two volumes 4to, on *the Elements and Practice of Rigging*

*and Seamanship.*

Sails are made of canvas, of different textures, and are extended on or between the maſts, to receive the wind that forces the veſſel through the water. They are quadrilateral or triangular, as has been elſewhere deſcribed, and are cut out of the canvas cloth by cloth. The width is governed by the length of the yard, gaff, boom, or ſtay ; the depth by the height of the mast. In the valuable work to which we have juſt referred, the following directions are given for cutting ſails. " The width and depth being given, find the number of cloths the width requires, allowing for ſeams, tabling on the leeches, and ſlack cloth ; and, in the depth, al­low for tabling on the head and foot. For ſails cut ſquare on the head and foot, with gores only on the leeches, as ſome topſails, &c. the cloths on the head, between the leeches, are cut ſquare to the depth ; and the gores on the leeches are found by dividing the depth of the ſail by the number of cloths gored, which gives the length of each gore. The gore is ſet down from a ſquare with the oppoſite ſelvage; and the canvas being cut diagonally, the longeſt gored ſide of one cloth makes the ſhorteſt ſide of the next ; conſequently, the firſt gore being known, the rest are cut by it. In the leeches of topſails cut hollow, the upper gores are long­er than the lower ones ; and in ſails cut with a roach leech, the lower gores are longer than the upper ones. This muſt be regulated by judgment, and care taken that the whole of the gores do not exceed the depth of the leech. Or, by drawing on paper the gored side of the ſail, and delineating the breadth of every cloth by a convenient ſcale of equal parts of an inch to a foot, the length of every gore may be found with preciſion. Sails, gored with a ſweep on the head or the foot, or on both, have the depth of their gores marked on the ſelvage, from the ſquare of the given depth on each cloth, and are cut as above ; the longeſt ſelvage of one ſerving to meaſure the ſhorteſt ſelvage of the next, be­ginning with the firſt gored cloth next the middle in ſome ſails, and the firſt cloth next the maſt leech in others. For thoſe gores that are irregular no ſtrict rule can be given; they can only be determined by the judge­ment of the ſail-maker, or by a drawing.

“ In the royal navy, mizen topſails are cut with three quarters of a yard hollow in the foot ; but, in the mer­chant ſervice, top and topgallant ſails are cut with more or leſs hollow in the foot. Flying jibs are cut with a roach-curve on the ſtay, and a three-inch gore in each cloth, ſhortening from the tack to the clue. Lower ſtudding-ſails are cut with ſquare leeches, and topmaſt and topgallant-maſt ſtudding ſails with goring leeches.

“ The length of reef and middle bands is governed by the width of the ſail at their reſpective places; the leech- linings, buntline-cloths, top-linings, maſt-cloths, and cor­ner-pieces, are cut agreeably to the depth of the ſail ; each cloth and every article ſhould be properly marked with charcoal, to prevent confuſion or miſtake. Sails that have bonnets are cut out the whole depth of the ſail and bonnet included, allowing enough for the ta­blings on the foot of the ſail and head and foot of the bonnet, The bonnet is cut off after the ſail is ſewed together. If a drabler is required, it is allowed for in the cutting out the ſame as the bonnet.”

When the cloth is thus properly cut, the different pieces are to be joined together in the form of a ſail ; and for doing this properly we have the following di­rections in the work already quoted, " Sails have a double flat ſeam, and ſhould be ſewed with the beſt Engliſh-made twine of three threads, ſpun 360 fathoms to the pound, and have from one hundred and eight to one hundred and ſixteen ſtitches in every yard in length. The twine for large ſails, in the royal navy, is waxed by hand, with genuine bees-wax, mixed with one-ſixth part of clear turpentine ; and, for ſmall ſails, in a mixture made with bees wax, 4 lb ; hogs lard 5 lb ; and clear turpentine 1 lb. In the merchant ſervice, the twine is dip­ped in tar @@(L), ſoftened with a proper proportion of oil.

“ It is the erroneous practice of ſome ſailmakers not to ſew the ſeams any farther than where the edge is creaſed down for the tabling ; but all ſails ſhould be ſewed quite home to the end, and, when finiſhed, ſhould be well rubbed down with a rubber. In the merchant ſervice ſeams are ſometimes made broader at the foot than at the head, being ſtroriger. Broad ſeams are not allowed to be made on courſes, in the royal navy, but goring leeches are adopted in lieu of them. Boom-mainiails and the ſails of ſloops generally have the ſeams broader at the foot than at the head. The ſeams of courſes and topſails are ſtuck or ſtitched up, in the middle of the ſeams, along the whole length, with doa­ble ſeaming-twine ; and have from 68 to 72 ſtitches in a yard. In the merchant ſervice it is common to ſtick the ſeams with two rows of ſtitches, when the ſail is half worn, as they will then laſt till the ſail is worn out.

“ The breadth of the ſeams of courſes, topſails, and other ſails, in the royal navy, to be as follow, viz. cour­ſes and topſails, for 50 gun ſhips and upwards, one inch and a half, and, for 44 gun ſhips and under, one inch and a quarter, at head and foot ; all other ſails, one inch at head and foot.

“ The tablings of all ſails are to be of a proportion- able breadth to the ſize of the ſail, and ſewed at the edge, with 68 to 72 ſtitches in a yard. Thoſe for the heads of main and fore courſes to be four to fix inches wide ; for ſprit courſes and mizens, drivers, and other boom ſails, 3 to 4 inches wide ; for topſails, 3 inches to 4 inches and a half ; topgallant and ſprit topſails, 3 inches ; royal ſails, 2 inches and a half; jib and other ſtayſails, 3 inches to 4 inches and a half, on the ſtay or hoiſt ; and for ſtudding ſails, 3 inches to 4 inches on the head. Tablings on the foot and leeches of main and fore courſes to be 3 inches to 5 inches broad ; ſprit courſe and topſails, 3 inches ; topgallant and ſprit top­ſails, 2 inches and a half ; royals, 2 inches ; fore leeches of mizen, driver, and other boomſails, 3 inches and a half to 4 inches ; after leech, 3 inches ; and on the foot 2 or 3 inches. Tablings on the after leech of jibs and other ſtayſails to be from 2 to 3 inches broad ; and, on the foot, 2 to a inches and a half : on ſtudding ſail leeches one inch and a half to two inches and a half; and on the foot, from one to two inches.

@@@(l) The dipping of the twine in tar, we are perſuaded, is a very bad practice, for the reaſon aſſigned in Rope-Making. See that article, n⁰ 32.