

# Lloyd's Register of Shipping.

Collingwood Buildings, Newcastle-on-Tyne.

*ack*  
*Ans'd. 9/9/21.* 23rd August 1921. *B*

Dear Sir,

In accordance with the request of the Committee as contained in the telegram of the 19th inst., that I should see the cast steel sternframe taken from the Steamer "KORANTON", and report the result of my examination of the fracture, I visited the Forge of Messrs. T.S. Forster & Sons at Sunderland on Saturday the 20th inst., when I saw the lower half of the cast steel sternframe which was found to be unsound in the radius at the bottom of the backpost.

I beg to enclose herewith a half size sketch of the surface area of the fracture in the frame it having been broken since its arrival at the forge for renewal. On the sketch I have purposely left the solid or homogeneous part of the surface clear, the five small parts slightly shaded and marked A are of a smooth character showing a want of homogeneity, and which, in my opinion, is due to slight pulls caused by contraction due to the uneven rate of cooling - beyond the middle of the section I found a small triangular cavity "C" about  $\frac{3}{8}$ " deep. The surface dotted and marked "B" is of a jagged and torn character, showing that when the parts were torn asunder it was not of a perfectly homogeneous

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character although strongly knit together in parts. There is on surface of the clear part, as shown by a thick line on sketch, very fine dark line, but in my opinion, this is due to the making of the skin of the casting and cannot be named in the category of defects. With reference to the small furrow marks the side of the sole piece, these do not appear to me as being a detrimental character - what has taken place is the swilling of certain foreign substances formed on the surface during operation of casting in the foundry, but when seen they should be dressed off which would prevent further development.

I beg respectfully to state that from experience, we have found that the largest number of defects which develop in frames have been found to develop at the junctions where there is a large section of material running in line with the smaller sections of backposts and sole-piece, the greatest possible care is exercised in the examination of these parts, but fortunately in many cases these small laminations are invisible to the eye for the reason that the surfaces are so keenly knit together, and the nature of the surface of the casting, makes the casting have a perfectly sound appearance, and it is only after the ship has been to sea for six or twelve months that the action of the salt water shows up and develops these lines of least resistance.

The only means that in my opinion would assist in discovering these marks is that of fire-proving which could be done by order of the Committee after the casting has been annealed.

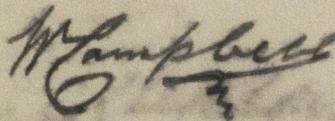
in this operation they could not pass observation unless they were of an internal character.

Also, if the Committee will allow me to make a further suggestion, viz-- that in view of the number of developments of hidden defects of this character, and with a view to minimise the stresses and strains set up when the sections are unequal, that a hole from 2" to 4" diameter (or even larger according to the section of material) be cast in the large sections, the holes would of course be machined to show a clean surface, and after examination plugged up.

I would respectfully submit that the same operation should take place in the centre of the couplings of all cast steel rudders.

I am, Dear Sir,

Yours faithfully,



The Secretary,

LONDON.



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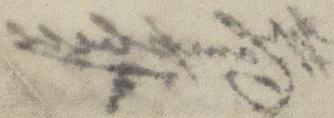
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In the operation they could not have anticipated unless they  
 were of an unusual character.

Also, if the Committee will allow me to make a  
 further suggestion, viz. - that in view of the nature of  
 developments of hidden defects of this character, and with a  
 view to minimize the stresses and strains set up when the  
 sections are unspooled, that a hole from 2" to 4" diameter (or even  
 larger according to the section of material) be cast in the large  
 section, the holes would of course be required to show a clear  
 surface, and after examination divided up.

I would respectfully submit that the same operation  
 should take place in the course of the coupling of all cast  
 steel forgings.

I am, Dear Sir,  
 Yours respectfully,  


Referred to the Chief Ship Surveyor and  
 referred to the Chief Engineer Surveyor,

*af*

Also for Mr. S. A. Hill to note.  
 15/8/11  
 + Mr. Maxime



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