

Any further communication on this subject should be addressed to  
THE SECRETARY,  
and the following Initial should be quoted in the left-hand corner.

Lloyd's Register of British  
and Foreign Shipping.

2. White Lion Court, Cornhill, E.C.

April 26<sup>th</sup> 1875

B Waymouth Esq.,

Sir,

In accordance with your instructions, I proceeded to Barrow to witness the trial of Howard's Improved Patent Safety Boiler, fitted to the S. S. Howard, built by the Barrow Ship Building Co, and intended to class 90 A.

As stated in a previous report, this Boiler has been designed to work at a pressure of 120 lbs per square inch, with a view to saving a large percentage of fuel, the working pressure of steam in this case being twice the working pressure in ordinary Boilers. Another novelty in its construction is that it can be taken to pieces and cleaned, each furnace and each stack of tubes can be drawn into the stove hole and thoroughly sealed. The Boiler being constructed in sections and the furnace joints kept tight by their own expansion, it caused grave doubts in my mind as to its safety and durability; and as it was altogether a question of perfect circulation, it could only be partially tested by actual trial at sea, steaming full speed.

Accordingly, the vessel sailed on her trial



trip at 11.30 a.m. on the 19<sup>th</sup> inst., and for the first 16 hours cruised about Morecambe Bay in the vicinity of Barrow; but everything working well, it was determined to run further to sea, and until 11.30 a.m. on the 21<sup>st</sup> inst., we cruised about the Irish Channel between the Isle of Man, Belfast Lough and the Mull of Galloway. During this time we had very fine weather, no wind, and the sea perfectly calm; the Engines and Boilers worked exceedingly well and gave no trouble; they were quite free from priming, but it was noticed that as the speed of the Engine was increased or decreased the water rose and fell suddenly. To give an extreme illustration of this, if the Engines were stopped suddenly, the height of the water in the gauge glasses would suddenly fall 5 or 6 inches, clearly proving that a false height of water is shown in sectional Boilers or Boilers with small water spaces. The feed was regularly kept up, without difficulty. The average pressure of steam was 115 lbs. per square inch and the average density of the water in the Boiler was eight ounces of salt to each gallon of water. The water was worked at this density to endeavour to form a scale of salt or lime on the internal surfaces, to protect them from corrosion, which is the usual treatment with new Boilers.

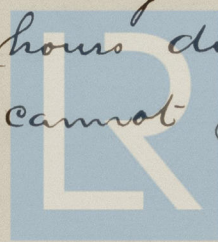


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On arrival at Barrow one of the furnaces was drawn for examination. The faced conical joints by which these furnaces are united together had been leaking a little but it was so slight that it was not of any consequence. It was impossible to say whether the circulation over the furnace crowns between the points A.A. on the plan had been perfect or not. The furnace had a slight scale on it about the thickness of a sheet of writing paper, it had retained its form and I could not say it had any appearance of being short of water; time alone will prove that. If there is not a perfect circulation and the furnace becomes slightly overheated, it will become slightly weakened each time steam is raised, and this weakening will go on until the furnace becomes too weak to withstand the internal pressure, and will alter its form or collapse. I made a few recommendations to the Manager of the Barrow Ship Building Co in order to improve the circulation and afford facilities for examination, which he promised to consider.

Altogether the trial of this Boiler was very satisfactory; and I do not hesitate in recommending the Committee to grant the vessel a machinery certificate, more especially as she is only intended to make short runs of 20 hours duration; still, at the same time I cannot help expressing



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my serious doubts as to Boilers of this kind remaining permanently efficient at sea, during the trials of a long sea voyage, and when deprived of the conveniences afforded by a home port for regular examination.

I have also to add that Mr Stewart Robertson, the manager of the Barrow Ship Building Co, desired me to express his great pleasure at a representative from this Society being present at the trial of this novelty in high pressure Marine Boilers.

I am Sir

Your Obedient Servant

W<sup>m</sup> Parker

Expenses-

Travelling	4. 10. 4
Subsistence	2. 10. 0
2½ days	
Telegrams	0. 2. 0
£	<u>7. 2. 4</u>



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