as he can take command of his yacht with or without the examination or certificate. The practical value set upon these very useless certificates by the Board of Trade may be gathered from one of the conditions: "The certificate will not entitle the holder to command any vessel except the pleasure yacht of which he may be, at the time, owner." (See "Master.")

#### CREWs.-

All yacht servants, from the master to the boy, may be dismissed without wages for:

1. Wilful disobedience of any lawful command of the owner-" an offence," said Sir William Scott, "of the grossest kind: The Court would be particularly attentive to preserve that subordination and discipline on board of ship which is so indispensably necessary for the preservation of the whole service, and of every person in it. It would not, therefore, be a peremptory or harsh tone. . . that will ever be held by the Court to justify resistance." In "Spain V. Arnott" (2 Starkie, 256), a farm servant was dismissed because he refused to go to a place a mile off before dinner, dinner being then ready. Lord Ellenborough said: "If the servant persisted in refusing to obey his employer's orders, I think he was warranted in turning him away.

It would be exceedingly inconvenient if the servant were to be permitted to set himself up to control his employer in his domestic regulations. After a refusal on the part of the servant to perform his work, the employer is not bound to keep him on as a burdensome and useless servant." So, too, a regimental messman, having once refused to serve up dinner until threatened with arrest, was held to have been rightly dismissed, although he offered an apology next morning: ("Churchward V. Chambers," 2 F. & F. 229). Again, where a man agreed (under 5 & 6 Will.- 4, c. 19) to serve as carpenter's mate of a vessel during a South Sea voyage, but refused to work except to an English port, the Court held him to have been rightly discharged: ("Renno V. Bennett," 3 Q. B. 768). And, lastly, it has been decided that an employer was warranted in dismissing a servant who persisted, contrary to the employer's orders, in going to visit a relation believed by her to be in a dying state: ("Turner V.- Mason," 14 M. & W. 112). In the case of a master of a yacht, it may be doubted whether the refusal to obey an order involving unnecessary danger would be a good ground of

discharge; nor, it is apprehended, would the failure to comply strictly with a command warrant a summary course of procedure ; as, for instance, if an owner ordered the master to make fast to one buoy, and he, perhaps for what he considered a good reason, made fast to another near at hand.

2. Gross moral misconduct, such as robbery, violence, continued insolence, or drunkenness:

("Cunningham V. Foublanque," 6 C.- & P. 49; "Speck V. Phillips," 5 M. & W. 279; "Wire V. Wilson," 1 C. & R. 662). On these matters Sir W. Scott said : "Drunkenness, neglect of duty, and disobedience are offences of a high nature, fully sufficient to justify discharge without notice.-- Drunkenness is an offence particularly obnoxious on board ship, where the sober, vigilant attention of every man is required. At the same time the Court cannot entirely forget that in a mode of life peculiarly exposed to severe peril and exertion, and therefore admitting in seasons of repose something of indulgence and refreshment, that indulgence and refreshment are naturally enough sought for by such persons in grosser pleasures of that kind; and therefore proof of a single act of intemperance, committed in port, is no conclusive proof of disability for general maritime employment ." ("The Exeter," 2 C. Robinson, 263).

3. Incompetence.-- When a man ships on board a yacht there is on his part an implied warranty that he possesses sufficient skill for the work he undertakes. No express promise that he has the requisite skill is necessary, and should he be found incompetent he may be discharged without notice : (Harmer v. Cornelius 28 L. J., C. P. 85). But the incompetence must be closely connected with the work he undertakes for example, a master employed to take charge of a sailing yacht could not be summarily discharged because he happened to be unacquainted with the management of a steam yacht or vice versa or because he did not know how to manage a trawl &c

4 Permanent illness according to the best authority a ground for dismissal "for there is no difference between a servant who will not and a servant who cannot perform the duty for which he was hired (Harmer v. Cornelius ante Cuckion v. Stones 28 L J Q B 03.) but mere temporary indisposition will not justify discharge. If a master receives injury in the performance of his duties he, like the crew, under the provisions of the Insurance Act.

Should the master be rightfully discharged for misconduct while the yacht is away cruising the owner is under no liability to pay his passage either to his home or to the place at which he was engaged ; for the dismissal was brought about by the man's own misconduct which is not to be a tax on the employer. ("Turner v. Robinson," 5 B. & Adolphus, 789). Should the offender refuse to leave the vessel, he may be removed by force, but the services of a policeman should be sought for, as, if unnecessary violence be employed, it will amount to an assault on the man.

On the subject of clothes the law is that the property in them is in the yacht owner; when, therefore, the servant is dismissed for misconduct, he cannot claim to take his clothes. If, however, he be hired expressly for the season, or for a year, at stated wages and his clothes, he then becomes entitled to them at the expiration of the season, or of the year, as the case may be: ("Crocker v. Molyneux," 3 C. & P. 470). Should a servant be guilty of returning the clothes supplied to him to the tailor or draper in exchange for money or private clothes, a yacht owner is only liable to pay for the garments actually supplied, and not for those given in exchange, and is entitled to set off against a subsequent account for clothes, the price of those supplied and paid for, but subsequently taken back by the tradesman: ("Hunter v. Berkeley," 7 C. & P.413). See cases tried in County Courts-Dublin, August, 1874; Torquay, Nov.17, 1877; Newport, Isle of Wight, Aug. 6, 1878; Southampton, Dec.10, 1878.

The strictly legal side of the question only has been dealt with; the questions of expediency and bounty are left to individual taste.

Agreement.--

A form of agreement suitable for. an owner and master to enter into is herewith appended.

Memorandum of Agreement entered into this day of , one thousand hundred , between , of , and hereinafter termed the owner, on the one part, and mariner of , and hereinafter termed the master, on the other part. The owner agrees to engage the master to serve in that capacity on board the yacht , and to pay him as wages the sum of per , the said wages to be paid [here insert "weekly," "monthly," "quarterly," as the case may be] ; and the owner agrees to supply the master each year the yacht is in commission during this agreement with suits of clothes

complete, as usually found for the master of a yacht; and the owner agrees that the said clothes shall be the property of the master, unless the master is discharged for misconduct, or discharges himself during any period that the owners yacht is in commission ; and the owner agrees to find the sailing master in food and a reasonable quantity of beer or other drink, or the equivalent in money of such food and drink, for the period the owner's yacht is in commission during this agreement;] and the said sailing master, on his part, agrees to enter and abide in the service of the owner for the wages and other considerations aforesaid, and to the best of his ability to maintain discipline, strict sobriety, cleanliness, and general good conduct in the crew on board the owner's yacht, and to keep the owner's yacht in a smart, tidy, clean, and yacht-like condition, and to incur no expense for the maintenance of the hull or equipment of the owner's yacht further than lawfully authorised by the owner, and to willingly, carefully, and skilfully take the owner's yacht to such places as the owner may desire her to be taken, either on the coasts of the British Isles or the coasts of , between and ; and when the yacht is put out of commission during this agreement the master, assisted by the crew, agrees to dismantle her and carefully store all her equipment as directed and to frequently visit the owner's yacht for the purpose of ventilating, pumping, and generally preserving and taking care of her and her equipment in the period she is out of commission during this agreement ; and it is further jointly agreed between the owner and master that the wages shall commence to be earned and continue to be paid as aforesaid, on and after the day of , one thousand hundred and ; and it is further jointly agreed between the owner and master that this agreement shall terminate upon either the owner or master giving notice thereof, but the owner may summarily cancel the agreement and dismiss the master should the master wilfully disregard any of the owner's reasonable commands, or be guilty of any misconduct, such as drunkenness, quarrelsome, violence of conduct, smuggling, continued absence, or neglect of duty, breaches of this agreement, gross carelessness, extravagance, or incompetence.

(Signed) Owner.

Sailing Master.

Witness, .

#### COOKS AND STEWARDS.

A curious point might arise with regard to cooks and stewards. On shore, both these functionaries would most certainly fall within the

category of domestic servants, and would, therefore, be entitled to a month's warning, or payment of a month's wages; but where the duration of the contract can only be inferred from the fact that the wages are paid weekly, it would be taken to be a weekly hiring, in which case a week's notice would suffice; or, again, owing to the fact that they cannot obtain situations as readily as shore servants, it is just possible that they might be held entitled to the same notice as the master, if they were hired on the same terms by the year and paid at the same intervals..

What has been said only applies when there has been no special stipulation at the commencement of the service, or no proof of custom. If an agreement has been made, the parties are bound by it; as there are no reported cases deciding what the custom is, the question is still in abeyance. Every yacht owner knows what he believes to be the custom, but until his idea has been supported in a court of law it is only a surmise.

#### SIGNING ARTICLES.

It is desirable for the master and crew to sign an agreement drawn up in a form sanctioned by the Board of Trade. If a Board of Trade agreement is agreed to and adopted without alteration, it must contain the following particulars as to terms :

1. The nature, and as far as practicable, the duration of the intended voyage; or the maximum period of the voyage or engagement and the places (if any) to which the voyage or engagement is not to extend. The statement under this head must be sufficiently plain to enable a man to understand the nature of the work for which he contemplates an engagement.
2. The number and description of the crew, specifying how many are engaged as sailors.
3. The time at which each seaman is to be on board or to begin work.
4. The capacity in which each seaman is to serve.
5. The amount of wages which each seaman is to receive.
6. A scale of the provisions which are to be furnished to each seaman.
7. Any regulations as to conduct on board, and as to fines, short allowance of provisions, or other lawful punishments for misconduct, which have been sanctioned by the Board of Trade as regulations proper to be adopted, and which the parties agree to adopt; and the agreement shall be so framed as to admit of stipulations on the part of the employer and the employed which are not contrary to law.

These agreement forms can be obtained at the Mercantile Marine offices, and from the Board of Trade; they are printed, and spaces are left for filling in the signatures of the different stipulations.

Of course yacht owners may make any special written agreements which their crews will sign; but the Board of Trade form, having official sanction given to it, should be adhered to as much as possible. In the interpretation clause of the Merchant Shipping Act, the word "seaman," is to include "every person (except masters, pilots, and apprentices duly indentured and registered) employed or engaged in any capacity on board any ship." In steam yachts, therefore, the engineers and firemen would be seamen; as also would be on every yacht the cook and steward. It may be observed that a yacht owner, though he should adopt the forms of agreement signed by the Board of Trade, or a modification of them, is not compelled to require that all the persons engaged on board his yacht should sign them. He may, for instance, engage his cook and steward on the same terms as would be the case if their service would be performed onshore. Still, it will be found advisable that the authority of the master should be secured over all on board alike, by the medium of a written agreement

The agreement is to be signed by all parties to it, the master signing first; and the document dates from the time of his signature.

In order to avoid any technical difficulties that may arise, the yacht owner should sign as master, and the regular sailing master as mate. The master to whom the men sign has sole control of everybody on board, and even in the movements of the vessel, and there is a story that a master of a yacht up the Mediterranean once threatened to put an owner in irons. Such gross misbehaviour, however, could not go long unrewarded.

In order to enable the crew to refer to the agreement, the master should at the commencement of the voyage have a legible copy (omitting the signatures) placed in some part of the vessel to which the men have access.

The following are the terms of the Official Agreement of the Board of Trade:

#### AGREEMENT.

The several persons whose names are subscribed, and whose descriptions are contained herein, and of whom [all] are engaged as sailors, hereby agree to serve on board the said yacht in the several

capacities expressed against their respective names, until the said yacht shall be paid off [on a cruise of pleasure to any British or foreign port or ports to which the Owner or Master may think fit to go. Voyage not to exceed months].

And the crew agree to conduct themselves in an orderly, faithful, honest, and sober manner, and to be at all times diligent in their respective duties, and to be obedient to the lawful commands of the said Master, or of any Person who shall lawfully succeed him, and of their Superior Officers, in everything relating to the said yacht and the stores thereof, whether on board, in boats, or on shore; in consideration of which services to be duly performed, the said Master hereby agrees to pay to the said crew as wages the sums against their names respectively expressed, and to supply them with provisions according to the scale one the other side hereof.

And it is hereby agreed that any embezzlement or wilful or negligent destruction of any part of the yacht's stores shall be made good to the Owner out of the wages of the person guilty of the same.

And if any person enters himself as qualified for a duty which he proves incompetent to perform, his wages shall be reduced in proportion to his incompetency, but no such reduction shall be made unless and until notice in writing of intention to make such reduction shall be given by the Master to the person who will be affected thereby; and it is also agreed that the Regulations authorised by the Board of Trade which are printed herein and numbered [1 to 5]# are adopted by the parties hereto, and shall be considered as embodied in this Agreement.

And it is also agreed that, if any member of the crew considers himself to be aggrieved by any breach of the Agreement or otherwise, he shall represent the same to the Master or Officer in charge of the ship in a quiet and orderly manner, who shall thereupon take such steps as the case may require; and it is also stipulated that advances an account and allotments of part of usages shall be made as specified against the names of the respective seamen in the columns provided for that purpose.

And it is also agreed that any man guilty of misconduct shall be liable to be discharged by the Master at any port in Great Britain or Ireland; and that the voyage shall be considered as terminated when the yacht is paid off.

And it is also agreed that [the clothes provided by the Owner shall remain his property until the final discharge of the crew, and should any member of the crew leave or be discharged previously the yacht's

clothes are to be left on board. The yacht's boats are not to be used by the crew without permission from the Master or Officer in charge of the yacht. The anchor watch to be relieved on deck]. [If a steam yacht the following should be added: The seamen and fireman are mutually to assist each other in the duties of the yacht when required by order of the Master].

In witness whereof the said parties have subscribed their names herein, on the days mentioned against their respective signatures.

Signed by Master, \_ on the \_ day of 19xx.

#### WAGES.

A seaman's right to wages and provisions begins either at the time at which he commences work, or at the time specified in the agreement for his arrival on board, whichever first happens, so that if a seaman goes on board and works sooner than he need have done, his right to wages does not necessarily date from the time he went on board.

\* In the case of foreign going yachts it is usual to insert particulars of the following nature: [On a cruise of pleasure to any British or foreign ports, or ports between the latitudes of 75 degrees north latitude and 75 degrees south latitude].

#Instructions to Masters with regard to the crew, and regulations for maintaining discipline (1 to 5), &c. are given on the official forms. The words in brackets are suggested as an example of the additions usually made. The words in italics are usually deleted, as the crew, with the exception of the Master, Mate, Steward, &c. generally provide their own provisions, money being advanced to them for that purpose.

Sea Mile.-- 6,080ft. (See "Knot.")

Sea Pie.-- A dish made up of all sorts in layers.

Sea Way.--

Generally used in the sense of waves in an open sea, meaning a disturbed sea.

Seaworthy.--

In every respect fit to go to sea. In chartering a ship it is insisted that she must be "tight, staunch and strong, and well equipped, manned with an adequate crew, provisions," &c.

Second Topsail.-- A gaff topsail between the largest and the jib-headed topsail.

Seizing.--

A way of securing a bight of a rope by a lashing so as to form an eye, or of securing any parts of ropes together.

Selvagee Strop.-- A strop made of spun yarn laid up in coils and marled. (See "Strop.")

Serve.-- To cover a rope with marline called "service."

Serving Mallet.-- The mallet which riggers use to wind service round ropes and bind it up tightly together.

Set.-- To hoist or make sail. This word is sometimes improperly confused with "sit" in reference to the way a sail stands.

Set Flying.-- Not set on a stay or bent by a lacing; a jib in a cutter is set flying.

Set of the Tide.-- Direction of the current. Setting Up.-- Purchasing up rigging taut.

Sewed or Sued.--

The condition of a vessel that grounds and on the return of the tide is not floated. If the tide does not lift her by 2ft. she is said to be "sewed" 2ft. If the tide on falling does not leave her quite dry, she is said to "sew" 1ft., 2ft., 3ft., or more, as the case may be.

Shackle.--

A U-shaped crook with an eye in each end, through which a screw bolt is passed. Variously used, and are often preferred to hooks. (Fig. 93.) There is a shackle at every fifteen fathoms of cable, so that by unshackling it the cable can be divided into many parts. Useful if the cable has to be slipped.

FIG 93

Shake Out a Reef.-- To untie the reef points and unroll a reef and hoist away.

Shake, To.-- To sail a vessel so close to wind that the weather cloths of the sails shake; the bead sails generally are the first to shake, and if the

helmsman does not notice it someone who does sings out, "All shaking forward"; or "Near forward."

Shake Up.-- "Give her a shake up." This is an order to put down the helm and cause the vessel to luff until her sails are "all shaking." The practice is to give a vessel a shake up and thus ease the weight on the sheets and enable the crew to get them in and belay before she again feels the weight.

Shallow Bodied. -With a very limited depth of hold.

Shape a Course.-- To steer a particular course.

Sharp Bottomed or Sharp Floored.-- A vessel with V-shaped sections.

Sharp Bowed.--

With a very fine entrance or a bow whose two sides form a very acute angle.

Sharp Sterned.--

A stern shaped something like the fore end or bow, thus <.

Sheathing.--

The copper sheets put on the bottom of a vessel. 16oz. and 20oz. copper is generally used for yachts. Sometimes 20oz. copper at the load line, and 16oz. below. The sizes and weight of sheathing are usually as follows :-

48in. by 20in., and more commonly for yachts 48in. by 14in.

The weight per sheet of the 48in. by 20in. is 7.5lb., there being 18oz. to the square foot. The weight per sheet of the 48in. by 14in. is as under :

16oz.		4.67lb.
20	„	5.83
28oz.	11.67lb.	„
32 „	12.33 „	„

160 nails to a sheet, or 1cwt. nails to every 100 sheets.

