

SECTION XLIX.

ON COATING THE BOTTOM OF IRON OR STEEL SHIPS.

Much has been written and argued on this subject, though, unfortunately, most of it has been special pleading for some particular composition, but the results of modern scientific enquiry, in brief, would seem to have established the following facts.

To apply a PROTECTIVE composition properly, the hull must be perfectly dry, or else the composition must be of a kind not affected by water.

Red and white lead paints are not now used to the extent they were, for it is proved that they deposit metallic lead under the action of sea water; galvanic action is set up between the lead and the iron, and wasting of the iron is the result.

Black varnish applied hot to perfectly dry plates is about as good a protective as it is possible to get, and is much used in the coasting trade without any antifouling composition over it.

Varnishes mixed with turpentine or naphtha are acted on by moisture which destroys the hold of the varnish on the hull, and for a perfect protection several coats are necessary. With mixtures of this sort dry weather is a necessity, and they must be allowed to harden before the ship is again floated.

Varnishes with body given by mineral oxides are better, if the solvent used is not too rapid in its evaporation, and if the ingredients do not act against each other, and have no properties injurious to the vessel's plates. Red oxide of iron is the most generally used of this class; but in the opinion of a very high authority metallic zinc would be better.

Mixtures of this last sort, or else black varnish, are the best protectives.

The plates should be as dry as possible whilst a protective coat is applied, which should not be mixed too thick, or it will not fill up all the small holes and irregularities, and thus to some extent fail.

A good existing coat of composition should not be disturbed, unless there are evident signs of rust underneath.

A *new* ship should be washed over with dilute acid to get rid of every trace of mill scale; then washed down with a mild alkaline wash, and again washed off with fresh water before the protective is applied.

ANTI-FOULING COMPOSITIONS.

Ships trading in high latitudes North or South foul much worse in the summer months, April to August inclusive, than in winter.

Vessels foul worse at anchor than under way; ships lying in brackish water foul more quickly when they go to sea than vessels that have been lying for the same time in salt water.

Certain parts of the world are far worse than others. A sailing vessel that had been trading on the Chilian coast for some time, when beached for cleaning, presented a spectacle which was almost past belief. The shell growth was fully eight inches thick, and in some parts more.

Exfoliating compounds, or, in other words, those that flake off, are better anti-foulers than poisonous ones; the old favourite mixture of white lead, tallow, and resin, put on as hot as possible, being a very good one, and unpatented. The writer made a four months' voyage in a steamer to the American Pacific coast with this composition, and on return there was hardly a trace of fouling on the vessel.

What has been said, then, can be resolved into this:—that if a new ship's bottom is to be well cared for, it must first be specially prepared as before mentioned; then carefully coated with a preservative, and this when dry must have an anti-fouling coat. The reason of many partial failures in these compositions is, without doubt, that they are put on too hurriedly. The hull is not dry enough to receive them, and the ship is floated again before *they* are dry.

It is most important that these matters should be attended to, especially in steel vessels, where it is hard to get anything to stay on, owing to the smoothness of the material; and unless more care is taken in these matters, considerably larger repairs will be wanted in years to come owing to wasted plates.

The young officer should, when his vessel is docked, make up his mind that careful supervision over the painters is needful, and that, if there is night work especially, his presence is absolutely necessary. It is not by any means a pleasant job to be standing about in a dry dock on a cold night with a few inches of water under foot; but if a ship is to be well coated, it is one of the important duties that the mate of a vessel should not shirk.

