The Sea-mans grammar... Written by captain John Smith,...

THE SEA-MANS GRAMMAR:

CONTAINING

Moſt plain and eaſie directions, how to Build, Rigge, Yard, and Maſt any Ship whatſoever.

With the plain expoſition of all ſuch termsas are uſed in a Navie and Fight at Sea.

Whereunto is added a Table of the Weight, Charge, Shot, Powder; and the dimenſions of all other appurtenances belonging to all ſorts of great Ordnance.

With divers practicall Experiments in the Art of GUNNERY.

Alſo the Charge and Duty of every Officer in a Ship and their Shares: With the uſe of the *Petty Tally*.

Written by Captain *JOHN SMITH*, ſometimes Governour of *Virginia*, and Admiral of *New England*.

Imprinted at *London*, and are to be ſold by *Andrew Kemb*, at St. *Margarets* Hill in *Southwark*, 1653.

La Grammaire du Matelot
qui enseigne la maniere de
construire, et equiper les
Navires avec l'Exposition des
termes dont on se sert
dans les Arrivées et
ensuite Bats de mer.

To the READER,

And all worthy Adventurers by Sea, and well-wishers to NAVIGATION.

THere hath been much already written concerning the Art of War by Land, bnt nothing concerning the same at Sea; yet perceiving the present occasion to require something of that kinde, I have adventured to bring again to remembrance, those excellent precepts and directions, long since published by Captain *John* Smith, which were almost worne out by time, and herein, if my desire to do good hath transported me beyond my selfe, I intreat your excuse, and take for requitall this bundle of many ages observations; which although they be not so punctually compiled as the Author could have wished, and it may be you expect, yet at present they cannot be much amended; If any will bestow that pains, I shall think him my friend, and honour his endeavours. In the *interim*, accept them as they are, and ponder errours in the balance of good will.

Farewell.

The Contents.

The Expositions of all the most difficult words seldome used but amongst Seamen: where you finde the word in the margine in that break against it; you shall find the exposition so plainly and briefly, that any willing capacity may easily understand them.

THE

The Floore.

Those ground timbers do give the floze of the Ship, being straight, saving at the ends they begin to compasse, and there they are called the Rungheads, and doth direct the Swéepe or Mould of the Fot-hoks and Navell timbers, for there doth begin the compasse and bearing of the Ship, those are skarfed into the ground timbers, which is one piece of wood let into another, or so much wood cut away from the one as from the other, for when any of those timbers are not long enough of themselves, they are skarfed in this manner, to make two or three as one: Those next the Kéele are called the ground Fot-hoks, the other the upper Fot-hoks; but first lay your kéelson over your floze-timbers, which is another long tree like the kéele, and this lying within as the other without, must be fast bound together with strong iron bolts thorow the timbers and all, and on those are all the upper works raised, when the Fot-hoks are skarfed as is said, and well bolted, when they are planked up to the Orlop they make the Ships Howle, and those timbers in generall are called the Ships Ribs, because they represent the carkasse of any thing that hath ribs. The sléepers run before and after on each side the kéelson, on the floz well bolted to the Fot-hoks, which being thus bound do strengthen each other. The Spurkits are the spaces betwixt the timbers alongst the ship side in all parts, but them in Howle below the Sléepers, are broad bords which they take up to cleare the Spurkits, if any thing get betwixt the timbers.

Runghead.
Sweepe.
Mould.
Skarfing.

Foot hooks.
Keelelson.

Howle.
Ribs.
Sleepers.
Spurkits.

The Garbord.
Garbord stark
Rising timbers

The Run.

The Garboard is the first plank next the Kéele on the outside, the Garboard strake is the first seame next the Kéele, your rising timbers are the hoks, or ground timbers and fot-hoks placed on the Kéele, and as they rise by little and little, so doth the run of the Ship from the floze, which is that part of the Ship under water, which comes narrower by degrées from the floze timbers along the sterne post, called the ships way afterward, for according to her run she will steare well or ill, by reason of the quicknesse or slowenesse of the water comming to the Rudder: now all those

Planks. planks under water, as they rise and are joyned one end to another, the fore end is called the But-end in all Ships: but

Butt-ends. in great ships they are commonly most carefully bolted, for if one of those ends should spring, or give way, it would be a great troublesome danger to stop such a leake, the other parts of those planks are made fast with good Trénails and Trun-

Tree nailes. Trunnions. nions of well seasoned timber, thorow the timbers or ribs, but those planks that are fastened into the Ships stem are call-

Whoodings. ed Whodings.

The gathering of those workes upon the Ships quarter under water is called the Tucke, if it lie too low it makes her

The Tucke. have a fat quarter, and hinders the quick passage of the water to the Rudder; if too high, she must be laid out in that part, else she will want bearing for her after workes. The Tran-

Transome. some is a timber lies thwart the stern, betwixt the two fashion pieces, and doth lay out the breadth of the Ship at the

Buttocks. buttockes, which is her breadth from the Tucke upwards, and according thereto her breadth or narrownesse, we say she hath a narrow or broad Buttock: the Fashion pieces before spoken of, are the two outmost timbers on either side the sterne, excepting the Counters. The Ships Rake is so much of her Hull as hangs over both ends of the Keele, so much as is forward is said, she rakes so much forward, and so in like manner aftward: by the Hull is meant, the full bulk or body of a ship without masts or any rigging from the Stem to the Stern: The Rake forward is neere halfe the length of the Keele, and for the Rake aftward about the fore-part of her Rake forward, but the fore Rake is that which gives the Ship good way, and makes her keepe a good winde, but if she have not a full Bow, it will make her pitch her head much into the Sea; if but a small Rake forward, the Sea will meet her so fast upon the Lowes, she will make small way, and if her Stern be upright as it were, she is called Bluffe, or Bluffe-headed. A Ships Billage is the breadth of the floore when she doth lie aground, and Billage water is that which cannot come to the pump, we say also she is bilged, when she strikes on a Rock, an Anchors Flowe, or any thing that it

Rake. The Hull.

Bluffe. Bluffe-headed. Billage.

THE SEA-MANS GRAMMAR:

CHAP. I.

Of Docks, and their definitions.

A Dock is a great pit or pond, or creek by a Harbour side, made convenient to work in, with two great flood-gates built so strong and close, that the Dock may be dry till the ship be built or repaired, and then being opened, let in the water to float and lanch her, and this is called a dry Dock. A dry Dock.

A wet Dock is any place where you may hale in a ship into the oze out of the tides way, where she may dock her selfe. A wet Dock.

A Cradle is a frame of timber, made along a ship, or the side of a Gally by her billioge, for the more ease and safety in lanching, much used in Turkie, Spain, and Italy. A Cradle.

And the stockes are cer- The stockes.

tain

tain framed posts, much of the same nature upon the shore to build a Pinnace, a Catch, a Frigot, or Boat, &c. To those Docks for building belongs their Wood-yards, with Saw-pits and all sorts of timber; but the Masts and Yards are chained together in some greater water to keep them from rotting, and in season: Also a Crab is necessary, which is an Engine of wood of three clawes placed on the ground in the nature of a Capsterne, for the launching of Ships, or healing them into the Dock.

Crab.

CAAP. II.

How to build a ship with the definitions of all the principall names of every part of her principall timbers, also how they are fixed one to another, and the reasons of their use.

The Keele.

THe first and lowest timber in a Ship is the keel, to which is fastened all the rest; this is a great tree or more, hewen to the proportion of her burthen laid by a right line in the bottome of the Dock, or stocks.

The Stem,

At the one end is skarfed into it the Stem, which is a great timber wrought compassing, and all the butt-ends of the planks forwards are fixed to it.

The Sterne.

The Stern post is another great timber, which is let into the keele at the other end somewhat sloping, and from it doth rise the two fashion pieces like a pair of great hornes, to those are fastened all the plankes that reach to the after end of the Ship, but before you use any plankes, they lay the Rungs, called floore timbers, or ground timbers, thwart the keele; thorow those you cut your Limberholes to bring the water to the well for the pumpe, the use of them is when the Ship is built to draw in them a long hair rope, by pulling it from Stern to Stem, to scowre them, and keep them clean from choaking.

The fashion pieces.

The Rungs.

The Limber-holes.

Those

Culvertailed is letting one timber into another, in such sort that they cannot slip out, as the Carling ends are fixed in the beams, and Carlings are certain timbers lieth along the Ship from beam to beam, on those the ledges doe rest, whereunto the planks of the Decks are fastened. The Carling Knées are also timbers comes thwart the Ship from the sides of the Hatches way, betwixt the two Masts, and bears up the Deck on both sides, and on their ends lieth the commings of the Hatches, which are those Timbers and planks which bears them up higher than the Decks, to kéepe the water from running down at the hatches; also they fit Lopeholes in them for the close fights, and they are likewise a great ease for men to stand upright if the Decks be low. The Hatches way is when they are open where the goods are lowered that way right down into the howle, and the Hatches are like Trap dores in the middest of the Decks, before the Main mast, by certain rings, to take up or lay down at your pleasure.

Culvertailed, Carlings.

Carling knees.

Commings.

Loopholes.

Hatches way.

A Scuttle-hatch is a little hatch doth cover a little square hole we call the Scuttle, where but one man alone can go down into the Ship, there are in divers places of the Ship whereby men passe from Deck to Deck, and there is also small Scuttles grated, to give light to them betwixt Decks, and for the smoak of Ordnances to passe away by. The Ramshead is a great block wherein is three shivers into which are passed the halyards, and at the end of it in a hole is reved the ties, and this is only belonging to the fore end main halyard; to this belong the fore Knight, and the main Knight, upon the second Deck sett bolted to the Beames. They are two short thick peces of wood, commonly carved with the head of a man upon them, in those are four shivers apiece, three for the halyards, and one for the top rope to run in: and Knevels are small pieces of wood nailed to the inside of the ship, to belay the Sheats and Racks unto.

A Scuttle.

Ramshead.

The fore Knight, The main Knight.

Knevels.

The Capstaine is a great piece of wood stands upright upon the Deck, abaft the main mast, the foot standing in a step

Capstaine.

upon

upon the lower deck, and is in the nature of a windis, to winde or weigh up the Anchors, Sails, Top-masts, Ordnances, or any thing, it is framed in divers squares, with holes thorow them, thorow which you put your Capstain bars, for as many men as can stand at them to thrust it about, and is called manning the Capstain. The main body of it is called the Spindle. The Whelps are short pieces of wood made fast to it; to keepe the Cable from comming too high in the turning about. The Paul is a short piece of iron made fast to the Deck, resting upon the whelps to keepe the Capstain from recoiling, which is dangerous, but in great Ships they have two, the other standing in the same manner betwixt the fore mast and the main, to heave upon the Ieare rope, and is called the Ieare Capstain, to strain any Rope, or hold off by, when we way anchor, to heave a head, or upon the Viall, which is when an Anchor is in stif ground we cannot weigh it, or the Sea goeth so high the main Capstain cannot purchase in the Cable, then we take a Hawser opening one end, and so puts into it Nippers some seven or eight fadome distant from each other, wherewith we binde the Hawser to the Cable, and so brings it to the Ieare Capstain to heave upon it, and this will purchase more than the main Capstain can. The Viall is fastened together at both ends with an eye or two, with a wall knot, and seased together. A Windas is a square piece of timber like a Role before the fore Castle in small Ships, and forced about with handspikes, for the same use as is the Capstain.

Capstain bars.

The Spindle.
Whelps.

Paul.

Ieare Capstain

The Viall.

A Windas.

The Pump. What are the parts of a Pump you may see in every place, the handle we call the Brake, the Pumps Can is a great Can we power water into Pumps to make it pump. The Daile is a Trough wherein the water doth run over the Docks: But in great Ships they use chained Pumps which will go with more ease, and deliver more water. The Dutch men use a Burre pump by the Ship side, wherein is only a long staffe with a Burre at the ende, like a Gunners Spunge, to pump up the Village water, that by reason of the breadth of the Ships floore cannot come to the Well: In pumping

The Brake.
The Can.
The Daile.

Chained Pumps.

A Bur Pump.

that breaks her Planks or Timbers to spring a Leake.

When you have berthed or brought her up to the planks, which are those thick timbers which goeth fore and aft on each side, whereon doth lie the beams of the first Orlop, which is the first flore to support the planks doth cover the Howle, those are great crosse timbers, that kæpes the Shyps sides asunder, the main beam is ever nert the main mast, where is the Ships greatest breadth, the rest from this is called the first, second, third, fourth, &c. forward or aftward beams. Great ships have a tire of beams under the Orlop whereon lies no deck, and great posts and binders called Riders from them to the Réele in Howle only to strengthen all. But the beams of the Orlop is to be bound at each end with sufficient Knées, which is a cracked piece of wood bowed like a Knée, that binges the beams and fœt-hoks being bolted together, some stand right up and down, some along the Ship, and are used about all the Decks, some sawed or hewed to that proportion, but them which grew naturally to that fashion are the best.

Planks.

Beames.

Orlop.

Riders.

Knees.

Lay the Orlop with good plank, according to her proportion, so level all as may be is the best in a man of Waire, because all the Ports may be of such equall height, so that every Piece may serve any Port, without making any beds or platforms to raise them, but first bring up your work as before to the second Deck or Orlop, and by the way you may cut your number of Port holes according to the greatnesse of your Ship; by them fasten your Ring bolts for the Tackles of your Ordnances you use Ringbolts also for bringing the Planks and Walles to the ship side, and Set bolts for forcing the works and planks together: Clinch bolts are clinched with a riveting hammer for drawing out. But Rag bolts are so jaggered that they cannot be drawn out. Fore lock bolts hath an eye at the end, whereinto a Forelock of iron is driven to kæpe it from starting back. Fend bolts are beat into the outside of a Ship, with the long head to save her sides from galling against other ships. Drive bolts is a long piece of iron to drive out a Trée naile, or any such

Ports.

Beds.

Ring bolts.

Set bolts.

Clinch bolts.

Rag bolts.

Forelock bolts.

Fend bolts.

Drive bolts.

such things, besides divers others so usefull that without them
She was built of Cedar. and long iron spikes and nailes nothing can be well done; yet I have known a ship built, hath sailed to and again over the main Ocean, which had not so much as a nail of iron in her, but onely one bolt in her Keel.

Clamps. Now your risings are above the first Drop as the Clamps are under it, which is long thick planks like them, fore and aft on both sides, under the ends of the Beams and Timbers of the second Deck or Drop, or the third Deck or Drop, or the third Deck which is never called by the name of Drop and yet they are all but Decks; also the half Deck and quarter Deck, whereon the Beams and Timbers bear are called risings. A flush Deck is when from Stem to Stern, it lies upon a right line fore & aft which is the best for a Man of War, both for the men to help and succour one another, as for the using of their arms, or remounting any dismounted Peece, because all the Ports on that Deck are on equall height, which cannot be without beds and much trouble, where the Deck doth camber or lie compassing. To sink a Deck is to lay it lower, to raise a Deck to put it higher, but have a care you so cut your Port holes, one piece lie not right over another for the better bringing them to your mark.

Decks.
A halfe Deck.
A quarter Deck
A flush Deck.
A Cambered Deck
To sink a Deck
To raise a Deck

The half Deck is from the main Mast to the Steerage, and the quarter Deck from that to the Masters Cabin called the Round House, which is the utmost of all, but you must understand all those Works are brought up together, as neere equality as may be from bend to bend, or waile to waile, which are the outmost timbers on the ship sides, and are the chiefe strength of her sides, to which the foot-hooks, beams and knees, are bolted, and are called the first, second, and third Bend; but the chaine waile is a broad timber set out amongst them, a little above where the chaines and shrouds are fastned together, to spread the shrouds the wider, the better to succour the masts. Thus the sides and Decks are wrought till you come at the Gunwaile, which is the upmost waile goeth about the upmost strake or seame of the upmost Deck about the ships waste, & the ships quarter is from the main mast aftward.

Round house
Bend, or waile
Chain waile.
Gunwaile.
The ships quarter gs.

pumping they use to take spels, that is, fresh men to relieve them, and count h to many stroakes they pumpe each watch, whereby they know if the ship be stanch, or tight, or how her leakes increase. The pumpe sucks, is when the water being out, it drawes up nothing but froth and winde. They have also a little Pumpe made of a Cane, a little piece of hollow wood or Latten like an Elder gun, to Pumpe the Beere or Water out of the Caske, for at Sea we use no Taps, and then stave the Caske to make more roome, and packeth the Pipe-staves or boords up as close as may be in other Caske till they use them.

The Pumpe suck.

A bare-Pump.

The Skuppers are little holes close to all the Decks thorow the Ships sides, whereat the water doth runne out when you pumpe or wash the Decks; the Skupper-leathers are nailed over those holes upon the lower Deck to keep out the Sea from comming in, yet give they way for it to runne out: Skupper nailes are little short ones with broad heads, made purposely to naile the Skupper-leathers, and the cotes of Masts and Pumps. The Waist is that part of the Ship betwixt the main Mast and the fore-castle, and the Waist boords are set up in the Ships waist, betwixt the Gun-waile and the waist trees, but they are most used in Boats, set up alongst their sides to keep the Sea from breaking in.

