it ſhould be contrived by the ſtowage, that the princi­pal and weightieſt part of the cargo or materials ſhould lie as near the main body of the ſhip, and as far ſrom the extreme ends, fore and aft, as things will admit of. For it ſhould be conſidered, that the roomy part of our ſhips lengthwiſe forms a ſweep or curve near four times as long as they are broad ; therefore thoſe roomy parts at and above the water’s edge, which are made by a full harping and a broad tranſom to ſupport the ſhip ſteady and keep her from plunging into the ſea, and alſo by the entrance and run of the ſhip having little or no bearing body under for the preſſure of the water to ſupport them, of courſe ſhould not be flowed with heavy goods or materials, but all the neceſſary vacan­cies, broken ſtowage, or light goods, ſhould be at theſe extreme ends fore and aft ; and in proportion as they are kept lighter by the ſtowage, the ſhip will be more lively to fall and riſe eaſy in great ſeas ; and this will contribute greatly to her working and sailing, and to prevent her from ſtraining and hogging ; for which reason it is a wrong practice to leave ſuch a large vacancy in the main hatchway, as is uſual, to coil and work the cables, which ought to be in the fore or after hatch­way, that the principal weight may be more eaſily flowed in the main body of the ſhip, above the flatteſt and loweſt floorings, where the preſſure of the water acts the more to ſupport it.

*Machine for meaſuring a Ship’s Day.* We have al­ready deſcribed a variety of machines or mſtruments which have been propoſed for this purpoſe under the article Log. In this place, therefore, we ſhall confine ourſelves to the machine invented by Francis Hopkin­ton, Eſq; Judge of the Admiralty in Pennſylvania.—- After having ſhown the fallacies to which the common log, and also that particular kind of infiniment invent­ed by M. Saumarez, are liable, he proceeds to deſcribe his own machine as follows :

This machine, in its moſt simple form, is repreſented by fig. 5. Plate CCCCLIII. wherein A B is a strong rod of iron moveable on the fulcrum C. D is a thin circular palate of braſs rivetted to the lower extremity of the rod. E an horizontal arm connected at orte end with the top of the rod AB by a moveable joint F, and at the other end with the bottom of the index IT, by a like moveable joint G. H is the index turning on its centre I, and travelling over the graduated arch K ; and L is a ſtrong ſpring, bearing againſt the rod AB, and conſtantly counteracting the preſſure upon the palate D. The rod AB ſhould be applied cloſe to the cut-water or flem, and ſhould be of ſuch a length that the palate D may be no higher above the keel than is neceſſary to ſecure it from injury when the veſſel is aground, or ſails in ſhoal water. As the bow of the ſhip curves inward towards the keel M, the palate D will be thrown to a diſtance from the bottom of the veſſel, although the perpendicular rod to which it is annexed lies cloſe to the bow above ; and therefore the palate will be more fairly acted upon. The arm E ſhould enter the bow ſomewhere near the hawſe hole, and lead to any convenient place in the forecastle, where a ſmooth board or plate may be fixed, having the index H, and graduated arch K, upon it.

It is evident from the figure, that as the ſhip is urged forward by the wind, the palate D will be preſſed upon bv the reſiſting medium, with a greater or leſs

force, according to the progreſſive motion of the ſhip ; and this will operate upon the levers to as to immediate­ly affect the index, making the leaſt increase or diminu­tion of the ſhip’s way visible on the graduated arch ; the ſpring L always counteracting the pressure upon the palate, and bringing back the index, on any relax­ation of the force impreſſed.

This machine is advantageouſly placed at the bow of the ſhip, where the current firſt begins, and acts fairly upon the palate, in preference to the item, where the tumultuous cloſing of the waters cauſes a wake, visible to a great diſtance. The palate D is ſunk neatly as low as the keel, that it may not be influenced by the heaping up of the water and the daſhing of the waves at and near the water line. The arch K is to ascertain how many knots or miles ſhe would run in one hour at her then rate of ſailing. But the graduations on this arch muſt be unequal ; becauſe the reſiſtance of the ſpring L will increaſe as it becomes more bent, to that the index will travel over a greater ſpace from one to five miles than from five to twelve. Laſtly, the palate, rod, ſpring, and all the metallic parts of the inſtrument, ſhould be covered with a ſtrong varniſh, to prevent ruſt from the corroſive quality of the ſalt water and ſea air.

This machine may be conſiderably improved as fol­lows : Let the rod or ſpear AB (fig. 5.) be a round rod of iron or ſteel, and inſtead of moving on the ful­crum or joint, as at C, let it paſs through and turn freely in a socket, to which socket the moveable joint muſt be annexed, as repreſented in ſig. 6. The rod muſt have a ſhoulder to bear on the upper edge of the socket, to prevent its flipping quite down. The rod muſt also paſs through a like locket at F, fig. 5. The joint of the lower socket muſt be fixed to the bow ot the ſhip, and the upper joint or socket muſt be connect­ed with the horizontal arm E. On the top of the uppermoſt socket let there be a small circular plate, bear­ing the 32 points of the manner’s compaſs; and let the top of the rod AB come through the centre of this plate, to as to carry a ſmall index upon it, as is repreſented in fig. 7. This ſmall index muſt be fixed to the top of the rod on a ſquare, to that by turning the in­dex round the plate, the rod may alſo turn in the sockets, and of courſe carry the palate D round with it ; the little index always pointing in a direction with the face of the palate. The ſmall compaſs plate ſhould not be fastened to the top of the socket, but only fitted tightly on, that it may be moveable at pleaſure. Sup­poſe then the intended port to bear S. W. from the place of departure, the palate muſt be turned on the loc­ket till the ſouth-weſt point thereon looks directly to the ſhip’s bow ; to that the ſouth-weſt and north-eaſt line on the compaſs plate may be preciſely parallel with the ſhip’s keel, and in this poſition the plate muſt remain during the whole voyage. Suppoſe, then, the ſhip to be ſailing in the direct courſe of her intended voyage, with her bowſprit pointing ſouth-weſt. Let the little index be brought to the ſouth-weſt point on the compaſs plate, and the palate ID will necessarily preſent its broad face toward the port of deſtination ; and this it muſt always be made to do, be the ſhip’s courſe what it may. If, on account of unfavourable winds, the ſhip is obliged to deviate from her intended courſe, the little in­dex muſt be moved to many points from the south-weſt