The allowance made for old copper is generally one-eighth less the price paid for new. That is, if the price of new copper be 80£ per ton, the price of old will be 70£ per ton. This price is subject to another deduction of 5lb. per cwt. for dross, &c. Copper is usually put on so that the edges overlap, but in the case of a few yachts the edges of the copper have been butted: that is, the edges were laid edge to edge and the nails were counter sunk and scoured down. Of course this plan entails enormous trouble, but the superior surface it presents can be considered as a compensation. Many yacht builders obtain the copper sheathing of Messrs. Neville, Druce, and Co., 13, Sherborne-lane, E.C., and Messrs. Vivian and Son, Bond-court House, Walbrook.

Sheave.--

The wheel within a block or in the sheave hole of a spar over which ropes pass.

Sheepshank.--

A plan of shortening a rope by taking up a part and folding it into two loops or bights, and then putting a half hitch of each standing part over a bight (Fig. 94).

FIG 94.

Sheer.--

The fore-and-aft vertical curve of a vessel's deck or rail of bulwarks. To sheer is to put the rudder over when a vessel is at anchor, so as to cause her to move laterally and ride clear of her anchor. A vessel is said to break her sheer when she departs from the sheer that has been given her.

Sheer Hulk.-- An old vessel fitted with sheers, whereby masts are lifted into other vessels. Sometimes used in the sense that nothing but the hulk remains.

Sheer Legs. - Two spars fitted with guys for lifting masts or other things.

Sheer Plan or Sheer Draught.-- A drawing showing a longitudinal vertical section or profile of a vessel.

Sheet.-- A rope or chain by which the lower after corners of sails are secured.

Sheet Bends.-- Fig. 95 is a single sheet bend, and Fig. 96 a double sheet bend.

FIG 95 FIG 96

Sheet Home.--

To strain or haul on a sheet until the foot of a sail is as straight or taut as it can be got. When the clew of a gaff topsail is hauled close out to the cheek block on the gaff. In practice, a gaff topsail sheet, however, is seldom sheeted home, as when once home no further strain could be brought on it; a few inches drift is therefore usually allowed. In square-rigged vessels a sail is said to be sheeted home when the after clews are hauled close out to the sheet blocks or sheave holes in the yard. This no doubt is the origin of the term.

Shelf.--

A strong piece of timber running the whole length of the vessel inside the timber beads, binding the timbers together; the deck beams rest on and are fastened to the shelf.

Shifting Backstays.--

The topmast backstays which are only temporarily set up and shifted every time a vessel is put about or gybed. (See "Preventer.")

Shifting Ballast.--

Ballast carried for shifting to windward to add to stiffness. A practice forbidden in yacht racing.

Shifting her Berth.-- When a vessel removes from an anchorage, &c.

Shift of Plank.-- The fore and aft distance between the butts of one line of plank and that of the next below or above.

Shift Tacks, To.-- To go from one tack to the other.

Shift the Helm.-- To move the tiller from one side to the other ; thus, if it is put to port, an order to shift the helm means put it to starboard.

Shin Up.--

To climb up the shrouds by the hands and shins, when they are not rattled down.

Ship, To.--

To put anything in position. To engage as one of the crew of a vessel. To ship a sea, to ship a crutch, to ship a seaman, &c.

Ship Shape.-- Done in a proper and unimpeachable manner.

Ship Shape and Bristol Fashion. -An expression probably originating in days gone by when Bristol shipbuilders and seamen were in great repute.

Ship's Papers.-- These include builders' certificate, register (in case of not being nun original owner, bill of sale as well), bill of lading, bill of health, &c. Also, in the case of a yacht, her Admiralty warrant, if she has one.

Shiver.-- To luff up and cause the sails to shiver or lift.

Shiver flee Mizzen.-- To luff up until the mizen lifts or shivers.

Shoe or Shod.-- Iron plates rivetted to the ends of wire rigging to receive shackle bolts.

Sheer.-- To move through the water after the means of propulsion is withdrawn.

Shore.-- A beach. A support of wood or iron, a prop.

Short Tacks or Short Beards.-- Beating or working to windward by frequent tacking.

Shorten.-- The wind is said to shorten when it comes more ahead. To shorten sail, to take in sail.

Shy.-- The wind is said to shy when it comes from ahead or breaks a vessel off.

Side Kelsons.-- Stout pieces of timber fitted fore and aft on either side of the keel.

Side Lights.--

The red (port) and green (starboard) lights carried by vessels when under way. Small yachts during bad weather are not required to have their side lights fixed, but must always have them ready on deck on their proper sides ready to show. Open boats must carry lights, and if the usual side lights are not used they must have lanterns fitted with green and red slides, to show- when required. Steam yachts and steam launches, in addition to the usual side lights, must carry a white light at the masthead. (See "Rule of the Road" under "Rules Concerning

Lights.") A single lamp with tricoloured lenses is not permitted on the Thames.

Siding or Sided.-- The size of a timber, &c. between its two planes and parallel sides. (See "Moulding.")

Sight the Anchor.-- To heave up the anchor.

Signals.-- Yachtsmen will find the following signals is useful and every yacht should leave on board at least one man in the crew who can make and read the following common signals :

#### FLASHING OR SOUND SIGNALS.

(Morse Code.)

#### Warning Signals for Vessels in Sight of one another

N.B.-The excessive use of Light or Sound Signals, mere especially flee latter, is liable to cause grave confusion and Ship masters are desired to exercise the greatest discretion in employing them particularly in crowded waters.

The following urgent and important signals may be made either by long and short flashes of light or by long and short sounds on a steam whistle sin en, foghorn, &

For example The signal, which in the Morse Alphabet represents the letter U is made by two short and one long flashes or blast - and means "You are standing into danger."

#### Instructions for the use of Flashing or Sound Signals.

1. With flashing signals the lamp must always be turned towards the person addressed.

2. To attract attention, a series of rapid short flashes or sounds should be made and continued until the person addressed gives the sign of attention by doing the same.

If, however, it is supposed that the person addressed cannot reply, the signal may be made after a moderate pause, or, under certain circumstances, the communication may be made without preparatory signs.

3. After making a few rapid short flashes or sounds as an acknowledgment, the receiver must watch, or listen attentively, until the communication is completed, when he must make the sign indicated below, showing that the message is understood.

4. If the receiver does not understand the message, he must wait until the signal is repeated.

5. Duration of SHORT flashes or sounds  
Duration of LONG flashes or sounds  
Interval between each flash or sound ...  
Preparative signal to attract attention...  
Answer, or "I understand"  
Urgent and important Signals.  
You are standing in danger (U)  
I want assistance ; remain by me (V)  
Have encountered ice (W)  
Your lights are out (or, want trimming) (P)  
The way is off my ship; you may feel your way past me (R)  
Stop, or, Heave to; I have something important to communicate (L)  
Am disabled; communicate with me (F)  
Steering Signals.  
When a vessel is in tow, the following signals may be made by flashes between her and the tug or towing vessel:  
Steer more to starboard  
Steer more to port  
Cast off hawsers

#### MORSE SPECIAL CHARACTERS.

Figures.

SIGNALS FOR PILOTS. United Kingdom.

The following signals, when used or displayed together or separately, shall be deemed to be signals for a pilot:

"in the Day-time.

"1. The Pilot jack (Union Jack with white border) to be hoisted to the fore.

"2. The International Code pilotage signal indicated by P T.

"3. The International Code flag S (white with small blue square centre), with or without the code pennant over it.

"4. The distant signal-two balls or shapes resembling balls hoisted about a cone point upwards.

"At Night.

"1. The pyrotechnic light, commonly known as a blue light, every fifteen minutes.

"2. A bright white light, flashed or shown at short or frequent intervals just above the bulwarks, for about a minute at a time."

"If a Master of a vessel uses or displays, or causes or permits any person under his authority to use or display, any of the pilot signals is for any other purpose than that of summoning a pilot, or uses or causes or permits any person under his authority to use any other signal for a pilot, he shall for each offence be liable to a fine not exceeding twenty pounds."

#### FLAG SIGNALS.

Yachts find it a great convenience to be able to signal messages to the shore or to another vessel, and the British method of semaphoring, as illustrated, is very useful for short distances. Where hand flags are not available, a hat or cap, or the arm alone, can be used. Signalling at night can be carried on by showing and observing a light, thus making long and short flashes indicating the signals of the Morse Telegraphic Code. Coastguards are acquainted with both systems.

INSTRUCTIONS.-- The person intending to semaphore should make the International Code signal VON (I am going to semaphore to you) and show the Alphabetical sign, then wait until the person to whom the signal is to be made makes the sign C.

The communication should then be proceeded with by spelling, a momentary pause being made between each sign or letter, and the arms being dropped between each word or group.

Should the sign A be made by the Receiver, the last two words should be repeated until the sign C is again made.

If, in the course of an Alphabetical message, Numerals have to be signalled, the Numeral sign (see illustration) should be shown, and the numbers then made. When the Numeral signal is finished, the Alphabetical sign should be made and the communication by spelling proceeded with as before.

Answering and Receiving Semaphore Signals. The sign C should be made by the Receiver of the signal, thus denoting that he is ready to read and write down the signal.

When a word is lost, the Receiver should make the sign A and the Sender should then repeat the last two words until the sign C is made again by the Receiver.

Signal of Distress.-- An ensign hoisted jack downwards.

Sister Block.--

A double block with two sheaves of the same size one above the other, and seized to the topmast shrouds of square rigged ships to receive the lifts and reef tackle pendants.

Sit.--

Sails are said to "sit" well when they do not girt, pucker, belly, or shake. This word is sometimes wrongly written "set."

Skeet.--

An instrument (usually a born on a stick) for wetting sails. In old yacht club rules skeeting to windward only was allowed, as it was thought the skeet might be used as a means of propulsion. "Fire engines" were occasionally used for skeeting, but the practice has gone out of fashion.

Skids.--

Pieces of timber put under a boat for resting her on deck, or when launching off.

Skiff.-- A small boat used by coast watermen for the conveyance of passengers.

Skin.-- The outside or inside planking of a vessel.

Skinning.-- In stowing a mainsail lifting the outside part up time after time, the bunt forming a kind of bag. This should never be allowed, as it ruins the sail.

Skin Resistance.-- The resistance a vessel meets with owing to the friction of the water on her plank or sheathing. (See "Resistance.")

Skipper.--

A slang term for the master of a yacht or other vessel. Ancient, "Schipper."

Skysail.-- A square sail set above the royals.

Sky Scraper.-- A triangular sail set above the skysail. Never used now.

Sky Pilot.-- A term applied by sailors to chaplains, also "Fire Escape."

Slab Line.-- A rope used to brail up the foot of courses.

Slab Reef.--

A kind of half-reef in a mainsail below the first reef, it takes up the foot or slab of the sail.

Slack - Swivel.

Slack.--

Not taut. To slack up a rope or fall of a tackle is to ease it.

Slack Helm.-- When a vessel carries very little, if any, weather helm.

Slack in Stays.-- Slow in coming head to wind, and still slower in paying off.

Slack Tide.--

The tide between the two streams when it runs neither one way nor the other. There are high-water slack and low-water slack.

Slant of Wind.-- A favouring wind. A wind that frees a vessel when close-hauled.

Sleep, or All Asleep.-- When the sails are full and do not flap or shiver.

Sliding Gunter.--

A gentleman under the signature of "Far West" says he has used a form of sliding gunter as shown by Fig. 97.

FIG 97.

It is fitted as shown, the sail goes up and down as a cutter's sail, but with one halyard. On letting go the halyard, the sail falls into the boat in a moment; it is made up on the boom, and covered in the usual way. If the traveller is made as shown it never jams, running up and down easily. The traveller does not come into play under full sail, but when reefed down the yard is sent up to its proper place, and the downhaul, which is spliced to the traveller, hauled taut; this holds the yard to the mast, setting the sail well. The masthead, or pole, should be as long as the distance between the tack and the upper reef cringle ; the sail may

be further reefed by lashing the halyard a foot or more above where it is fast to the yard.

Sliding Keel.--

An old term for a keel which was lifted at the ends in contradistinction a pivoted board. (See the chapter on " Centreboards.")

Slings.-- Ropes or strops used to support or sling yards, &c.

Slip.-- To let go, as to slip the cable.

Sloop.--

A fore-and-aft rigged vessel something like a cutter, but usually has a standing bowsprit. Small sloops have only one head sail set on a stay. (See the "Trial.")

Slot.-- An aperture generally for a pin or bolt to travel in.

Smack.-- A small trading vessel usually cutter rigged. A fishing cutter.

Small Helm.-- Said of a vessel when she carries weather helm.

Small Stuff.--

A term applied in the dockyards to denote planking of 4in. thickness and under.

FIG 98.

Snatch Block.--

A block with an opening in the shell so that a rope can be put over the sheave without reeving it. (See Fig. 98.)

Sneak Box.-- A shallow and beamy boat in use on Barnegat Bay, U.S.A.

Snotter.--

A double-eyed strop used to support the heel of a sprit on the mast. (See "Sprit Sail.")

Snow.--

A two-masted vessel with a stay, termed a horse, from the mainmast head to the deck on which a trysail was set. Frequently a spar was fitted instead of the stay.

Snub.--

To bring a vessel up suddenly when she has way on and only a short range of cable to veer out. Sometimes necessary if the vessel must be stopped at all costs, but a practice likely to break the fluke of an anchor if it is a good and quick holder.

Snug.--

Comfortably canvassed to suit the weather. Anything made neat, or stowed compactly.

So !-An order to cease, often given instead of "belay" when men are hauling on a rope.

Soldiers' Wind.--

A wind so that a vessel can lie her course all through to her destination without tacking or any display of seamanship.

Sooji Mooji.--

A composition of caustic soda and quicklime (see "Caustic Soda") for cleaning off old paint, varnish, &c.

Sound.-- Not decayed or rotten; free of shakes, splits, crushings, &c.

Sounding.-- See "Lead."

Soundings.-- To be near enough to land for the deep sea lead to find a bottom.

Spales or Spauls.--

Cross shores used to keep the frame of a vessel in position whilst building.

Span.--

A rope made fast by both ends to a spar or stay, usually for the purpose of booking a tackle to. Very long spans are now commonly fitted to gaffs to hook the peak halyards to.

Spanish Burton.--

A purchase composed of three single blocks. A double Spanish Burton consists of one double and two single blocks.

Spanish Reef.--

A knot tied in the head of a jib. headed sail to shorten the hoist or reduce the area of the sail.

Spanker.--

The fore-and-aft sail set with boom and gaff on the mizen of a square-rigged ship; termed also the driver.

Span Shackle.--

A bolt with a triangular shackle. The gammon iron that encircles the bowsprit at the stem. When it is directly over the stem the forestay is shackled to it.

Spars.-- The masts, booms, gaffs, yards, bowsprit, &c. of a vessel.

Spars, Mensuration of.--

Cubical contents of a spar can thus be found. Find the area of each end (see "Area of Circles"); add the areas of the circles together and halve the sum. Multiply the half by the length of the spar. If the spar tapers towards each end, the area of each end and the middle area should be taken, added together, and divided by 3. And the plan is as follows: take the girth (see circumference "Areas of Circles ") of the spar at each end and halve it. Find the square of the half, and multiply it by the length of the spar. If the spar tapers at both ends, find the girths at three places, halve and divide by 3; find the square of the quotient, and multiply it by the length of the spar. The weight of spars can be found by multiplying their solid contents by the weight in pounds per cubic foot of the wood the spar is made of. Thus a cubic foot of red pine will weigh from 32 to 40lb., and a cubic foot of oak from 53 to 60lb. (See "Weight and Bulk of Substances.")

Spectacle Strop.-- A short strop with an eye at each end.

Speed of Yachts.--

The speed of yachts and ships under sail is a subject of great interest to yachtsmen. Speaking generally, modern yachts attain far greater speed than old vessels in light winds, and the less the wind the greater the difference in favour of modern types. The American schooner **Westward** in 1910 displayed extraordinary speed in light airs (and also in fresh winds). Such cutters as **Shamrock**, 23 metres, 75 ft. L.W.L., attain marvellous speed with hardly any wind at all when older yachts would scarcely be able to move.

In strong breezes when maximum speed is attained, the difference in the speed of yachts is only slightly in favour of modern vessels. No doubt very exaggerated opinions prevail as to the speed a yacht is capable of. Very frequently there is a mistake made about the distance sailed in a certain time; no allowance has been made for tide, or the speed has been inaccurately judged. So far as our experience goes, the following table gives the maximum speed ballasted sailing yachts of certain length and tonnage generally attain;

These observed speeds correspond with the theory that speed varies as the square roots of the length on load waterline in vessels of similar form and proportions. Of course, there have been isolated instances when these speeds have been exceeded, and especially by unballasted small boats.

A modern vessel, it is important to remember, will attain a speed nearly approaching her maximum speed when sailing quite close hauled. Sailing at the same angle to the wind an old-fashioned vessel could make but slow headway. When off the wind, in a fresh breeze old and new types approach equality.

There has been no better instance of the equality in speed of old and new vessels on a broad reach (when sailing at high speed) than that afforded by the races sailed across Channel on July 18th, 1903. After rounding the mark-boat off Boulogne, the yachts sailed back to Dover Wick in a steady jackyard topsail breeze a little abaft of the beam. The matches included yachts of every type, but the old boats were all thoroughly well preserved, though possibly in some instances a little undercanvased. Those which may be regarded as good reaching boats came home in the order of their length on load waterline, irrespective of age and type. The weight of the wind was such that **Fiona** was probably

travelling her fastest. The speeds of **Cicely**, **Irex**, and **Bona**, no doubt, would have considerably increased had there been rather more wind, whilst probably **Palmosa**, although she had only a jibheader aloft, would not have done much better under different conditions.

The time of sailing the distance, which is approximately twenty-five miles, was as follows :-

Length Time.

Yacht. L.W.L. in ft. H. M. S.

it is interesting to notice how nearly the time occupied in seconds by the yachts varied in inverse ratio to the square root of the length of load waterline in feet

Speed.

Yacht L.W. L. Knots.