The Skuppers

Skupper-leathers.

Skupper-nails.

The Waist.

Waist-boords.

Waist trees.

There are usually three Ladders in a Ship; the entering Ladder is in the Waist, made formally of wood, and another out of the Gallery made of Ropes to go into the boat by in foule weather, and the third at the Beak-head, made fast over the Boultspret to get upon it, onely used in great Ships.

The entering Ladder.

Gallery Ladder.

Boultspret Ladder.

It were not amisse now to remember the Fore-castle, being as usefull a place as the rest, this is the forepart of the Ship above the Decks over the Bowe, there is a broad Bowe and a narrow bow, so called according to the broadnes or the thinnesse: the Bowe is the broadest part of the Ship before, compassing the Stem to the Louse, which reacheth so farre as the Bulk-head of the Fore-castle extendeth. Against the

The Fore-castle.

Bowe.

Louse.

Cut a feather.

Bowe is the first breach of the Sea, if the Bow be too broad, she will seldome carry a bone in her mouth or cut a feather, that is, to make a some before her: where a well bowed Ship so swiftly pierceth the water, as that it foameth, and in the dark night sparkleth like fire. If the Bowe be too narrow, as before is said, she pitcheth her head into the Sea, so that the meane is the best if her after-way be answerable. The

Hauses.

Hauses are those great round holes before, under the Beakhead, where commonly is used the Castles when you come to an Anchor, the bold or high Hause is the best, for when they lie low in any great sea, they will take in very much water, the which to keep out, they build a circle of planke either abaft or before the maine Mast called the Manger: and a Hause-plug at Sea, now the Fore-castle doth cover all those being built up like a halfe decke, to which is fixed the Beake-head, and the Bow is the Decke abaft the Forecastle, whereon lieth the Bow péces.

Manger.

Prow.

The beakhead.

The Beak-head is without the ship before the fore-Castle, supported by the maine knee, fastened into the stem, all painted and carved as the sterne, and of great use, as well for the grace and countenance of the ship, as a place for men to ease themselves in. To it is fastened the coller of the maine stay, and the fore-tacks there brought aboard; also the standing for rigging and trimming the sprete-saile geare; under the midest of it is the Combe, which is a little péere of wood with two holes in it to bring the fore-tacks aboard. The bits are two great péeces of timber, and the Crospeece goeth thorow them, they are ordinarily placed abaft the Manger in the ships loofe, to belay the Cable thereto when you ride at Anchor: Their lower parts are fastened to the Riders, but the middle part in great ships are bolted to two great beames crosse to the Bowes, and yet in extraordinary stormes we are glad to make fast the Cable to the maine Mast for strengthening of the bits and safeip of the Bowes, which have in great stormes béen torne from the ships. The David is a short peece of timber, at the end whereof in a notch they hang a block in a strap called the

Combe.

Bits.

Crospeece.

David.

Fish-

Fish-block, by which they hale up the flok of the Anchor to the Ships bowe, it is put out betwixt the Cat and the Louse, and to be removed when you please. The Cat is also a short peece of timber aloft right over the Hawse; in the end it hath two shivers in a block, wherein is reeved a Rope, to which is fastened a great hook of Iron, to trice up the Anchor from the Hawse to the top of the fore-castle. Fish-block. Cat.

A Bulks head is like a seeling or a wall of boords thwart the Ship, as the Gun-room, the great Cabin, the bread-room, the quarter Decke, or any other such division: but them which doth make close the fore-castle, and the halfe Decke, the Mariners call the Cubbridge heads, wherein are placed murtherers, and abaft Falcons, Falconets, or Robinits to cleare the Decks fore and aft so well as upon the ships sides, to defend the ship and offend an enemy. Sockets are the holes wherein the pintels of the murderers or fowlers go into. The hollow arching betwixt the lower part of the Gallery and the Transome, is called the lower Counter; the upper Counter is from the Gallery to the arch of the round house, and the brackets are little carved knees to support the Galleries. A Bulkes head. Cubbridge head. Sockets. Low Counter. Upper Counter Brackets.

The Stearage rome, is before the great Cabin, where he that steereth the Ship doth alwayes stand, before him is a square box nailed together with wooden pinnes, called a Bittacle, because iron nailes would attract the Compasse; this is built so close, that the Lamp or Candle only sheweth light to the stearage, and in it alwayes stands the Compasse, which every one knowes is a round box, and in the midst of the bottom a sharp pin called a Centre whereon the Fly doth play, which is a round peece of pice-bord, with a small wyer under it touched with the Load-stone, in the midst of it is a little brasse Cap that doth keep it levell upon the Centre. On the upper part is painted 32. points of the Compasse covered with glasse to keep it from dust, breaking, or the winde; this Box doth hang in two or three brasse circles, so fired they give such way to the moving of the Ship that still the Box will stand steady: there is also a dark Com- The Stearage. Great Cabin. Bittacle. The compasse.

A dark Compaſſe.
A Compaſſe for Variation.
The Travas.

paſſe, and a Compaſſe for the variation, yet they are but as the other, onely the dark Compaſſe hath the points blacke and white, and the other onely touched for the true North and South. Upon the Bittacle is alſo the Travas, which is a litile round bord full of holes upon lines like the Compaſſe, upon which by the removing of a little ſtick they keep an account, how many glaſſes (which are but half hours) they ſteare upon every point. The Whip-ſtaffe is that piece of wood like a ſtrong ſtaffe the Stearſman or Helmeſman hath alwayes in his hand, going through the Rowl, and then made faſt to the Tiller with a Ring.

The Whip-ſtaffe.
The Rowle.

The Tiller.
Rudder.

The Tiller is a ſtrong piece of wood made faſt to the Rudder, which is a great timber ſomewhat like a Planke, made according to the burthen of the ſhip, and hung at the ſterne upon hookes and hinges, they call Pintels and Gudgions, or Rudder-irons. The Tiller playeth in the Gun-roome over the Ordnances by the Whip-ſtaffe; whereby the Rudder is ſo turned to and fro as the Helmeſman pleaſeth, and the Cat holes are over the Ports, right with the Capſtaine as they can, to heave the Ship a sterne by a Cable or a Hauſer called a ſterne-faſt. On each ſide the Stearage-roome are divers Cabins, as alſo in the great Cabin, the quarter Decke, and the round houſe, with many convenient ſeates or Lockers to put any thing in, as in little Cupberts.

Pintels.
Gudgions or Rudder Irons.
The Gun-room.
Ca-bles.
Lockers.
The bread-room.
Cook-room.

The Bread-roome is commonly under the Gun-roome, well dried or plated. The Cook-roome where they dreſſe their victuall may be placed in divers places of the Ship, as ſometimes in the Hould; but that oft ſpoileth the victuall by reaſon of the heat, but commonly in Merchantmen it is the Fore-caſtle, eſpecially being contrived in Furnaces; beſides in chaſe their Sterne is that part of the ſhip they moſt uſe in fight, but in a man of warre they fight moſt with their Prow, and it is very troubleſome to the uſe of his Ordnance, and very dangerous lying over the Powder-roome, ſome doe place it over the Hatches way, but that as the Stewards roome are ever to be contrived according to

Sterne.

to the Ships imp'oyment, &c. Calking is beating Okum into every seame or betwixt Planke and Planke and Okum is old Ropes torn in pieces like Towze Match, or Yarns of Flax, which being close beat into every seame with a calking Iron and a Mallet, which is a hammer of wood and an Iron chissell, being well payed over with hot pitch, doth make her more right than it is possib'e by joyning Planke to Planke. Graving is onely under water, a white mixture of Talow, Sope and Brimstone; or Train-oil, Resin, and Brimstone boiled together, is the best to preserve her calking and make her glib or slippery to passe the water; and when it is decayed by weeds, or Barnacles, which is a kinde of fish like a long red worm, will eat thorow all the Plankes if she be not sheathed, which is as casing the Hull under water with Tar, and Haire, close covered over with thin boards fast nailed to the Hull, which though the Worm pierce, she cannot endure the Tar. Breaming her, is but washing or burning of all the filth with reeds or broom, either in a dry dock or upon her Careene; which is, to make her so light as you may bring her to lie on the one side so much as may be in the calmest water you can, but take heed you overset her not; and this is the best way to Breame Ships of great burthen, or those have but 4 sharp Floores for fear of bruising or oversetting. Parsling is most used upon the Decks and halfe Decks; which is, to take a lisk of Canvas so long as the seam is you would parcell, being first well calked, then powre hot pitch upon it, and it will keep out the water from passing the seams. There remains nothing now as I can remember to the building the Hull of the Ship, nor the definition of her most proper tearmes, but onely seeing the Cabins and such other parts as you please, and to binde an end with all things fitting for the Sea, as you may reade in the Covenants betwixt the Carpenter and the Owner, which are thus.

Calking.
Okum.
Calking Iron.
Paying.
Graving.
Barnacles, or Wormes.
Broming or Breaming.
Careene.
Parsling.

If you would have a ship built of 400 Tuns, she requires a planke of 4 inches: if 300 Tuns, 3 inches: small Ships 2 inches, but none lesse. For clamps, middle bands and sce-

lers,

pers, they be all of six inch planke for binding within. The rest for the sparring up of the works of square three inch planke. Lay the beams of the Drope, if she be 400 Tuns at ten foot deep in howle, and all the beames to be bound with two knees at each end, and a standard knee at every beames end upon the Drope. all the Drope to be laid with square three inch planke, and all the plankes to be tree-nailed to the beames.

Six foot would be between the beames of the Deck and Drope, and ten ports on each side upon the lower Drope, all the binding betweene them should be with three inch or two inch planke, and the upper Decke should be laid with so many beames as are fitting with knees to binde them; laying that Decke with spruce Deal of thirty foot long, the sap cut off, and two inches thick, for it is better then any other.

Then for the Captains Cabben or great Cabben, the Stearage, the half Decke, the Round house, the Fore-castle, and to binde an end with the Capstern and all things fitting for the Sea, the Smiths work, the carving, joyning, and painting excepted, are the principall things I remember to be observed: for a Charter-party betwixt the Merchant, the Master, and the Owner, you have Presidents of all sorts in most Scriveners shops.

CHAP.

CHAP. III.

How to proportion the Masts and Yards for a Ship, by her Beame and Keele.

A Ship over-masted.

WHen a ship is built, she should be masted, wherein is a great deal of experience to be used so well as art; for if you overmast her, either in length or bigneſſe, she will lie too much down by a winde, and labour too much a hull, and that is called a Taunt-mast, but if either too small or too short, she is under masted or low masted, and cannot bear so great a sail as should give her her true way. For a man of warre, a well ordered Taunt-mast is best, but for a long voyage, a short Mast will bear more Canvasse, and is lesse subject to bear by the bord: Their Rules are divers, because no Artist can build a Ship so truly to proportion, neither set her Masts, but by the triall of her condition, they may be impaired or amended: suppose a Ship of 300 Tunnes be 29 foot at the Beame, if her maine Mast be 24 inches diameter, the length of it must be 24 yards, for every inch in thickneſſe is allowed a yard in length, and the fore-Mast 22 inches in thickneſſe, must be 22 yards in length; your Bowle-sprit both in length and thickneſſe must be equall to the fore-Mast, the Misen 17 yards in length, and 17 inches diameter.

Taunt masted.

Under-masted.

An example.

But the Rule most used is to take the $\frac{4}{5}$ parts of the breadth of the Ship, and multiply that by three, will give you so many foot as your maine Mast should be in length, the bigneſſe or thickneſſe will bear it also, allowing an inch for a yard; but if it be a made Mast, that is greater than one Tree, it must be more: for example, suppose the Ships breadth 30 foot, foure fifths of 30 foot are 24 foot, so you finde the maine Mast must be 24 yards long, for every yard is 3 foot and 24 inches thorow, allowing an inch to every yard.

The rule most used.

A made Mast, or an arme Mast.

yard. The fore Mast is to be in length $\frac{4}{7}$ of the maine Mast, which will be 20 yards wanting one $\frac{4}{7}$ part of a yard, and 20 inches thorow. The Boultsprit must ever be equall with the fore Mast. The misen Mast haise the length of the maine Mast, which will be 12 yards long, and 12. inches diameter. Now as you take the proportion of the Masts from the Beame or bredth of the Ship, so do you the length of the yards from the Kéele.

The Steps. These Masts have each their steps in the Ship, and their
Partners. partners at every Decke where thorow they passe to the Kéele, being strong timbers bolted to the Beams in circling the Masts, to kéep them steady in their steps fast wedged for rowing; yet some ships will not sail so well as when it doth play a little, but that is very dangerous in foule weather.
Cotes. Their Cotes are pieces of tarred Canvas, or a Tarpawling
Tarpawling. put about them and the Rudder to kéep the water out.
Cheeks. At the top of the fore Mast and maine Mast are spliced cheeks, or thick clamps of wood, thorow which are in each two
The Hounds. holes called the Hounds, wherein the Tyes do run to hoise the yards, but the top Mast hath but one hole or Hound,
The Cap. and one tye. Every mast also hath a Cap if a top; which is a piece of square timber with a round hole in it to receive the top Masts or Flag-staffe, to kéep them steady and strong,
Crosse-trees. lest they be born by the bord in a stiffe gale. The Crosse-
Tressel-trees. trees are also at the head of the Masts, one let into another tresse, and strongly bolted with the Tressel trees, to kéep up the top Masts which are fastened in them, and those are at the tops of each Mast; all the Masts stand upright but the Boultsprit which lyeth along over the Beak-head, and that
Pillow. timber it resteth on is called the Pillow.

An example of the Yards by the Keele. Now for the yards, suppose the ship be 76 fot at the Kéele, her maine yard must be 21 yards in length, and in thicknesse but 17 inches. The fore Yard 19 yards long, and 15 inches diameter or thick. The sprit-saile Yard 16 yards long, and but nine inches thick, and your Misen-yard so long as the Mast, the top yards bears halfe proportion to the maine, and fore yard, and the top gallants, the haise to them.

them, but this rule is not absolute, for if your Masts be taunt your yards must be the shorter; if a low Mast the longer, but this is supposed the best. To have the main Yard $\frac{5}{6}$ parts of her Keele in length: the top Yard $\frac{7}{8}$ of the main Yard: and the main Yard for bignesse $\frac{1}{4}$ parts of an inch, for a yard in length. The length of the fore Yard $\frac{4}{7}$ of the main Yard: the crossejack Yard and Spritsail Yard to be of a length, but you must allow the Misen Yard and Spritsail Yard $\frac{1}{8}$ inch of thicknesse to a yard in length. But to give a true Arithmeticall and Geometrical proportion for the building of all sorts of Ships, were they all built after one mould, as also of their Masts, Yards, Cables, Cordage, and Sailes, were all the stuffe of like goodnesse, a methodicall rule as you see might be projected: but their lengths, breadths, depths, rakes and burthens are so variable and different, that nothing but experience can possibly teach it.

CHAP. IV.

The names of all the Masts, Tops, and Yards belonging to a Ship.

The Boul-sprit, the Spritsail Yard, the Spritsail top-mast, the Spritsaile top sail yard: the fore Mast, the fore yard, the fore top-mast, the fore top-saile yard, the fore top gallant Mast, the fore top gallant saile yard, Cotes, wouldings, Gromits, and Staples for all yards. The main Mast, the main Yard, the main Top. The main top Mast, the main top-saile Yard. The top gallant Mast, the main top gallant saile Yard. The Truckle is a square piece of wood at the top, wherein you put the Flagstaffe. The Misen, the Misen Yard, the Misen top mast, the Misen top sail Yard. The Crosse Jack. In great Ships they have two Misens, the latter is called the Bonaventure Misen.

A Jury Mast, that is, when a Mast is born by the bowes, with Yards, Ropes, Trees, or what they can, spliced or fished together they make a Jury mast, woulding or binding them with ropes fast triced together with hand-spikes, as they use to would or binde any Mast or Yard.

CAAP. V.

How all the Tackling and Rigging of a Ship is made fast one to another, with their names, and the reasons of their use.

Riggage or Cordage.

A Mast well rigged.

A Yard well rigged.

Over rigged.

THe rigging a Ship, is all the Ropes or Cordage belonging to the Masts and Yards; and it is proper to say, The mast is well rigged, or the yard is well rigged, that is, when all the Ropes are well fited to a true proportion of her burthen. We say also, when they are too many or too great, she is over-rigged, and doth much wrong a Ship in her sailing; for a small weight aloft, is much more in that nature than a much greater below, and the more upright any Ship goeth, the better she saileth.

All Mast have staies except one.

A Coller.

A Lannier.

Dead mens eyes.

Crowes-feet.

