

At the request of Messrs P. Bornholdt & Co. we, the undersigned, went ~~on board~~ on the 21st February 1900 on board the Italian steamer "Etna" lying in the port of Liban in order to ascertain, ^{in consequence of} ~~in consequence of~~ ^{in consequence of} of our survey of the 17th February 1900, the state of the propellers.

The vessel had been trimmed ~~forward~~ by loading the fore ~~holds~~ and filling the tanks in such a way that the propeller became free ~~until~~ up to $\frac{1}{5}$ of the boss and thus it could be surveyed with care. The material of which the propeller is made appears to be soft cast iron. The 4 blades of the screw are damaged and show serious defects. The original length of the blades appears to have been about 2100 m/m (7 feet) measured from the ~~middle~~ ^{centre} of the shaft. The ~~repeated~~ survey which has been made of the broken blades shows the following lengths:

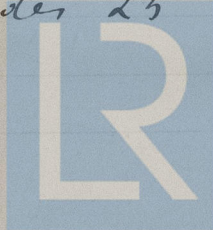
Blade No I	1929 m/m
II	1610
III	1610
IV	1670

The broken part shows a dense material and ~~remains~~ on I, II & III almost in a perpendicular way to the axis of the blades and on IV in an oblique direction.

The broken surface has been measured as follows:

I	480 m/m
II	700
III	720
IV	650

The thickness of the cast iron blades is in the middle 55 m/m, on the sides 25 m/m and on the rim about 25 m/m.



No other cracks have been ascertained on the blades or on the boss.

But as the ~~surface~~ ^{which} surface of the screw is in direct proportion to the hull of the vessel and amounts generally to $\frac{1}{3}$ of the area of the ~~midship section~~ ^{midship section}, has been reduced, through the blades being broken by about 40%, it results that the steamer, leaving aside the important reduction ~~in~~ ^{of} the speed and other disadvantages, will not be in a position to enter ~~eventually~~ ^{eventually} or in a long sea voyage. It is therefore recommended either to draw in the screw and replace it by a new one or else to ~~lengthen~~ ^{lengthen}, if not the three, at least ^{the} two consecutive blades ~~at 2 & 3~~ by suitable tips until they are about the same length as No 1. The tips may consist of two $\frac{3}{8}$ inches ^{bronze or iron} plates which are to be welded upwards in the form of a leave. These blades are fastened ^{each} by means of 9 ~~rivets~~ ^{rivets} screws with flat semi-circular heads. The distance between the screws may be, parallel to length-awl, 80 ^{mm}; perpendicular to the length-awl, 250 ^{mm} and at the rim 65 ^{mm} ~~at the centre of hole~~. The projection of the surface ^{which} is to be fitted has to correspond with that already existing and amounts to about $\frac{1}{5}$ of the ~~circular area~~ ^{surface} of the screw. Projecting edges have to be carefully rounded off.



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