Cicely 9)52 ... 8172 ... 1151

Irex 9)18) ... 5)40 ... 10 79

Bona 8 8)3 ... s))7 ... 10.92

Fiona 8)44 ... 8710 ... 1033

Namara 8387 ... 879) ... 1023

Moonbeam 7.748 ... 910) ... 9-55

Palmosa... 7748 ... 987) ... 9.30

Owing to the great difference in the age, and consequently in type, it would be unfair to compare them according to Y.R.A. linear rating, a form of measurement which naturally penalises some more severely than others, but supposing their rating for the purposes of this race to have accorded with their L.W.L. length, it is really remarkable how very close the yachts would have come together under the existing scale of time allowance of the Y.R.A. **Cicely**, at 92ft. would have allowed **Palmosa**, at 54ft., 1580sec., according to the Y.R.A. time scale, whilst the actual difference between them in the race was 1503sec. These circumstances lead us to conclude that, for practical purposes, there is as much truth today in the adage that the speed of yachts varies according to the square root of the length as there was at a time the oldest of these competitors was launched, and when yachtsmen were less inclined to believe mathematical calculations than they are now. When we consider, too, the long period over which the careers of the competing vessels have extended, for **Fiona** was built in 1865 and

**Moonbeam** in 1903, the races from Dover to Boulogne and back, on July 18th, 1903, must be regarded as amongst the most interesting contests recorded in yachting history.

There are some apparently well-authenticated reports that yachts of great length on the load-line have reached a speed of 16 knots. The fastest speed ever attained by a sailing yacht (which can be regarded as actually authentic) was reached by the schooner **Rainbow** in 1898. This yacht was designed by Mr. G.L. Watson, and built on the Clyde for the late Mr. C.L. Orr-Ewing. She was 115ft. long, L.W.L., and carried 13,460 sq. ft. of canvas. In the race from Dover to Heligoland for the German Emperor's Cup in 1898 she sailed from the Borkam Lightship to Heligoland mark boat, a distance of 60 miles, in four hours, and twice during that time the log registered 16.5 knots. On August 3rd, 1898, at Cowes, she sailed the Queen's course, 47 miles, at an average speed of 12.3 knots.

The yawl **Sybarita** on June 11th, 1901, racing against the cutter **Kariad** in a match from Rothesay round the Ailsa Crag and back, which sailed in nearly a gale of wind and very heavy sea, averaged 12.3 knots.

On August 6th, 1902, the German Emperor's schooner **Meteor III**, with a water line of 120ft., sailed the Queen's course at Cowes in 3hrs. 50min. 27sec., just two minutes less time than **Rainbow** occupied on August 3rd, 1898; **Rainbow**, however, had to make several tacks, and **Meteor** reached all the way. **Meteor's** time of 1902 was the fastest ever recorded over the Queen's course at that date; but on August 7th, 1908, the schooner **Cicely** sailed the Queen's course in 3hrs. 43min. 27sec., thus beating the old records of **Rainbow** and **Meteor III**.

On August 8th, 1908, a German built vessel -- **Germania** (L.W.L. about 107ft.) -- sailed the old Queen's course at Cowes (Bullock and Lymington) in 3hrs. 35min. 11sec., the distance, 47 miles, being covered at an average speed of 13.1 knots. This is now the fastest race ever sailed at Cowes.

The American yacht **Sappho** (121ft. L.W.L.) is alleged to have made 16 knots as long ago as 1869; and as doubts have at various times been thrown upon the statement, an extract from her log book in crossing the Atlantic in 1869 is given further on. The **Sappho** left Sandy Hook

Lightship 7 a.m. July 28, and arrived Queenstown Harbour 9 p.m. Aug. 9, Queenstown time, making the run in 12 days 9 hours 36 min. (two hours less to the Old Head of Kinsale).

The marvellous Transatlantic passage of the schooner **Atlantic** (135ft. L.W.L.), Sandy Hook to the Scilly Islands in 11 days 16hrs. 22min. is given on page 750. This was done in 1905 after a lapse of 36 years.

In the case of the **Sappho** it will be seen that the strong wind was on the quarter the whole way, and as the sea was exceptionally smooth, more favourable conditions for attaining high speed could not have been had. As a rule, with a strong wind, there is a great deal of sea, and this, of course, is an unfavourable condition for the attainment of high speeds, and it must be remembered that the schooner **Atlantic** was 14ft. longer on the L.W.L. than the **Sappho**.

In the Atlantic race of 1886, between the American yachts **Dauntless** and **Coronet**, the **Dauntless** logged 328 miles in 24 hours, whilst the biggest run of the **Coronet** was 291 miles.

It is equally well authenticated that the American yacht **Meteor** (which was lost in the Mediterranean), in a passage from Cowes to Lisbon in 1869, logged 319 miles in 24 hours, with a strong, quarterly, double-reef wind. During some portion of the 24 hours the **Meteor** logged 16 knots.

The **Cambria**, in the Atlantic yacht race 1870 only attained a maximum speed of 11.5 knots, but there was a heavy quarter sea whenever she had a strong fair wind. In the year 1871 the late Mr. Dixon Kemp said that the greatest sustained speed that he had ever been witness to an a match was in a race between the **Livonia** (106ft. on the waterline) and **Columbia** (98ft.) in America. The **Livonia** did the distance between the S.W. Spit buoy and Sandy Hook Lightship, 8.75 nautical miles, in 40 minutes, or at the rate of 13 knots; and no doubt that some part of the time she was going 13.5 knots. The tide was not strong, and abeam.

The reader will observe that this speed has been exceeded by more modern vessels. In a match of the Royal Victoria Yacht Club, Ryde, on Aug. 12, 1885, the **Irex** (cutter, 83.5ft. on the waterline) in a strong reaching wind went round a course of 50 miles in four hours eight

minutes. The tide was equally with and against her, so the average speed through the water was 12.1 knots.

We do not think this speed has been much exceeded by English yachts of the lengths given, but the late Mr. Thellusson stated that the **Guinevere** (121ft. L.W.L.) logged 14 knots. Mr. Heckstall Smith timed the schooner **Germania** (107ft L.W.L.) to sail 5 nautical miles, from the East Princessa Buoy to the Warner Lightship, in 20min.; making a slight curve to allow for water on the end of St. Helens Patch, she was then doing 15 knots. This was in a race on August 12th, 1912. Regarding, then, the figures given by the late Mr. Thellusson, and other yachtsmen of the old school, about the year 1870, and those of the present day, it may be concluded, in a general sense, that there has been a slight increase in the maximum speed of yachts.

When we consider that **Irex** was 7ft. shorter than **Sybarita**, no less than 33ft. shorter than **Rainbow**, and 37ft. shorter than **Guinevere**, **Sappho**, and 23ft. shorter than **Germania** her performance can only be regarded as marvellous.

The fastest day run of a sailing yacht in an ocean passage was made by the American yacht **Atlantic** on May 24th, 1905, in a race across the Atlantic Ocean for a Cup given by the German Emperor. This yacht was a three-masted fore-and-aft schooner, 185ft long over all, 135ft L.W.L., 29ft. 6in. beam, and 15ft draught, 532 tons, T.M. She ran 341 nautical miles in the day, thus averaging 14.2 knots (see her log below): the late Captain Charles Barr was at the helm. Her owner was Mr. Wilson Marshall.

It is recorded that the clipper ship **Sovereign of the Seas** in 1852 averaged 300 miles a day for eleven consecutive days, and 333 miles for four consecutive days. Her greatest distance any day, noon to noon, was 362 miles; but in 1853, on a voyage from Oaten to New York, she ran 396 miles on March 16, and on the 18th 411.

The ship Red Jacket, New York to England, January, 1853, logged 417 miles, and in the Southern Ocean, July, 1853, she made the following remarkable record:

Date. Miles. Date Miles. Date Miles.

July 3 312 July 7 299 July 11 24)  
4 300 ,, 5..... 380 ,, 32 700  
288 ,, 9 7)7  
G 400 I ,, 10 334 Total... 318i

On July 8 the latitude was 46 38' S., longitude 1195 44' E. The foregoing particulars were published by her commander, Mr. Samuel Reid, in the Field of April 16, 1887.

The **James Baines**, in the Southern Ocean, June 17, 1856, did 418 miles in the 24 hours, latitude 430 31' 5., longitude 106s 15' E. On the 18th she logged for a time 21 knots. This may or may not be authentic, but the extract from her log is given below.

The **Lightning** is said to have averaged 18 knots for 24 hours -- that is, 432 miles in the 24 hours, and the James Baines, on a voyage to Australia, in 1855, is credited with 430 miles in the 24 hours. In the Field of April 3rd, 1909, Mr. W.H. Stoneham records that he was serving on board the full rigged ship **Jura**, 1198 tons, on her maiden voyage from Greenock to Calcutta, and when running her easting down she logged 420 miles, noon to noon. This was in December, 1875. In all cases nautical miles are meant, and not statute miles.

The **Melbourne** in a passage to Australia in 1876 averaged 300 miles for 17 consecutive days. Her greatest runs were 374, 365, and 352 miles per 24 hours.

The greatest speed ever entered in a log of a sailing ship was in the log of the James Baines, June 18th, 1856, 8:30 p.m.; it runs thus: "In all starboard stud sails, ship going 21 knots with main skysail set." (See "Time Allowance by Length.")

Spell.--

The term of work allotted to any of the men in a watch. Thus there is the spell at the helm termed "trick"; spell at the masthead to look out, spell at the pump, &c. When a man's time comes to be relieved and the one who has to take his place lags, the former sings out "Spell 0!" (See "Trick.")

Spencer.--

A fore-and-aft sail set with gaffs in square-rigged ships, as trysails on the fore and main mast.

Spider-Hoop or Spider Band.--

An iron band round the mast with iron belaying pins in it.

Spiling.--

Marking on a bar of wood the distances that a curved line (say that of a frame) is from a straight line.

Spilling Lines.--

Ropes attached to sails for spilling them of wind in reefing or furling.

Spindle Jib.-- A jib topsail.

Spindle Model.-- A name given to a cylindrical model tapering at the ends.

Spindrift.-- See "Spoon Drift."

Spinnaker.--

A jib-headed sail reaching from the topmast head to the deck, first introduced in yacht racing in a Royal London match, June 5, 1865, by Mr. William Gordon in the Niobe, and hence for some time termed a "Ni-ohs." The term "spinnaker" appears to have been applied to it as a kind of nickname, without "rhyme or reason." In 1866 Mr. Herbert Maudslay had a similar sail made for his yacht Sphinx, and it was first used in a match of the Royal Victoria Yacht Club at Ryde. The men called the yacht "Spinks," and hence the Itchen Ferry men nicknamed the sail a "spinker," as the year before they called it a Ni-ohs. From spinker came spinniker, or, as now written, "spinnaker." The word, as heard spoken by the crew of the Sphinx, was introduced into our nautical vocabulary by the late Mr. Dixon Kemp in describing a yacht match he sailed at Ryde on board the Sphinx, Aug. 15, 1866, and reported in the Field of Aug. 18. The word next appeared in print in Hunt's "Yachting Magazine" for September, 1866, in reference to the same match, the word having apparently been taken from the Field. The author first spelt the word "spinniker," and the "spinnaker" form was not introduced until 1869.

Prior to the introduction of the spinnaker a square sail and square topsail or raffee were used. The accompanying wood-cut (Fig. 99) was made in 1854, and represents the Phantom (cutter, 27 tons) in a match on the Thames. Sometimes a large jib was hoisted by a block lashed half way up the topmast, and boomed out by the tack (if allowed by the rules) when before the wind. These large head sails were, however, generally prohibited, and the following is a copy of the rule of the Royal Thames Yacht Club prior to 1865:

"That all yachts cutter rigged, and not carrying more than four fore and aft sails, be eligible to sail; but no jib to exceed 2ft. in the head nor to be hoisted above the mainmast head, neither shall it be boomed out." It was the rescinding of this rule in 1865 that brought into existence the "Ni-ohs" or "spinnaker." Mr. MacMullen, in his "Down Channel" (published in 1869), says that he had a similar sail in 1852; but booming out a big balloon or jib by the tack was always a common practice both on board yachts and fishing smacks.

Spirketting.--

Timber worked inside a vessel under the shelf in a fore-and-aft direction.

Spitfire.-- The smallest storm jib.

Splice.--

To join the ends of rope together by interweaving the untwisted strands. An eye splice is formed by interweaving the untwisted end of a rope in the lay of the strands.

Split Lug.--

A lugsail in two parts (Fig. 100); the fore part is sheeted like a foresail, and in going about the tack is never cast off, nor is the tack of the after part of the sail. The up and down lines on the sail show where it is divided and where the mast comes. To heave to, the slew (after cringle) of the fore part of the log would be hauled up to the mat or to windward of it, easing the mainsheet as required. The split lug is not in much favour. The standing lug (or even balance lug) and foresail rig has all the advantages of the split lug without so much yard forward of the mast and without the disadvantage of not being able to lower the fore part or foresail. The most that can be said in favour of the split lug is

that it points out the advantages of a main and foresail in preference to one sail.

Spoken.-- Said when one ship has spoken to another by signal.

#### FIG 100

Spokes.--

The bars of the steering wheel of a ship radiating from the boss. "To give her a spoke" is to move the wheel to the extent of the distance between spoke and spoke.

Sponson.--

The platform ahead and abaft paddle wheels, usually outside the bulwarks, but sometimes enclosed.

Spoon Drift.-- Spray blown from the crests of waves.

Spreader.--

A crosstree, a strut, a piece of wood or steel used to extend and give breadth and leverage to a stay such as the bobstay, topmast stay, masthead stay, or forward mast head stay or strut.stay. The cross trees act as a spreader to the topmast and masthead stays, the dolphin striker to the bobstay and the strut to the forward masthead or strut-stay. (See "Strut.")

Spring.-- A warp or hawser or rope.

Spring a Mast.-- To crack or splinter a mast.

Spring her Luff.--

To ease the weather tiller lines so that a vessel will luff to a free puff.

Sprit Sail.--

A four-sided sail stretched by a pole termed a sprit (Fig. 101). This is a time-honoured contrivance for setting a sail that has no boom, but a gaff is preferred if the sail has a boom.

Sprung.-- Damaged by a cross way cracking or splintering. (See "Spring a Mast.")

Spun Yarn -Small rope or cord used for serving, &c.

Square.--

Said of sails when they are trimmed at right angles to the keel. A ship is said to have square yards when there is little difference between the lengths of upper and lower yards, or when her yards are very long.

Square the Yards.--

To brace them across at right angles to the keel. Square the boom is to haul it out at right angles to the keel.

Squeeze.--

A vessel is said to be squeezed when she is sailed very close to the wind in order that she may weather some point or object.

FIG 101.

Stains on Deck.--

Iron moulds, &c., can be removed from a deck by a solution of one part muriatic acid, three parts water.

Stand.--

A term variously employed; as to stand towards the shore, to stand E.S.E., and so on; to stand on without tacking. A sail is said to stand when it does not lift or shake.

Standard.-- See "Royal Standard."

Stand By.--

The order to make ready ; as "Stand by to lower the topsail!" "Let go the anchor!" &c.

Standing Part.--

The part permanently made fast to something, and not hauled upon.

Standing Rigging.-- The rigging that is kept permanently in its place.

Stand Up.--

A vessel is said to stand up well that carries her canvas without heeling much.

Starboard.-- The right hand side. The opposite to port.

Starbolins.--

The men and "watches" who compose the starboard watch. (See "Larbolins.")

Start, To.--

To move, as to slacken a sheet or tack. To start a butt is to cause a plank to start from its fastenings at its butt or end.

Started neither Tack nor Sheet.--

Said when a vessel sails a long course without a shift of wind, so that there is no occasion for her to alter the trim of her sails.

Starved of Wind.--

When a vessel is sailed so near the wind that she does not have enough of it, or feel the weight of it.

Slay, To.-- To tack.

Stay Rope.-- The luff or weather bolt rope of a jib or other sail.

Stays.--

Ropes for supporting masts and other spars. A vessel is said to be in stays when she is going through the operation of tacking. To stay is to tack. Strictly, when a ship is head to wind. Probably derived from the fact that a square rigged ship "stays" a long time before her head pays off, and she is then "in stays." (See "Missing Stays.")

Steady !-- An order to put the helm amidships, or not to move it about.

Steerage.--

In a yacht the space between the after athwartship bulkhead of the main cabin and the athwartship bulkhead of the after cabin. (The latter is generally known as the ladies' cabin. Usually the term steerage is limited to the fore and aft passage and berths therein.)

Steerage Way.--

When a vessel moves through the water so that she can be steered. In simply drifting or moving with the tide a vessel has no steerage way on, and cannot be steered; therefore steerage way means that a vessel relatively to the water moves and passes the water.

Steersman.-- A helmsman.

Steeve.--

The upward inclination or rake which a bowsprit has, or which the plank sheer has forward. The running bowsprit has usually a steeve corresponding with the sheer forward; a standing bowsprit has generally considerably more on square rigged vessels.

Stern.--

The timber at the fore end of a vessel into which the ends of the plank are butted. To stem is to make headway, as against a current.

Stemson.-- A piece of timber worked inside the stem.

Step.--

A piece of timber or metal to receive a vessel's mast, &c. To step is to put a thing into its step.

Stern-board.--

The name given to the three-cornered board aft in an open boat. (See "Stern Sheets.")

Stern Board.-- A movement of a vessel sternwards.

Stern Way.-- Moving astern: to make a stern board.

Stern Post.-- The strong timber to which the rudder is hung.

Stern Sheets.--

The seat in the aft end of a boat. Sometimes the three-cornered bottom board aft in a boat is termed the stern sheet. This board in' a yachts gig, in the bow or aft, is usually a wood grating. In small fishing boats the stern sheet is the platform on which the fisherman coils away his nets, lines, &c.

Stiff.-- Not easily heeled ; having great stability.