All the Masts, Top masts, and Flag staves have staves, excepting the Spret sail top mast, the maine masts stay is made fast by a Lannier to a Coller, which is a great Rope that comes about the head and Boult-spret, the other end to the head of the maine Mast. The main top Masts stay is fastened to the head of the fore-mast by a strop and a dead mans eye. The main top-gallant Masts stay in like manner to the head of the fore top Mast. The fore Masts and stays belonging to them in like manner are fastened to the Boultspret, and Spretsail top Mast, and those staies do help to stay the Boultspret. The Pilen staies do come to the maine mast, and the Pilen top mast staies to the shrouds with Crowes feet: the use of those staies are to keep the masts from falling aftwards, or too much forwards. Those Lanniers are many small Ropes reeved into the dead mens eyes of all shrouds,

Shrouds, either to slaken them or set them taught; also all the
sates have their blocks, and dead mens eyes have Lanniers.
Dead mens eyes are blocks, some small, some great, with
many holes but no shivers, the Crowes-feet reeved thorow
them are a many of small lines, sometimes 6, 8 or 10 but of
small use more than for fashion to make the Ship shew full
of small Ropes. Blocks or Pullies are thick pieces of wood
having shivers in them, which is a little Wheele fixed in
the middest with a Cock or Pin, some are brasse, but the
most of wood, whereon all the running Ropes do run, some
are little, some great, with 3, 4 or 5 shivers in them, and
are called by the names of the Ropes whereto they serve.
There are also double blocks, that where there is use of
much strength will purchase with much ease, but not so fast
as the other, and when we hale any Tackle or Haleyard to
which two blocks do belong, when they meet, we call that
block and block.

Blocks or Pullies.
Shivers.
A Cocke.
Running ropes
Double blocks.
Block and block.

The Shrouds are great Ropes which go up either sides of
all masts. The misen main mast and fore mast shrouds have
at their lower ends dead mens eyes sealed into them, and
are set up taught by Lanniers to the chaines; at the other
end, over the heads of those masts are pendants, for Tackels
and Swifters under them. The top masts shrouds in like
manner are fastened with Lanniers and dead mens eyes to
the Puttocks or plats of iron belonging to them, aloft over
the head of the mast as the other: and the Chaines are
strong plates of iron fast bolted into the Ships side by the
Chain-waile. When the Shrouds are too stiffe, we say,
ease them, when too slacke, we say, set Taught the shrouds;
but the Boultsprit hath no Shrouds, and all those small
ropes do crosse the Shrouds like steps are called Ratlings.
The Puttocks go from the Shrouds of the fore mast, main
mast or misen, to go off from the Shrouds into the Top,
Cap, or Bowl, which is a round thing at the head of either
mast for men to stand in, for when the Shrouds come neer
the top of the mast, they fall in so much, that without the
Puttocks you could not get into the Top, and in a manner
they

All masts have Shrouds. &c.
Chaines.
To ease.
Taught.
Ratlings.
Puttocks.

they are a kinde of a Shroud. A Pendant is a short Rope made fast at one end to the head of the Mast or the yards arm, having at the other end a block with a shiver to reeve some running rope in, as the Pendants of the back stayes and Tackles hang a little down on the in-side of the Shrouds: all yards armes have them but the Misen, into which the braces are reeved, and also there are Pendants or Streamers hang from the yards armes, made of Taffaty, or coloured flanell cloth to beautifie the Ship onely: Parrels are little round Balls called Trucks, and little pieces of wood cal'ed ribs, and ropes which do incircle the masts, and so made fast to the yards, that the yards may slip up and down easily upon the masts, and with the help of the brest-rope doth keep the yard close to the mast. The standing ropes are the shrouds and stayes, because they are not removed, except it be to be eased or set taughter,

Parrels.

Ribs.

Brest-ropes. Standing ropes.

The Tackles or ropes run in three parts, having a Pendant with a block at the one end, and a block with a hake at the other, to heave any thing in or out of the ship; they are of divers sorts, as the Boats tackles made fast the one to the fore shrouds, the other to the main, to hoise the Boat in or out: also the tackles that keep firm the masts from straying. The Gunners tackles for haling in or out the Ordnances: but the winding tackle is the greatest, which is a great double block with three shivers to the end of a small Cable about the head of the mast, and serveth as a Pendant. To which is made fast a Guy, which is a rope brought to it from the fore mast, to keep the weight upon it steady, or from swinging to and again: Into the block is reeved a hawser, which is also reeved thorow another doublock, having a strop at the end of it; which put thorow the eye of the slings is locked into it with a fid, and so hoise the goods in or out by the help of the Snap-block.

The Tackles are of divers sorts, &c.

A Guy.

Cat harpings are small ropes run in little blockes from one side of the ship to the other, near the upper decke to keep the shrouds tight for the more safety of the mast from rowling. The Halyards belong to all masts, for by them we hoise

Cat harpings.

Halyards.

hoise the yards to their height, and the Ties are the ropes by which the yards do hang, and do carry up the yards when we straine the Halyards; the maine yard and fore yard ties are first reeved thorow the Rams head, then thorow the Hounds, with a turn in the eye of the slings which are made fast to the yard; the misen yard and top yard have but single ties, that is, one doth but run in one part, but the Spretsail yard hath none, for it is made fast with a paire of slings to the boltspret. A horse is a rope made fast to the fore mast shrouds, and the Spretsail sheats, to keep those sheats clear of the anchor flukes. The Ties. A Horse.

To sling is to make fast any caske, yard, ordnances, or the like in a paire of Slings, and Slings are made of a rope spliced at either end into it selfe with one eye at either end, so long as to be sufficient to receive the caske, the middle part of the rope also they seaze together, and so maketh another eye to hitch the hook of the tackle, another sort are made much longer for the hoising of ordnances, another is a chain of iron to Sling or binde the yards fast aloft to the crosse trees in a fight, lest the tie should be cut, and so the mast must fall. The Canhookes are two hookes fastened to the end of a rope with a nose, like this the Brewers use to sling or carry their barrels on, and those serve also to take in or out hogsheads, or any other commodities. A Parbunkel is two ropes that have at each end a nose or lump that being crossed, you may set any vessell that hath but one head upon them, bringing but the loopes over the upper end of the cask, for but the tackle to them, and then the vessell will stand straight in the middest to heave out, or take in without spi ling. To Sling. Slings. Canhookes. A Parbunkell

Puddings are ropes nailed round to the yards arms close to the end, a pretty distance one from another, to save the Robbins from galling upon the yards, or to serve the anchors ring to save the clinch of the cable from galling. And the Robbins are little lines reeved into the eylet holes of the sail under the head ropes, to make fast the sail to the yard, for in stead of tying, sea men alwayes say, make fast. Head lines, are the ropes that make all the sails fast to the yard. Puddings. Robbins. Head lines.

Furling

Furling lines. Furling lines are small lines made fast to the top sail, top gallant sail, and the misen yards armes. The misen hath

A smiting line. but one called the smiting line, the other on each side one,

Brales. and by these we farthell or binde up the sailes. The Brales are small ropes reved throw blockes seased on each side the ties, and come downe before the sail, and at the very skirt are fastened to the Crængles, with them we furle or farthell our sailes acrosse, and they belong onely to the two courses and the misen: to hale up the Brales, or brale up the saile, is all one; Creengles are little ropes spliced into the Bolt-

Creengles. ropes of all sailes belonging to the maine and fore mast, to which the bolings bridles are made fast, and to hold by when we shake off a Bonnet.

Bolt ropes. Boltropes is that rope is sowed about every saile, soft and gently twisted, for the better sowing and handling the

Bunt lines. sailes. Bunt lines is but a small rope made fast to the middest of the boltrope to a crængle reved throw a small blocke which is seased to the yard, to trice or draw up the bunt of

Clew Garnet. the saile, when you farthell or make it up. The Clew garnet is a rope made fast to the clew of the saile, and from thence runnes in a block seased to the middle of the yard, which in furling doth hale up the clew of the saile close to

Clew line. the middle of the yard, and the clew line is the same to the top sailes top gallant and spret sailes, as the Clew garnet is to the maine and foresailes. The Clew of a sailes is the

A Clew. lower corner next the Sheat and Tackes, and stretcheth somewhat goaring or sloping from the square of the saile, and according to the Goaring she is said to spread a great or

Goaring. a little clew. Tackes are great ropes which having a wall-

Tackes. knot at one end seased into the clew of the saile, and so reved first throw the chestres, and then cometh in at a hole in the ships sides, this doth carry forward the clew of the saile to make it stand close by a winde. The Sheats are bent to

Sheats. the clews of all sailes, in the low sailes they hale aft the clew of the sailes, but in top sailes they serve to hale them home, that is, to bring the clew close to the yards arme.

Braces. The Braces belong to all yards but the misen, every yard hath

hath two réeved at their ends thorow two pendants, and those are to square the yards, or travasse them as you please.

The boling is made fast to the léech of the saile about the middest to make it stand the sharper or closer by a winde; it is fastened by two, three, or four ropes like a crows foot to as many parts of the saile which is called the boling bridles, onely the misen boling is fastened to the lower end of the yard, this rope belongs to all sailes except the Spret-saile, and Spret-saile Top-saile, which not having any place to hale it forward by, they cannot use those sailes by a winde: sharp the maine boling is to hall it taught: hale up the boling is to pull it harder forward on: check or ease the Boling is to let it be more slack.

Boling.

Boling bridles.

Sharp the Boling.

Check the Boling.

Lee sannge is a rope réeved into the créengles of the courses when we would hale in the bottome of the sail, to lash up a bonnet or take in the sail; and réeving is but drawing a rope thorow a block or oylet to runne up and down.

Lee sannges.

Reeving.

Léech lines are small ropes made fast to the Léech of the top-sailes, for they belong to no other; and are réeved into a block at the yard close by the top-saile ties, to hale in the Léech of the sail when you take them in. The Léech of a sail is the outward side of a skirt of a sail, from the earing to the clew; and the Earing is that part of the buntrope which at all the four corners of the sail is left open as it were a ring. The two uppmost parts are put over the ends of the yards arms, and so made fast to the yards, and the lowermost are seased or bent to the sheats, and sackes into the clew. The Lifts are two ropes which belong to all yards arme, to top the yards; that is, to make them hang higher or lower at your pleasure. But the top-sail Lifts do serve for sheats to the top gallant yards, the haling them is called the topping the Lifts, as top a starboard, or top a port.

Léech lines.

Léech of a sail.

Earings.

Bent.

Lifts.

Topping the Lifts.

Legs.

Legs are small ropes put thorow the bolt ropes of the maine and fore sail, néer to a foot in length, spliced each end into the other in the Léech of the sail, having a little eye whereunto the martnets are fastened by two hitches, and the end seased into the standing parts of the martnets, which

Martnets.

are

are also small lines like crow feet reeved through a block at the top mast head, and so comes down by the mast to the deck; but the top-sail martnets are made fast to the head of the top gallant mast, and cometh but to the top, where it is haled and called the top martnets, they serve to bring that part of

Latchers. the Leech next the yards arm up close to the yard. Latchets are small lines sowed in the Bonnets and Drablers like

Lashing. laps to lash or make fast the Bonnet to the course, or the course to the Drabler, which we call lashing the Bonnet to

The Loose hook. the course, or the Drabler to the Bonnet. The Loose hooke is a tackle with two hookes, one to hitch into a cringle of the main, or fore saile, in the bolt rope in the leech of the sail by

Bouse. the clew, and the other to strap spliced to the cheeks to bouse or pull down the sail to succour the tackes in a stiffe gale of

A Bonner. winde, or take off or put on a Bonnet or a Drabler, which

A Drabler. are two short sailes to take off or put to the fore course or the

A course. maine, which is the fore sail, or main saile.

A Knave line. The Knave-line is a rope hath one end fastened to the croste trees, and so comes down by the ties to the Rams head, to which is sealed a small piece of wood some two foot long with a hole in the end, whereunto the line is reeved, and brought to the ships side, and haled taught to the Railes to keep the ties and Halyards from turning about one ano-

Knettels. ther when they are new. Knettels are two rope yarnes twisted together, and a knot at each end, whereunto to seale

Rope yarnes. a block, a rope, or the like. Rope yarnes are the yarnes of any rope untwisted, they serve to sarve small ropes, or make Sinnet, Mats, Plats, or Caburnes, and make up the sails at the yards armes.

Sinnet. Sinnet is a string made of rope yarne commonly of two, four, six, eight or nine strings plaited in three parts, which

Mats or Panch being beat flat they use it to sarve ropes or Mats. That which we call a Panch, are broad clouts, woven of Thrums and Sinnet together, to save things from galling about the main and fore yards at the ties, and also from the masts, and upon the Boltspret, Louse, Beake head or Gunwale to save the clewes of the sailes from galling or fretting.

Cabur-

Caburne is a small line made of spun yarne to make a bend of two Cables, or to seale the Tackels, or the like. Sealing is to binde fast any ropes together, with some small rope yarne. Marline is any line, to a blocke, or any Tackell, Pendant, Garnet, or the like. There is also a rope by which the Boat doth ride by the ships side, which we call a Seasen. To sarve any rope with plats or Sinnet, is but to lay Sinnet, Spun yarne, Rope yarne, or a piece of Canvas upon the rope, and then rowle it fast to kéep the rope from galling about the shrowds at the head of the masts, the Cable in the Hawse, the flook of the Anchor, the boat rope or any thing. Spunyarne is nothing but rope yarne made small at the ends, and so spun one to another so long as you will with a winch. Also Caskets are but small ropes of Sinnet made fast to the gromits or rings upon the yards, the longest are in the midst of the yards betwixt the ties, and are called the best Caskets, hanging on each side the yard in small lengths, only to binde up the sail when it is furled.

Caburne.

Seasing.

Seasen.

Sarver or Sirvis.

Spunyarne.

Caskets.

Marling is a small line of untwisted hemp, very pliant and well tarred, to seale the ends of Ropes from raveling out, or the sides of the blocks at their arses, or if the sail rent out of the Boltrope, they will make it fast with marlin till they have leisure to mend it. The marling spike, is but a small piece of iron to splice ropes together, or open the bolt rope when you sew the sail. Splicing is so to let one ropes end into another they shall be as firm as if they were but one rope, and this is called a round Splice; but the cut Splice is to let one into another with as much distance as you will, and yet be strong, and undo when you will. Now to make an end of this discourse with a knot, you are to know, Seamen use three, the first is called the Wall knot, which is a round knob, so made with the strands or lives of a rope, it cannot slip; the sheates, Tides, and Stoppers use this knot. The Boling knot is also so fr nely made and fastened by the bridles into the crænels of the sails, they will break, or the sail split before it will slip. The last is the sleepshanke, which is a knot they cast them upon a runner or Tacle when

Marling.

Marling spike.

Splicing.

A round splice.

A cut Splice.

A Knot.

A Wall knot.

A boling knot.

Sleepshanks Knot.

it is too long to take in the gaps, and by this knot they can shorten a rope without cutting it, as much as they list, and presently undo it again, and yet never the worse.

CHAP. VI.

What doth belong to the Boats and Skiffe, with the definition of all those thirteen Ropes which are onely properly called Ropes belonging to a ship and the Boat, and their use.

A long Boat.

OF Boats there are divers sorts, but those belonging to ships, are called either the long Boat or ships Boat, which should be able to weigh her sheat anchor, those will live in any reasonable sea, especially the long Boat; great ships have also other small boats called Shallops and Skiffes, which are with more ease and lesse trouble rowed to and again upon any small occasion. To a boat belongs a mast and sail, a stay sheat and Halyard, Rudder and Rudder irons, as to a ship, also in any discovery they use a Tarpawling, which is a good piece of Canvas washed over with Tar, to cover the Bailes or hoopes over the sterne of their boat, where they lodge in an harbour which is that you call a Tilt covered with Wadmall in your Wherries; or else an Awning, which is but the bots saile, or some piece of an old saile brought over the yard and stay, and bounned out with the boat hooke, so spread over their heads, which is also much used, as well a shore as in a ship, especially in hot countreys to keep men from the extremity of heat or wet, which is very oft infectious.

A Shallop.
A Skiffe.

Tarpawling.
Bailes.

Awning.

Thoughts.
Thowles.

Thoughts are the seats whereon the Rowers sit; and Thowles small pins put into little holes in the Gunwale or upon the Boats side, against which they bear the oares when they row, they have also a Dared, and also in long boats

boats a windlesse to weigh the anchor by, which is with more ease than the ship can. The two arching timbers against the boat head are called Carlings. Man the boat is to put a Gang of men, which is a company into her, they are commonly called the Corswaine Gang, who hath the charge of her. Free the boat is to bail or cast out the water. Trim the boat is to keep her streight. Winde the boat is to bring her head the other way. Hold water is to stay her. Forbear is to hold still any oar you are commanded, or on the broad, or whole side. A fresh Spell is to relieve the Rowers with another Gang, give the Boat more way for a dram of the bottell, who saies Amends, one and all; Yea, yea, yea, yea, yea, that is, they pull all strongly together.

A Gang.
Free or Bail.
Trim Boat.
Winde Boat.
Hold water.
Forbear.
A spell.
Yea, yea, yea.

