on the lower deck, each over each ; and therefore, where there is a beam arm in the lower deck there muſt alſo be one above it in the upper deck, and the ſame in the middle deck in three-deck ſhips. It com­monly happens in ſhips of the line that there cannot be a whole beam between the deck breaſt hook and the beam that ſupports the ſtep of the bowſprit, becauſe the bowſprit paffes through that place : in this cafe, there muſt be a beam arm placed, letting the end come equal­ly between the beam and the breaſt hook : but in ſhips that the bowſprit will allow of a whole beam, then the ports and the reſt of the beams muſt be conſulted in or­der to ſpace it ; and when it ſo happens that the fore- maſt comes in the wake of a port, then a beam arm muſt be necessarily introduced.

Having placed the beams according to the diſpoſition of the other beams below, the ladder-ways ſhould be contrived : there ſhould be one next abaft the fore hatchway, which is a single ladder-way ; and one next afore the main hatch, which is a double ladder-way ; the ladders ſtanding the fore and aft way. There ſhould alſo be another next abaft the after hatch, and one over the cockpit correſponding with that on the lower deck.

The capſtans are next to be conſidered ; the after one is already placed on the lower deck, the barrel of which muſt paſs through the upper deck to receive the whelps and drumhead there, it being a double capſtan. In ſhips having three decks, the upper part of each capſtan is in the middle deck ; but in ſhips with one deck there is only this one capſtan, the upper part of which is placed on the quarter deck. The foremoſt capſtan ſhould be placed in the moſt convenient ſpot, to admit of its being lowered down to the orlop out of the way of the long boat : it may therefore be placed between the main and fore hatchways ; the beam under the ſixth port of the lower deck may form the aft ſide of its room, and the beams on each ſide of it ſhould be placed exactly over or under the beams on the other decks, and they ſhould be at a diſtance from each other ſufficient to let the drumheads paſs between them. The centre of the capſtan ſhould then be placed in the middle between the beams which compoſe its room ; and the partners ſhould be fitted in ſuch a manner as to ſhift occaſionally when wanted, which is by letting them be in two pieces fitted together. The partners on the lower deck, wherein the capſtan ſteps, muſt be ſup­ported by a pillar on the orlop deck, the lower part of which may be fitted in an oak chock ; ſo that when the pillar is taken away, and the capſtan lowered down, that chock ſerves as a ſtep for the capſtan. Thoſe two beams on the orlop, by having the pillar and chock upon them, have therefore the whole weight of the capſtan preſſing downwards : for the ſupport of them, there ſhould be a carling placed underneath the fore and aft way, with three pillars, one under each beam, and one between ; all of them being ſtept in the kelſon, by which the orlop deck will be well ſupported in the wake of the capſtan, and the other decks will feel no ſtrain from it.

The fire hearth is next to be diſpoſed ; which is placed differently according to the ſize of the ſhip. In three-deckers it is found moſt convenient to place it on the middle deck ; whence there is much more room un­der the forecaſtle than there would have been had it

been placed there. In all two-deck ſhips it is placed under the forecaſtle, becauſe on the deck underneath the bits are in the way. It is alſo under the forecaſtle in one-deck ſhips, though confined between the bits : in this caſe it ſhould be kept as near as poſſible to the after bits, that there may be more room between it and the foremoſt bits to make a good galley.

The poſitions of the main-topſail-ſheet bits are next to be determined ; the foremoſt of which muſt be ſo placed as to let its foreside come againſt the aft side of the beam abaft the main hatchway, and to paſs down to the lower deck, and there ſtep in the beams : admit­ting it to be a ſtraight piece, it would come at the aft ſide of the lower deck beam the ſame as it does at the upper deck beam, in conſequence of thoſe two beams ranging well up and down with each other : it muſt therefore have a caſt under the upper deck beam, by which the lower part may be brought forward ſufficient to ſtop in the lower deck beam. The aftermoſt muſt be placed againſt the foreſide of the beam abaft the mast, and ſtep on the beam below ; but there is no neceſſity to provide a crooked piece as before, for the beam of the upper deck may be moved a little farther aft, till it admit of the bit ſtopping on the lower deck beam, unleſs the beam comes under a port, as in that caſe it muſt not by any means be moved. The croſs pieces to the bits ſhould be on the foreſide, and in height from the upper deck about one-third of the height between it and the quarter deck. With regard to the heads of the bits, the length of the ſhip’s waſte ſhould be conſidered ; and if there is length enough from the forecaſtle to the foremoſt bits to admit of the ſpare geer being ſtowed thereon without reaching far­ther aft, the quarter deck may then run ſo far forward that the head of the foremoſt bits ſhall tenon in the foremoſt beam ; this gives the mainmaſt another deck, and admits of the quarter deck being all that the long­er : but if there is not the room before mentioned, then the quarter deck muſt run no further forward than the after bits, which will then tenon in the foremoſt beam ; and the foremoſt bits muſt have a croſs piece let on their heads, which is termed a *horſe,* and will be for the purpoſe of receiving the ends of the ſpare geer.

The length of the quarter deck being now deter­mined, the beams are then to be placed. For this pur­poſe the ſeveral contrivances in the quarter deck muſt be previouſly conſulted. It is necessary to obſerve, that there are neither carlings nor lodges, the carlings of the hatches excepted, in the quarter deck, round-houſe, and forecaſtle ; as they would weaken inſtead of ſtrengthening the beams, which ſhould be as ſmall as the ſize of the ſhip will permit, in order that the upper works may be as light as poſſible. Hence, as there are to be nei­ther carlings nor lodges, the deck will require a great­er number of beams, and a good round up, as on the contrary the deck would be apt to bend with its own weight. The moſt approved rule is therefore to have double the number of beams in the quarter deck as there are in a ſpace of the ſame length in the upper deck.

Then proceed to ſhift the beams to the beſt advan­tage, conſulting the hatchways, ladder-ways, mails, bits, wheel, &c. With reſpect to the ladder-ways on the quarter decks of all ſhips, there ſhould be one near the fore part of the great cabin for the officers, and an-