

# REPORT ON MACHINERY.

No. 6542 Received at London Office THURS 29 SEPT 1887  
 No. in Survey held at Stockton & Newcastle Date, first Survey 26<sup>th</sup> Jan 87 Last Survey 3<sup>rd</sup> Sept 1887  
 Reg. Book. on the Screw Steamer "Gipshire" (Number of Vents 18) Tons 2425  
 Master Wm Millar Built at Newcastle By whom built Messrs Swan & Hunter When built 1887  
 Engines made at Stockton By whom made Messrs Blair & Co Ltd when made 1887  
 Boilers made at Stockton By whom made Messrs Blair & Co Ltd when made 1887  
 Registered Horse Power 400 Owners Turnbull, Martin & Co Port belonging to Glasgow  
 Reg. Manufactory 320

## ENGINES, &c.—

Description of Engines Triple Expansion, 3 Cylinders & 3 Cranks.  
 Diameter of Cylinders 27" 44" 71" Length of Stroke 48" No. of Rev. per minute 60 Point of Cut off, High Pressure 1/2 stroke Low Pressure 1/2 stroke  
 Diameter of Screw shaft 14 1/4" Diam. of Tunnel shaft 13 1/2" Diam. of Crank shaft journals 14" Diam. of Crank pin 14 1/2" size of Crank webs 23 1/2" x 9 3/4"  
 Diameter of screw 18.0" Pitch of screw 20.0" No. of blades 4 state whether moveable yes total surface 83 sq. ft.  
 No. of Feed pumps 2 diameter of ditto 3 1/2" Stroke 34" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 diameter of ditto 5" Stroke 34" Can one be overhauled while the other is at work yes  
 Where do they pump from Fore & main holds, After well, Engine room, ballast tanks & sea.  
 No. of Donkey Engines 2 Size of Pumps (9x10) (5x8) Where do they pump from (Ballast tanks, all bilges & sea) (All tanks, sea, hotwell & bilges)  
 Are all the bilge suction pipes fitted with roses yes Are the roses always accessible yes Are the sluices on Engine room bulkheads always accessible yes  
 No. of bilge injections one and sizes 4 dia Are they connected to condenser, or to circulating pump Circulating pump.  
 How are the pumps worked By levers from the After piston rod crosshead.  
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks valves & cocks  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates yes Are the discharge pipes above or below the deep water line above  
 Are they each fitted with a discharge valve always accessible on the plating of the vessel yes Are the blow off cocks fitted with a spigot and brass covering plate yes  
 What pipes are carried through the bunkers bilge suction to fore holds How are they protected By wood casing.  
 Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times yes  
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges yes.  
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock Porton dock 21.9.87  
 Is the screw shaft tunnel watertight ✓ and fitted with a sluice door yes worked from upper platform

## BOILERS, &c.—

Number of Boilers Three Description Cyl. mult. Double Ended Whether Steel or Iron Steel.  
 Working Pressure 160 lbs. Tested by hydraulic pressure to 320 lbs. Date of test 29<sup>th</sup> August 1887.  
 Description of superheating apparatus or steam chest none  
 Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately no Superheater.  
 No. of square feet of fire grate surface in each boiler 54 sq. ft. Description of safety valves Spring No. to each boiler 2  
 Area of each valve 8.29 Are they fitted with easing gear yes No. of safety valves to superheater — area of each valve —  
 Are they fitted with easing gear — Smallest distance between boilers and bunkers or ~~woodwork~~ 12" Diameter of boilers 11.9 7/8"  
 Length of boilers 15.6" description of riveting of shell long. seams double butt strap circum. seams double riv. lap Thickness of shell plates 1 1/16"  
 Diameter of rivet holes 1 1/16" whether punched or drilled drilled pitch of rivets 1 row 7" 2 rows 3 1/2" Lap of plating 4 5/8"  
 Percentage of strength of longitudinal joint 84.8 working pressure of shell by rules 165 lbs. size of manholes in shell 16 x 12"  
 Size of compensating rings 28" x 24" x 1 1/16" No. of Furnaces in each boiler 4  
 Outside diameter 3.2" length, top 5.8" bottom 5.8" thickness of plates corrugated 7/32" description of joint welded if rings are fitted no  
 Greatest length between rings — working pressure of furnace by the rules 171 lbs. combustion chamber plating, thickness, sides 9/16" back — top 9/16"  
 Pitch of stays to ditto, sides 4 1/2" x 1 1/4" back — top 4 1/2" x 1 1/4" If stays are fitted with nuts or riveted heads nuts working pressure of plating by rules 172 lbs. Diameter of stays at smallest part 1 5/16" working pressure of ditto by rules 198 lbs. end plates in steam space, thickness 1 1/16"  
 Pitch of stays to ditto 15 3/4" x 15 1/2" how stays are secured double nuts & washers working pressure by rules 163 lbs. diameter of stays at smallest part 2 1/2" working pressure by rules 181 lbs. Front plates at bottom, thickness 1" Back plates, thickness —  
 Greatest pitch of stays — working pressure by rules — Diameter of tubes 3" pitch of tubes 4 3/8" x 4 1/4" thickness of tube plates, front 1" back 13/16" how stayed stay tube pitch of stays 8 3/4" x 8 1/2" width of water spaces 1 1/4"  
 Diameter of Superheater or Steam chest — length — thickness of plates — description of longitudinal joint — diam. of rivet holes —  
 No. of rivets — working pressure of shell by rules — diameter of flue — thickness of plates — If stiffened with rings —  
 Distance between rings — working pressure by rules — end plates of superheater, or steam chest; thickness — how stayed —  
 Superheater or steam chest; how connected to boiler —