The entering rope is tied by the ships side, to hold by as you go up the entering ladder, cleats, or wailes.

The Bucket rope that is tied to the Bucket by which you hale and draw water up by the ships side.

The Bolt ropes are those wherein the sails are sowed.

The Port ropes hale up the Ports of the Ordnances.

The Ieare rope is a piece of a hawser made fast to the maine yard, another to the fore yard close to the ties, reeved thorow a blocke which is seated close to the top, and so comes down by the mast, and is reeved thorow another blocke at the bottom of the mast close by the decke; great ships have on each side the ties one, but small ships none: the use is to help to hoise up the yard to succour the ties, which though they breake yet they would hold up the mast.

The entering rope.
Bucket rope.
Bolt ropes.
Port ropes.
Ieare rope.

The Preventer rope is a little one seated crosse over the ties, that if one part of them should break, yet the other should not runne thorow the Rams head to indanger the yard.

Preventer rope.

The top ropes are those wherewith we set or strike the maine or fore top masts, it is reeved thorow a great blocke seated under the Cap, reeved thorow the heel of the top mast thwart ships, and then made fast to a ring with a clinch on the other side the Cap, the other part comes down by the

Top ropes.

ties, rœved into the Knights, and so brought to the Captaine when they set the Top masts.

Keele ropes. The Kéele rope, you have read in the building, is of haire in the Keele to scower the Limber holes.

Rudder rope. The Rudder rope is rœved thorow the stem post, and goeth thorow the head of the Rudder, and then both ends Spliced together, serves to save the Rudder if it should be struck off the irons.

Cat rope. The Cat rope is to hale up the Cat.

Boy rope. The Boy rope is that which is tied to the boy by the one end, and the anchors flooke by the other.

Boat rope. The Boat rope is that which the ship doth tow her Boat by, at her sterne.

Chest rope. The Chest rope is added to the Boat rope when she is towed at the ships sterne, to kœp her from shearing, that is, from swinging to and again; for in a stiffe gale she will make such yawes, and have such girds, it would indanger her to be torne in pieces, but that they use to swift her, that is, to incircle the Gunwaile with a good rope, and to that make fast the Chest rope.

CHAP.

CAAP. VII.

The names of all sorts of Anchors, Cables, and Sails; and how they bear their proportions, with their use: Also how the Ordnances should be placed, and the goods stowed in a ship.

THe proper tearmes belonging to Anchors are many: the least are called Kedgers, to use fair weather in a slow stream, or to kedge up and down a narrow River, which is when they fear the winde or tide may drive them on shore; they row by her with an Anchor in a boat, and in the middest of the stream, or where they ride most fit if the Ship come too nèr the shore, and so by a Hawser winde her head about, then weigh it again till the like occasion, and this is kedging. There is also a stream Anchor not much bigger, to stemme an easie stream or tide. Then there is the first, second, and third Anchor, yet all such as a Ship in fair weather may ride by, and are called bow Anchors. The greatest is the sheat Anchor, and never used but in great necessity. They are commonly made according to the burthen of the Ship by proportion, for that the sheat Anchor of a small ship will not serve for a Kedger to a great ship. Also it beareth a proportion in it selfe, as the one flooke, which is that doth sticke in the ground, is but the third part of the shanke, in length; at the head of the shanke there is a hole called an eye, and in it a Ring, wherein is the Nut to which there is fast fired a Stocke of wood to fill the Flookes, and the length is taken from the length of the Shanke. These differ not in shape but in weight, from two hundred, to three or four thousand weight. Grapels, or Graplings, are the least of all, and have four flookes but

A Kedger.
Streame Anchor.
The first.
Second.
Third Anchor.
Sheat Anchor.
An Anchors shanke.
Flook.
Shoulder.
Beam or Nut.
Eye.
Ring.
Stocke.

but no ſtock; for a boat to ride by, or to throw into a ſhip in a fight, to pull down the gratings or hold faſt.

A Cable, the first, second, and third.

The Cables alſo carry a proportion to the Anchors, but if it be not three ſtrond, it is accounted but a Hawſer, yet a great ſhips Hawſer may be a Cable to the sheat Anchor for a ſmall ſhip: and there is the firſt, ſecond, and third Cable, beſides the Sheat Anchor Cable. If the Cable be well made, we ſay it is well laid. To keckell or ſarve the Cable, as is ſaid, is but to binde ſome old clouts to keep it from galling in the Hawſe or Ring. Splice a Cable, is to faſten two ends together, that it may be double in length, to make the Ship ride with more eaſe, and is called a ſhot of Cable. Quoile a Cable, is to lay it up in a round Ring, or take one above another. Pay more Cable, is when you carry an Anchor out in the boat to turn over. Pay cheap, is when you over ſet it, or turns it over board faſter. Here more Cable, is when you ride at Anchor. And end for end is when the Cable runneth clear out of the Hawſe, or any rope out of his ſhiver. A Bight is to hold by any part of a rope, that is, the upmoſt take. A bitter is but the turn of a Cable about the Bits, and beare it out by little and little. And the Bitters end is that part of the Cable doth ſtay within board. Cert, is when the Cable is ſo taught that upon the turning of a tide, a Ship cannot go over it.

Sheat Anchor Cable.
Keckell.
Splice,
A ſhot of Cable.
Quoile.
A Take.
Pay.
Pay cheape.
End for end.
A Bight.
A Bitter.
A Bitters end.
Cert.

To bend the Cable to the Anchor, is to make it faſt to the Ring; unbend the Cable, is but to take it away, which we uſually do when we are at Sea, and to tie two ropes or Cables together is called bending. Hitch, is to catch hold of any thing with a rope to hold it faſt, or with a hooke, as hitch the fiſh-hooke to the Anchors flooke, or the Tackles into the Garnets of the Slings. Fenders are pieces of old Hawſers called Junkes hung over the ſhip ſides to keep them from bruiſing. In boats they uſe poles or boat-hookes to ſend off the boat from bruiſing. A Breſt-faſt is a rope which is faſtened to ſome part of the Ship forwards to hold her head to a wharfe or any thing, and a Sterne-faſt is the ſame in the Sterne. The uſe for the Hawſer is to

To bend.
Unbend.
Bending.
Hitch.
Fenders.
Junkes.
Breſt-faſt.
Sterne faſt.

warp the Ship by, which is laying out an Anchor, and winde her up to it by a Capsterae. Rousing is but pulling the slacknesse of any Cables with mens hands into the Ship. The Shank-painter is a short chain fastened under the fore masts shrouds with a bolt to the ships sides, and at the other end a rope to make fast the Anchor to the Bowe. To stop is when you come to an Anchor, and beares out your Cable, but by degrees till the Ship ride well, then they say stop the Ship. To those Cables and Anchors belong short pieces of wood called Boyes, or close hoped barrels like Tankards as is said, but much shorter, to shew you the Anchor and help to weigh it, there is another sort of Cans called Can Boyes much greater, mored upon shoules to give Partners warning of the dangers.

Rousing.

Shank-painter.

Stop.

Boyes.

Can Boyes.

The main sail and the fore sail is called the fore course, and the main course or a paire of courses. Bonits and Drablers are commonly one third part a piece to the sail they belong unto in depth, but their proportion is uncertain; for some will make the main sail so deep, that with a shallow bonet they will cloath all the Mast without a Drabler, but without bonets we call them but courses; we say, lash on the bonet to the course, because it is made fast with Latchets into the eylet holes of the sail, as the Drabler is to it, and used as the winde permits. There is also your main top-sail, and fore top-sail, with their top-gallant sails, and in a fair gaile your studding sails, which are bolts of Canbasse, or any cloth that will hold winde, we extend alongst the side of the main sail, and bowes it out with a bowne or long pole, which we use also sometimes to the clew of the main sail, fore saile, and spret sail, when you go before the winde or quartering, else not. Your Misen, and Misen top-sail, your Spret and Spret top-sail, as the rest, take all their names of their yards. A Drift sail is onely used under water, veared out right a head by sheats, to keep the Ships head right upon the Sea in a storm, or when a ship drives too fast in a current. A Netting sail is onely a sail laid over the Netting, which is small ropes from the top of

Sailes.
Main Sail.
Fore Sail.
Main course.
Fore course.
Bonits.
Drablers.

Main top Sail.
Fore top-Sail.
Top gallant Sailes.
Studding sails.

Misen.
Misen top sail.
Spret sail.
Spretsail top-Sail.
Drift Sail.

Netting Sail.
Nettings.

the

the foze castle to the Poope, stretched upon the ledges from
Waist trees. the Waist-trées to the Rouse-trées, which are onely small
Rouse-trees. Timbers to bear up the Gratings from the half Decke to
Stantions. the foze-castle, supported by Stantions that rest upon the
Gratings. halfe Decke; and this Netting oz Gratting, which is but
the like made of wood, you may set up oz take down when
you please, and is called the close fights foze and aft. Now
Head Sailes. the use of those sailes is this, all head Sailes which are
those belonging to the foze Mast and Boltsprit, do keep the
After Sailes. Ship from the winde oz to fall off, All after Sailes, that
is, all the sailes belonging to the maine Mast and Mizen
kéepes her to winde ward, therefoze few ships will steare up-
on quarter windes with one saile, but must have one after
saile, and one head saile. The sailes are cut in pzopoztion
as the Masts and Yards are in bzeadth and length. but the
Spretsaile is $\frac{3}{4}$ parts the depth of the foze saile, and the
Mizen by the Léech twise so déep as the Mast is long from
Leech. the Decke to the Hounds. The Léech of a saile is the out-
ward side oz skirt of the saile from the earing to the clew,
The Clew. the middle betwixt which we account the Léech. The clew,
is the lower cozner of a Saile, to which you make fast your
Goring. Sheats and Tacks, oz that which comes gozing out from
the square of the saile, foz a square saile hath no Clew, but
the maine saile must be cut gozing, because the Tacks will
come closer abozd, and so cause the sail to hold moze winde;
now when the Saile is large and hath a good Clew, we say
she spzeads a large Clew, oz spzeads much Cantas. In ma-
king those sailes they use two sozts of seames down the
Sailes, which doth sew the bzeadth of the Cantas together,
A Monke seame. the one we call a Munke seame, which is flat, the other a
A Round seame. round seame, which is so called because it is round.

The Ship being thus pzovided, there wants yet her
Ordnances, which should be in greatnesse according to her
building in strength and burthen, but the greatest com-
A Tier. monly lieth lowest, which we call the lower Tier, if she be
Third. furnished foze and aft. Likewise the second Tier, and the
Second. third, which are the smallest. The foze Castle and the
baise

halfe Decke being also furnished, we account halfe a Tier. — Halfe a Tier.

Stowage or to stow, is to put the goods in Howle in order. The most ponderous next the Ballast, which is next the Kéelson to kéep her stiffe in the Sea. Ballast is either Gravell, Stones, or Lead, but that which is driest, heaviest, and lies closest is best. To finde a leake, they trench the Ballast, that is, to divide it. The Ballast will sometimes shot, that is, run from one side to another, and so will Corn and Salt, if you make not Pouches or Bulk-heads, which when the Ship doth héeld is very dangerous to overset or turn the Kéele upwards. For Caske that is so stowed, tier above tier with Ballast; and canting Coines, which are little short pieces of wood or Billets cut with a sharp ridge or edge to lie betwixt the Cask; and standing Coines are Billets or Pipe-staves, to make them they cannot give way nor stirre. The ship will bear much, that is, carry much Ordnance or goods, or bear much sail; and when you let any thing down into the Howle, lowering it by degrees, they say, Amaine; and being down, Strike.

Stowage. — To Stow. — Ballast. — Trench the Ballast. — Shout. — Canting Coines. — Standing Coines. — To bear.

CHAP. VIII.

The charge and duty of the Captain of a ship, and every Office and Officer in a man of War.

The Captains charge.

THe Captains charge is to command all, and tell the Master to what Port he will go, or to what Height: In a fight he is to give direction for the managing thereof, and the master is to see the cunning of the ship, and trimming of the sailes.

The Master and his Mates.

The Master and his Mates are to direct the course, command all the Sailers, for stearing, trimming, and sailing the ship; his Mates are only his seconds, allowed sometimes for the two mid ships men, that ought to take charge of the first prize.

The Pilot.

The Pilot when they make land doth take the charge of the Ship till he bring her to harbour.

The Chirurgion and his Mate.

The Chirurgion is to be exempted from all duty, but to attend the sicke, and cure the wounded: and good care would be had he have a certificate from Barber-Chirurgions Hall of his sufficiency, and also that his chest be well furnished both for Physicke and Chirurgery, and so near as may be proper for that clime you go for, which neglect hath been the losse of many a mans life.

The Cape-merchant or Purser.

The Cape-merchant or Purser hath the charge of all the Cargasoune or merchandize, and doth keep an account of all that is received, or delivered, but a man of War hath onely a Purser.

The Gunner with his Mate, and quarter Gunners.

The Master Gunner hath the charge of the ordnance, and shot, powder, match, ladles, sponges, worms, cartreges, arms and fire-works; and the rest of the Gunners, or quar-

ter

ter Gunners to receive their charge from him according to directions, and to give an account of their stoze.

The Carpenter and his Mate, is to have the nails, clinches, rowe and clinch nailes, pikes, splates, rudder irons, pumpe nails, skupper nails and leather, sawes, files, hatchets and such like, and ever ready foz calking, breaming, stopping leakes, fishing, oz splicing the masts oz yards as occasion requireth, and to give account of his stoze. The Carpenter and his Mate.

The Boatswaine is to have the charge of all the cozdage, tackling, sailes, fids and marling spikes, nædles, twine, saile-cloth, and rigging the ship, his Mate the command of the long boat, foz the setting fozth of Anchozs, weighing oz fetching home an Anchoz, warping, towing, oz mozing, and to give an account of his stoze. The Boatswaine and his Mate.

The Trumpeter is alwayes to attend the Captains command, and to sound either at his going a shoze, oz comming abozd, at the entertainment of strangers, also when you hale a ship, when you charge, bozd, oz enter; and the poope is his place to stand oz sit upon, if there be a noise, they are to attend him, if there be not, every one he doth teach to bear a part, the Captain is to incourage him, by increasing his shares, oz pay, and give the master Trumpeter a reward. The Trumpeter.

The Marshall is to punish offenders, and to see justice executed according to directions; as ducking at the yards arme, haling under the Kæle, bound to the Capsterne, oz main mast with a basket of shot about his necke, setting in the bilbowes, and to pay the Cobtie oz the Mozsoune; but the Boyes the Boatswaine is to sæ everp Sunday at the chest, to say their compasse, and receive their punishment foz all their wækes offences, which done, they are to have a quarter can of bæer, and a bisket of bzead, but if the Boatswaine eat oz drink befoze he catch them, they are free. The Marshall

The Corporall is to see the setting and relæving the watch, and sæ all the souldiers and sailers kæp their armes cleane, neat, and yare, and teach them their use. The Corporall

The Steward and his Mate.

The Steward is to deliver out the victuals according to the Captains directions, and messe them four, five, or six as there is occasion.

The Quarter-masters.

The Quarter-masters have the charge of the howle, for stowing, romaging, and trimming the ship in the hold, and of their squadrons for the watch, and for fishing to have a Sayne, a fisgig, a harpin yron, and fish hookes, for Porgos, Boneros, Dolphins, or Dorados, and rayling lines for Mackrels.

The Cooper and his Mate.

The Cooper is to look to the Caske, hoopes and twigs, to stave or repair the buckets, barricos, cans, steep tubs, runlets, hogsheads, pipes, buts, &c. for wine, bear, sider, beverage, fresh water, or any liquor.

The Coxswain and his Mate.

The Coxswaine is to have a choise Gang to attend the skiffe to go to and again as occasion commandeth.

The Cook and his Mate.

The Cooke is to dresse and deliver out the victual, he hath his store of quarter cans, small cans, platters, spoones, Lanthornes, &c. and is to give his account of the remainder.

The Swabber.

The Swabber is to wash and keep clean the Ship and maps.

The Lyar.

The Liar is to hold his place but for a weeke, and he that is first taken with a lie, every Sunday is so proclaimed at the maine mast by a generall cry, a Liar, a Liar, a Liar, he is under the Swabber, and onely to keep clean the beake head and chaines.

The Sailers.

The Sailers are the ancient men for hoising the sailes, getting the tacks aboord, haling the bowlings, and stearing the ship.

The Younkers.

The Younkers are the young men called fore-mast men, to take in the top-sailes, or top and yard, for furling the sailes, or slinging the yards, bousing or trising, and take their turns at Helme.

The Lieutenant his place.

The Lieutenant is to associate the Captaine, and in his absence to execute his place, he is to see the Marshall and Corporall to their duties, and assist them in instructing the souldiers, and in a fight the fore-castle is his place to make

make good, as the Captain doth the halfe decke, and the Quarter-maſters, or Maſters Mate the mid ſhips, and in a States man of war, he is allowed as neceſſary as a Lieutenant on ſhore.

CHAP. IX.