Stock of an Anchor.-- The crossbar near the shackle.

Stocks.-- The framework upon which a vessel rests whilst she is being built.

Stooping.--

To dive into a wave hollow. Generally an easy sort of pitching, caused by the undulation of waves or "swell."

Stopper.--

A rope or lashing used to prevent a rope or chain surging or slipping, as cable stopper, rigging stoppers, &c. The latter is usually a short piece of rope put on as a kind of racking to prevent the rigging or its tackles rendering. A stopper is sometimes put on with a hitch, as shown by Fig. 103. (See "Racking.")

Stops.--

Yarns or short pieces of rope by which sails are secured when rolled up or stowed. Also the short lines by which sails are tied to yards when they are not laced.

Storm Anchor.-- See "Floating Anchor" and "Oil on Troubled Waters."

Storm Sails.-- The storm trysail and storm jib set in bad weather.

Stove in.-- Broken in.

Stow.--

To roll up. To furl a sail. To pack away any kind of article. A slang term telling a man to cease talking, as "Stow that."

Straight of Breadth.--

The distance where the breadth of a ship is equal or nearly equal amidships; now generally termed parallel length of middle body, because the two sides of a ship may be for some distance parallel to each other. A straight of breadth is seldom found in a yacht excepting in

some long steam yachts ; these frequently are of the same breadth for some distance amid. ships. (See " Body" and "Dead Flat.")

Stroke or Streak.-- A length of plank of any breadth.

Strand.-- Yarns twisted together and they then make the parts or strands of a rope.

Stranded.-- Said of a rope when one or more of its strands have burst. Cast ashore.

Strands.-- Yarns when unlaidd and used as "stops" are sometimes called strands.

Strap.-- See "Strop."

Stream.--

The direction of the flood tide and ebb tide. The tides in the Channel are usually referred to as the eastern stream for the flood and western stream for the ebb.

Stretch.-- A course sailed. Also the elasticity of canvas or rope, &c.

Strike.--

To lower, as to strike the topmast, &c. Also to strike the ground when sailing.

Striking Topsails.-- See "Saluting."

Stringers.--

Strengthening strakes of plank, steel, or iron inside or outside a vessel's frame.

Strop or Strap.--

A sort of hoop made of rope yarn, wire, or iron, used to put round spars, blocks, &c. to hook tackles to. Fig. 102 shows a selvagee strop. (See also Selvagee.")

FIG 102

A selvagee strop is put on to a rope to hook a block or tackle to, as shown in Fig. 103. the whole of the strop being used up in the cross turns.

Another way of putting a strop on a block is shown in Fig. 104. The bights are passed through and through round the rope until used up; the tackle is then hooked to the bights as in Fig 103. A strop is usually put on a wire rope in this way, as it is less likely to slip.

Strut.--

A single spreader. A piece of wood or steel fitted on the foreside of the mast opposite the gaff jaws for the purpose of giving spread to a steel wire stay which supports the masthead, the "strut-stay" being the wire that goes from the masthead through or over the "strut" opposite the gaff jaws and down to the deck at the base of the mast to take the backward strain of the masthead and counteract the forward thrust of the gaff.

Strut-Stay.-- See "Strut."

Studding Sails.--

Sails set outside the courses, topsail, &c' in square rigged ships ; called by sailors "stu'n's'ls."

Stuff.--

Small rope, and picked hemp or cotton waste, and timber. Also slang for sails as, "Give her the stuff," meaning more sail.

FIG 103

Surge.-- When a rope renders round a belaying pin, &c.

Swansea Pilot Boats.--

A very snugly rigged kind of schooner met with in the Bristol Channel. The rig comprises mainmast, foremast, and running bowsprit; the mainmast is stepped exactly in the middle of the boat, and has a great rake aft, so that the head of the mast plumbs over the after part of the cockpit, two sheaves are cut in it, through which the halyards are rove. The foremast is upright, with sheaves like the mainmast, and a block on the fore part under the sheave holes for the jib halyards. These masts

require no rigging or stays, and are pole masted without )out any topmasts. The gaffs are short, being for a boat of 25 to 30 tons only about 6ft. long, and only require one halyard. One end of the halyard is spliced to a single block ; the other

FIG. 104.

end being passed over the first sheave in the mast, then through a single block, which is booked on to the gaff, and finally through the upper sheave in the mast. This end is belayed. A purchase is formed by a rope passed through the block on the halyard and through a block on deck. The fore halyards are rigged the same way, and the jib halyards are of the ordinary kind. The sails consist of mainsail, foresail, and jib ; the two former being laced

FIG 105

to the mast. These sails can be taken in in about one minute and a half, and set in about two and a half. The outhaul of the jib is passed under a sheave on the stem, and acts as a bobstay; there are no shrouds to bow sprit. The advantages of this rig are said to be that one man can handle a boat of 25 tons himself, and the boats are equally as handy with the foresail as without it, likewise the mainsail. They will stay or do anything either way, and with only the foresail and jib a boat can be sailed on a wind. (Fig. 105.)

Swell.--

Long waves with unbroken crest:, usually met with after heavy winds have subsided.

Sweep.--

A long bend. To sweep is to impel by sweeps or large oars; formerly, vessels as large as 300 tons used sweeps, and by hard work could make three knots an hour. Sweeps are not permitted in yacht racing.

Sweeps.-- Large oars.

Swig, To.--

The fall of a tackle is put under a cleat or pin, and is held firmly by one or more of the crew; another man (or man) then takes hold of the part of

the fall between the cleat and the block and throws his whole weight on it; as he comes up the other hand takes in the slack. By swigging on a tackle a couple of hands can often get in all that is required, where by steady hauling they might not have moved the blocks an inch. To drink.

#### Swimming.--

If a person who cannot swim falls overboard, he should turn his face upwards towards the sky, and press his chest forward; he cannot then sink. He should keep the legs down as much as possible, and the mouth firmly shut. He should keep composed, and strike out slowly with the hand. A person could soon learn to swim by walking into the water breast high, and then striking out, holding the face well up towards the sky. It should be always borne in mind that the human body is somewhat lighter bulk for bulk than water ; consequently a piece will appear above water until some of the fluid is swallowed. The proper thing to do is, therefore, to see that the piece of the body which floats out of the water is the face part, so that breathing can take place.

Swivel Hook.-- A hook that revolves by a pivot inserted in a socket and clinched.

#### T.

#### Tabernacle.--

A strong upright trunk used in boats and barges to step the mast in on deck so that it can be lowered for going under bridges. It is, in fact, a lengthening of the mast, the trunk being the housed part with a hinge or joint on deck. In small boats that have no deck the mast is generally stepped at the bottom of the tabernacle, and not on the top. Used also in certain yachts.

#### Tabling.--

The strengthening pieces of canvas sewn to the edges of sails where the roping goes on.

#### Tack.--

The lower fore-corner of a sail. To tack is to go about or shift from one tack to another. The side on which the wind blows on the sail, as starboard tack or port tack.

This term probably originated with the square rig, as "port tacks" aboard means that the lower port corners of the sail are now hauled inboard, whereas when the wind was on the other side these corners had been hauled outboard by the sheets.

Tackle.--

An arrangement of ropes and pulleys for increasing power ; a purchase. (Pronounced "tay-kel" by sailors.)

Tackle-fall.-- The hauling part of the rope of a tackle.

Tack Tackles.-- The tackles employed to set down the tacks of sails.

Taffrail.-- The continuation of the top rail round the aft side of the counter.

Tail Block.--

A block with a tail or piece of rope stropped to it for making fast the block instead of a hook.

A tail block is put on to a rope by a rolling hitch, as shown in Fig. 106 The hitches are jammed up close together. The end of the tail can be seized back to the rope if required.

FIG 106

FIG 107

Often when in a hurry only one hitch is taken (Fig. 107), the tail being gripped round the rope with the hand. A tail tackle is put on to a rope in the same manner as a tail block.

Tail On.-- An order to take hold of a rope and help haul.

Tail Tackle.--

A watch tackle; that is, a double and single block. The single block has a hook; the double block a rope tail, which can be hitched to ropes or parts of rigging, &c.

Take In or Take Off To hand or furl a sail.

Take, To.--

A jib is said to take when a vessel has been head to wind and the jib fills on one side or the other.

Take Up.-- To shrink; to tighten up.

Tanning a Sail.--

No tanning will entirely prevent mildew, if the canvas is left unopened and unaired an unlimited time. For a 20ft. boat boil in a furnace of 15 gallons 28lb. of catechu, until thoroughly dissolved; put in such sails as convenient, and let them soak a night; then spread and mop them over both sides with the mixture. If required very dark indeed, double the amount of catechu Sails too large for a furnace or vat are mopped only on a floor of asphalte, or cement, with the mixture. Sails are sometimes "tanned" in a tan yard with oak bark and ochre. The yarn of the Bembridge Redwings is dyed before it is woven.

Taunt.--

Tall, high, towering. (See "A-taunto.")

Taut.-- Tight : stretched as tightly as possible.

Taut Bowline.--

A ship is said to be on a taut bowline when the bowlines on the leeches of the sail are hauled as taut as possible for sailing near the wind. With everything stretched as flat as possible for close-hauled sailing.

Tend.--

To attend to a sheet and watch it to see if it requires hauling in or slacking out ; generally to attend to any work on board ship.

Tenon.-- A sort of tongue cut at the end of a piece of timber to fit into a mortise.

Thick Stuff.-- Timber or plank over 4in. thick.

Thimble.--

A ring, pear-shaped or circular, with a groove outside for ropes to fit in. When the thimble is pear-shaped it is usually termed a "heart thimble or thimble heart." These thimbles are used for the eye splices in ropes,

whilst circular thimbles are mostly used for the cringles of sails, &c. For steel wire shrouds the thimble is usually solid.

Thimble Eyes.--

Eyes spliced in rigging round a thimble. A thimble seized in a strop.

Tholes.-- Pins fitted into the holes in rowlocks for oars to work in.

Thread.--

A vessel is said to thread her way when she weaves in and out among other vessels, or through a narrow channel. Thread of oakum or cotton for caulking small boats.

Three Sheets in the Wind.--

Half drunk. "Three cloths shaking," said sometimes of -a mainsail when a vessel is sailed too near the wind.

Throat.--

The deepest part of the hollow of the jaws of a gaff, or the hollow of a V shaped knee, or the hollow of a floor. The throat halyards are those which are attached to the throat of a gaff. The upper weather corner of a gaff-sail is often called the throat, or nook, because it is attached to the throat of the gaff.

Through Bolt, or Through Fastening.--

A bolt that passes through timber and plank, and clinched.

Thumb Cleat.--

Pieces of wood put on spars, &c. to prevent ropes or strops from slipping.

Thwarts.-- The transverse seats in a boat. (Sea "Athwartships.")

Tidal Harbour.-- A harbour that can only be entered on certain stages of the tide.

Tides.--

Usually the rise and fall or flow and ebb of the sea around the coast. The highest tides occur at the new moon and full moon. Tides in estuaries, harbours, and bays vary a great deal.

Tie.--

A runner to which a tackle is hooked, used for hoisting lug-sails and squaresails.

Tiers.--

Ropes or gaskets used to secure the mainsail of a fore-and-aft vessel when furled or stowed to the boom. The tier that takes up the middle of the sail is termed the bunt tier. (See "Gasket" and "Buntline.")

Tight.--

Impervious to water; well caulked; not leaky. Never applied to the tension of ropes, &c., which are always "taut." (See "Taut.")

Tiller.--

The piece of timber inserted in the rudder head for steering; usually termed the helm.

Tiller Lines.--

The lines attached to the tiller to move it by. (See "Tiller Ropes," which are a different thing.) Generally in yachts of 40 tons and over, a tackle is used. In large yachts a second tackle is sometimes used, if the yacht carries much weather helm or is hard to steer : these second tackles are usually termed relieving tackles.

Tiller Ropes.--

The ropes attached to the short tiller when a wheel is used for steering. The ropes pass round the drum on the same axis as the wheel. In large vessels the tiller ropes are frequently made of raw hide.

Timber-heads.-- The heads or upper ends of the frames.

Timber Hitch.--

A quick way of bending a rope to a spar. A loop or bight is formed by twisting the end of a rope round its standing part, thus (Fig. 108):

The end of the rope is shown on the right, and the standing part passing through the bight on the left.

Timbers.-- The frames or ribs of a vessel.

Time Allowance.--

The allowance made by one yacht to another in competitive sailing, proportional to the size of the yachts and the distance sailed.

In small boat sailing, an allowance of 1 sec. per inch for every excess inch of length for every mile sailed, is a good allowance. Where length and breadth are multiplied together, 1 sec. per square foot for every mile makes a good allowance. Where length and breadth are added together, the allowance might be 1.25 second per inch per mile. These allowances are only adapted for boats that do not differ much in length. Where the difference in length much exceeds a foot, the boats should be classed as a 21ft. class, 25ft. class., &c

FIG 108

TIME ALLOWANCE BY LENGTH.

Rating yachts by length, in competitive sailing, has been practised since the early days of yacht racing, so far at least as small yachts are concerned ; but the practice has not become general, for the principal reason that one yacht, say of 40ft. length, owing to greater beam, might be capable of carrying a larger quantity of sail than another yacht of 40ft. length, and so have greater speed. If sails were not the means of propulsion this would be of little consequence, as, length for length, vessels of varied proportions of beam might if well modelled, be of equal speed ; and the speed of vessels of different lengths will be found to vary nearly as the square roots of their lengths, unless there be some extraordinary variance in their general form. It is not, therefore, surprising to find that the roots of the linear dimensions of yachts have been many times suggested as a proper basis for a time allowance.

So far as our experience goes, the speed of yachts of different sizes accords with those set out in the table below; and these speeds so agree with the assumption that the speed varies as the square root of the length. When the configurations of the yachts are the same, the quality of immersed surface varies considerably.

Thus, in the table it has been assumed that a yacht 64ft. long can sail one mile in six minutes; and that the time of other yachts per mile will vary as the square root of their respective lengths. Therefore, on this

assumption, a yacht 9ft. long will sail a mile in sixteen minutes (or 960 seconds), and the time between a yacht 9ft. long and any other larger yacht will therefore be found by the equation

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#### Y.R.A. TIME ALLOWANCE

The Yacht Racing Association has now three scales of time allowance, which are those of the International Yacht Racing Union (see pages 260 to 262). Scale No.1 is 4 seconds per metre of rating per mile; scale No.3 is a graduated scale suitable for all classes of cutters from 23 metres rating down to 5 metres rating; it is intended to be used when the International cutter classes are amalgamated. Scale No.5 is a combination of scale No.1 and scale No.3; it is intended to be used when cutters, yawls, schooners, and ketches sail in the same race. Scales No.1, No.3, and No.5 are calculated for a moderate breeze. Scales No.2 and No.4 for very light winds and very strong winds have not been adopted by the Y.R.A. and are not used in Great Britain.

#### Timing.--

In timing vessels passing marks to finish a race or otherwise, the fairest plan is to take the time as each vessel's bowsprit end reaches the mark. In timing yachts that have to gybe or tack round marks, time must be taken when in the opinion of the timekeeper the yacht is fairly at or round the mark; this especially in the case of gybing.

#### Toggle.--

A short rope with an eye at one end and a small piece of wood at the other, to insert in the eye and form a kind of strop or becket.

#### Ton.--

A weight of 2240lb. avoirdupois. In hydraulics 35 cubic feet of sea water represent a ton, or 36 cubic feet of fresh water.

#### Tonnage and Rating.--

The nominal size or capacity of a ship, variously estimated. Since the early days when "tons burden" meant the actual tons weight of coal a vessel such as the north country keels would carry, the word "tonnage" has conveyed no fixed idea of bulk or weight. The nominal tonnage has been variously computed and the earliest record (See "Archeologia,"

Vol. XI) is that the "tons burden" of the ships of the Royal Navy in the 17th century was calculated by

$L \times B \times D / 96$

L length on keel, B extreme breadth, and D depth of hold.

It was probably found that a ship was capable of filling up with coal to just half her cubical capacity, taking 48 cubic feet to the ton, hence came the divisor 96. Say a vessel was

$80 \times 24 \times 12 / 96 = 240$  tons, which would be about the amount of coal or other dead weight she would carry.

Owing probably to the inconvenience of arriving at the depth of laden vessels entering ports, the rule was altered to

$L \times B \times N \frac{1}{2}(B) / 94$

and finally, in 1719, an Act was passed enjoining that the rule just stated should be law, but to allow for rake of stem  $\frac{3}{5}$  of the breadth was ordered to be subtracted from the length.

In this rule it will be seen there were two assumptions. First, that the vessel was a rectangular figure, and, second, that her depth was equal to her breadth. The result was that ships were built under it as much like boxes as possible, and deep in proportion to breadth, because depth was untaxed and beam heavily taxed. However, in spite of learned arguments and much abuse (the rule of measurement was commonly referred to as the "iniquitous tonnage laws"), the rule remained in force as the law of the land until the passing of the Merchant Shipping Act in 1854. Under that Act the tonnage became one of cubic capacity (100 cubic feet to the ton), and for roughly estimating the tons of a laden ship the following rule was allowed to be used under the Act:

[much tedium deleted until some future point]

Top.--

In square-rigged ships, the platform at the lower mast heads to give additional spread to the topmast rigging, and to form a kind of gallery

for riflemen in war ships. There are fore top, main top, and mizen top. To top is to raise one end of a boom or yard by the topping lifts. The "top" of a vessel is the part above water.

Topgallant Bulwarks.--

Bulwarks fitted above the rail to afford additional shelter on deck.

Topgallant Mast.-- The mast next above the top. mast in square-rigged ships.

Top Hamper.-- Any real or supposed unnecessary weight carried on deck or masts.