**DONKEY BOILER**— Description *Cylindrical, multitubular, 2 furnaces x 2 Combustion Chambers*  
 Made at *Stoke Newington* by whom made *Messrs. Riley Bros.* when made *22.8.87* where fixed *On deck*  
 Working pressure *100 lbs.* tested by hydraulic pressure to *200 lbs.* No. of Certificate *1457* fire grate area *20 sq. ft.* description of safety valves *Spring*  
 No. of safety valves *two* area of each *5.4* if fitted with easing gear *yes* if steam from main boilers can enter the donkey boiler  
 diameter of donkey boiler *8.0* length *8.0* description of riveting *double riv butt*  
 Thickness of shell plates *9/16* diameter of rivet holes *13/16* whether punched or drilled *drilled* pitch of rivets *2 1/16* lap of plating *4*  
 per centage of strength of joint *76* thickness of crown plates *7/16* stayed by *2 stays 1 1/4 dia.*  
 Diameter of furnace, top *2.3* length *5.3* thickness of plates *7/16* description of joint *single riv butt*  
 bottom *4.0* length of furnace *5.3* thickness of plates *7/16* description of joint *single riv butt*  
 Thickness of furnace crown plates *9/16* stayed by *riders 9/16 pitch*  
 Working pressure of furnace by rules *115 lbs.* diameter of uptake *—* thickness of plates *—* thickness of water tubes *—*

**SPARE GEAR.** State the articles supplied:— *Two propeller blades, One crank shaft, One screw air-pump bucket, head valve, & foot valve. One set of connecting rod bolts, One set of coupling bolts.*

The foregoing is a correct description,  
*Robt Blair & Co Ltd*  
*7, Horriest Lane* Manufacturer of Engines & main boilers.

**General Remarks** (State quality of workmanship, opinions as to class, &c.)

The machinery and boilers of this vessel have been constructed under Special Survey and of a good quality of workmanship, the machinery and main boilers have been tried under steam and found to work well and the vessel in my opinion, is eligible to have the notification *L.M.C. 9.8* recorded in the Register Book when the following work has been executed to the satisfaction of a Surveyor of this Society.  
 Main pipes and easing gear of the main boiler safety valves to be fitted. Two lengths of donkey engine air large piping, to deck, and the steam piping from main boilers to the refrigerating engines, to be fitted. Sea connections at forward and after ends of stokehole to be made accessible. Chocks, securing the main boilers in a fore and aft direction, to be fitted. Twice door of screw tunnel to be fitted. Mountings of the donkey boiler to be fitted and tested under steam.  
 Two main bearing bolts, One set of feed and bilge pump valves, One set of piston springs, Bolts and nuts and iron of various sizes to be supplied. The vessel has proceeded to Newcastle for completion.

The above mentioned fittings have been satisfactorily completed, Spare gear supplied, donkey boiler safety valves adapted under steam and set to working pressure.

*Richard Sims*

The amount of Entry Fee .. £ 3 : 0 : 0 *received by me,*  
 Special .. £ 40 : 0 : 0  
 Donkey Boiler Fee .. £ — : — : —  
 Certificate (if required) .. £ *gratis* — : — : —  
 To be sent as per margin.  
 (Travelling Expenses, if any, £ )

*R. Stoddart*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute TUESDAY 4 OCT 1887