Proper Sea tearmes for dividing the company at Sea, and ſtearing, ſailing, or moring a Ship in fair weather, or in a ſtorm.

IT is to be ſuppoſed by this the Ship is victualled and manned, the voyage determined, the ſteep Tubs in the chains to ſhift their Beefe, Porke, or Fiſh in ſalt water, till the ſalt be out though not the ſaltneſſe, and all things elſe ready to ſet ſail; but before we go any further, for the better underſtanding the reſt, a few words for ſteering and cunning the Ship would not be amiſſe. Then know, Starboord is the right hand, Larboord the left; Starboord the Helm, is to put the Helm a Starboord, then the Ship will go to the Larboord. Right your Helme, that is, to keep it in the mid Ships, or right up. Port, that is, to put the Helme to Larboord, and the Ship will go to the Starboord, for the Ship will ever go contrary to the Helme. Now by a quarter winde, they will ſay aloofe, or keep your Looſe, keep her to it, have a care of your Lee-latch. Touch the winde, and war no more, is no more but to bid him at the Helme to keep her ſo neer the winde as may be; no nearer, eaſe the Helme, or bear up, is to let her fall to Lee-ward. Steady, that is, to keep her right upon that point you ſtear by; be yare at the Helm, or a freſh man to the Helm. But he that keepes the Ship moſt from yawing doth commonly uſe the leaſt motion with the Helm, and thoſe ſtear the beſt.

Steep Tubs.
Starboord.
Larboord.
Cunning.
Stearing.
Mid ſhips.
Port.
Aloofe.
Keep your looſe.
War no more.
No neare.
Eaſe.
Steady.
Yare.

The

The Maſter and company being abord, he commands them to get the ſails to the yards, and about your geare or work on all hands, ſtretch forward your maine Halliards, hoiſe your Sails halfe maſt high. Ready, or make ready to ſet ſail, croſſe your yards, bring your Table to the Capſterne; Boatſwaine fetch an Anchor abord, break ground or weigh Anchor. Heave a head, men into the Tops, men upon the yards; come, is the Anchor a pike, that is, to heave the Halſe of the ſhip right over the Anchor, what is the Anchor away? Yea, yea. Let fall your fore-ſail. Tally, that is, hale off the Sheats; who is at the Helme there? coile your Cables in ſmall fakes, hale the Cat, a Bitter, belay, looſe fall your Anchor with your ſhank-painter, ſtow the Boat, ſet the land, how it bears by the Compaſſe that we may the better know thereby to kéep our account and direct our courſe, let fall your main ſail, every man ſay his private prayer for a bone voyage, out with your ſpret ſail, on with your bonits and Drablers, ſteare ſteady and kéep your courſe, ſo, you go well.

Geare.

Ready.

A Pike.

Tally.

How they divide the company at ſea, and ſet, and rule the watch.

When this is done, the Captain or Maſter commands the Boatſwaine to call up the company; the Maſter being chief of the Starbord watch doth call one, and his right hand Mate on the Larboord doth call another, and ſo forward till they be divided in two parts, then each man is to chuſe his Mate, Conſort, or Comrade, and then divide them into ſquadrons according to your number and burthen of your ſhip as you ſee occaſion; theſe are to take their turns at the Helme, trim ſailes, pumpe, and do all duties each half, or each ſquadron for eight Glaſſes or four hours which is a watch, but care would be had that there be not two Comrades upon one watch becauſe they may have the more roome in their Cabbins to reſt. And as the Captain and maſters Mates, Gunners, Carpenters, Quartermaſters, Trumpeters, &c. are to be abaft the Maſt, ſo the Boatſwaine, and all the Yonkers or common Sailers under his command is to be before the Maſt. The next is, to meſſe them into meſſes, and then give every meſſe a quarter Can of béere and a biſket of bread to ſtay their ſtomacks till the Kettle be

be boiled, that they may first go to prayer, then to supper, and at six a clock sing a Psalm, say a Prayer, and the Master with his side begins the watch, then all the rest may do what they will till midnight; and then his Mate with his Larboard men with a Psalm and a Prayer releeves them till four in the morning, and so from eight to twelve each other, except some flaw of winde come, some storm or gust, or some accident that requires the help of all hands which commonly after such good cheere in most voyages doth happen.

The winde veeres.

For now the winde veeres, that is, it doth shift from point to point, get your Starboard tackes aboard, and tally or hale off your Lee-Sheats. The Ship will not waver, settle your maine Topsaile, veere a fadome of your sheat. The winde comes fair again and a fresh gale, hale up the slatch of the Lee-boling. By Slatch is meant the middle part of any rope hangs over board. Veere more sheat, or a flowne sheat, that is, when they are not haled home to the blocke. But when we say, let fly the sheats, then they let go amain, which commonly is in some gust, lest they spend their topsailes, or if her quick side lie in the water, overset the Ship. A flowne sheat is when she goes before the winde, or betwixt a paire of sheats, or all sailes drawing. But the winde shrinkes, that is, when you must take in the Spret sail, and get the tacks aboard, hale close the main Boling, that is, when your Tacks are close aboord. If you would saile against the winde or keep your own, that is, not to fall to Lee-ward or go back again, by halling off close your Bolings, you set your sailes so sharp as you can to lie close by a winde, thwarting it a league or two, or more or lesse, as you see cause, first on the one board, then on the other; this we call boording or beating it up upon a tacke in the windes eye, or bolting to and again; but the longer your boords are, the more you work or gather into the winde. If a sudden flaw of winde should surprise you, when you would lower a yard so fast as you can, they call A main; but a cresse sail cannot come neerer the winde than six points, but a Carvell whose sailes stand like a pair of Tailors sheeres, will go much neerer.

Flowne.

Fly.

A paire of courses.

How to handle a ship in a storm.

If over casts, we shall have winde, fowl weather, settle your top sailes, take in the spret-saile, in with your top sailes, lower the foze-saile, tallow under the parrels, brade up close all them sailes, lash sure the ordnance, strike your top-masts to the cap, make it sure with your sheeps feet. A storme, let us lie at Trie with our main course, that is, to hale the tacke abozd, the sheat close aft, the boling set up, and the helme tied close abozd. When that will not serve then Try the mizen, if that split, oz the storm grow so great she cannot beare it; then hull, which is to bear no sail, but to strike a hull is when they would lie obscurely in the Sea, oz stay foz some consoyt, lash sure the helme a lee, and so a good ship will lie at ease under the Sea as we terme it. If she will weather coile, and lay her head the other way without loosing a sail, that must be done by bearing up the Helm, and then she will drive nothing so far to Leeward. They call it hulling also in a calm swelling Sea, which is commonly before a storme, when they strike their sails lest she should beat them in pieces against the mast by Rowling. We say a ship doth Labour much when she doth rowl much any way; but if she will neither Try noz Hull, Then spoone, that is, put her right before the winde, this way although she will rowle more than the other, yet if she be weak it will not straine her any thing so much in the Trough of the Sea, which is the distance betwixt two waves oz Billowes. If none of this will do well, then she is in danger to founder, if not sinke. Foundering is when she will neither beare noz steare, the Sea will so over rake her, except you free out the water; she will lie like a log, and so consequently sinke. To spend a mast oz yard, is when they are broke by fowl weather, and to spring a mast is when it is cracked in any place.

Try.

Hull.

Under the Sea.

Weather coile.

Rowling.

Labour.

Spoone.

Trough.

Founder.

To spend a mast.

Spring a mast.

In this extremity he that doth cun the Ship cannot have too much judgement, noz experience to try her drift, oz how she capes, which are two tearms also used in the trials of the running oz setting of currants. A yoke is when the Sea is so rough as that men cannot govern the Helme with their hands, and then they sease a block to the Helm on each side at the

A Yoke.

the end, and réeving two fals thorow them like Gunners Tackles brings them to the ships side, and so some being at the one side of the Tackle, some at the other, they steare her with much more ease than they can with a single rope with a double turn about the Helme.

When the storme is past, though the winde may alter three or four points of the compasse, or more, yet the Sea for a good time will go the same way; then if your course be right against it, you shall meet it right a head, so we call it a head Sea. Sometimes when there is but little winde, there will come a contrary Sea, and presently the winde after it, whereby we may judge that from whence it came was much winde, for commonly before any great storm the Sea will come that way. Now if the ship may run on shore in ose or mud she may escape, or Billage on a rock, or Anchors slacke, repair her leake, but if she split or sinke, she is a wrack. But séeing the storm decreaseth, let us trie if she will endure the Hullocke of a Sail, which sometimes is a piece of the Mizen sail or some other little sail, part opened to kéep her head to the Sea, but if yet she would weather cocke, we will loose a Hullocke of her fore sail, and put the Helme a weather, and it will bring her head where her sterne is; courage my hearts.

A head Sea.

Hullocke.

It cleares up, set your fore sail; Now it is fair weather, out with all your sails, go large or laske, that is, when we have a fresh gale, or fair winde, and all sails drawing. But for more haste unparrell the mizen yard and lanch it, and the sail over her Lée quarter, and fit Gives at the further end to kéep the yard steady, ans with a Boome bome it out; this we call a Gose-wing. Who is at Helme there? Sirra, you must be amongst the Points; Well Master, the Channell is broad enough; Yet you cannot steare betwixt a paire of sheats; Those are words of mockery betwixt the Gunner and the Stearesman. But to procéed.

Large.
Laske.

Gooseing.

Get your Larboard Tackes aboard, hale off your Starboard sheats, kerp your course upon the point you are directed; Port, he will lay her by the Lée; the staies, or back

ſtaies, that is, when all the ſailes flutter in the winde, and are not kept full, that is full of winde, they fall upon the maſts and Shrowds, ſo that the Ship goes a drift upon her broad foe, fill the ſailes, keep full, full and by. Make ready to Tacke about, is but for every man to ſtand to handle the ſails and ropes they muſt hale. Tacke about is to bear up the helme, and that brings her to ſtay all her ſailes lying flat againſt the Shrowds, then as ſhe turns we ſay ſhe is payed, then let riſe your Lee-tacks and hale off your Sheats, and trim all your ſailes as they were before, which is eaſt off that Boling which was the weather boling, and hale up taught the other. So all your Sheats, Braſes, and Tacks are trimmed by a winde as before. To belay, is to make faſt the ropes in their proper places. Round in, is when the winde larges, let riſe the maine tacke and fore tacke, and hale aft the fore Sheat to the cats head, and the main Sheat to the cubbridge head, this is Rounding in, or rounding aft the ſail; the Sheats being there they hale them down to keep them firme from flying up with a Paſarado, which is any rope wherewith we hale down the Sheats, blockes of the main or fore ſail, when they are haled aft the clew of the main ſail to the Cubbridge head of the main maſt, and the clew of the fore ſail to the Cat head; Do this when the Ships goes large.

Round in.

Rounding aft.

Paſarado.

Obſerve. Obſerve the height; that is, at twelve a clock to take the height of the Sun, or in the night the North ſtar, or in the forenoone and afternoone, if you miſſe theſe by finding the Azimuth and Almicanter.

Dead water. Dead water is the Eddie water followes the ſterne of the Ship, not paſſing away ſo quickly as that ſlides by her ſides.

The Wake. The wake of a Ship is the ſmooth water a ſterne ſhewing the way ſhe hath gone in the ſea, by this we judge what way ſhe doth make, for if the wake be right a ſterne, we know ſhe makes good her way forwards; but if to Lee-ward a point or two, we then think to the Lee-ward of her courſe, but ſhe is a nimble Ship that in turning or tacking about will not fall to the Lee-ward of her wake when ſhe hath weathered it. Diſſim-

bogue

bogue is to passe some narrow strait or currant into the maine Ocean, out of some great Gulfe or Bay. A Drift is any thing floating in the sea that is of wood. Rockwéed doth grow by the shore, and is a sine of land, yet it is oft found far in the Sea. Lay the ship by the Lée to trie the Dipsie line, which is a small line some hundred and fifty fadome long, with a long plummet at the end, made hollow, wherein is put tallow, that will bring up any gravell; which is first marked at twenty fadome, and after increased by tens to the end; and those distinguished by so many small knots upon each little string that is fixed at the mark thorow the strouds or middest of the line, shewing it is so many times ten fadome déep, where the plummet doth rest from drawing the line out of your hand; this is onely used in déep water when we think we approach the shore, for in the maine sea at 200. fadomes we finde no bottome. Bring the Ship to rights, that is, again unto her sail as she was, some use a Log line, and a minute glasse to know what way she makes, but that is so uncertain, it is not worth the labour to trie it.

Disimbogue. A drift. Rockweed. Dipsie line. Plummet. Log line.

One to the top to look out for land, the man cries out Land to; which is just so far as a kenning, or a man may discover, descrie, or see the land. And to lay a land is to sail from it just so farre as you can sée it, A good Land fall is when we fall just with our reckoning, if otherwise a bad Land fall; but howsoever how it bears, set it by the compasse, and bend your Cables to the Anchors, A Head land, or a Point of land doth lie further out at Sea than the rest. A Land mark, is any Mountaine, Rock, Church, Windmill or the like, that the Pilot can know by comparing one by another how they beare by the compasse. A Reach is the distance of two points so farre as you can sée them in a right line, as White Hall and London Bridge, or White Hall and the end of Lambeth towards Chelsey. Fetch the Sounding line, this is bigger than the Dipsie line, and is marked at two fadome next the lead with a peece of blacke leather, at three fadome the like, but six; at 5 fadome with a

Land to. Kenning. To lay a land. Good land fall. Bad land fall. A head land. A Point. Land marke. To raise a land. To make land. A Reach. Sounding line.

piece of white cloth, at 7 fadome with a piece of red in a piece of white leather, at 15 with a white cloth, &c. The

The Lead. founding lead is fix or feven pound weight, and neer a foot long, he that doth heave this lead ſtands by the horſe, or in the chaines, and doth ſing fadome by the mark 5.0. and a ſhaftment leſſe, 4. 0. this is to finde where the ſhip may

Fowle water. ſail by the depth of the water. Fowl water is when ſhe comes into ſhallow water where ſhe raiſes the ſand or oſe with her way yet not touch the ground, but ſhe cannot ſteere her helme ſo well as in deep water.

When a ſhip ſailes with a large winde towards the land,

Bear in. or a fair winde into a harbour, we ſay ſhe bears in with the land or harbour. And when ſhe would not come nere the land, but goeth more Rame-way than her courſe, we ſay ſhe

Beare off. bears off; but a Ship board, bear off is uſed to every thing

Beare up. you would thruſt from you. Bear up is to bring the Ship to

Hold off. go large or before the winde. To Hold off is when we heave the Cable at the Capſterne, if it be great and ſtiffe,

Surges. or ſlimie with oſe, it ſurges or ſlips back unleſſe they keep it cloſe to the whelps, and then they either hold it faſt with nippers, or brings it to the Jeare Capſterne, and this is called Holding off. As you approach the ſhore, ſhorten your ſails, when you are in harbour take in your ſails, and come to an anchor, wherein much judgement is required.

Neake to. To know well the ſoundings, if it be Neaked to, that is, deep water cloſe aboard the ſhore, or ſhallow, or if the Lee under the weather ſhore, or the lee ſhore be ſandy, clay, oſe, or fowl and rockie ground, but the Lee ſhore all men would

A Roade. ſhun that can avoid it. Or a roade which is an open place neer

Offing. the ſhore. Or the offing which is the open Sea from the ſhore.

Land locked. or the midſt of any great ſtream is called the offing. Land lock, is when the land is round about you.

To Ride. Now the Ship is ſaid to Ride, ſo long as the Anchors do

Ride a great Roade. hold and comes not home, To Ride a great roade is when the winde hath much power. They will ſtrike their top maſts, and the yards alongſt Ships, and the deeper the water is, it requires more Cable; when we have rid in any di-

ſtreſſe.

ſtreſſe we ſay we have rid hawſe full, becauſe the water broke into the hawſes, To ride betwixt winde and tide, is when the winde and tide are contrary and of equall power, which will make her rowle extremely, yet not ſtrain much the cable. To ride thwart is to ride with her ſide to the tide, and then ſhe never ſtraines it. To ride apike is to pike your yards when you ride amongſt many ſhips. To ride acroſſe is to hoiſe the main and foze yards to the hounds, and topped alike. When the water is gone and the ſhip lies dry, we ſay ſhe is Sewed; if her head but lie dry, ſhe is Selwed a head; but if ſhe cannot all lie dry, ſhe cannot Sew there. Water born is when there is no more water than will juſt beat her from the ground. The water line is to that Bend or place ſhe ſhould ſwim in when ſhe is loaded.

Ride a ſtreſſe.
Ride betwixt winds and tide.
Ride thwart tide.
Ride a pike.
Ride croſſe.
Sewed.
Sew.
Water born.
Water line.