Topmast Hoops.--

Hoops were formerly used for jib-headed topsails, the same as they used to be for the original "gaff topsails." The hoops when not in use rest on the masthead. In hoisting the topsail the lacing is passed through an eyelet hole in the luff of the sail and through a hoop, and so on. When the sail is hoisted chock-a-block the lacing is hauled taut; in lowering the lacing is slackened. Hoops facilitate the hoisting and lowering of the sail, and admit of its being lowered and hoisted without a man going aloft.

Topping Lifts.-- Ropes or tackles used to raise or support booms or yards.

Top Rail.-- The rail fitted on the stanchions as a finish to the bulwarks.

Topsails.--

Racing yachts usually are supplied with various topsails, viz., large jackyard topsail, a smaller one, jib-headed topsail, and jib topsail. Formerly a square topsail was carried as well, but spinnakers have superseded squaresails. A cruising yacht usually carries one yard topsail and one jib-headed topsail. Schooners carry as well a main topmast staysail.

Topsail Schooner.-- See "Square Topsail Schooner."

Topside.--

That part of a vessel above the wales; now in yachts sometimes understood as the part between the water-line and deck, or the freeboard.

Top Timbers.-- The upper parts of the framing of a vessel.

Top Your Boom and Sail Large.-- To leave in a hurry and sail off the wind.

Toss the Oars.--

To throw them out of the rowlocks and rest them perpendicularly, blades uppermost, on reaching a destination.

Toss up the Boom.-- To raise the boom by the lifts.

Touching the Wind.--

Luffing into the wind till the sails shake. (See "Luff and Touch Her.")

Tow Rope or Tow Line.-- The rope or hawser used in towing.

Track.-- The course or wake of a ship.

Trade Wind.--

Winds that blow in one direction a considerable time, admitting of traders making expeditious voyages.

Trail Boards.-- Carved boards fitted on the bow and stem of schooners.

Transom.--

The frame at the sternpost of a vessel. In boats the transverse board at the stern, which gives shape to the quarters and forms the stern end of the boat.

Transverse.-- Athwartships. At right-angles to the line of the keel.

Trapezium.--

A four-sided figure with two sides or foot and head parallel, as a ship's square sail.

Trapezoid.--

A four-sided figure whose sides do not form parallel lines, such as a cutter's mainsail.

Traveller.-- An iron ring, thimble, or strop which travels on a spar, bar, or rope.

Traveller, Jointed.--

The fishermen on the S.W. coast use a jointed mast traveller. The iron hoop is in two half moons, each end has an eye turned in (see Fig. 109); the two halves are connected by these eyes. The object in having a jointed traveller is to facilitate lowering.

FIG 109.

Treenails.--

Bolts or plugs of wood used to fasten plank to the timbers of vessels. Pronounced "trennel."

Trestle Trees.--

In ships long pieces of timber fitted at the masthead in a fore-and-aft direction to support the cross trees.

Triatic Stay.--

A stay from foremast head to mainmast head in a schooner, and termed sciatic stay in old works.

Trick.-- The time a man is stationed at the helm. (See "Spell.")

Trim.--

The position of a ship in the water in a fore-and-aft direction. To trim a vessel is to set her in a particular position, by the head or stern. The term is sometimes erroneously used to represent the shifting of ballast transversely. To trim the sails is to sheet and tack them so that they are disposed in the best manner possible, in relation to the force and direction of the wind.

Trip.--

A passage. Sometimes used in Scotland to denote a board made in beating to windward. To trip a spar is to cant it. To trip an anchor is to

break it out of the ground; an anchor is a-trip when one of its flukes is on, but not in, the ground. (See "Anchor" and "Scowing.")

**Trip or Tripping Line.--**  
rope used to cant a spar, as trip halyards for a topsail, or the line bent to the crown of an anchor to trip it or break it out of the ground.

**Trough of the Sea.--** The hollow between wave crest and wave-crest.

**Trucks.--**  
The wooden caps fitted on the upper mastheads to reeve the signal halyards through.

**True Wind.--**  
A wind that does not vary; the prevailing wind in contradistinction to eddies or baffling puffs.

**Trying.--**  
To "try" is when a vessel is hove to, to so trim her sails that she may gather headway and make something to the good.

**Trysail.--**  
A small sort of gaff sail or sharp headed sail set in heavy weather. The sail set on the fore and main mast of square rigged ships and brigs similar to the spanker on the mizen.-- The origin of the term try sail was probably that in heavy weather it was the sail set to enable a vessel to "try," or to make some headway.

**Tuck.--** The form of the hollow in the quarter near the transom or stern-post.

**Tug.--** A towing boat.-- To tug is to tow.

**Tumble In or Tumble Home.--**  
When the sides of a ship near the deck incline inwards; the opposite to flaring.

**Tumbler.--**  
A piece of wood pivoted in the jaw of a gaff which is always in the plane of the mast.

Tumbler-fid.-- A self-acting fid for a topmast.

Turk's-head.--

A knot made of small line round a rope as a stopper or for ornament.

Turn.--

A circle made by a rope round a pin, &c. "Turn O" is an order to belay.-

- To catch a turn is to put the fall of a tackle or part of any rope round a belaying pin, stanchion, &c.

Turn In.--

To secure the end of a rope by seizing. To go to one's berth to sleep.

Turning to Windward.--

Working or beating for a point or object by short boards. Generally beating to windward. To turn is to tack.

Turn of the Tide.-- When the tide changes from flood to ebb, or the contrary.

Twice Laid Rope.--

Rope remade from old rope. A term of reproach for articles of inferior quality.

Twiddler.--

Small broom used in scrubbing the decks of yachts, to clean out corners, &c.

Twiddling Stick.-- The tiller, hence "twiddling lines" are the tiller lines.

Two-blocks.--

Said when a tackle has been used so that its two blocks come close together. (See "Chock-a-block. ")

U.-V.

Una Boat.--

This is a centre-board boat with one sail introduced from America, where they are known as "cat boats." The mast is stepped close to the stem (sometimes with a rake aft), and the sail is laced to a boom and

gaff. The name Una was given them because the first boat introduced at Cowes, from America, was so named. These boats vary from twice to three times their beam in length, and are very shallow. If handled with care, they are safe enough, very fast, and in smooth water very weatherly and handy. In squalls they should always be luffed up in good time, or they might be driven under. (See Fig. 110.)

#### FIG 110

The term "Una rig is now commonly used in England to denote a one-sail boat. Undoubtedly the word "Una" refers to one sail, and not to the type of boat; hence we hear of all sorts of boats being "Una rigged" and in America the corresponding rig (termed "cat rig") is applied to both deep-bodied and shallow craft. Whether or not any single sail could be properly classed under the term Una can only be decided arbitrarily. The one sail boat brought over here in 1853 and named "Una" had a gaff sail, and no other sail. Cowes Unas were famous in their day, but since the advent of small "Raters" none have been built.

Unbend.-- To cast loose a sail from its gaff, yard, &c. The opposite of bend.

Under Bowing the Sea.--

When a vessel is close hauled sailing in a cross sea, and gets the worst of it on the lee bow.

Under Canvas.-- Proceeding by means of sail. With sail set.

Under Deck.-- Below.

Under Hatches.-- Below deck.

Under-Run.--

To follow up a rope, chain hawser, or cable, by hauling it in from a boat which moves in the direction that the cable, &c. is laid out.

Under Sail.-- See "Under Canvas."

Under the Lee.--

Sheltered from the wind by the sails of another vessel. Under the lee of the land, sheltered from the full force of the wind by the land.

Under-way.--

Moving through the water under the influence of the wind, steam, or oars. Sometimes wrongly written under-weigh. It is said a vessel may be under-weigh when she is getting her anchor; but even then it would be the anchor, and not the vessel, that would be under-weigh.

In Admiral Smyth's "Sailor's Word Book," (edition revised by Admiral Sir E. Belcher, 1867), is the following :-

"UNDERWAY.-- A ship beginning to move under canvas after her anchor is started; some have written this underweigh, but improperly. A ship is underweigh when she has weighed her anchor; she may be with or without canvas, or hove to. As soon as she gathers way she is underway. This is a moot point with old seamen."

The obvious objections to using underweigh in this limited sense is that a man might find himself saying. "We got underweigh at noon, but were not underway until two hours later." The fact is, underweigh is never written by seamen except through carelessness; but the odd thing is that greenhorns take to the word more kindly than they do to underway, probably because they have enough knowledge to know that to get underway the anchor must be weighed. The best naval writers never describe the operation of heaving in up the anchor as getting underweigh but always write "she weighed," or she weighed anchor," or "we weighed," &c. To get underway" is by them used in the sense of making preparation to get way on, and when the anchor is aweigh the ship may have way on or not. Dana (who may be taken as an unimpeachable authority) does not admit the word underweigh at all in his Seaman's Manual (revised edition by the Registrar-General of British Shipping) but in the instructions for making sail &c. underway is always used thus "Getting underway from a single anchor," "getting underway, riding head to wind" &c. So also underway is the term used in the Merchant Shipping Act.

In William Falconer's Marine Dictionary (the edition published 1779) underweigh is not to be found, but we come upon the following sections :

"UNDERWAY.-- If it be in a tideway and with a leading wind, so that the ship can stem the tide, let it be a rule when the tide serves to get underway and sail against the flood, which gives time to clear a ship of her moorings, and affords a more powerful effect to the helm to clear of other ships, &c.

"WAY.-- The course or progress a ship makes in the water under sail. Thus, when she begins her motion she is said to be underway, &c."

"RIDING AT ANCHOR.-- When a fleet of many ships is moored in a port or road care must be taken to preserve a considerable distance between the vessels, not only for the purpose of keeping them clear of each other, but to prevent them from running foul when getting underway."

"WEIGH.-- To heave up the anchor of a ship in order to prepare her for sailing."

William Falconer, besides being a distinguished author, was a thorough seaman, and after long service in HM's Navy, was lost in the wreck of the *Aurora*, 1769, aged 39.

Hutchinson (master mariner), in his "Practical Seamanship," published in 1795, uses the term "underway," and underweigh is not to be found in his book. B.H. Gower, in his "Seamanship," published 1808, also uses underway. Admiral Sir George Nares, in his "Seamanship" (6th edition, published 1882), always uses underway, and so does Admiral De Horsey in his writings.

Underwriter.--

A person who attaches his name to a policy of insurance by the side of the amount he will share of the risk. The under part of some policies may have two or three hundred names attached, as the principle of underwriting is to have very little at stake on any one ship. To become an underwriter at Lloyd's a deposit of 5000£ cash is required, for which interest is paid. The entrance fee is 100£, and the subscription is 12£ 12s. per year, together with 5£. 5s. for a seat in the rooms.

Union.--

The national flag denoting the union of England, Scotland, and Ireland. The Jack is a small flag -- a diminutive of the Union only flown from the jack staff on bowsprit end or fore part of a ship. In the merchant service it must have a white border. When flown from the mast with a white border it is the signal for a pilot, and is called the Pilot Jack. To no other union flag is the term Jack applied. The "Union" is flown on forts, Government works, &c. The flag of England is the St. George's cross (+) red on a white ground. The national flag of Scotland is St. Andrew's, a white cross (x) or saltire on a blue ground, and on the union with England these two were combined. The Scottish flag remained unchanged; the English cross was merely placed over it, the white ground of the English flag giving place to the blue ground of that of Scotland. This was the first Union flag.

On the union with Ireland the Irish saltire (St. Patrick's cross (x), red on white) was added, being placed side by side with that of Scotland; but for a requirement of heraldry, to be presently noticed, the flag would consist of a blue ground with one band of white representing the Scottish cross, and one of red of the same breadth beside it, representing the first cross, with a red cross over both--nothing more. But it is a law of heraldry that colour cannot be placed next colour, nor metal next metal, and so, to meet this, the red Irish cross has a narrow hem or border of silver (white) to separate it from the blue ground of the flag, and for the same purpose the red cross of St. George has, or rather should have, a similar narrow border of white of the same breadth as the border of St. Patrick's cross. In arranging the two saltires they are "counterchanged," that is, Scotland has precedence in the first and third quarters by its white cross being placed above the Irish one, while in the second and fourth quarters the precedence is ceded to Ireland by the red cross being placed over the white.

The words of the heraldic blazon contained in the Order of the King in Council of Nov. 5, 1800, and announced to the nation by the Proclamation of Jan. 1, 1801, prescribes the form in which the national flag is to be constructed in these words: "The Union flag shall be azure, the crosses saltires of Saint Andrew and Saint Patrick, quarterly per saltire, counterchanged, argent and gules; the latter fimbriated of the second, surmounted by the cross of St. George of the third, fimbriated as the saltire." To these distinct words of the verbal blazon in the

Proclamation all questions as to the form and proportions of the flag must be referred.

The Order in Council refers to a "draft" or drawing of the flag, and of this drawing, the one which accompanies the Admiralty Memorandum professes to be a copy, both the drawing and the Admiralty measurement obviously disconform to the blazon proscribed in the Proclamation. That blazon expressly directs that the cross of St. George "shall be fimbriated as the saltire" that is, it must have a border the same as that of the Irish saltire; but, so far is this from being the case, that, while in the drawing the hem or border of the cross of Ireland is less than one-sixtieth the width of the flag (which is quite as broad as it should be), the measurement given in the Admiralty Memorandum for the breadth of the border of the St. George's cross is one-fifteenth, and it is nearly the same in the drawing said to be a copy of that in the Council Records. This palpable error has been followed in almost all our flags. It will be seen in the diagram made from the Admiralty regulations given further on, but a border so broad is not a fimbriation at all. It really represents two crosses -- a white one with a red one over.

Mr. Laughton, the accomplished lecturer on naval history at the Royal Naval College, thus speaks of it: "A fimbriation," he says, "is a narrow border to separate colour from colour. It should be as narrow as possible to mark the contrast; but the white border of our St. George's cross is not, strictly speaking, a fimbriation at all. It is a white cross of one-third the width of the flag surmounted of a red cross."

There is another error equally calling for correction, and for which the Admiralty Memorandum is responsible. When two saltires are directed to be represented on the same shield or flag, they must be of the same breadth. The crosses of Scotland and Ireland therefore, which on our flag are side by side, ought to be of precisely the same breadth. In the official drawing of 1800 they look nearly the same, and they were perhaps intended to be so ; but the Admiralty Memorandum, disregarding the drawing and the verbal blazon alike, directs that the Scottish saltire shall be one-tenth the breadth of the flag, and that the Irish

SCALE 1/4in=1FT.

Blue, light shade (horizontal lines); red, dark shade (vertical lines).

FIG 111.

saltire shall be only one-fifteenth. If the diagram of the Admiralty were altered, so as to make the Irish saltire as broad as that of Scotland; if the border of the Irish cross were made narrower; and if the border of the St. George's cross were reduced so as to make it of the same breadth as that of the Irish cross, it would more correctly show what the flag ought to be according to the heraldic blazon. Flags in the Royal Navy are measured by the number of breadths they contain in their widths, a breadth being equal to 9in. An eight breadth Jack will therefore be 6ft. wide and 12ft. long, being in length double its width.

(See Fig. 111.)

ADMIRALTY SCALE FOR MARINE "UNION JACKS."

St. George's Cross. Red cross to be one fifth the width of flag, borders to be one fifteenth the width of flag, or one-third the width of red cross.

St. Andrew's Cross to be one fifteenth the width of the flag, or one-fifth the width of St. George's Cross, or equal to the border of St. George's Cross.

St. Patrick's Cross. Narrow white to be one-thirtieth the width of the flag, or one sixth the width of St. George's Cross, or one half of St. Andrew's Cross. Broad white to be one-tenth of the width of the flag, or one half of the red of St. George's Cross, or equal to red of St. Andrew's Cross and narrow white together.

Union Down.-- An ensign with the jack downwards, hoisted as a signal of distress.

Unmoored.--

With anchors a-weigh. A vessel is also said to be "unmoored" when she is riding to a single anchor, as to be moored two anchors must be down, or she must be fast to a permanent mooring.

Unreeve.-- To haul out a rope from a hole, &c.

Unrig.-- To dismantle a ship or any part of her, as to unrig a topmast or bowsprit.

Unship.-- To remove a thing from its lodgment.

Up and Down.--

Vertically. The wind is sometimes said to be up and down the mast, when there is none at all, like Paddy's hurricane.

Upper Mast, Upper Stick.-- A topmast, a topgallant mast, &c.

Upper Strake.--

The top strake running round a vessel at the deck edge under the covering board, usually stouter than the general planking, and almost always of bard wood to better bold fastenings.

Usages of the Sea.-- Customs of the sea in relation to commercial pursuits, which are held in law to be binding.

V.

Van.-- The advanced part of a fleet.

Vane.-- See "Dog Vane."

Vang.--

A rope used to keep a gaff from sagging to leeward. On a schooner's foresail a block is lashed to the mainmast head, through which the vang is rove and made fast to the fore gaff end; the fall of the rope leads to the deck. In square-rigged ships vangs are generally used on the spanker gaff. Sprit sail barges also use vangs.

Variation of the Compass.--

The departure the compass needle shows from true North at certain parts of the globe. The difference between magnetic and true North usually expressed in degrees on charts. The variation widely differs, thus : in the English Channel it is about 230, at New York only 5û. The deviation of the compass is due to local attraction. A chart called a "Variation Chart," shows by curved lines the changing variations of the compass needle for different parts of the globe. Variation must not be confused with the deviation due to local attraction in iron and composite ships.

Varnish.--

Black Japan: 1oz. lamp black, 2oz. bitumen, 1/2oz. acetate lead, 1/2oz. Turkey umber, 1/2oz. Venice turpentine, 12oz. boiled oil. Dissolve the oil in turpentine; powder the other ingredients, and stir in gradually. Simmer on slow fire ten minutes.

Copal Varnish: Copal 30oz., drying linseed oil 18oz., spirits of turpentine 50oz. Briskly fuse the copal; heat the oil to close on boiling point, and pour it hot on the copal; mix thoroughly; allow the mixture to cool a little and add the turpentine, mix 'thoroughly. When cool strain for use. Only first class varnish should be used.

