

## REPORT ON MACHINERY.

Port of MIDDLESBROUGH-ON-TEES

Received at London Office

No. in  
Reg. Book.Survey held at Middlesbro'-on-TeesDate, first Survey September 10<sup>th</sup> 1898Last Survey 18<sup>th</sup> September 1899(Number of Visits 107)on the Steel screw steamer "Manchester Commerce"Tons { Gross 5363  
Net 3444Master Bayley Built at H. Hartlepool. By whom built Furness, Witley & Co. Ltd When built 1899.Engines made at Middlesbro'-on-Tees. By whom made Sie. C. Furness, Westgate & Co. Ltd when made 1899.Boilers made at " By whom made " when made 1899.Registered Horse Power 498 Owners The Manchester Lines Ltd Port belonging to Manchester.Nom. Horse Power as per Section 28 541.Is Electric Light fitted Yes

## ENGINES, &amp;c.—Description of Engines

Tri CompoundNo. of Cylinders 3No. of Cranks 3Diameter of Cylinders 28", 46", 78" Length of Stroke 54" Revolutions per minute 90 Diameter of Screw shaft as per rule 16.3Diameter of Tunnel shaft as fitted 14.5" Diameter of Crank shaft journals 16" Diameter of Crank pin 16" Size of Crank webs 25" x 10.5"Diameter of screw 19' 0" Pitch of screw 20ft. No. of blades 4 State whether moveable Yes Total surface 100 sq ft.No. of Feed pumps 2 Diameter of ditto 4.5" Stroke 24" Can one be overhauled while the other is at work YesNo. of Bilge pumps 2 Diameter of ditto 5" Stroke 24" Can one be overhauled while the other is at work YesNo. of Donkey Engines 3 Sizes of Pumps Feed 8" x 5" 10" Duplex. Ballast 8" x 9" 10" Battle 5.5" x 4" 6" No. and size of Suctions connected to both Bilge and Donkey pumpsIn Engine Room Three, each 3.5" dia. In Holds, &c. Six, One 3.5" Suction in

each of the six wells.

No. of bilge injections 1 sizes 8" Connected to condenser, or to circulating pump C. F. Is a separate donkey suction fitted in Engine room & size Yes: 5"Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are the sluices on Engine room bulkheads always accessible NoneAre all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks BothAre 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 AboveAre 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 YesWhat pipes are carried through the bunkers None How are they protected ✓Are all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times YesAre the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges YesWhen were stern tube, propeller, screw shaft, and all connections examined in dry dock Inspected Is the screw shaft tunnel watertight YesIs it fitted with a watertight door Yes worked from Upper platform

## OILERS, &amp;c.—

(Letter for record (r))

Total Heating Surface of Boilers 4,200 sq ft.Is forced draft fitted YesNo. and Description of Boilers 3. Cyl. Mult. Single Ended. Working Pressure 190 lbs. Tested by hydraulic pressure to 380 lbs.Date of test (1) 28.2.99. (2) 10.3.99. (3) 30.3.99. Can each boiler be worked separately Yes Area of fire grate in each boiler 54.45 sq ft. No. and Description of safety valves toeach boiler Two: direct spring. Area of each valve 11.04 sq in. Pressure to which they are adjusted 195 lbs. Are they fittedwith easing gear Yes Smallest distance between boilers or uptakes and bunkers or woodwork Side bunker. Mean diameter of boilers 44.9"Length 12' 0" Material of shell plates S. 2 1/2 x 32 tons. Thickness 1 1/8" Description of riveting: circum. seams D.R. lap. long. seams dbl butt straps.Diameter of rivet holes in long. seams 1 5/8" Pitch of rivets 9" 4 1/2" Lap of plates or width of butt straps 19 1/2" x 1 1/8" thick.Per centages of strength of longitudinal joint 85.0 Working pressure of shell by rules 191.6 lbs. Size of manhole in shell 16" x 12"Size of compensating ring 34 1/2 x 24 1/2 x 1 5/8" No. and Description of Furnaces in each boiler 3. Motlow. Material S. Outside diameter 46"Length of plain part top 8' 3" bottom 8' 3" Thickness of plates 9" 1 1/8" Description of longitudinal joint weld. No. of strengthening rings ✓Working pressure of furnace by the rules 191.3 Combustion chamber plates: Material S. Thickness: Sides 5/8" Back 5/8" Top 5/8" Bottom 1 1/8"Pitch of stays to ditto: Sides 8 1/2" x 1 3/4" Back 8 1/2" x 8 1/4" Top 8 1/2" x 8" If stays are fitted with nuts or riveted heads Nuts. Working pressure by rules 194.5Material of stays steel. Diameter at smallest part 1 5/8" Area supported by each stay 68.4 sq in. Working pressure by rules 225.4 End plates in steam space:Material S. Thickness 1 3/8" Pitch of stays 14" x 1 1/2" How are stays secured D. No. W. Working pressure by rules 201.8 Material of stays S.Diameter at smallest part 2 1/2" Area supported by each stay 246.5 sq in. Working pressure by rules 198.4 Material of Front plates at bottom S.Thickness 1 1/8" Material of Lower back plate S. Thickness 5/8" Greatest pitch of stays 13" Working pressure of plate by rules 223.2Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" x 3 3/4" Material of tube plates S. Thickness: Front 5/8" 6 lbs. Back 5/8" Mean pitch of stays 1 1/2" x 1 1/2"Pitch across wide water spaces 13 1/2" Working pressures by rules 193.4 Girders to Chamber tops: Material S. Depth andthickness of girder at centre 8 3/4" x 1 1/2" Length as per rule 30" Distance apart 8 3/4" Number and pitch of Stays in each 2: 8"Working pressure by rules 196.8 Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler workedseparately ✓ Diameter ✓ Length ✓ Thickness of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diam. of rivetholes ✓ Pitch of rivets ✓ Working pressure of shell by rules ✓ Diameter of flue ✓ Material of flue plates ✓ Thickness ✓if stiffened with rings ✓ Distance between rings ✓ Working pressure by rules ✓ End plates: Thickness ✓ How stayed ✓Working pressure of end plates ✓ Area of safety valves to superheater ✓ Are they fitted with easing gear ✓