Laſtly, to More a ſhip is to lay out her anchors as is moſt fit for her to ride by, and the wayes are divers; as firſt, to More a faire Berth from any annoiance. To more a croſſe is to lay one anchor to one ſide of the ſtream, and the other to the other right againſt one another, and ſo they beare equally ebbe and flood. To more alongſt is to lay an anchor amidſt the ſtream ahead, and another aſterne, when you fear driving a ſhore. Water ſhot is to more quartering betwixt both nether croſſe, nor alongſt the tide. In an open rode they will more that way they think the winde will come the moſt to hurt them. To more a Proviſo, is to have one anchor in the river, and a hawſer a ſhore, which is moored with her head a ſhore; otherwiſe two cables is the leaſt, and four cables the beſt to more by.

To more.
More croſſe.
More alongſt.
Water ſhot.
More Proviſo.

CHAP.

CAAP. X.

Proper tearmes for the Windes, Ebbes, Floods, and Eddies, with their definitions, and an estimate of the depth of the Sea, by the height of the Hils and the largenesse of the Earth.

A Calme. A Breze. WHen there is not a breath of winde stirring, it is a calm or a starke calme. A Breze is a winde blowes out of the Sea, and commonly in faire weather begimneth about nine in the morning and lasteth till neere night; so likewise all the night it is from the shore which is called a Turnado, or a Sea-turn, but this is but upon such coasts where it bloweth thus most certainly, except it be a storm, or very fowl weather, as in Barbaria, Ægypt, and the most of the Levant. We have such Brezes in most hot countreys in Summer, but they

A fresh gale. are very uncertain. A fresh Gale is that doth presently blow after a calm, when the winde beginneth to quicken or blow.

A Loome gale. A faire Loome Gale is the best to saile in, because the Sea goeth not high, and we beat out all our sailes. A stiffe Gale is so much winde as our top sailes can endure to beat.

Eddie winde. It overblowes. Eddie winde is checked by the sail, a mountain, turning, or any such thing that makes it return back again. It overblowes when we can beat no top sailes. A flaw of winde is

A Gust. A Spout. a Gust which is very violent upon a sudden, but quickly endeth. A Spout in the West Indies commonly falleth in those Gusts, which is, as it were, a small river falling entirely from the clouds, like out of our water Spouts, which make the Sea where it falleth rebound in flashes, exceeding

A whirlwinde. A Storme. high. Whirle windes runneth round, and bloweth divers wayes at once. A storm is knowen to every one not to be much

much leſſe than a tempeſt, that will blow down houſes, and trées up by the roots. A Mounſoune is a conſtant winde in the Eaſt Indies, that bloweth alwayes thrée moneths together one way, and the next three moneths the contrary way. A Hericano is ſo violent in the Weſt Indies, it will continue thrée, four, or five wéekes, but they have it not paſt once in five, ſix, or ſeven yéers; but then it is with ſuch extremity that the Sea flies like rain, and the waves ſo high, they over flow the low grounds by the Sea, *in ſo much*, that ſhips have been driven over tops of high trées there growing, many leagues into the land, and there left, as was Captaine Francis Nelſon an Engliſhman, and an excellent Sea-man for one.

A Tempeſt.
A Mounſoune.
A Hericano.

We ſay a calme ſea, or Becalmed, when is ſo ſmooth the Ship moves very little, and the men leap over bord to ſwim.

Becalmed.

A Rough Sea is when the waves grow high. An overgrown Sea when the ſurges and billowes go higheſt. The Rut of the ſea where it doth daſh againſt any thing. And the Roaring of the Sea is moſt commonly obſerved a ſhore, a little before a ſtorm or after a ſtorm.

A Rough Sea.
An overgrown Sea.
Surges.
The Rut of the Sea.
The roaring of the Sea.

Flood is when the water beginneth to riſe, which is young flood as we call it, then quarter flood, halfe flood, full Sea, ſtill water, or high water. So when it Ebbes, quarter ebbe, halfe ebbe, thrée quarter ebbe, low water, or dead low water every one doth know; and alſo that as at a ſpring tide the Sea or water is at the higheſt, ſo at a Neape tide it is at the loweſt. This word Tide, is common both to Flood and Ebbe; for you ſay as well tide of ebbe, as tide of flood, or a windward Tide when the Tide runnes againſt the ſtream, as a Lee-ward Tide, that is, when the winde and the Tide goeth both one way, which makes the water as ſmooth as the other rough. To Tide over to a place, is to go over with the Tide of ebbe or flood, and ſtop the contrary by anchoring till the next Tide, thus you may work againſt the winde if it over blow not. A Tide gate is where the Tide runneth ſtrongeſt. It flowes Tide and halfe Tide, that is, it will be halfe flood by the ſhore, before it begin to ſt. w in

Floods and ebbes.
A Tide of ebbe.
A Tide of flood.
A windward Tide.
A Lee-ward Tide.
To Tide over.
A Tide gate.
Tide and halfe Tide.

the

the channell; for although the Tide of flood run aloft, yet the Tide of ebbe runnes close by the ground. An Eddie tide is where the water doth run back contrary to the tide, that is, when some headland or great point in a River hinder-eth the free passage of the stream, that causeth the water on the other side the point to turn round by the shore as in a circle, till it fall into the tide again.

Eddie Tide.

As touching the reasons of ebbes and flods, and to know how far it is to the bottome of the deepest place of the Sea, I will not take upon me to discourse of; as knowing the same to be the secrets of God unrevealed to man: only I will set down a Philosophicall speculation of divers mens opinions touching the depth of the Sea; which I hope will not be thought much impertinent to the subject of this book by the judicious Reader.

The height of mountains perpendicular.

Fabianus in Plinie, and Cleomides conceived the depth of the Sea to be fiftæne furlongs, that is, a mile and $\frac{7}{8}$ parts, Plutarch compared it equall to the highest mountaines, Scaliger and others conceited the hills farre surpassed the deepnesse of the Sea, ann that in few places it is more then a hundred paces in depth, it may be he meant in some narrow Seas, but in the main Ocean experience hath taught us it is much more than twice so much, for I have sounded 300 fadome, yet found no ground. Eratosthenes in Theon that great Mathematician writeth the highest mountain perpendicular is but ten furlongs, that is, one mile and a quarter. Also Dicæarcus affirmeth this to be the height of the hill Pelius in Thessalia, but Xenagoras in Plutarch observed the height of Olympus in the same region to be twenty paces more, which is 1270. paces, but surely all those meane onely those mountaines in or about Greece, where they lived and were best acquainted; but how these may compare with the Alpes, in Asia, Atlas in Africa, Caucasus in India, the Andes in Peru, and divers, others hath not yet been examined.

The height of the hils compared with the superficies of the earth and depth of the Sea.

But whatsoever the hils may be above the superficies of the earth, many hold opinion the Sea is much deeper, who sup-

suppose that the earth at the first framing was in the superficies regular and spheritrail, as the holy Scripture directs us to beléeve; because the water covered and compassed all the face of the earth, also that the face of the earth was equall to that of the Sea. Damascen noteth, that the unevennesse and irregularity which now is seen in the earths superficies, was caused by taking some parts out of the upper face of the earth in sundry places to make it more hollow, and lay them in other places to make it more conver, or by raising up some part and depressing others to make roome and receit for the Sea, that mutation being wrought by the power of the word of the Lord, Let the waters be gathered into one place, that the dry land may appear. As for Aquinas, Dionysius, Catharianus, and some Divines that conceited there was no mutation, but a violent accumulation of the waters, or heaping them up on high is unreasonable; because it is against nature, that water being a flexible and a ponderous body, so to consist and stay it selfe, and not fall to the lower parts about it; where in nature there is nothing to hinder it, or, if it be restrained supernaturally by the hand and bridle of Almighty God, lest it should overwhelme and drowne all the land, it must follow, that God even in the very institution of nature imposed a perpetuall violence upon nature. And this with al, that at the Deluge there was no necessity to breake up the springs of the deep, and to open the cataracts of Heaven, and poure down water continually so many dayes and nights together, seeing the only with-drawing of that hand, or letting go of that bridle which restraineth the water would presently have overwhelmed all.

But both by Scriptures, the experience of Navigators, and reason in making estimation of the depth of the Sea, reckon not onely the height of the hils above the common superficies of the earth, but the height of all the dry land above the superficies of the Sea, because the whole masse of earth that now appeareth above the waters, being taken as it were out of the places which the waters now possesse,

How all the hils and dry land above the superficies of the Sea hath made roum for the Sea, therefore they are in equall height and depth.

must be equall to the place out of which it was taken; so consequently it seemeth, that the height or elevation of the one should answer the descending or depth of the other; and therefore in estimating the depth of the Sea, we consider not onely the erection of the hils above the ordinary land, but the advantage of the dry land above the Sea; which latter, I mean the height of the ordinary maine land, excluding the hills, which properly answer the extraordinary deepes and whirle-poles in the Sea. The rest is held more in large Continents above the Sea, than that of the hills is above the land.

That there is small difference betwixt the springs first rising out of the earth, and their falling into the Sea.

For that the plain face of the dry land is not level, or equally distant from the Center, but hath a great descent towards the Sea, and a rising towards the mid-land parts, although it appear not plainly to the eye, yet to reason it is most manifest; because we finde that part of the earth the Sea covereth descendeth lower and lower towards the Sea. For the Sea, which touching the upper face of it, is known by nature to be levell and evenly distant from the center, is observed to wax deeper and deeper the further one saileth from the shore towards the main Ocean: even so in that part which is uncovered, the streamings of rivers on all sides from the midland parts towards the sea, sliding from the higher to the lower declareth so much, whose courses are some 1000 or 2000 miles, in which declination, Pliny in his derivation of water requireth one cubit of declining in 240 foot of proceeding. But Columella, Vitruvius, Paladius, and others, in their conduction of waters require somewhat lesse; namely, that in the proceeding of 200 foot forward, there should be allowed one foot of descending downward, which yet in the course of 1000 miles, as Danubius, Volgha, or Indus, &c. have so much or more, which will make five miles of descent in perpendicular account, and in the course of 2000 or more, as Nilus, Niger, and the River of the Amazons have 10 miles or more of the like descent.

The determination of these questions.

These are not taken as rules of necessity, as though water could not runne without that advantage, for that respect the

the conveyers of waters in these times content themselves with one inch in 600 foot, as Philander and Vitruvius observed, but is rather under a rule of commodity for expedition and wholsomnesse of water so conveyed, lest resting too long in pipes it should contract some unwholsome condition, or else through the slacknesse of motion, or long closenesse, or banishment from the aire, gather some aptnesse and disposition to putrefie. Although I say, such excesse of advantage as in the artificiall conveyance of waters the forenamed Authors require, be not of necessity exacted in the naturall derivation of them, yet certain it is, that the descent of rivers being continually and their course long, and in many places swift, and in some places headlong and furious; the differences of height or advantage cannot be great betwixt the springs of the rivers and their out lets, betwixt the first rising out of the earth and their falling into the Sea: unto which declivity of land seeing the deepnesse of the Sea in proportion answer as I before declared, and not onely to the height of the hils: it is concluded, that the deepnesse to be much more than the Philosophers commonly reputed: and although the deepnesse of the Sardinian Sea, which Aristotle saith, was the deepest of the Mediterranean, recorded by Posidonius in Strabo, to have been found but 1000 fadome, which is but a mile and a fifth part, and the greatest breadth not past 600 miles: then seeing if in so narrow a Sea it be so deep, what may we esteem the main Ocean to be, that in many places is five times so broad, seeing the broader the Seas are, if they be intire and free from Ilands, they are answerably observed to be the deeper. If you desire any further satisfaction, reade the first part of Purchas his Pilgrimage, where you may reade how to finde all those Authors at large. Now because he hath taken neer 100 times as much from me, I have made bold to borrow this from him, seeing he hath sounded such deep waters for this our Ship to sail in, being a Gentleman whose person I loved, and whose memory and vertues I will ever honour.

Note, the difference betwixt the springs of the rivers, and their falling into the Sea is not great.

CHAP. XI.

Proper Sea-tearms belonging to the good or bad condition of Ships, how to finde them and amend them.

A wholsome ship.

A Ship that will try hull, and ride well at Anchor, we call a wholsome Ship. A long Ship that drawes much water will doe all this, but if she draw much water and be short, she may hull well, but neither try nor ride well; if she draw little water and be long, she may try and ride well, but never hull well, which is called an unwholsome Ship. The howsing in of a Ship is when she is past the breadth of her bearing she is brought in narrow to her upper works: it is certain this makes her wholsome in the Sea without rowling, because the weight of her Ordnance doth counterpoise her breadth under water, but it is not so good in a man of warre, because it taketh away a great deal of her room, nor will her tacks ever so well come abord as if she were laid out aloft and not flaring, which is when she is a little howsing in, neer the water, and then the upper work doth hang over again, and is laid out broader aloft, this makes a Ship more romy aloft for men to use their arms in, but Sir Walter Rawleighs proportion, which is to be proportionally wrought to her other work is the best, because the counterpoise on each side doth make her swimme perpendicular or straight, and consequently steady, which is the best.

An unwholsome Ship.

Howsing a Ship.

Flaring.

If a Ship be narrow, and her bearing either not laid out enough or too low, then you must make her broader and her bearing the higher by ripping off the plankes two or three

thrée ſtrakes under water and as much above, and put other Timbers upon the firſt, and then put on the plankes upon thoſe Timbers, this will make her beare a better ſail, but it is a hinderance to her ſailing, this is to be done when a Ship is cranke ſided and will beare no ſaile, and is called Furring. Note alſo, that when a Ship hath a déep Kéele it doth kéep her from rowling. If ſhe be floaty and her Kéele ſhallow, put on another kéele under the firſt to make it déeper, for it will make her hold more in the water, this we call a falſe Kéele. Likewiſe if her ſtem be too flat to make her cut water the better, and not gripe, which is when ſhe will not kéep a winde well; fit another ſtem before it, and that is called a falſe ſtem, which will make her rid more way and beare a better ſaile. Alſo the Run of a Ship is as much to be regarded, for if it be too ſhort and too full below, the water comes but ſlowly to the Rudder becauſe the force of it is broken by her breadth, and then to put a falſe ſtem poſt to lengthen her is the next remedy, but to lengthen her is better; for when a Ship comes off handſomly by degrées, and her Tuck doth not lie too low, which will hinder the water from coming ſwiftly to the Ruder, makes her ſhe cannot ſteare well, and they are called as they are, a good runne or a bad. When a Ship hath loſt a piece of her Kéele, and that we cannot come well to mend it, you muſt patch a new piece unto it, and binde it with a ſtirrup, which is an iron comes round about it and the Keele up to the other ſide of the Ship, whereto it is ſtrongly nailed with Spikes. Her rake alſo may be a defect, which is ſo much of the Hull, as by a perpendicular line the end of the Kéele is from the ſetting on of the ſtem, ſo much as is without that forward on, and in like manner the ſetting in of her ſtem Poſt. Your French men gives great Rakes forwards on, which makes her give good way and kéep a good winde, but if ſhe have not a full bowe ſhe will pitch her head extremely in the ſea. If ſhe have but a ſmall Rake, ſhe is ſo bluffe that the Seas méet her ſo ſuddenly upon the Bowes ſhe cannot cut the Water much, but the longer a ſhip is, the fuller ſhould be

Cranke ſide.
Furring.
A falſe Keele.
Gripe.
A falſe ſtem.
The runne.
A good runne.
A bad runne.
A Stirrup.
Her Rake.

her

Loome. her Bowe, but the meanis the beſt. The looming of a Ship is her proſpective, that is, as ſhe doth ſhew great or little: Her water draught is ſo many foot as ſhe goes in the water, but the Ships that draw moſt water are commonly the moſt wholſome, but the leaſt draught goes beſt but rolls

Heeld. moſt, and we ſay a Ship doth heeld on Starbord or Larboord, that is, to that ſide ſhe doth leane moſt.

Overſet. To overſet or overthrow a Ship, is by bearing too much

Overthrow. ſaile you bring her Keele upwards, or on ſhore overthrow her by grounding her, ſo that ſhe falls upon one ſide; and we

Walt. ſay a Ship is walt when ſhe is not ſtiffe, and hath not Bal-

Wall reared. laſt enough in her to keep her ſtiffe. And wall reared when ſhe is right built up, after ſhe comes to her bearing it makes her ill ſhapen and unſeemly, but it gives her within much roome, and ſhe is very wholſome, if her bearing be well laid out. The Maſting of a Ship is much to be conſidered, and will much cauſe her to ſail well or ill, as I have related in

Iron ſicke. the maſting a Ship. Iron ſick, is when the Bolts, Spikes or Nailes are ſo eaten with ruſt they ſtand hollow in the plankes, and ſo makes her leake, the which to prevent, they uſe to put lead over all the bolt heads under water. Laſtly, the trimming of a Ship doth much amend or impair

Trim. her ſailing, and ſo alter her condition. To finde her trim, that is, how ſhe will ſail beſt; is by trying her ſailing with another Ship, ſo many glaſſes trimmed a head, and ſo many aſterne, and ſo many upon an even Keele; alſo the eaſing of her Maſts and Shrouds, for ſome Ships will ſail much better when they are ſlacke than when they are taught.

CHAP.

