

# REPORT ON MACHINERY.

No. 155

(Received in London Office) **JUNE 1882**

No. in Survey held at Dundee Date, first Survey 13/9/81 Last Survey 31 May 1882  
 Reg. Book. on the I.S.S. "Mallard" Tons 1296.2  
834.9

Master J. Hayes Built at Dundee When built June 1882  
 Engines made at Dundee By whom made Gourlay Bros. Co. when made 1882  
 Boilers made at Dundee By whom made Do " " when made 1882  
 Registered Horse Power 140. Owners General Steam Nav Co Port belonging to London

**ENGINES, &c.—**

Description of Engines Direct Acting Compound 2nd Lys Surface Condensing  
 Diameter of Cylinders 30" x 54" Length of Stroke 36 No. of Rev. per minute 75 Point of Cut off, High Pressure 9/16 Low Pressure 9/16  
 Diameter of Screw shaft 10 1/4" Diameter of Tunnel shaft 9 3/4" Diameter of Crank shaft journals 10 1/4" Diameter of Crank pin 10 1/4" size of Crank webs 7 x 11 3/4"  
 Diameter of screw 14.0 Pitch of screw 14.6 No. of blades 4 state whether moveable sol total surface 55.6 feet  
 No. of Feed pumps two diameter of ditto 3 1/2" Stroke 20" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps two diameter of ditto 3 1/2" Stroke 20" Can one be overhauled while the other is at work yes  
 Where do they pump from all compartments  
 No. of Donkey Engines one Size of Pumps 6" x 7" x 3 1/2" Where do they pump from Sec. Hatch. engine room  
bilge - to boilers and on deck (one Pulsometer 6" pipe for pumping tanks and all compartments)  
 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 1/2" Are they connected to condenser, or to circulating pump circulating  
 How are the pumps worked by levers from low pressure piston crosshead  
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks both  
 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 none How are they protected —  
 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 before launch 4/5/82  
 Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from from main deck

**BOILERS, &c.—**

Number of Boilers two Description Steel Circular Tubular  
 Working Pressure 75 lbs Tested by hydraulic pressure to 150 lbs Date of test 10/4/82  
 Description of evaporating apparatus or steam chest horizontal drums  
 Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately —  
 No. of square feet of fire grate surface in each boiler 34 feet Description of safety valves direct Spring load G.B. Co.  
 No. to each boiler two area of each valve 9.63 sq" 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 8"  
 Diameter of boilers 11.3 Length of boilers 9.3 description of riveting of shell long. seams lap table R circum. seams lap D.R.  
 Thickness of shell plates 5/8" diameter of rivet holes 1" whether punched or drilled drilled pitch of rivets 3 7/8"  
 Lap of plating 6 7/8" x 1/2" per centage of strength of longitudinal joint 74% working pressure of shell by rules 78 lbs  
 Size of manholes in shell 17" x 13" size of compensating rings 4" x 4" x 3/4"  
 No. of Furnaces in each boiler two outside diameter 38 1/2" mean length, top 6.6 bottom 6.6  
 Thickness of plates 15/32" description of joint butt S.R. if rings are fitted no greatest length between rings —  
 Working pressure of furnace by the rules 75 lbs  
 Combustion chamber plating, thickness, sides 7/16" back 15/32" top 15/32"  
 Pitch of stays to ditto sides 8 1/2" x 9" back 9 1/2" x 8 1/2" top round  
 If stays are fitted with nuts or riveted heads nuts both ends working pressure of plating by rules 78 lbs  
 Diameter of stays at smallest part sides 1 1/2" rest 1 3/4" working pressure of ditto by rules side stays 5062 lbs & 6202 lbs  
 End plates in steam space, thickness 3/4" pitch of stays to ditto 17" x 15" how stays are secured thru ends & nuts  
 Working pressure by rules 79 lbs diameter of stays at smallest part 2 3/8" working pressure by rules 4346 lbs  
 Front plates at bottom, thickness 7/16" Back plates, thickness 9/16" greatest pitch of stays 14 x 9 1/2" working pressure by rules 5713 lbs

