close, and the strakes taper as they recede from midships. They also acquire an upward curve, called “ sny,” which renders it difficult to work the plank. When the sny be­comes too great, a strake is ended short of the rest, and this is termed a “ stealer,” as it diminishes the sny for the succeeding strakes. Under the buttock it is often neces­sary to work some of the after plank wider at the after end, which has the same effect of diminishing the sny of the fol­lowing strakes. “ Hang” is the exact reverse of “ sny.” It mostly occurs in working plank on the inner surface of the timbers, and outside above the main breadth.

The various plans for fastening the plank and for secur­ing the buts will be most easily understood by a reference to Plate CCCCLVIII. fig. 43.

When the plank is worked and fastened, the seams, or the intervals between the edges of the strokes, are filled with oakum, or “ caulked,” with such care and force, that the oakum, while undisturbed, is almost as hard as the plank itself. If the openings between the strakes were of parallel width throughout the thickness of the plank, it would be impossible to make the caulking sufficiently compact to re­sist the water. The inner part of the edges of contiguous strakes should be in contact throughout their length, and from this contact the edges should gradually recede from each other to the outer surface of the plank, so that at a thickness of about ten inches they would be about 10/16ths of an inch apart ; that is, about 1/16th of an inch seam for every inch in thickness of plank. The practice in the royal yards is to allow a double thread for every inch in thickness of plank, and an additional double thread for every five inches ; besides which, one, or sometimes two, threads of spun-yarn are driven in as a bottom to the oakum. In the merchant­yards on the Thames, and where the larger merchant-ships are built, the caulking is nearly the same as in the govern­ment establishments. But in the smaller ships built at the outports, the oakum is seldom “ bottomed” home to the inner edge of the seam, the consequence of which is, that the uncovered edges of the planks decay, and the second caulking drives the oakum through, after which the seams cannot long be kept tight.

It is the generally received opinion, that however the French may have excelled us in designing the body of a ship, our practical building has always been incomparably superior to theirs. In so far as the skill of the workman is involved in this opinion, we believe it to be strictly correct.

The workmanship of English mechanics is probably un­rivalled, certainly not surpassed by that of any other me­chanics in the world, either in solidity or in neatness of exe­cution ; but we cannot in justice urge the claim of supe­riority further.

However weak the French prizes taken during the last century may have been from defective workmanship, the materials were in several instances much more judiciously combined for the purpose of obtaining strength than in the contemporary ships in our service. Indeed it was not un­til after Sir Robert Seppings became surveyor of the navy, that the absurdity of having the sheer of the ship and the sheer of the ports different from each other, was disconti­nued. The effect of this difference in their sheer was, that the assemblages of thick strakes brought round the sides for the purpose of strengthening them, were actually cut off from being crossed by the sheer of the ports. In the ma­jority of the French and Spanish ships taken at so early a period as the middle of the last century’, the sheer of the ports was the same as the sheer of the ship, consequently the whole strength of the thick strakes was preserved. The shelf was also originally copied from the French ; and though they have now discontinued it, it was at the period of its introduction an important improvement. Also we have only followed them in the adoption of iron knees for the security of our beam-ends. In making these animad­versions, we speak wholly of the past. For many years Bri­tish ships have been unequalled for strength, as well as for perfection, of workmanship.

It has become almost a fashion to decry the improve­ments introduced by Sir Robert Seppings. It would be well, perhaps, to remember the complaints continually made, of the weakness of the ships before he became surveyor of the navy, and to contrast the fleets of England at that time with the fleets which he left in the service when he relin­quished the surveyorship. There is no doubt that many of his plans were imperfect, and are susceptible of great im­provement. No change ever yet was made, or ever will be made, that was not and will not be susceptible of yet further improvement.

We have already mentioned the decks which are situated below the line of non-action ; those above it must all be con­sidered as most valuable longitudinal ties. Their sheer has been most properly much diminished within these last twen­ty years, It is evident, that for rigidity, decks without any sheer would be advantageous. The sheer was probably given them to facilitate the run of water to the scuppers, and may perhaps be desirable for this purpose ; but certainly, as strength is lost by their curvature, the sheer of the decks should be as little as possible. It may be objected, that perfectly straight decks would be injurious, or at least very unsightly, in the event of hogging taking place. The ob­jection is not valid; strength must not be sacrificed in order to prepare for the occurrence of a contingency which we are endeavouring to prevent, and which evidently may be pre­vented for a great length of time, since the various improve­ments introduced during the last five-and-twenty years have certainly almost wholly prevented the weakness in ships, which was before such a source of constant complaints.

The only consideration, in fastening decks, is to preserve their contact with the beams, and to withstand the action of caulking : more than enough to effect this object is use­less, and therefore the numerous bolts introduced with the system of diagonal decks were unnecessary. It may pro­bably be proper to observe, that the harder the material used for the flat of decks, the greater should the quantity of fastening be, as there will be less yielding of the edge to the caulking ; and although it is usual to allow more seam for caulking planks of a hard than of a soft material, the caulking will bring far more strain on the fastenings of the harder than on those of the softer ; besides which, strictly speaking, though it is not practically expedient, seam should depend upon thickness alone. It may not be improper to mention here, that the quantity of fastening must increase with the thickness of the plank, whether of deck or bottom, which is to be secured ; for the set of the oakum in caulk­ing will have the greater mechanical effect the thicker the edge.

The diagonal deck, whatever advantage it might have been presumed to possess in other respects, was certainly a great loss of strength in as far as longitudinal tie was in­volved, and, we consider, has been most judiciously discon­tinued. The rapid deterioration arising from the wear oc­curring across the fibre of the wood, with the additional in­convenience, that the partial wear along the working pas­sage of the deck, by crossing every strake, involves the shifting the whole flat, is alone a strong argument against any alteration in the system of laying the strakes of deck fore and aft. Mackonochie proposed to lay decks in three layers, one diagonally from starboard to larboard, another diagonally from larboard to starboard, and an upper layer fore and aft. He also proposed a somewhat similar system for the outside plank, from the garboard to the wales. Mer­chant-vessels have been built in America, and boats and steam-vessels in this country, on this system of layers of planks laid diagonally.

Sir Robert Seppings was apparently aware of the import­