**DONKEY BOILER—** Description *None fitted*

Made at ☒ By whom made ☒ When made ☒ Where fixed ☒

Working pressure ☒ tested by hydraulic pressure to ☒ No. of Certificate ☒ Fire grate area ☒ Description of safety valves ☒

No. of safety valves ☒ Area of each ☒ Pressure to which they are adjusted ☒ If fitted with easing gear ☒ If steam from mo ☒ s can enter the donkey boiler ☒

Diameter of donkey boiler ☒ Length ☒ Material of shell plates ☒ Thickness ☒

Description of riveting long. seams ☒ Diameter of rivet holes ☒ Whether punched or drilled ☒ Pitch of riv ☒

Lap of plating ☒ Per centage of strength of joint ☒ Rivets ☒ Thickness of shell crown plates ☒ Radius of do. ☒ No. of Stays to do. ☒

Dia. of stays. ☒ Diameter of furnace Top ☒ Bottom ☒ Length of furnace ☒ Thickness of furnace plates ☒ Description ☒

joint ☒ Thickness of furnace crown plates ☒ Stayed by ☒ Working pressure of shell by rules ☒

Working pressure of furnace by rules ☒ Diameter of uptake ☒ Thickness of uptake plates ☒ Thickness of water tubes ☒

**SPARE GEAR.** State the articles supplied:—2 propeller blades, 2 top & 2 bottom end bolts & nuts, 2 main bearing 1 set Coupling bolts, 1 set each Air, Feed, Bilge & Ballast donkey pump valves, 1 set Ram bottom kings & pistons, 1 set Springs L.P. piston, 2 kings, piston valves, 2 Safety valve springs, 1 Escape valve spring, 1 set Size, 1 fan & spindle Centrifugal pump, 2 main feed Check valves, 4 Studs & nuts for propeller blades, bolts & nuts assorted & iron of various size

The foregoing is a correct description,  
**FOR SIR CHRISTOPHER FURNESS, WEBTGANTH & CO., LD.** Manufacturers of Engines & Marine Boilers.

*W. Northpool*  
 Dates of Survey while building  
 During progress of work in ships—**MANAGING DIRECTOR.** 1295 Sept: 10, 12, 14, 16, 20, 22, 27, 29, Oct: 3, 5, 11, 15, 16, 21, 25, 27, 31, Nov: 1, 2, 9, 10, 15, 17, 22, 27, 29, 30, Dec: 3, 5, 16, 19, 20  
 During erection on board vessel — 20, 23, 29, 1899 Jan: 5, 11, 13, 16, 18, 20, 23, 24, 26, 28, Feb: 1, 11, 14, 17, 19, 22, 24, 25, 28, 29, Mar: 4, 8, 10, 13, 16, 20, 23, 24, 25, 30, 31, Apr: 5, 7, 10, 12, 13, 17, 19, 23, 27, 29, May: 1, 5, 11, 16, 19, 25, 29, 30, 31  
 Total No. of visits (407) June 2, 5, 12, 14, 22, 27, July 1, 2, 29, Aug: 2, 23, 30, Sept: 1, 12, 13, 16, 18, 19

**General Remarks** (State quality of workmanship, opinions as to class, &c.) *The machinery of this vessel has been built under Special Survey, in accordance with Rule requirements. The materials, and workmanship are good & efficient. When completed and fitted on board, it was tried under steam at morning with satisfactory results, and is now in good working order, and in our opinion eligible to have notation **L.M.C. 11.99** inserted in the Society's Register Book.*

*Refrigerating machinery has been fitted without any request for Survey, particulars of the same will be forwarded as soon as received.*

It is submitted that  
 this vessel is eligible for  
**THE RECORD.** **L.M.C. 11.99.**

*Dec. Light. Ref. Mch. F.D*

*27.11.99*  
*27/11/99*

The amount of Entry Fee. £ 3 : 0 :  
 Special .. .. £ 49 : 1 :  
 Donkey Boiler Fee .. .. £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, 24. 11. 1899  
 When received, 24. 11. 1899

*Lidley Towell & Richard Sims*  
 Engineer Surveyors to Lloyd's Register of British & Foreign Shipping

**Committee's Minute**  
**Assigned**  
**TUES. 28 NOV 1899**  
**MACHINERY CERTIFICATE**  
**WRITTEN.**  
*+ L.M.C. 11.99*

Certificate (if required) to be sent to W. Northpool