Diameter of tubes  $3\frac{1}{2}$ " pitch of tubes  $4\frac{3}{4}$ " thickness of tube plates, front  $\frac{4}{16}$ " back  $\frac{4}{16}$ "  
 How stayed tubes *ends* pitch of stays  $9\frac{1}{2}$ " x  $14\frac{1}{4}$ " width of water spaces  $1\frac{1}{2}$ "  
 Diameter of ~~Superheater~~ Steam chest  $3'$   $3"$  length  $8'$   $0"$   
 Thickness of plates  $\frac{7}{16}$ " description of longitudinal joint *Lap S.R.* diameter of rivet holes  $3\frac{1}{4}$ " pitch of rivets  $2\frac{1}{2}$ "  
 Working pressure of shell by rules  $163$  *lb* Diameter of flue *—* thickness of plates *—*  
 If stiffened with rings *—* distance between rings *—* Working pressure by rules *—*  
 End plates of ~~superheater~~ steam chest; thickness  $\frac{4}{16}$ " How stayed *by 4-14" dia bolts stays this ends ends*  
~~Superheater~~ steam chest; how connected to boiler *by malleable necks riveted to shells*

**DONKEY BOILER—** Description *one Round vertical*  
 Made at *Dundee* By whom made *Gourlay Bros & Co* when made *June 1882*  
 Where fixed *Main Deck* working pressure  $50$  *lb* Tested by hydraulic pressure to  $100$  *lb* No. of Certificate  $167$   
 Fire grate area  $12.5$  *feet* Description of safety valves *direct S.Z.* No. of safety valves  $one$  area of each  $7$  *sq*  
 If fitted with casing gear *yes* If steam from main boilers can enter the donkey boiler *no*  
 Diameter of donkey boiler  $5'$   $0"$  length  $10'$   $9"$  description of riveting *Lap double riveted*  
 thickness of shell plates  $\frac{7}{16}$ " diameter of rivet holes  $3\frac{1}{4}$ " whether punched or drilled *punched*  
 pitch of rivets  $2\frac{7}{8}$ " lap of plating  $3\frac{7}{8}$ " x  $2\frac{1}{2}$ " per centage of strength of joint  $73$  *%*  
 thickness of crown plates  $\frac{1}{2}$ " stayed by *5 gusset stays to top & sides*  
 Diameter of furnace, top  $3'$   $10\frac{1}{2}"$  bottom  $4'$   $2\frac{1}{2}"$  length of furnace  $5'$   $6"$   
 thickness of plates  $\frac{7}{16}$ " description of joint *Lap single riveted*  
 thickness of furnace crown plates  $\frac{7}{16}$ " stayed by *dished*  
 Working pressure of shell by rules  $80$  *lb* working pressure of furnace by rules  $64$  *lb*  
 diameter of uptake  $13\frac{1}{2}$  *in* thickness of plates  $\frac{3}{8}$ " thickness of water tubes  $\frac{5}{16}$ "

The foregoing is a correct description,  
*Gourlay Bros & Co* Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c. *The boilers and machinery*)  
 of this vessel have been built in accordance with the requirements of the Rules, and to plans of boilers submitted for the committees approval dated 15/9/81. The material and workmanship are of the best description. The boilers have been tested under steam, and the safety valves set to a working pressure of 75 lbs per square inch, and the machinery seen at work, and in my opinion all is in good and safe working order, and eligible to be entered into the Register Book with the distinctive mark **+** Lloyd's M.C in red.

*It is submitted that this vessel is eligible to have the inscription + Lloyd's M.C 5182*

The amount of Entry Fee £ 2 : - : - received by me,  
 Special .. £ 21 : 0 : 0  
 Certificate (if required) .. £ - : 2 : 6 31<sup>st</sup> May 1882  
 To be sent as per margin.  
 (Travelling Expenses, if any, £ )

*John Starbuck*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
 Dundee District

Committee's Minute Tuesday, 6th June, 1882.  
**+ Lloyd's M.C**