A Quick-drying Varnish: 7lb. copal (fused), hot linseed 1/2 gall., hot turpentine 1.5 gall. Carefully stir and boil together.

Oak Varnish: 7lb. pale resin dissolved in 2gall. oil of turpentine.

Varnish for Metals: Powder 1lb. of copal and dissolve in 2lb. of strongest alcohol. A very quick-drying varnish.

Varnish for Iron: Mastic (clear grains) 10lb., camphor 5lb., sandarach 15lb. elemi 5lb. Dissolve in sufficient alcohol.

Black Varnish or Polish for Iron: Resin 4oz., lamp black 2oz., beeswax 3oz., shellac 2oz., linseed oil 1qt. Boil together one hour, and then stir in 1/2pt. turpentine.

Tar Varnish for Iron: Coal tar 1pt., lamp black 1oz., heel ball 1/2oz., spirits turpentine 1/4pt., beeswax 1oz. Dissolve the heel ball and beeswax in the turpentine, add the lamp black and tar, warm and mix it thoroughly. This mixture should be applied hot.

Tar Varnish for Wood or Iron : 1 gallon coal tar, 2oz. oil of vitriol; mix thoroughly, and add 1/2pt. of turpentine; mix, and apply immediately. This dries quickly, and only quantities sufficient for use should be made.

Varnishing a Bright Boat.--

Rub down the wood thoroughly and put on four coats of copal varnish. If size is used for priming, the varnish will peel off. To clean off

varnish : take a mixture of soda (2lb.), soap (1lb.), boiled together, it will remove varnish from spars, &c. It should be applied hot. (See also "Caustic Soda.")

Veer.--

To pay out chain. Veer is also used in the sense of wearing or gybing. The wind is said to veer when it changes in direction with the sun; to back when it changes against the sun, the wind is said to veer when it draws more aft. To haul when it comes more ahead.

Veer and Haul.--

To slacken up a rope, and then haul on it suddenly, in order that those who are hauling on it may acquire a momentum. Pulling by jerks.

Veer out the Cable.-- The order to pay out or slack away cable.

Veering a Buoy in a Vessel's Wake.--

Throwing overboard a buoy in the wake of a ship when a man has fallen overboard, in the hope that he may get to it, and pick it up.

Vertical.-- At right angles to the horizon, or perpendicular to the horizon.

Vessel.-- A name for all kinds of craft, from a canoe to a three-decker.

Victual.-- To supply with provisions for a voyage, &c.

Voyage.-- The passage of a vessel by sea. A short voyage is called a trip or a cast.

W. Y. Z.

Wag.--

A slang term for a waterwag, namely, the smallest type of Kingstown boat.

Waist.-- The middle fore and aft part of a vessel's decks.

Waisters.--

Green hands, or old decrepit seamen, who are stationed about in the waist of a vessel to haul upon ropes, &c.

Wake.--

The peculiar eddying water that appears after a ship has passed. Vessels are said to leave a clean wake that do not cause waves to form astern.

Wales.-- Thick strakes of plank.

Walk Away with It.-- See "Run Away."

Wall Knot.--

A knot formed at the end of a rope by unlaying and interweaving the strands.

Wall Sided.--

Up and down sides of a vessel that neither tumble home nor flare out.

Wallow.--

To lie in the trough of a sea and roll heavily; to roll under the sea.

Warrants.-- See "Admiralty Warrants."

Wash Strake.--

A strake, fixed or movable, of plank fitted to the gunwale of an open boat to increase her height out of water.

Watch.--

An anchor buoy or mooring buoy is said to watch when it keeps above water.

Watch and Watch.--

The arrangement whereby one half of the crew is on deck for four hours, then the other half for four hours.

Watches.--

The divisions of time for work on board a vessel. The crew of a ship is divided for this work into two watches, port and starboard, each watch being alternately on deck, excepting in emergencies, when both watches may be called on deck. Watches are thus divided: From 8 p.m. to

midnight is the "First Watch." From midnight to 4 a.m. is the "Middle Watch." From 4 a.m. to 8 a.m. is the "Morning Watch." From 8 a.m. to noon is the "Forenoon Watch." From noon to 4 p.m. the "Afternoon Watch." From 4 p.m. to 6 p.m., and 6 p.m. to 8 p.m. the two "Dog Watches."

Watching for a Smooth.--

In a sea way looking out for a time when the waves are smaller to tack in, &c.

Watch Tackle.--

A tackle consisting of single and double block; the single block has a hook, the double a tail.

Water.--

One cubic foot fresh water .0279 ton or 62.39lb.; one gallon .00447 ton. A ton fresh water equal to 223.76 gallons.

One cubic foot salt water .0286 ton or 64.05lb.; one gallon .0046 ton ; 1 ton 217.95 gallons.

One gallon fresh water weighs 10.01lb.; one pint 20oz. A ton of fresh water is usually taken as 36 cubic feet; a ton of salt water as 35 cubic feet. (See "Cubic Measure of Water.")

Water Ballast.--

Water carried in tanks or breakers as ballast. The tanks or breakers should be either full or empty.

Water Borne.--

Not resting on the ground, but being in the condition of floating.

Watering.--

Taking water into the tanks by the hose or by means of breakers. Steam yachts often "water" by filling their dinghy or their cutter, and then pump it into the tanks with the donkey pumps, if the water has to be fetched from shore.

Water Line.--

A horizontal plane passing through a vessel longitudinally. Length on load waterline means the length in a straight line from the fore side of the stem to the aft side of the sternpost or counter at the water level.

Water Logged.--

The condition of a vessel, that although her hold is full of water, she does not sink, owing to the buoyant nature of her cargo, or from other causes.

Waterproofing.--

Boil 12oz. of beeswax in 1 gallon of linseed oil for two hours ; paint the cloth with this mixture twice or thrice. Colour as required.

Waterproofing Sail Cloth.--

The recipe used by Mr. Berthon to render the canvas of his collapsing boats waterproof, and similar to that used in H.M. dockyards for hammock cloths, is as follows: To 6oz. of hard yellow soap add 1 1/2 pints of water, and when boiling, add 5lb. (more or less according to the required consistency) of ground spruce ochre, 1/2lb. patent driers, and 5lb. of boiled linseed oil. For waterproofing sheets, the ochre should be omitted, as it adds to the weight, lessens the flexibility, and is unnecessary.

Existing coverings are made waterproof by preparations of india-rubber, oil, paint, &c. Fabrics coated with india-rubber are not proof against the effects of climate or rough usage, are not easily repaired, and, compared with those coated with the Chinese and other preparations, are very heavy, and, if the same dimensions, expensive. The recipe for "waterproofing" calico used by the Chinese, is said to be efficient, alike in the hottest and coldest climates, is believed to be composed of boiled oil one quart, soft soap 1oz., and beeswax 1oz.; the whole boiled until reduced to three-quarters of its previous quantity; but experiments are required to test the above proportions.

To waterproof cotton drilling boil a mixture of 6oz. hard yellow soap, 1-1/2 pint water, 1/2lb. patent driers, 5lb. boiled linseed oil.

Mr. Arthur Hill Coates, a well-known amateur yachtsman, of Bangor, co. Down, gave the following instructions for waterproofing sail covers:

To make a sail cover so that it is not stiff, but as soft as kid, use strong good calico ; when the cover is made, wash out with boiling water all the finish or dressing, dry thoroughly, saturate with petroleum oil, wring out, and allow to dry in air. When quite dry, paint with white lead, coloured to taste, mixed with raw linseed oil and turpentine, three thin coats. I have a cover five years old as good as the first day, and as soft as could be desired, and that never sticks. Waterproof coats and leggings for boating made the same way are a luxury.

Waves.--

The formation of waves is a subject which has received much attention, but no completely satisfactory theory as to their genesis has yet been evolved. The general theory is, that the smooth sea is acted upon by the impact and friction of the moving air or wind, and that the waves increase in size and speed, until the wind force is incapable of further developing them. Deep sea waves vary much in length, even under similar influences of wind pressure, and its continuation. Captain Motter of the French Navy, measured a wave in the North Atlantic, 2720ft., or half a mile from crest to crest, and Sir James Ross, one 1920ft. long. Such waves however, are seldom met with, and Dr. Scoresby observed that Atlantic storm waves had lengths of from 500ft. to 600ft. Measuring the heights of waves is a more difficult matter than measuring their lengths, and there has been much exaggeration under this head.

The late Sir E. Belcher, at the Institute of Naval Architects in 1862, mentioned a wave he had observed rise to 100ft. Professor Rankine, in his work on Navel Architecture, speaks of waves on rocky coasts rising to 150ft., and waves have been known to fly over the Eddystone Lighthouse. However, the greatest heights of deep sea waves as measured by Dr. Scoresby, and other accurate observers, have been 48ft., but it is rare to meet with waves exceeding 30ft. in height. Ordinary storm waves such as met with in the Atlantic of about 200ft. in length, have a height of about one-twentieth of their length, but the ratio becomes lower as the length of the waves increase, and waves of 1000ft. in length have been observed with but a height of 10ft. On the other hand, waves of 600ft. in length have been observed of unusual steepness, and with heights one-eighth of their lengths. A long series of observations made by M. Bertin on the heights and lengths of waves, would seem to prove that the average height of deep sea waves is as 1

to 25 of their length. This of course is applied to single waves only. In what is termed a "confused sea," where a long wave may overtake and pass through a short one, the general height becomes increased, almost to the extent of the combined heights of both waves, and the wave form under such circumstances, is more or less "confused." In the English Channel, superposed waves are common, and the waves generally being short and steep, heights are met with of about one eighth the length of the waves. (A wave length is the length from crest to crest, and wave height, the height from hollow to crest.)

The speed of waves is generally proportional to their length. Thus a wave 20ft. long will travel 6 miles an hour, and one 50ft. long, 9 miles ; 120ft., 15 miles ; 200ft., 19 miles ; 400ft., 27 miles; 600ft., 32 miles ; 1000ft., 42 miles. It must be understood that it is only the wave motion, or form, and not the water which travels, and no substance resting on the water is carried forward by the advance of waves further than the force of gravity may give a substance an alternate forward and backward motion, as it became differently situated on the sides of waves. Thus a ship will simply rise and fall with the waves and not be carried forward by them, and an unbroken wave would do a ship no harm in the sense of an impact due to the wave striking her. The danger from waves arises when they break over a ship, or when a ship by intercepting a wave causes it to break. (The best article in a popular form on Waves, and oscillations of ships among them, is in Sir W.H. White's "Manual of Naval Architecture.")

A work by Mr Vaughan Cornish entitled "Waves of the Sea" (T. Fisher Unwin, 1910), contains some interesting matter.

Waves, to Still.-- See "Oil on Troubled Water."

Way.--

Motion through the water, as underway, headway, sternway, steerage way, leeway, &c. (See "Under way.")

Way Enough.--

In rowing, an order given by the person steering a boat when being rowed alongside a vessel or causeway to direct the oarsmen to cease rowing with the stroke about to be completed, and lay in their oars. Way enough! is strictly merely an order to cease rowing and should be

followed by the order "Oars!" if the men are to be directed to lay in their oars. In practice, however, the orders "Way enough!" and "Oars !" have an identical effect upon a smart yacht's crew when bringing a boat alongside, i.e., simply to cause the crew to cease rowing, throw up their oars, and lay them in. This order generally follows the order "In bow!" - - which see. (See also "Oars.")

Ways.--

Balks of timber arranged in a kind of chute to haul vessels upon or to launch them off.

Wear.--

To bring the wind on the other side of a vessel by putting the helm up so that the vessel's head goes round away from the wind instead of towards the wind as in tacking. Used on square rigged vessels instead of gybe.

Weather.--

The windward or "breezy" side of an object. The side on which the "weather" is felt; not to leeward. To weather is to pass on the windward side of an object. In cross tacking the vessel "weathers" another that crosses ahead of her. To weather on another vessel is to gain on her in a windward direction by holding a better wind than she does -- to eat her out of the wind.

Weather Board.--

On the weather side of a vessel. Sometimes in working to windward by a long board and a short one the short one is called "weather board."

Weather Boards.--

Pieces of boards fitted over open ports to turn water or rain off.

Weather Cloth.--

The cloth in a sail next the luff. The "weather" leach of a sail is the luff.

Weather Cloths.--

Pieces of canvas fitted on ridge ropes and stanchions of yachts above the bulwarks ; also the tarpaulins used to cover the hammocks when stowed in the nettings.

Weather Gauge.--

The condition of a vessel that is to windward of another one. In slang, to possess an advantage.

Weather Helm.--

The helm or tiller hauled to windward when a vessel owing to too much after sail has an inclination to fly up in the wind. If the centre of effort of the sails is much abaft the centre of lateral resistance, a vessel will require weather helm to keep her out of the wind. The tendency to fly up in the wind can be remedied by reducing the after sail, or setting more head sail, or by easing the main sheet. However, all vessels should carry a little weather helm. (The contrary to "Lee Helm," which see.) It has been frequently argued that the effect of the water pressure on the rudder when the helm is to windward (that is the rudder to leeward), is to press the vessel bodily to windward, and no doubt there is some truth in this, although the influence of the rudder in this respect could be only small.

Weathering.--

A relative term used in sailing to define the action of one vessel which is eating to windward of another, thus, if a vessel is said to be weathering on another she is eating her out of the wind, or closing up to her from the leeward, or departing from her in a windward direction. Weathering an object is passing on its windward side.

Weatherliness.-- See "Weatherly."

Weatherly.--

The quality of hanging to windward well or holding a good wind. This term is often improperly used to denote good behaviour in a sea way or in bad weather.

Weather Lurch.--

A weather roll or a roll to windward. In running with the main boom well off, the boom should be always secured with a guy, or it may fall to the opposite side during a weather roll, and cause some damage.

Weather Tide, or Weather-going Tide.--

The tide which makes to windward or against the wind. (See "Lee-going tide.")

Wedges of Immersion and Emersion.-- See "Immersed."

Wedging Up.--

Lifting a vessel by driving wedges under her keel to take her weight off the building blocks before launching.

Weepings.--

The exudations of damp or water through the seams or cracks of planks, &c.

Weigh.-- To raise a thing, as weighing the anchor. (See "Underway.")

Weight.--

Weight of Metal Plates in Pounds per Square Foot.

[]

Weight of Chains.

[]

Well.--

A sunken part of the deck aft, termed cockpit sometimes. In small vessels there is usually a well aft in which the steersman sits ; the cabin of a small boat is usually entered from the well. The cabin of most American yachts, large or small, is usually entered from the cockpit aft.

Well That! Well There!--An order to cease hauling and belay.

Wexford Flat Bottom Boats.--

These boats are built for the herring fishery, and are generally termed "cots." The fishing season lasts from about the middle of October to Christmas, and very often the boats are not put into the water for the rest of the year.

They are suitable to any coast without quays or shelter, and where there is often a heavy surf, making it necessary to haul boats above high-water mark every time they are used.

FIG 112.

The beam of the boat, which is of the larger sort, is about one fourth of its length, say 6ft. beam to 24ft. in length, built of the undermentioned woods, viz.: the bottom and the beams of either white or yellow pine, the strakes of yellow pine, and the stem and stern posts, and the timbers of elm grown in the country.

The accompanying sketch (Fig. 112) shows a boat turned over on its side exhibiting the bottom.

The bottom boards are of wood, not less than an inch and a half thick; they are laid down on heavy pieces of squared wood, and the elm timbers, which are sawn out of wood having the necessary bend, so as to reach from a few inches beyond the centre of the bottom to the top of the gunwale, are about two inches square -- they cross one another, the bottom boards are then pegged to these timbers by driving pegs three-quarters of an inch thick and some 8in. in length through the timbers and boards ; the ends are left to be cut off after the boat has been finished and turned over. These pegs are secured by cutting out a wedge from the lower end with a chisel, and then driving a wedge into the place from which it has been cut, thus filling the peg in the hole more tightly. No nails are used for the bottom except to attach the short piece of keel at the stern, say four feet; and the heads of these nails are sunk in the keel. The wooden pegs never move, and wear evenly with the bottom; breadth at bottom, 4.5 ft. The stem and stern are alike, no transom being required. The end of a short keel extends some two inches beyond the bottom of the sternpost to protect the rudder. The stem and stern posts are morticed for the ends of the bottom boards, and, as it is well to have them strong, there is a good lot of dead wood.

FIG 113.

The first strake is three-quarters of an inch thick, and often an inch; but before fastening this on the beam of wood under the centre of the boat is either removed or sunk in the ground, say, three inches, and heavy weights of stones usually are placed on the bottom, near the centre, to bend the bottom boards, as it is considered that they do not row or sail so well on quite an even bottom.

The rest of the strakes are half an inch thick, and fastened on both to the timbers and themselves with iron nails, galvanised if procurable.

Twelve-penny nails are used to fix to the bottom boards and timbers, and six-penny nails to the strakes. Of course these boats are all clincher built, and are rather heavy, weighing three and a half or four hundredweight. They require four men generally to run them down and haul them up upon rollers. These are some 6in. in diameter if the sand is heavy. Long boards are placed under the rollers. The sails are usually two or three sprit sails (see Fig. 113), and sometimes a foresail. No keel boats are ever used, owing to the great advantage of a flat bottom for grounding.

Accidents seldom take place with these boats, but, like all shallow boats, they require very skilful handling.

The centre-board now remains to be described. It runs in a frame or sheath formed for it in the centre of the boat. These, when let down, draw about 3ft. below the bottom of the boat, and are about 2ft. broad. The board is about 1in. thick; no iron is used for them. When they near the shore they are hauled up. They are not required when the sails are not used. The depth of these boats is about 2ft. to the top of the gunwale, and they generally pull four oars. They are too broad for one man to scull. Of course they will not carry so much sail as a keel boat, nor will they sail so near the wind.

