



Lloyd's Register of Shipping,

Lloyd's Bank Chambers,

Middlesbrough, 29th September, 1942.



Dear Sir,

I have to refer to your letter of the 26th ultimo on the subject of defects found on the port boiler of the s.s. "CHULMLEIGH" recently under examination in London.

A portion of the defective wrapper plate and two fractured rivets were forwarded to illustrate the case and these have now been examined, and I think it well to submit the following remarks thereon.

RIVETS.

Examination confirmed that the rivet shanks were distorted. In each case cracking had started at the bottom of the countersink. Sections were cut from both rivets to include cracked areas and the microscopical examination which followed produced no evidence to suggest intercrystalline cleavage. The cracks ran in practically straight lines and there was an absence of the type of cracking usually associated with intercrystalline failure.

WRAPPER PLATE.

This specimen was sawn into a number of small sections for examination under the microscope. Generally the cracks were so badly corroded that their character was obscured. However, I was able to find in one small section, cut from the side of a rivet hole, an area suggesting intercrystalline cracking although the evidence was to some extent masked by the "banded" structure of the ferrite and pearlite (Micro No.664). This type of structure usually, but not invariably - since segregation plays a part, is an indication of a low finishing temperature. The steel in question had not received any effective heat treatment; had this been done an equi-axial system of grains would have resulted and identification of the type of fracture made easier. The case of the s.s. "Amstel", my report dated 2.9.42., illustrates this point. Micrographs No.663 x 100 (unetched) and No.664 x 100 are included herewith.

SUMMARY.

The steel appeared to be of suitable quality. In regard to the rivets no evidence of intercrystalline cracking was observed. Concerning the wrapper plate such evidence as was found suggests failure due to chemical action.

I am, Dear Sir,
Yours faithfully,

Louis Phipps

The Secretary,
LONDON.

Lloyd's Register
Foundation

