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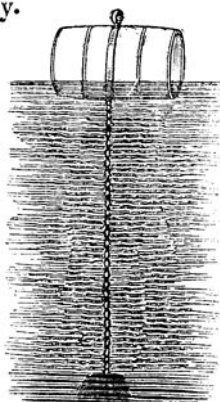


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XX. *Plan for Mooring Ships in Roadsteads.* By Lieut.-Colonel MILLER, F.R.S.*

IN a country whose attention has been so steadily directed to her naval prosperity as that of England has been, it may perhaps appear surprising, that some attempt has not been made, or rather that any means should have been left untried, for effectually securing ships in roadsteads; as every heavy gale of wind is sure to be followed by an account of vessels driven from their anchors, on some part of the coast or other, and too frequently accompanied with a melancholy catalogue of loss of life and property. The only grand national works that have been undertaken to guard against so great a calamity, are the breakwaters at Plymouth and Kingstown; but however creditable these works may be to the nation, and however well they may answer the purpose intended, their great expense must be a serious obstacle to their ever being generally adopted throughout the country.

The following plan is therefore submitted with due deference to the public; and if it should be the means of saving a single vessel from shipwreck, the object of the writer will be attained. It is very simple, and will easily be understood from the figure. It consists merely in securing a large buoy, by means of a block of cast-iron, so that it cannot be moved by stress of weather, to which a vessel can make fast, instead of letting go her anchor.



Construction.

Length of buoy	16 feet.
Diameter of ditto at the middle	9
Ditto at the ends	7½
Length of chain	36
Diameter of cast-iron block at top	3
Ditto at bottom	5½
Height of ditto	2½
Weight of ditto	7 tons.

The buoy must be made abundantly strong, bound with iron and coppered, as it will be subject to a heavy strain, and may frequently be drawn under water. A strong iron hoop also passes round its centre, to which the chain and ring are

* Communicated by the Author.

attached,

attached, and the chain must be of sufficient length to allow the buoy to rise to the surface at high water.

In most anchorages the weight of the cast-iron block will sink it sufficiently deep to prevent its being moved; but in stiff ground, where that may not take place, piles must be driven round it, by means of the diving-bell, so as effectually to secure it.

It is conceived that a buoy of these dimensions would be sufficient to hold a ship of 500 tons under any circumstances; but for a very large vessel, the size of the cast-iron block and also that of the buoy would require to be considerably increased, as the larger the buoy, with the greater ease would the vessel ride.

The principal cause of a vessel dragging her anchor, or parting her cable in a gale of wind, is the jerk that is produced by a heavy sea striking her when the cable is on the stretch. By the proposed plan this would be guarded against; as the tendency of the buoy to rise perpendicularly, while the vessel pulled horizontally, would cause a spring on the cable so as to prevent any sudden jerk. A vessel moored in this manner would probably not require to veer out more than 20 or 30 fathoms of cable: and the manner of bringing up would be, to make fast a hawser to the buoy: heave upon it until the latter came under the bows of the vessel, then pass the (chain) cable through the ring of the buoy, and bring the end on board. The cable would thus be double, and a vessel could get under weigh in an instant by letting go one end of it.

Buoys of this description might be laid down (in the Downs for instance) in lines at different distances from the shore; and a vessel, instead of looking out for good holding ground, might then bring up as near to the land as her draught of water would permit her, and thus facilitate her communication with it. They might also be laid down in rocky ground, where ships cannot anchor at all, by attaching them to bolts fixed in the rocks, by means of the diving-bell.

XXI. *On Writing-ink, and on the Effects which are produced upon it by Paper and Parchment.* By Mr. JOHN REID.*

IT has often been remarked that old writings retain their colour better than those of a later date; and it has been supposed in consequence, that formerly, ink of a superior quality to that now in use had been employed. But though much depends

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