The ballast used consists of large stones. The fishermen at Wexford are a bold and hardy race, and they need be, for herring fishing on a December night is desperately cold work; but it is their harvest of the sea, and when four men can take from twelve to twenty mace of herrings in the night (the mace is 500, and worth from 15s to 20s.), it pays them well. It is a pretty sight to see forty or fifty boats out of a night; but it is very cold work, and none but those brought up to it could stand it.

Wheel.--

Used to give motion to the rudder by chains which pass over a barrel and lead through blocks to the tiller. When the tiller points forward the chain is put over the barrel first; when the tiller points aft the chain is put under the barrel first.

Where Away ?--

When an object is sighted, a question as to its bearing.

Wherry.--

A small boat for rowing and sailing, usual rig a spritsail, main, and mizen, and foresail. (French "Houari.")

Whip.-- A purchase consisting of one single block. A pennant vane.

Whip, To.-- To bind the ends of rope with twine to prevent their fraying.

Whiskers.-- Used to spread bowsprit shrouds.

Whistling for Wind.--

In calms or light winds sailors sometimes amuse themselves by whistling in the hope that it will bring a breeze. They also scratch the boom for a breeze, or to make the vessel go faster. During heavy weather the superstition is all the other way, and no whistling or boom scratching is permitted.

Whole Sail Strength.--

A wind of such strength that a yacht can just carry all her canvas, including her "best" (not balloonier) gaff topsail, to windward.

Wicked-looking.-- Said of a craft which has a smart, raking appearance.

Winch.--

A drum with crank handles, pawl, &c., fitted to the mast to get in the topsail sheet, &c.

Winch Roller Reefing Gear.--

Rolling the foot of a sail round the boom is an old invention, just as reefing square sails round the yards is, and pretty good proof of the value of the boom roller in short handed vessels is the fact that it is generally used by the pilots about the Isle of Wight, &c. They revolve the boom by the means of an endless chain on sheaves, and it answers very well; but various other plans are in use, and those invented by Mr. Baden-Powell, Mr. Roger Turner, and Mr. Linton Hope are highly recommended by yachtsmen who have seen them in use. Mr Baden-Powell's gear is shown in the chapter on canoeing.

FIG 114

Turner's gear (see Fig. 114) is very largely used ; the sole manufacturers are W. Delf and Son, Beccles, Suffolk. It is very inexpensive, the cost being as follows :-  
[TABLE]

Special prices are given for larger sizes.

In ordering the gear owners should mention whether A, B, C, or D is required, and also give the exact diameter of each end of the boom. One claw-ring (charged extra, as above) will be sent with each set of gear, unless otherwise specified.

Mr. Hope's gear is made by Messrs. Woodnutt, of St. Helens, Isle of Wight, and has been fitted to vessels up to 90 tons It is illustrated on Plate LXXIV.

Mr. F. D. Marshall, writing of his gear, says : "After having tried the roller reefing arrangement, as depicted on the accompanying scale drawing (quarter full size), for three years, it can be confidently recommended to fellow yachtsmen as suitable for yachts ranging from 18ft. to 42ft. rating. The facility with which any number of reefs may be taken in or shaken out is astonishing, and there is the further recommendation that the sail is not pulled out of shape by the reef earings, but rolled smoothly and compactly round the boom. It has been urged that the mainsheet ring will chafe the sail when reefed, as the friction will be great, but on carefully examining the Lady Nancy's mainsail after three years of wear no sign of chafing is to be noticed. The mainsheet ring at the extremities must, of course, be well padded with soft. canvas, and, if this is carefully done, the chafing is reduced to a minimum.

"It is not within the writer's knowledge who first invented this arrangement, but the Lady Nancy's, in the first instance, was made by Herr Heidtmann, of Hamburgh, but was improved and perfected by the writer. Previously he had seen a similar arrangement on some Hamburgh boats, and it was the facility with which these boats reefed that induced the writer to give the system a trial.

"The drawing (see Plate LXXIII) is sufficiently clear, and little explanation is necessary. The apparatus, however, must be very conscientiously and strongly made of the toughest (preferably Swedish) iron.

"The main boom must be quite parallel from end to end.

"The eyebolt, for fastening the tack of the sail to the boom, must be almost flush with the boom, otherwise the eye will cause an indentation in the sail when rolled. A split and hinged eyebolt is the best to adopt.

"The main boom has a groove along its upper side, to take the foot rope of mainsail. This is necessary, to cause the foot to roll evenly around the boom.

"The sail must be laced to the boom.

"The topping lift is attached to a loose swivel plate, to prevent the lift rolling round the boom as the latter is revolved.

"The mainsheet ring is made of a grooved piece of iron (the grooving is for strength), to which is riveted the outside bar of round iron. The ring must be of such strength that it cannot spring open in heavy weather and allow the main boom to get adrift.

"The extremities of the ring are padded with soft canvas. Do not pad with leather, as this will stain the mainsail.

"Modus Operandi.-- It is always advisable to hoist the mainsail before reefing, if at moorings, as the sail rolls around the boom tighter and snugger, although the reefing may be accomplished with the sail on deck, if care be taken to stretch the sail along the boom as latter is revolved. Having sail properly hoisted and peak well set up proceed to reef as follows: Slack throat halyard until hook (D) is free from traveller band (E). Untoggle as many mast beeps according to the quantity of sail to be rolled up. Have a piece of gas or steam tube handy to ship on handle of ratchet, this lengthening of handle gives more leverage and power. Work the ratchet, and roll the sail around boom, so that boom travels up the mast as high as pen can reach, and work the

ratchet (assuming the sail is to be so much shortened). While the sail is being rolled up, slack mainsheet as necessary, remembering to keep sheet as taut as possible. Overhaul topping lift as main boom goes skywards. Lower away on throat and peak halyards until boom is down in place. If sail is to be further shortened, proceed as before. When sufficient has been rolled up, lower away until hook (D) can grip the hand (E). Set up on throat and peak, overhaul topping lift, and all is finished.

"NOTE.-- Instead of reefing the sail up the mast as described the sail may be rolled down by simply slacking the main and peak halyards as the sail is taken up by the revolving boom. The topping lift will take the weight of the boom. Experience, however, has shown that a snugger job is made by rolling the sail up the mast and lowering boom afterwards."

Wind Bound.-- See "Bound."

Windfall.-- An unexpected advantage or acquisition of treasure.

Wind Jamming.--

A new-fashioned slang term for sailing by the wind. Wind jammers, sailing ships.

Windlass.--

A horizontal barrel, revolved by cranks or handspikes, for getting the anchor. In yachts a small neat capstan is now generally used.

Wind Marks.--

The marks or assumed marks on sheets to which they are hauled in for sailing by the wind.

Winds.--

The following arrangement and description of winds has been generally adopted:

[TABLE]

Windsail.-- A canvas shaft or tube for conveying air to or from below deck.

Wing and Wing.--

A schooner before the wind with the main sail off the lee quarter, and the foresail boomed out to windward. Some times termed goose winged. (See "Goose Wing.")

Wings of a Ship.-- That part of a ship at the sides near the load line.

Wink.--

A west country term for a kind of winch used in the bow of a boat by fishermen to raise the anchor. (See "Anchor.")

Winning Flag or Crowing Flag.--

The racing flag which is hoisted after a race to denote that a yacht has won a prize. It is hoisted immediately below and on the same halyards as the burgee. When a regatta is concluded a yacht hoists under her burgee as many racing flags as she has won prizes at the regatta. On arriving at a port, fresh from a regatta where she has been successful, she, in a like manner, hoists as many racing flags as she has won prizes; and if she calls at her own port she hoists as many flags as she has won prizes up to date. When she has sailed her last match she hoists as many racing flags as she has won prizes during the season. These are also hoisted when she returns to her own port. For a first prize, the racing flag should be close up under the burgee; about 1/3 down the mast for a second; and 1/2 or 2/3 down for a third, or different coloured flags may be used to denote second and third prizes.

Wire Rope, Weight of.--

The weight, elasticity, and strength of iron and steel wire rope and hemp rope vary very considerably, according to the quality of the iron, steel, or hemp used in its manufacture. The following table of the weight of different sizes of rope, iron, hemp, &c. was compiled by the well-known civil engineer Mr. G.L. Molesworth:

[TABLE]

Manilla rope, if not dried up and chafed, is slightly stronger size for size than hemp.

Wiring.--

A stringer or ledge running fore and aft in a boat to support the thwarts. (See "Clyde Sailing Boats.") Called also "Risings."

Wisby Laws.--

A code of maritime laws which, with the rules of Oleron, for many centuries formed the basis of all regulations relating to seamen and ships. Wisby is a seaport of Gothland in the Baltic, and a port famous so long back as the 13th century.

Woof.-- The threads or texture of any kind of cloth or canvas, &c.

Work.--

A vessel is said to work when the different parts of her frame, planking, &c., are not securely bound together so that the various parts relative to each other alter their positions.

Working to Windward.--

Proceeding by short tacks. Beating to windward. To work up to a vessel is to get nearer to her or catch her whilst beating to windward.

Wrinkle.--

Something worth knowing; a piece of valuable experience. Wrinkles in copper are generally a sign of severe strains in vessels, or that the vessel "works," or that her frame and plank shifts when she is under way in a sea. Sometimes wrinkles will show when a vessel is hauled up to dry and disappear when she is put in the water as the plank swells.

Y.

Yacht.--

Generally a "yacht" is any vessel which is permanently fitted out and used by her owner for pleasure. The word is of Dutch origin. In the time of Elizabeth a "yacht" was kept for the use of the Sovereign, and since that date every succeeding monarch has had more than one yacht.

About the year 1900 there was considerable discussion as to whether any pleasure craft, privately owned, could be justly described as a yacht and Mr R. E. Froude defined "a racing yacht" as such a vessel "combining habitability with speed." This appears a good general definition, for should the vessel be constructed so as to be merely a fast

vessel but uninhabitable, she ceases to be a gentle. man's yacht in the true sense of the word, but is more truly described as a "sailing machine." On the other hand, if the craft is nothing more than a luxurious cruiser lacking in speed, she cannot be properly described as a "racing yacht."

Schooners (see "Schooner") are supposed to have been evolved out of the old pinks, which were referred to be Spenser in his "Faerie Queene." They were certainly common among the many different vessels in the British navy during the reign of the Stuarts, and were chiefly remarkable for their sharp sterns. (In the "Navy List" for 1644 are the names of the Paramour pink and Talbot pink.) They were of Dutch origin; but they were certainly used by the Spaniards in the Mediterranean, and differed from the xebecs by having flat instead of sharp floors. However, according to the researches of Admiral Smythe, a yacht existed in England in the time of the Plantagenets under the name of "esnecca." This name, esnecca, appears to have been dropped by the English in the reign of Charles II, when that Monarch was presented by the Dutch with a "yacht" named Mary, in the year 1660. Charles II became very fond of yachting; and besides many yachts which were designed for him by Sir Phineas Pett, he is credited with having desired one for himself, named Jamaie, which was built at Lambeth.

The Jamaie was matched against a small Dutch yacht named Bezan in 1662 from Greenwich to Gravesend and back, and the King was gratified to find his vessel leading by three miles at the finish, although the little Dutch craft led by half a mile beating down, "the wind being contrary, but saved his stakes in returning, his majesty sometimes steering himself," according to Mr. Pepys. This is probably the first account of a yacht match, and the first record of an amateur helmsman. These yachts were, no doubt, sloop rigged, but yachts did not owe their origin to Charles II; for, as before said, the Plantagenets had their Royal yachts, and one later on, often referred to, the Rat of White, was built by Queen Elizabeth at Cowes. It is scarcely possible, therefore, that the Dutch can claim a greater antiquity for yachts than the English; and, indeed, so far as "yachting," as now understood, goes, there appears to be no doubt that it originated with Charles II, whose frequent yacht matches with his brother, the Duke of York, and his constant changing of his vessels, are duly recorded by Pepys.

The following is a list of the yachts built by Charles II:

Name.	Where built.	Date.	Length.
Charlotte.....	Woolwich (Pett) .....	1677	61-0
Cleveland .....	Portsmouth (Deane) .....	1671	53-4
Fubbs .....	Greenwich (Pett) .....	1682	63-0
Henrietta .....	Woolwich (Shish) .....	1679	65-0
Jamaie.....	Lambeth (Charles II.).....	1662	31-0
Isabella .....	Greenwich (Pett) .....	1683	60-0
Isle of Wight.....	Portsmouth (Fuzer) .....	1673	31-0
Katherine .....	Chatham (Pett).....	1674	56-0
Kitchen .....	Rotherhithe (Castle) .....	1674	56-0
Mary.....	Chatham (Pett).....	1677	66-6
Merlin .....	Rotherhithe (Shish).....	1666	53-0
Monmouth .....	Rotherhithe (Castle) .....	1666	52-0
Navy.....	Portsmouth (Deane) .....	1673	48-0
Queenborough .....	Chatham (Pett).....	1671	31-6

American yachting dates no farther back than the commencement of the last century. Mr. J. C. Stevens, when he resigned the commodoreship of the New York Yacht Club in 1855, wrote a letter to the members, in which he left one to infer that American yachting originated with him; and he went on to say, "I have been a yacht owner for more than half a century, commencing in 1802 as builder, cabin boy, cook, and all the hands of the celebrated yacht Diver, 9ft. long, 3ft. wide, and 3ft. deep, ending as commodore of a squadron whose flagship, the Maria, carries her pennant one hundred and fifty feet above the surface of the sea" ; and her bottom, he might have added, four feet under the surface of the sea, as truly she was four feet in the water and one hundred and fifty in the air. The first American yacht club was the "New York Yacht Club," organised in 1844.

Various yachts were built at Cowes during the eighteenth century, but to Cork apparently belongs the honour of originating yachting as a national pastime. In 1720 the "Cork Harbour Water Club" was established; but the yachts were small; and not until about 1783 did any private person build a yacht of any considerable size. This yacht was built at Itchen for the Duke of Richmond, and between that date and 1812 various yachts were built at Cowes, Fishbourne, and Southampton.

In 1810 a club was started at Cowes (the club seal of the Royal Yacht Squadron bears date 1812), and thenceforward yachting made very rapid strides. In 1812 there were probably fifty yachts afloat, and these belonged exclusively to noblemen or to country gentlemen. In 1850 the number of yachts reached 500, and the pastime of cruising and racing had taken a firm hold of all branches of the community. From this time forward the growth in the number of yachts became very rapid, as will be gleaned from the tables which follow. Until the present century the number of sailing yachts and their tonnage continued to increase. In 1899 there were 5161 sailing yachts in the world. In 1904 there were 5335. In 1912 the number had dropped to 4980. The reason for this was that hundreds of small sailing yachts between the years 1904 and 1912 were fitted with oil motors and for this reason are not included in the figures as sailing vessels.

#### NUMBER OF YACHTS.

In 1912 there were 2746 steam and motor yachts and 4980 sailing yachts; 1590 yachts fitted with motors are included in the number of steamers in 1912.

#### TONNAGE.

[TABLE]

1850.	1864.	1878.	1891.	1901.	1912.
22,141	39,485	89,420	206,154	271,576	373,575

#### YACHTS OWNED IN VARIOUS COUNTRIES.

The tables prove that in the world the sport of yachting is ever on the increase. The number of yachts in the world has steadily increased in the last twenty years.

[Note that only the first of several tables is in this first draft.]

NUMBER OF YACHTS.

		1850.	1878.	1912.
	Under 10 tons	54	460	3957
10 tons, and not exceeding	19	127	403	1575
20	29	85	180	630
30	39	59	96	288
40	50	41	89	221
50	60	27	50	119
60	80	40	88	170
80	100	15	60	89
100	150	33	87	103
150	200	9	48	144
Above	200	10	40	430
Steam Yachts		3	282	*
Total		503	1883	7726

\* The above figures include steamers.

In 1912 there were 2746 steam and motor yachts and 4980 sailing yachts; 1590 yachts fitted with motors are included in the number of steamers in 1912.

TONNAGE.

	1850.	1864.	1878.
Gross Tonnage.....	22,141	39,485	89,420
	1891.	1901.	1912.
Gross Tonnage.....	206,184	271,576	373,575

In the last decade, however, this increase in the fleet has been due to the growth of maritime sport in foreign nations. The United Kingdom has reached its high water mark. In Germany in 1901 there were 470

yachts, and in France in 1901 there were 577. In 1912 Germany nearly doubled her number of yachts, having 900, but in France there was a decrease, being only 546.

The following table shows at a glance how the increase has arisen in the foreign fleet:

<b>Year.</b>	<b>Yachts in the World.</b>	<b>Owned in the United Kingdom.</b>	<b>Built in the United Kingdom.</b>
1891	5015	3216	3583
1895	6206	3741	4210
1899	6581	4007	4491
1904	6837	3982	4496
1912	7726	3962	4522

The figures in the last column prove that the growth of yachting in foreign countries continues to benefit British yacht builders and designers. In 1891 England had built over 70 percent of the world's yachts. She has still built 58.3 percent, notwithstanding the fact that from 1891 to 1912 the number of foreign owned yachts has increased by 48 percent.

#### Yacht Club.--

A club formed with the ostensible object of associating yacht owners, and promoting a fondness for the sea. (See "Recognised Yacht Club.")

#### Yachting Etiquette.--

British yacht owners follow the regulations of the Royal Navy as far as possible in saluting, &c. (See "Saluting"; see also the "King's Regulations for the Royal Navy," which can be obtained from Messrs. Harrison and Sons, price 2s. 6d.) The New York Yacht Club has drawn up the following complete set of rules of "Yacht Routine" for the use of its members. Although those relating to flag signals, "meals," "guest flag," &c., are not in common use in British waters, the general Routine set forth is in accordance with time honoured custom and drafted with commendable accuracy.