CAAP. XII.

Considerations for a Sea Captaine in the choise of his ship, and in placing his Ordnance. In giving Chase, Boording, and entering a man of warre like himselfe, or a defending Merchant man.

How to chuse a Ship fit to make a man of warre.

IN Land service we call a man of war a Souldier either on foot or Horse, and at Sea a Ship, which if she be not as well built, conditioned, and provided, as neere fitting such an imployment as may be, she may prove (either) as a horseman that knoweth not how to hold his reines, keep his seat in his saddle and stirrups, carry his body, nor how to help his horse with leg and spur in a curvet, gallop, or stop; or as an excellent horsman that knoweth all, this, mounted upon a Jade that will do nothing, which were he mounted according to his experience, he would do more with that one, than halfe a dozen of the other though as well horsed as himselfe. But I confesse, every horsman cannot mount himself alike, neither every Seaman ship himselfe as he would, I mean not for outward ornament, which the better they are, the lesse to be disliked; for there cannot be a braver sight than a Ship in her bravery, but of a competent sufficiency as the businesse requireth. But were I to chuse a Ship for my self, I would have her sail well, yet strongly built, her decks flush and flat, and so roomy that men might passe with ease; her Bowe and chase so Gally-like contrived, should bear as many Ordnances as with convenience she could, for that always cometh most to fight, and so stiffe, she should bear a stiffe sail and bear out her lower tier in any reasonable weather, neither should her Gunroome be unprovided: not manned like a Merchant-man, which if

they

they be double manned, that is, to have twice so many men as would saile her, they think it is too many in regard of the charge, yet to speak true, there are few Merchant Ships in the world do any way exceed ours. And those men they entertaine in good voyages have such good pay, and such acquaintance one with another in shipping themselves, that thirty or fourty of them would trouble a man of warre with three or four times their number manned with prest men, being halfe of them scarce hale Boulings. Yea, and many times a Pirat who are commonly the best manned, but they fight only for wealth, not for honour nor revenge, except they be extremely constrained. But such a Ship as I have spoken of well manned with rather too many than too few, with all sufficient Officers, Shot, Powder, Victuall, and all their purtenences, in my opinion might well passe muster for a time of war.

His reward that first descries a Ship, or enters a prize.

Now being at Sea, the tops are seldome without one or other to look out for purchase, because he that first descries a saile, if she prove prize, is to have a good suite of Apparell, or so much money as is set down by order for his reward, as also he that doth first enter a Ship there is a certain reward allowed him; when we see a Ship alter her course, and useth all the meanes she can to fetch you up, you are the chase, and he the chaser. In giving chase or chasing, or to escape being chased, there is required an infinite judgement and experience, for there is no rule for it; but the shortest way to fetch up your chase is the best. If you be too Leeward, get all your Tacks aboard, and shape your course as he doth to meet him at the neerest angle you can, then he must either alter his course and Tacke as you Tacke as neer the wind as he can lie to keep his own till night, and then strike as Hell that you may not descry him by his sailes, or do his best to lose you in the darke; for look how much he falls to lee-ward, he falls so much in your way. If he be right ahead of you, that is called a sterne chase, if you weather him, for every man in chasing doth seek to get the weather, because you cannot board him except you weather him, he will lasket or

How to give chase, and escape the chaser.

or go large, if you gather on him that way, he will trie you before the winde, then if your ordnance cannot reach him, if he can out-strip you he is gone: But suppose you are to winde-ward, if he clap close by a wind, and there goes a head sea, and yours a lee-ward ship, if you do the like your ship will so bear against the Sea, she will make no way; therefore you must go a little more large though you chase under his lee till you can run ahead.

Board and board. Board and Board is when two ships lie together side by side, but he that knoweth how to defend himself, and work well, will so cun his ship, as force you to enter upon his quarter, which is the highest part of the ship, and but the mizen shrouds to enter by; from whence he may do you much hurt with little danger, except you fire him, which a Pirat will never do, neither sinke you if he can chuse, except you be able to force him to defend himself. But in a Sea fight we call Boarding, ta Boarding where we can, the greatest advantage for your Ordnance is to board him thwart the hawse, because you may use all the ordnance you have on one side, and she onely them is her prow; but the best and safest boarding for entring is on the bowe, but you must be carefull to cleare the decks with burning granados, fire-pots, poutches of powder, to which give fire by a Gun-powder match, to prevent traines to the powder chest, which are long boards joyned like a triangle with divers broad ledges on either side, wherein lieth as many peble stones or beatch as can there lie, those being fired will make all cleer before them. Besides in an extremity a man would rather blow up the quarter deck, half deck, fore castle, or any thing, than be taken by him he knowes a mortall enemy, and commonly there are more men lost in entering, if the chase stand to her defence, in an instant, than in a long fight board and board, if she be provided of her close fights: I confesse, the charging upon trenches, and the entrances of a breach in a champtre are attempts as desperate as a man would think could be performed, but he that hath tried himself as oft in the entering a resting ship as I have done both them and the other,

Boarding and entering a ship.

Powder chests.

other, he would surely confesse there is no such dangerous service alhoze, as a resolved resolute fight at sea. A ships close fights, are small ledges of wood laid crosse one another like the grates of iron in a prisons window, betwixt the main mast, and the foze mast, and are called gratings, oz nettings as is said, which are made of small ropes, much in like manner covered with a sail; the which to undo is to heave a kedger, oz fix a grapling into them, tied in a rope, but a chaine of iron is better, and shearing off will tear it in pieces if the rope and anchoz hold, some have used shear hookes which are hookes like sickels fixed in the ends of the yards armes, that if a shipwinder sail come to bowz her, those sheares will cut her shzouds, and spoil her tackling, but they are so subject to bzeak their own yards, and cut all the ropes comes from the top sails, they are out of request. To conclude, if a ship be open, pzesently to bowd her is the best way to take her. But if you see your chase strip himselfe into fighting sailes, that is, to put out his colours in the powpe, his flag in the main top, his streamers oz pendants at the ends of his yards armes, furle his spzet-sail, pike his mizen, and sling his maine yard, pzovide your self to fight. Now because I would not be tedious in describing a fight at Sea, I have troubled you with this shozt pzeamble that you may the plainlier understand it.

Evident signes that a chase will fight.

CHAP.

CHAP. III.

How to Manage a fight at Sea, with the proper tearms in a fight largely expreſſed, and the ordering of a Navy at Sea.

FOr this maſter piece of this worke, I confeſſe I might do better to leave it to every particular mans conceit as it is, or thoſe of longer practice or more experience, yet becauſe I have ſéen many bookes of the Art of Warre by land, and never any for the Sea, ſéeing all men ſo ſilent in this moſt difficult ſervice; and there are ſo many young Captains, and others that deſire to be Captains, who know very little, or nothing at all to any purpoſe, for their better underſtanding I have proceeded thus far; now for this that follows, what I have ſéen, done, and conceived by my ſmall experience, I refer me to their friendly conſtructions, and well adviſed conſiderations.

Many the bookes of the Art of War for the land, none for the ſea.

A ſaſl, how bears ſhe or ſtands ſhée, to winds-ward or lee-ward? ſet him by the Compaſſe; he ſtands right ahead, or on the weather-Bowe, or lée-Bowe, let flie your colours if you have a conſort, elſe not. Out with all your ſails, a ſteady man to the helme, ſit cloſe to kéep her ſteady, give him chaſe or fetch him up; he holds his own, no, we gather on him. Captain, out goes his flag and pendants, alſo his waſte clothes and top armings, which is a long red cloth about ſhrée quarters of a yard broad, edged on each ſide with Calico or white linnen cloth, that goeth round about the ſhip on the out ſides of all her upper works fore and aft, and before the cubbridge heads, alſo about the fore and maine tops, as well for the countenance and grace of the ſhip, as to cover the men for being ſéen, he furles and ſlings his

To give chaſe.

Waſteclothes.

Top-armings.

maine yard, in goes his spret-saile. Thus they use to strip themselves into their short sailes, or fighting sailes, which is onely the fore sail, the maine and fore top sailes, because the rest should not be fired nor spoiled; besides they would be troublesome to handle, hinder our sights and the using our armes; he makes ready his close fights fore and aft.

Fighting sails.

To hale a ship.

How to begin a fight.

Master, how stands the chase? Right on head I say; Well we shall reatch him by and by; What's all ready? Yea, yea, every man to his charge, dowse your top-saile to salute him for the Sea, hale him with a noise of trumpets; Whence is your ship? Of Spaine; Whence is yours? Of England; Are you a Merchant, or a man of War? We are of the Sea; He waves us to Lee-ward with his drawn sword, cals amain for the King of Spaine, and springs his louse, give him a chase piece with your broad side, and run a good berth ahead of him; Done, done. We have the winde of him, and he tackes about, tacke you about also and keep your louse, be yare at the helme, edge in with him, give him a volley of small shot, also your prow and broad side as before, and keep your louse; He payes us shot for shot; Well, we shall requite him; What are you ready again? Yea, yea. Try him once more, as before; Done, done; Keep your louse and load your ordnance again; Is all ready? Yea, yea; edge in with him again, begin with your bowe pieces, proceed with your broad side, and let her fall off with the winde, to give her also your full chase, your weather broad side, and bring her round that the sterne may also discharge, and your tackes close aboord again; Done, done, the winde veeres, the Sea goes too high to board her, and we are shot thorow and thorow and between winde and water. Try the pump. bear up the helme; Master, let us breathe and refresh a little, and fling a man over board to stop the leakes; that is, to trusse him up about the middle in a peece of cantas, and a rope to keep him from sinking, and his armes at liberty, with a malet in the one hand, and a plug lapped in Okum, and well tarred in a tarpawling clout in the other, which he will quickly beat into the hole or holes the bullets made; What cheere mates?

How to fling a man over board.

is all well? All well, all well, all well; Then make ready to bear up with him again, and withall your great and small shot charge him, and in the smoke bord him thwart the hawse, on the bowe, mid Ships, or rather then faile, on his quarter, or make fast your graplings if you can to his close fights and shear off. Captain, we are fowl on each other, and the Ship is on fire, cut any thing to get clear, and smother the fire with wet clothes. In such a case they will presently be such friends, as to help one the other all they can to get clear, lest they both should burn together and sink; and if they be generous, the fire quenched, drink kindely one to another; heave their cans over bord, and then begin again as before.

A consultation and direction in a sea fight, and how they bury their dead.

Well Master, the day is spent, the night drawes on, let us consult. Chirurgion, look to the wounded, and winde up the slain, with each a weight or bullet at their heads and feet to make them sinke, and give them three Gunnes for their funerals. Swabber, make clean the Ship; Purser record their Names; Watch, be vigilant to keep your berth to winde ward that we lose him not in the night; Gunners, spunge your Ordnance; Souldiers, scowre your pieces; Carpenters, about your leakes; Boatswaine and the rest, repair the sails and shrouds; and Cooke, you observe your directions against the morning watch; Boy, Holla Master, Holla, is the Kettle boiled? yea, yea; Boatswaine, call up the men to prayer and break fast.

A preparation for a fresh charge.

Boy, fetch my cellar of bottels, a health to you all fore and aft, courage my hearts for a fresh charge; Gunners, beat open the ports, and out with your lower tire, and bring me from the weather side to the lee, so many pieces as we have ports to bear upon him. Master, lay him aboord louse for louse; mid Ships men, see the tops and yards well manned, with stones, fire pots, and brasse balles, to throw amongst them before we enter, or if we be put off, charge them with all your great and small shot, in the smoke let us enter them in the shrouds, and every squadron at his best advantage; so sound Drums and Trumpets, and Saint George for England.

They

How a prize doth yeeld, and how to entertain him Sea-man like.

They hang out a flag of truce, hale him a main, abale, or take in his flag, strike their sails and come aboard with their Captaine, Purser and Gunner, with their commission, cocket, or bils of loading. Out goes the boat, they are launched from the ship side, entertaine them with a generall cry, God save the Captain and all the company with the Trumpets sounding, examine them in particular, and then conclude your conditions, with feasting, freedome, or punishment, as you finde occasion; but alwayes have as much care to their wounded as your own, and if there be either young women or aged men, use them nobly, which is ever the nature of a generous disposition. To conclude, if you surprize him, or enter perforce, you may stow the men, rifle, pillage, or sack, and cry a prize.

How to call a Counsell of War, and order a Navy at Sea.

To call a Councell of Warre in a Fleet; There is your Councell of Warre to manage all businesses of import, and the common Councell for matters of small moment, when they would have a meeting, where the Admirall doth appoint it; if in the Admirall, they hang but a flag in the maine shrouds; if in the Vice Admirall, in the fore shrouds; if in the Reare Admirall, in the mizen; If there be many squadrons, the Admirall of each squadron upon sundry occasions doth carry in their main tops, flags of sundry colours, or else they are distinguished by severall pendants from the yard armes; every night or morning they are to come under the Lee of the Admirall to salute him and know his pleasure, but no Admirall of any squadron is to bear his flag in the maine top, in the presence of the Admirall generall, except the Admirall come aboard of him to Councell, to dinner, or collation, and so any ship else where he so resideth during that time, is to wear his flag in the main top. They use to marshall or order those squadrons in rankes like Manaples, which is four square, if the winde and Sea permits, a good berth or distance from each other, that they becalm not one another, nor come not fowle of each other: the Generall commonly in the middest, his Vice Admirall in the front, and his Reare Admirall in the Reare; or otherwise like a halfe

halfe Moone, which is two ſquadzons like two triangles foz the two hoznes, and ſo the reſt of the ſquadzons behinde each other a good diſtance, and the Generall in the middeſt of the halfe circle, from whence he ſeeth all his Fleet, and ſendeth his directions, as he findes occaſion to whom he pleaſeth.

Stratagems for Sea-men.

Now betweẽ two Navies they uſe often, eſpecially in a harbour oz road where they are at Anchoz, to fill old Barkes with pitch, tar, traine oil, lin-ſeed oil, bzimſtone, roſin, rẽds, with dzy wood, and ſuch combuſtible things, ſometimes they linke thzée oz four together in the night, and put them adzift as they finde occaſion. To paſſe a fozt ſome will make both ſhips and ſails all black, but if the fozt keep but a fire on the other ſide, and all the pieces point blanke with the fire, if they diſcharge what is betwixt them and the fire, the ſhot will hit if the rule be truly obſerved; foz when a ſhip is betwixt the fire and you, ſhe doth keep you from ſeeing it till ſhe be paſt it. To conclude, there is as many ſtratagems, advantages, and inventions to be uſed as you finde occaſions, and therefoze experience muſt be the beſt Tutoz.

CHAP.

CHAP. XIV.

The names of all sorts of great Ordnance, and their appurtenances, with their proper tearms and expositions, also divers observations concerning their shooting, with a Table of proportion for their weight of metall, weight of powder, weight of shot, and there best at randome and point blanke inlarged.

The Names of great Ordnance.

A Canon royall, or double Canon, a Canon, a Canon Serpentine, a bastard Canon, a demy Canon, a Canon Petro, a culverine, a Basilisco, a demy Culverine, a bastard Culvering, a Sacar, a Minion, a Falcon, a Falconet a Serpentine, a Rabbinet. To all those do belong

Carriages. carriages whereon pieces do lie supported by an areltre betwixt two wheeles, whereon doth lie the piece upon her

Trunnions. trunnions, which are two knobs cast with the piece on each of her sides, which doth lie in two halfe holes upon the two cheekes of the carriages, to raise her up or down as you will,

Capsquares. over them are the capsquares, which are two broad pieces of iron doth cover them, made fast by a pin with a fore locke to keep the piece from falling out. That the piece and

Wheeles. carriages is drawn along upon wheeles every one doth know

Truks. if she be for land service, they have wheeles made with spokes like coach wheeles, and according to their proportions strongly shod with iron, and the pins at the ends of the Areltre are called Linch pins.

If for Sea she have Trucks, which are round intire pieces of wood like wheeles. To mount a piece is to lay her upon

To mount a Peece. her carriages; to dismount her, to take her down. Her Bed

To dismount a Peece. is a planke doth lie next the piece, or the piece upon it upon

Beds. the carriage, and betwixt the Piece and it they put their quoines,

quoines, which are great wedges of wood with a little handle at the end to put them forward or backward for levelling the Peece as you please. To travas a Péce is to turne her which way you will upon her Platform. To dispart a Péce is to finde a difference betwixt the thicknesse of the metall at her mouth and britch or carnouse, which is the greatest circle about her britch, and her muzzle Ring is the greatest circle about her mouth thereby to make a just shot, there are divers wayes to dispart her, but the most easiest is as good as the best: and that is but by putting a little sticke or a straw that is strait into the touch hole to the lower part of the Cylinder or Concave, which is the bore of the Péce and cut it off close by the metall, and then apply it in the same manner to the mouth, and it will exactly shew you the difference, which being set upon the muzzle of the Péce with a little Clay, Pitch, or Wax, it will be as the pin of any Péce is to the sight, levell to the carnouse or britch of the Péce, otherwayes you may give her allowance according to your judgement.

