

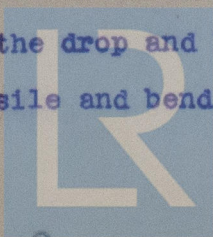
S.S. "GALILEO".

Failure of cast steel rudder.

This vessel was built in 1908 by the Northumberland Shipbuilding Co., at Newcastle and the cast steel rudder was manufactured by the Skodawerke Co., of Pilsen, Bohemia. It was inspected and tested at the Manufacturers' Works by Mr. Koch, the Society's Inspector of Forgings and Castings for the district and certified by him to be in a sound and efficient condition, and to have withstood the prescribed tests.

When the vessel was surveyed at Hull in February of this year the Surveyors found two defects in the cast steel rudder frame, one of which was situated at the junction of the first gudgeon with the main body of the post and the other was found in a similar position at the second gudgeon. The Hull Surveyors reported that it had been arranged to replace this rudder with one of forged iron and they recommended that the vessel might be allowed to retain her classification until the new rudder was made. The vessel made a voyage to New York and after her return the new forged rudder was fitted. The Owners proceeded to destroy the defective rudder and in so doing discovered another defect situated near the third gudgeon from the heel, and this defect, although not previously visible, was found to be of a more serious character than the other two. A photograph was sent showing the appearance of the rudder at the fracture occurring at the last named defect.

Upon the case being reported in March last by the Hull Surveyors, Mr. Koch, the Vienna Surveyor who inspected and tested the casting, was requested to report upon the circumstances. He stated that the casting was seen by him in a rough condition on the 15th May, 1907. The casting had been well annealed and it withstood the drop and hammering tests satisfactorily, and the tensile and bend tests were also



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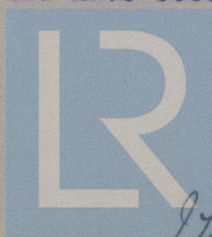
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satisfactory.

The Surveyor further stated that he knew the necks of the gudgeons in a cast steel rudder or stern frame were the most dangerous parts of such castings, and he therefore always gave special attention to them. If he found the slightest trace of a fault he tried to find out by drilling or chiselling the extent of the same, but in this case when he saw the rudder in its rough condition but cleaned of sand no faults were found. He much regretted that this had happened to a casting examined by him. He stated that when he was first appointed to Trieste he rejected several castings on account of faults like this found in the rudder of the "GALILEO". He recommended the steel Makers to work ribs in the necks of the gudgeons to prevent such faults, and since that was done he had never found severe faults of this kind.

With reference to this remark made by the Surveyor it should be explained that it would have been impracticable to fix such ribs in the rudder in question.

As the result of further communication with the Surveyor he now states that the drop test was carried out as per Rule from a height of about 8 ft. upon a hard ground. The rudder was then slung up and well hammered and so far as could be ascertained was found to be sound. It was then carefully inspected by him and no defects were discovered. He adds that this rudder has been carefully tested and examined by him the same as all the other castings which he has inspected during the time he has been in the Society's service, and had it been found in any way unsatisfactory he would have rejected it. He can only express his deep regret that this failure should have occurred to a steel casting inspected by him.



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