#### YACHT ROUTINE.

##### SECTION I. DISTINGUISHING FLAGS AND SIGNALS.

1. IN COMMISSION.-- The distinguishing marks of a yacht in commission, other than the yacht ensign, are a burgee and flag or private signal. On sailing yachts, when under way, the yacht ensign should be displayed at the main peak of single and of two-masted yachts, at the mizzen peak of three-masted yachts and at the mizzen gaff of ketches and yawls. Steam or other power yachts should fly the yacht ensign from a staff at the stern. When at anchor, the yacht ensign should be displayed from a staff at the stern of all yachts, other than ketches and yawls, where it should be displayed at the mizzen truck. On a yacht with two or more masts, the burgee is flown at the fore truck and the private signal at the main. When under way, single-masted yachts, other than ketches and yawls, should fly the owner's private signal at the main truck; when at anchor, the burgee. On ketches and yawls, the private signal should be flown at the mizzen and the burgee at the main.

On a mastless yacht, the distinguishing flag is flown at the loftiest or most conspicuous heist, but the burgee and private signal should never be flown on the same hoist. The distinguishing flag of a Flag Officer is always flown at the main both day and night. The Club burgee and private signal may be "made up and mastheaded previous to colours and "broken out" when the signal for colours is given, but the ensign should never be "made up" and "broken out."

2. Distinguishing SIGNALS, PENNANTS, &c.-- Distinguishing signals, pennants, &c., will be found described in the By-Laws, and in the coloured plates in the N.Y.Y.C. Book of Rules.

3. JACK.-- When prescribed by routine a yacht should fly the National Union Jack.

4. ABSENT SIGNAL.-- The absent signal is a rectangular blue flag by day and a blue light by night.

5. OWNER'S MEAL SIGNAL.-- The owner's meal signal is a rectangular white flag by day and a white light by night.

6. GUEST FLAG.-- The guest flag is a rectangular blue flag (same as absent signal) with a white stripe running diagonally across from head.

7. CREW'S MEAL SIGNAL.-- The crew's meal signal is a red pennant. The absent flag and meal signals are not considered "colours."

8. CLUB LAUNCH'S SIGNAL.-- To call the Club launch the letter "T" should be hoisted from daylight until dark, and a red light should be shown at night. Three blasts on the fog horn may also be sounded.

## SECTION II. COLOURS, &c.

1. RANK.-- In making colours, salutes, &c. the yacht always represents the rank of its owner, whether he be aboard or not.
2. FLAG OFFICERS.-- A Flag Officer should always fly his flag while his yacht is in commission, except when he is on a cruise with another club of which he is a member.
3. IN COMMISSION.-- A yacht in commission should make colours at 8 A.M. and haul down at sunset taking time from the Senior Officer present.
4. IN COMPANY WITH A U.S. VESSEL, &c.-- When in company with a vessel of the United States Navy, or at anchor off a United States Naval Station, the Senior Officer should give the time for colours with such vessel or station.
5. OFF THE ANCHORAGE OF ANOTHER CLUB.-- The time for colours in the home anchorage of another club should be taken from its Senior Officer present, subject to paragraph 4.
6. ENTERING PORT BEFORE OR AFTER COLOURS.-- When a yacht comes to anchor, or gets under way, her colours should be hoisted, although the time is earlier or later than that specified in paragraph 3, provided there be sufficient light for the colours to be recognised. On entering harbour under such circumstances, the colours should be hauled down immediately after anchoring. At other times, all yachts, except Flagships, should fly, between sunset and morning colours, a night pennant at the main.
7. ENSIGN DISPLAYED AT SEA.-- Unless there are good reasons to the contrary, the ensign should, when at sea, be displayed on falling in with ships of war, and on approaching lightships, lighthouses, signal stations, military posts, or towns.
8. HALF-MAST COLOURS.-- On occasions of national mourning, the ensign only should be half masted. On the death of a yacht owner, the burgee and his private signal, but not the ensign, should be half masted. When mourning is ordered for the death of a member, the burgee only should be half masted. This rule should apply to a yacht both at anchor and under way, and to the Club House.
9. COLOURS; HOW HALF MASTED.-- In half masting colours they should, if not previously hoisted, be first mastheaded and then lowered to half mast. Before lowering from half mast, colours should first be

mastheaded and then lowered. When the ensign is at half mast, it should be mastheaded before making or returning a salute.

10. THE JACK; WHEN DISPLAYED.-- The Jack should be set on Sundays, on all ceremonial occasions, and when the Senior Officer present has it set. When displayed, the Jack should be set on a staff at the bow. The Jack should not be set when awnings are housed, when wash clothes are triced up, or when under way, except as provided in Section VII., paragraph 4 ("Dressing Ship.")

11. UNOFFICIAL PRESENCE OF FLAG OFFICER.-- A Flag Officer embarked in a boat, not flying his distinctive flag, should be considered as present in an unofficial capacity.

12. The burgee and private signal should never be flown on the same hoist.

13. The time for sunset as published in the Club Book shall be official.

### SECTION III. ABSENT AND MEAL SIGNALS.

1. ABSENT SIGNAL.-- When an owner is not on board, his yacht should hoist the absent signal at the starboard main spreader. An absent signal does not exempt a yacht from the observance of the Club routine.

2. OWNER'S MEAL SIGNAL.-- During an owner's meal hours his yacht should hoist the specified signal at the starboard main spreader.

3. GUEST FLAG.-- Should the owner be absent, the guest flag may be hoisted.

4. CREW'S MEAL SIGNAL.-- During the crew's meal hours the specified signal should be flown at the port fore spreader of a yacht with two or more masts, and at the port spreader of single-masted yachts.

5. SQUARE-RIGGED YACHTS.-- In a square rigged yacht, the owner's absent or meal signals should be hoisted at the starboard main yardarm, and the crew's meal signal at the port fore yardarm.

6. MEAL SIGNALS UNDER WAY.-- Meal signals may be hoisted when the colours are not displayed, but never when under way.

7. COMMITTEE BOAT.-- On a yacht acting as Committee boat, the Regatta Committee flag should be hoisted at the main truck underneath the private signal or Flag Officer's pennant.

### SECTION IV. LIGHTS.

1. COMMODORE.-- From sunset until sunrise, the Commodore should show two blue lights hung vertically at the stern.

2. VICE-COMMODORE.-- The Vice-Commodore should show lights, as provided for the Commodore, substituting red lights for blue.
3. REAR COMMODORE.-- The Rear Commodore should show lights, as provided for the Commodore, substituting white lights for blue.
4. ABSENT SIGNAL.-- When a yacht is at anchor amid the owner is absent, a blue light should after dark be shown at the starboard main spreader in a fore-and-aft rigged yacht and at the starboard main yardarm in a square-rigged yacht.
5. SEARCHLIGHTS.-- A search light should be carefully handled, and its beam should never be thrown on the pilot house or on the helmsman of a yacht or boat under way.
6. BOAT BOOMS.-- Boat booms should be rigged in at night, but if rigged out, a white light should be showing at the boom end.
7. All boats riding by a stern line should show a white light.

#### SECTION V. GUNS.

Guns should be used only for "colours," for drawing attention to signals, and as hereinafter provided.

#### SECTION VI. SALUTES.

1. STEAM WHISTLES.-- Steam whistles should never be used in saluting.
2. GUNS.-- Gun salutes should be avoided as much as possible.
3. ENSIGNS.-- All salutes, except as hereinafter provided, should be made by dipping the ensign once.
4. VESSELS OF THE U.S. NAVY.-- Vessels of the United States Navy should be saluted by dipping the ensign once.
5. COMMODORE.-- On all occasions, except as provided in section IX, paragraph 1 (Annual Cruise), the Commodore should, on coming to anchor, be saluted with one gun by the officer in command of the anchorage. This salute should be answered in kind by the Commodore. All other yachts present should dip the ensign once (see Section VIII.)
6. Junior FLAG OFFICER.-- A Junior Flag Officer should, when coming to anchor, be saluted by the officer in command of the anchorage by dipping the ensign once, unless the latter be senior in rank, in which case the junior should salute first.

7. CAPTAINS.-- A Captain should salute the Senior Officer present by dipping the ensign once, either before or when the yacht comes to anchor.
8. PASSING.-- The salute for passing yachts is one dip of the ensign.
9. COMMITTEE BOAT.-- A Committee Boat should neither salute nor be saluted during a race.
10. SALUTING ANOTHER CLUB.-- On arriving at the home anchorage of another club, a yacht should, on coming to anchor, salute by dipping the ensign once. After the tender of Civilities has been received, the owner of the entering yacht should visit the officer in command of the anchorage.
11. DURING OFFICIAL VISIT OF A FLAG OFFICER.-- When a Flag Officer makes an official visit, his flag, if senior, should be hoisted at the fore of a yacht with two or more masts, and at the main of a single masted yacht, the burgee being hauled down. The Flag Officer's flag should be kept flying while he remains on board, and when leaving and well clear of the yacht, one gun should be fired and his flag be hauled down.
12. SALUTING QUARTERDECK.-- When a yacht is boarded or left, the quarterdeck should be saluted by touching the cap.
13. DISTINGUISHED VISITORS.-- When a distinguished visitor of another nationality visits a yacht, his national ensign should, if possible, be displayed at the fore, on a yacht with two or more masts; and at the main, on a single-masted yacht, the Club burgee being hauled down.
14. PERSONAL FLAGS OF OFFICIALS.-- A yacht may display the personal flag of a National State, or Municipal officer, when such an official is on board. This flag should be displayed at the main for the President of the United States, and at the fore for all other officials.

#### SECTION VII. DRESSING SHIP.

1. GENERAL RULE.-- In dressing ship, rectangular flags should alternate with pennants on distance lines whenever possible.
2. DISTINCTIVE FLAGS AND FOREIGN ENSIGNS.-- Flag Officer's flags and burgees should not be used in dressing ship, nor should the ensign of any foreign nation be displayed, except when the dressing is in compliment to such nation. On this occasion the foreign ensign should be displayed at the fore truck. When a yacht is dressed the ensign should be displayed in lowered boats.

3. NATIONAL ANNIVERSARIES.-- On the Fourth of July, and when ordered on other national anniversaries, a yacht in commission, not under way, should, when the weather permits, dress ship at 8 a.m., and remain dressed till sunset. When said anniversaries occur on Sunday, all special ceremonies may be postponed to the following day.
4. On special occasions only, such as marine parades, a steam yacht under way, or sailing yacht under tow, may dress ship.

#### SECTION VIII. OFFICERS IN COMMAND OF ANCHORAGE.

1. DUTIES.-- The Senior Officer present should (except in the home waters of a foreign club) command the anchorage, give the time for colours, make and return salutes, visits, etc.
2. STATION VESSEL.-- His yacht should remain the station vessel until a senior in rank arrives.
3. TRANSFER OF COMMAND.-- When a Senior Officer transfers the command he should fire one gun. This should be answered in kind by the officer assuming command of the anchorage.
4. SHIP'S BELLS.-- Time should always be taken from the Flagship or the Senior Officer's yacht present. If in company with a naval vessel time should be taken from that vessel.

#### SECTION IX. ANNUAL CRUISE.

1. COMMODORE'S SALUTE.-- On joining the Squadron at the rendezvous, the Commodore should, on coming to anchor, be saluted by the officer in command firing one gun, all other yachts present to follow by firing one gun or dipping the ensign once. This salute will be returned by the Commodore firing one gun. Yachts arriving after the Commodore has assumed command should dip the ensign once either on passing the Flagship or on coming to anchor. When the Squadron is disbanded, the Commodore should fire one gun and be answered by the yachts present firing one gun or dipping the ensign once.
2. JOINING OR PARTING COMPANY.-- After joining the Squadron a yacht should request permission before leaving.
3. Gun AND OTHER SIGNALS.-- When with the Squadron guns should not be fired except to call attention to signals, or as provided for in other paragraphs.
4. SQUADRONS PASSING AT SEA.-- When squadrons of different clubs meet at sea, salutes should be exchanged by the Senior Officers alone.

5. SALUTES FROM SINGLE YACHTS.-- Salutes from a single yacht at sea should be answered only by the flagship.

6. BURGERS ON SINGLE-MASTED YACHTS.-- Single-masted yachts, while cruising in Squadron, should display their private signal when under sail, and the Club burgee when at anchor. [no, actually that's "BURGEES"]

#### SECTION X.

HOME WATERS.-- "Home Waters" should be understood to mean all waters from Sandy Hook to Cape Cod, excluding the home anchorages of other recognised yacht clubs.

#### SECTION XI. BOAT SERVICE.

1. PRECEDENCE.-- The order of entering and leaving boats is: Juniors enter first and leave last.

2. BOAT FLAGS.-- When in boats, Flag Officers, the Fleet Captain, and Regatta Committee should fly their distinctive flags, Captains their private signals, and Members the burgee. The flag of the Senior Officer embarked has precedence. When two boats are approaching the same gangway or landing stage Flag Officers should have the right of way.

3. HAILING AND ANSWERING.-- Every boat approaching a yacht at night should be hailed, and this hail should be answered promptly. The answer of the Commodore intending to board his own or another yacht should be "Commodore"; of a Junior Flag Officer, "Flag"; of the Fleet Captain, "Fleet" ; of a Captain, the name of his yacht; of a Member, "Aye, aye" ; of a Visitor, "Visitor" ; of a sailing master or any other yacht officer, "No, no" ; and of a member of the crew, "Hello." Passing boats should answer "Passing."

4. BOAT CREWS.-- Boat crews should be dressed alike and in the prescribed uniform. Neck handkerchiefs should always be worn, knotted in front, and cap ribbons should not be tucked under.

Yacht Racing Association.--

An association of yachtsmen originated in 1875 by Prince Batthyany-Strattman (at that time known as Count Edmund Batthyany), Capt. J. W. Hughes, one time owner of the Vanguard cutter, R.Y.S., and the late Mr. Dixon Kemp. The object was to provide one code of sailing rules for use in all matches, and to decide such disputes as might be referred to the Council of the Association. The Association and Council are

constituted similarly to the Jockey Club.

The Rules of Yacht Racing known as the "Y.R.A. Rules" were formulated by the Association and are acknowledged in British waters as the only recognised code of yacht racing rules for all sizes of yachts.

Since the formation of the International Yacht Racing Union in 1907, the Yacht Racing Association has been the National Authority for Great Britain affiliated to the Union, which comprises all the yachting nations of Europe.

The Union has adopted, practically without alteration, the "Y.R.A. Rules," hence the code has now become recognised throughout Europe.

Yacht Register.--

A book issued annually in May by Lloyd's Register of British and Foreign Shipping, subscription 1£ 1s. Previously to the year 1877 difficulty was experienced in arriving at the age and condition of a yacht, but the "Yacht Register," published by Lloyd's annually since that date, contains all the particulars an intending purchaser need know. Owners will derive benefit from having their yachts surveyed and classed at Lloyd's, and special facilities now exist for making such surveys and assigning characters. The Register contains the following particulars Names of yachts (sail, steam, and motor yachts of all sizes) ; official number, number in the Register; signal letters ; rig; sailmaker's name; registered tonnage, net and gross; Thames tonnage; dimensions (length, breadth, and depth); repairs to yacht, and date thereof; nature of repairs ; class; materials used in her construction ; builder's name; designer's name; date of building; port; port of survey; fastenings; sheathing; description of engines; builders of engines, &c.

So complete is the "Yacht Register" that these headings are given in three languages, English, French, and German. The "Yacht Register" also contains complete lists of yacht and Sailing Clubs, Yacht Club flags, ensigns, and burgees; owners' racing and personal flags; names and addresses of owners of yachts; and names and addresses of builders and designers. A special section of the book, since 1907, has been devoted to the racing yachts built for the International Rating Classes of all countries belonging to the International Yacht Racing Union.

"The Rules and Regulations for Building for Classification of Yacht" and the "Rules for the Building and Classification of Yachts of the International Rating Classes" are two separate volumes forming supplements to the "Yacht Register" -- they are sold separately, price 5s. each. The first-named relates to cruising yachts and all vessels classed "A1," and the second to International racing yachts of the classes of 23 meters and under, which are classed "R." These rules and regulations relate to wood, iron, and composite yachts ; and tables of scantlings, fastenings, &c. are given for each, together with a table for anchors, chains, &c. for sailing yachts and steam yachts. These Volumes are most valuable, and are of great assistance to builders who have little experience of the particular work required in a yacht, as well to the more experienced builders. A yacht can be built of any material and fastened in almost any way an owner or builder may desire, and still she can be admitted with a grade into the book.

Existing yachts can be surveyed, and, if approved, assigned the A1 class for fourteen years, or any other grade, according to their construction, condition, and age. The volumes contain full information as to the manner of having a survey effected. The offices are Lloyd's Register of British and Foreign Shipping, Lloyd's Avenue, Fenchurch Street, E.C. (See also "Lloyd's," "Rules," "A1," and "R.")

Yard.-- A spar used to extend a sail.

Yard Arm.-- The extremities of yards.

Yarn.--

A yarn is generally understood to mean one of the parts of a strand of a rope. The strands of old rope are separated and used as stops for temporarily securing sails when rolled up, &c. A narrative, a tale, a long story, or discourse. (See "Strands.")

Yaw.--

When a vessel's head flies from one direction to another; generally when a vessel does not steer a straight or steady course.

Yawl.--

A two-masted fore-and-aft rigged vessel with the mizen mast stepped in her counter.

Yellow Flag or Yellow Jack.-- The quarantine or fever flag.

Yoke.--

The lower cap on the masthead. It is cut out of solid wood, and either strengthened by an iron plate over the whole of its top, or an iron band round its entire edge. The crosstrees are fitted on the yoke. A yoke is also the crossbar put on the rudderhead of small boats, to which lines, termed yoke lines, are attached for steering.

Z.

Zig-Zag Work.-- Working to windward by short boards.