Quoines.

Travas.

Dispart.

Britch.

Carnouse.

Muzzle.

Cylinder.

Concave.

Bore.

How to dispart a Peece.

Taper boared.

Taper boared, is when a Péce is wider at the mouth then towards the britch, which is dangerous (if the Bullet go not home) to burst her. Honycombed, is when she is ill cast or overmuch worne she will be rugged within, which is dangerous for a crosse barre shot to catch hold by, or any ragge of her wadding being a fire and sticking there may fire the next charge you put in her; and you may finde if she be Taper bored, either with a crow'ed wyer at the end of a long staffe, by scratching up and down to see where you can catch any hold, or a light candle at the end of a sticke thrust up and down to see if you can see any fault. Britchings are the ropes by which you lash your Ordnance fast to the Ships side in foule weather. Chambers is a charge made of brasse or iron which we use to put in at the britch of a sling or murtherer, containing just so much powder as will drive away the case of stones or shot, or any thing in her. In a great Péce we call that her Chamber so far as the powder doth reach when she is laded.

Hony-comb.

How to finde it.

Britchings.

Chambers.

Cartrages. A Cartrage is a bag of Canvasse made upon a frame of a round piece of wood somewhat lesse than the bore of the Péece, they make them also of paper, they have also Cartrages or rather cases for Cartrages made of Lattin to kéep the Cartrages in, which is to have no more powder in them than just the charge of your Péece, and they are closely co-

Cases. vered in those cases of Lattin, to kéep them dry, and from any mischances by fire, and are far more ready and safer

A Budge-barrell. than your Ladles or Budgebarrels. A Budgebarrel is a little Barrell made of Lattin, filled with powder to carry from place to place for fear of fire; in the cover it hath a long

A Ladle. neck to fill the Ladles withall without opening. A Ladle is a long staffe with a péece of thin Copper at the end like halfe a Cartrage, in breadth and length so much as will hold no more powder than the one charge for the Péece it belongs

A Spunge. to. A Spunge is such another staffe, with a piece of a Lambs skin at the end about it to thrust up and down the Péece, to take off the dust, moisture, or sparkes of fire if

A Rammer. any remain in her. And a Rammer is a bob of wood at the other end to ramme home the Powder and the Waddings.

Waddings. Waddings is Okum, old clouts, or straw, put after the

Wood cases. powder and the Bullet. A Case is made of two pieces of hollow wood joyned together like two halfe Cartrages fit to

Case shot. put into the bore of a Péece, and a case shot is any kinde of small Bullets, Nailes, old iron, or the like to put into the case to shoot out of the Ordnances or Murderers, these will do much mischiefe when we lie board and board: but for Spunges and Rammers they use now a stiffe Rope a little more than the length of the Péece, which you may turn and winde within board as you will, with much more ease and safety than the other.

Round shot. Round shot is a round Bullet for any Peece: Crosbar-

Crosse bar shot. shot is also a round shot, but it hath a long spike of Iron cast

To arm a shot. with it as if it did go thorow the middest of it, the ends whereof are commonly armed for fear of bursting the Péece, which is to binde a little Okum in a little Canvasse at the

Trundle shot. end of each Pike. Trundle shot is onely a bolt of iron sir-

téen

ten or eighteen inches in length; at both ends sharp pointed, and about a handfull from each end a round broad bowle of lead according to the bore of the Peece cast upon it. Langrell shot runnes loose with a shackell, to be shortened when you put it into the Peece, and when it flies out it doth spread it selfe, it hath at the end of either barre a halfe Bullet either of lead or iron. Chaine shot is two bullets with a chaine betwixt them, and some are contrived round as in a Ball, yet will spread in flying their full length in breadth; all these are used when you are neer a Ship to shot down Masts, Yards, Shrouds, teare the sailes, spoile the men, or any thing that is above the decks. Fire works are divers, and of many compositions, as Arrowes trimmed with wilde fire to sticke in the sailes or Ships side shot burning. Pikes of wilde fire to strike burning into a Ship side to fire her. There is also divers sorts of Granados, some to breake and fly in abundance of peeces every way, as will your brasse balls and earthen pots which when they are covered with quartered bullets stucke in pitch, and the pots filled with good powder, in a crowd of people will make an incredible slaughter; some will burn under water, and never extinguish till the stuffe be consumed; some onely will burn and fume out a most stinking poison smoke; some, being but onely an Oile, being nointed on any thing made of dry wood, will take fire by the heat of the Sun when the Sun shines hot. There is also a Powder, which being laid in like manner upon any thing subject to burn, will take fire if either any raine or water light upon it; but those inventions are bad on shore, but much worse at Sea, and are naught because so dangerous, and not easie to be quenched, and their practice worse, because they may do as much mischief to a friend as to an enemy, therefore I will leave them as they are.

Langrell shot.

Chaine shot.

Fire works.

Arrowes of wilde fire.

Pikes of wilde fire.

Granados of divers sorts.

Brasse Balles.

There are also divers sorts of powder, the Serpentine is like dust and weake, and will not keep at Sea but be moist. The common sort is great corned powder but grosse, and onely used in great Ordnance. Your fine corned Powder for hand Guns is in goodnesse as your salt-Peeter is oft re-

Powder.

Serpentine powder.

Grosse corned Powder.

Fine corned Powder.

fined, and from ten pence a pound to eighteene pence a pound.

A Tomkin. A Fid. A Tomkin is a round piece of wood put into the Peeces mouth and covered with Tallow, and a fid a little Drum made like a naile put in at the touch hole, and covered with a thin lead bound above it to kéep the powder dry in the Péce.

Shackels Shackels are a kinde of Rings but not round, made like them at the hatches corners (by which we take them up and lay them down) but bigger, fixed to the middest of the ports within board, through which we put a billet to kéep fast the port for flying open in foul weather, which may easily indanger, if not sinke the Ship.

To cloy a Peece or poison her. To uncloy. To cloy or poison a Péce, is to drive a naile into her touch hole, then you cannot give fire. And to uncloy her, is to put as much oil as you can about the nail to make it glib, and by a traine give fire to her by her mouth, and so blow it out.

Compasse Callipers. Compasse Callipers belongs to the Gunner, and is like two halfe Circles that hath a handle and joint like a paire of Compasses, but they are blunt at the points to open as you please for to dispart a Péce.

Horne. Priming Iron. A Horne is his touch box, his primer is a small long piece of iron, sharpe at the small end to pierce the Cartrage through the touch hole.

Lint stocke. Gunners quadrant. Dark Lanthorn. Morters. The names of small Peeces, and their implements. Lint stock is a handsome carved stick, more than halfe a yard long, with a Cocke at the one end to hold fast his Match, and a sharpe pike in the other to sticke it fast upon the Deck or platform upright. The Gunners quadrant is to levell a Péce or mount her to any random. A darke Lanthorne is as well to be used by any body as he. For Mortars, or such chambers as are only used for triumphs, there is no use for them in the service: but for Curtoues, Harquebuses Muskets, Bastard-muskets, Colivers, Crabuts, Carbines, long Pistols or short Pistols, there belong to them Bandiliers, bullet Bags, Wormes, Scowrers, melting Ladles, Lead, Molds of all sorts to cast their shot.

Bandiliers. Bullet bags. Wormes. Scowrers. Melting Ladles. Lead Molds. Quartered shot. Quarter Bullets is but any bullet quartered in four or eight parts, and all those are as usefull a ship-board as on shore. For the soul, trunke, bore, fortification, the diversity of their met[illegible]ls, and divers

divers other curious Theorems or tearms used about great Ordnance, there are so many uncertainties as well in her mounting, levelling upon her platform, as also the accidents that may happen in the powder, the ground, the aire, and differences in proportion, I will not undertake to prescribe any certain artificiall rule. These propositions fol'owing are nere the matter, but for your better satisfaction reade Master Digs Pantometria, Master Smith, or Master Bournes Art of Gunnery, or Master Robert Nortons Exposition upon Master Digs Stratiaticos, any of those will shew the Theorie at large But to be a good Gunner you must learn it by practice.

A Table of Proportion for the weight and ſhooting of great Ordnance.

		The names of the great Peeces.	The height of the Peeces	The weight of the peeces	The weight of the ſhot.	The weight of the powd.	The bredth of the ladle	The length of the ladle	2400li. of powder makes of ſhot in a	Shot point blanke in	Shot randome in
			Inches	*Pound*	*Pound*	*Pound*	*Inches*	*Inches*	*Peece*	*Paces*	*Paces*
Theſe Peeces be moſt ſerviceable for battery, being within 80 paces to their mark, which is the chief of their forces.	1	A Canon Royall.	8 ½	8000	66	30	13 ¾	24 ½	80	16	1930
	2	A Canon	8	6000	60	27	12	24	85	17	2000
	3	A Canon Serpentine	7 ½	5500	53 ⅓	25	10 ½	23 ½	96	20	2000
	4	A Baſtard Canon	7	4500	41 ¼	20	10	23 ⅓	120	18	1800
	5	A demy Canon	6 ½	4000	30 ¼	18	9 ⅓	23 ¼	133	17	1700
	6	A Canon Petro	6	3000	24 ¼	14	9	23	171	16	1600
Theſe Peeces be good and alſo ſerviceable to be mixt with the above Ordnance for battery to peeces being croſt with the reſt, as alſo fit for Caſtles, Forts and walls to be planted, and for defence.	7	A Culvering	5 ½	4500	17 ⅓	12	8 ½	22 ⅓	200	20	2500
	8	A Baſiliſco	5	4000	15 ¼	10	7 ½	22	240	35	3000
	9	A demy Culvering	4 ½	3400	9 ⅓	8	6 ⅓	21	300	20	2500
	10	A baſtard Culvering	4	3000	7	6 ¼	6	20	388	18	1800
	11	A Sacre	3 ½	1400	5 ⅓	5 ⅓	5 ½	18	490	17	1700
	12	A Minion	3 ¼	1000	4	4	4 ½	17	600	16	1600
	13	A Faulcon	2 ½	660	2 ¼	2 ¼	4 ¼	15	1087	15	1500
	14	A Faulcon	2 ⅓	800	3	3	4 ¼	15	800	15	1500
Theſe Peeces are good and ſerviceable for the field, and moſt ready for defence.	15	A Faulconet	2	500	1 ¼	1 ¼	3 ¼	11 ¼	1950	4	1400
	16	A Sarpentine	1 ½	400	⅓	⅓	2 ⅓	10	7200	13	1300
	17	A Rabonet	1	300	½	½	1 ⅓	6	4800	12	1000

Note that seldome in Ships they use any Ordnance greater than Demy Canons, nor have they any certainty either at point blanke or any random.

Note your Serpentine powder in old time was in meale, but now corned and made stronger, and called Canon corne powder.

But that for small Ordnance is called corn Powder fine, and ought to have in strength a quarter more, because those small Péces are better fortified than the greater.

Now if you have but one sort of Powder for all, abate ¼ part, and cut off ¼ of the breadth and length of your Ladle.

But Cartrages are now found the best and most readiest.

Provided alwayes, that all Shot must be a quarter lesse than the height of the Péce.

CHAP.

CHAP. XV.

How they divide their shares in a man of War, what Bookes and instruments are fit for a Sea-man, with divers advertisements for Sea-men, and the use of the petty Tally.

THe ship hath one third part, the victualler the other third, the other third part is for the Company, and this is subdivided thus in shares.

Shares.

The Captain hath	10	In some but 9
The Lieutenant	9	or as he agreeth with the Capt: ine.
The Master	8	In some but 7
The Mates	7	
The Chirurgion	6	
The Gunner	6	
The Boatswaine	6	
The Carpenter	6	
The Trumpeter	6	
The 4 quarter Mast-	5	apéce, or
The Cooper	5	
The Chirurg. Mate-	5	
The Gunners mate-	5	
The Carpent. Mate-	5	
The Corporall	4	
The quar. Gunners-	4	
The Trump. Mate-	3	
The Steward.	4	
The Cooke	4	
The Corswaine	4	
The Swabber	4	

In English Ships they seldom use any Marshall, whose shares amongst the French is equall with the Boatswains, all the rest of the Younkers, or fore-mast-men according to their deserts, some three, some two and a half, some one and a half, and the boys one, which is a single share, or one and an half, or as they do deserve.

Now the Master, or his right hand Mate, the Gunner, Boatswaine, and four quarter Masters do make the shares, not the Captain who hath onely this privilege, to take away half a share, or a whole share at most, to give from one to another as he best pleaseth.

For to learn to observe the Altitude, Latitude, Longitude, Amplitude, the variation of the Compasse, the Suns Azimuth and Almicanter, to shift the Sun and Moon, and know the tides, your Rombs, prick your Card, say your Compasse, and get some of these Boks, but practice is the best.

Master Wrights Errours of Navigation.
Master Taps Sea-mans Kalendar.
The Art of Navigation.
The Sea Regiment.
The Sea-mans Secret.
Waggoner.
Master Gunters Works.
The Sea-mans Glasse for the Scale.
The New Attractive for Variation.
Master Wright for use of the Globe.
Master Hewes for the same.

Instruments fitting for a Sea-men.

Compasses so many pair and sorts as you will, an Astrolabe Quadrant, a Crosse-staff, a Back-staff, an Astrolabe, a Nocturnall.

Advertisements for young Commanders, Captains, and other Officers.

A young Gentleman that desires command at Sea, ought well to consider the condition of their Ship, Victuall and Company, for if there be more learners than Sailers, how slightly soever many esteeme Sailers, all the work to save Ship, goods, and lives must lie upon them, especially in foule weather, then their labour, hazard, wet, and cold,

cold, is so incredible I cannot expresse it. It is not then the number of them that here can say at home what I cannot do I can quickly learn, and what a great matter is it to sail a ship, or go to Sea; surely those for a good time will do more trouble than good, I confesse it is most necessary such should go, but not too many in one ship; for if the labour of three score should lie upon thirty, (as many times it doth) they are so over-charged with labour, bruises, and over-straining themselves they fall sick of one disease or other, for there is no dallying nor excuses with storms, gusts, over-grown Seas, and ice-shores, and when their victuall is putrified it endangers all: Men of all other professions in lightening, thunder, storms and tempests, with rain and snow may shelter themselves in dry houses by good fires, but those are the chief times Seamen must stand to their tackling, and attend with all diligence their greatest labour upon the decks. Many suppose any thing is good enough to serve men at Sea, & yet nothing sufficient for thē ashore, either for their healths, for their ease, or estates or estate; A Cōmander at Sea should do wel to think the contrary, and provide for himself & company in like manner; also seriously to consider what will be his charge to furnish himself at Sea with bedding, linnen, armes, and apparel, how to kēp his table aboard, and his expences on shore, and provide his petty Tally, which is a competent proportion according to your number of these particulars following.

The petty Tally.

Fine wheat flower close and well packed, Rice, Currants, Sugar, Prunes, Cynamon, Ginger, Pepper, Cloves, green Ginger, Oil, Butter, Holland chēese, or old chēese, Wine-vineger, Canarie-sack, Aqua vitæ, the best Wines, the best waters, the juyce of Limons for the scurvy, white Biskit, Oatmeal, Gammons of Bacon, dried Neats tongues, Beef packed up in Vineger, Legs of Mutton minced and stewed, and close packed up, with tried Sewet or Butter in earthen pots. To entertain Strangers, Marmalade, Suckets, Almonds, Comfits and such like.

The use of the petty Tally.

Some it may be will say I would have men rather to feast then fight; But I say the want of those necessaries occasions the

the losse of more men than in any English Fleet hath been slain since 88. For when a man is ill, or at the point of death, I would know whether a dish of buttered Rice with a little Cynamon, Ginger, and Sugar, a little minced meat, or rost Beef, a few stew'd Prunes, a race of green Ginger, a Flap-jack, a Kan of fresh water brewed with a little Cynamon, and Sugar be not better than a little pur John, or salt fish with Oil and Mustard, or Bisket, Butter, Chese, or Oat-meal-pottage on Fish-dayes, or on Flesh-dayes, Salt, Beef, Pork and Pease with six shillings beer, this is your ordinary ships allowance, and good for them are well if well conditioned, which is not alwayes as Sea-men can (too well) witnesse And after a storme, when our men are all wet, and some have not so much as a cloth to shift them, shaking with cold, few of those but will tell you, a little Sack or Aqua-vitæ is much better to kéep them in health, than a little small Beer or cold water although it be swéet. Now that every one should provide things for himself, few of them have either that providence or means, and there is neither Ale-house, Tavern, nor Inne to burn a faggot in, neither Grocer, Poulterer, Apothecary, nor Butchers Shop, and therefore the use of this petty Tally is necessary; and thus to be employed as there is occasion. To entertain Strangers, as they are in quality every Commander should shew himself as like himself as he can, as well for the credit of the Ship and his setters forth, as himself; but in that herein every one may moderate themselves according to their own pleasures, therefore I leave it to their own discretions, and this brief Discourse, and my self to their friendly construction, and good opinion.

FINIS.