

# REPORT ON MACHINERY.

Port of MIDDLESBROUGH-ON-TEES.

Received at London Office 22<sup>nd</sup> November 1899

No. in Survey held at Middlesbro'-on-Tees Date, first Survey September 10<sup>th</sup> 1898 Last Survey 18<sup>th</sup> September 1899

Reg. Book. on the steel screw steamer "Manchester Commerce" (Number of Visits 107) Tons { Gross 5263 Net 3444

Master Bayley Built at W. Hartlepool. By whom built Furze & Co., Witley & Co. Ltd When built 1899.

Engines made at Middlesbro'-on-Tees. By whom made Sie. C. Furze & Co., Witley & 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, &c.—Description of Engines Tri Compound. No. of Cylinders 3. No. of Cranks 3.

Diameter of Cylinders 28", 46", 78" Length of Stroke 54" Revolutions per minute 90. Diameter of Screw shaft as per rule 16.3" as fitted 17"

Diameter of Tunnel shaft as per rule 13.7" 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 Yes

No. of Bilge pumps 2. Diameter of ditto 5" Stroke 24" Can one be overhauled while the other is at work Yes.

No. of Donkey Engines 3. Sizes of Pumps Seed. 8" x 5" x 10" Duplex. Ballast. 8" x 9" x 10" Galle. 5.5" x 4" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps Six, One 3.5" Suction in

In Engine Room Three, each 3.5" dia. each of the six wells. In Holds, &c. Six, One 3.5" Suction in

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 None

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 and all boiler mountings accessible at all times Yes.

Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges Yes.

When were stern tube, propeller, screw shaft, and all connections examined in dry dock Two weeks Is the screw shaft tunnel watertight Yes

Is it fitted with a watertight door Yes worked from Upper platform

OILERS, &c.— (Letter for record (7)) Total Heating Surface of Boilers 4,120 sq. ft. Is forced draft fitted Yes.

No. 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 to each boiler Two: direct spring. Area of each valve 11.04 sq. in. Pressure to which they are adjusted 195 lbs. Are they fitted with easing gear Yes.

Smallest distance between boilers or uptakes and bunkers or woodwork no side bunker. Mean diameter of boilers 14.9"

Length 12.0" Material of shell plates S. 2 1/2% 32 tons. Thickness 1 1/16" Description of riveting: circum. seams D. R. laps. long. seams dbl butt straps.

Diameter of rivet holes in long. seams 1 5/16" Pitch of rivets 9" 4 1/2" Lap of plates or width of butt straps 19 1/8" x 1 1/16" thick.

Per centages of strength of longitudinal joint rivets: 85.0 Working pressure of shell by rules 191.6 lbs. Size of manhole in shell 16" x 12" plate: 85.4

Size of compensating ring 3 1/2" x 2 1/2" x 1 5/16" No. and Description of Furnaces in each boiler 3. Motor. Material S. Outside diameter 46"

Length of plain part top 8.3" Thickness of plates crown 9" bottom 7 1/16" 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 8" Top 8" Bottom 1 1/16"

Pitch of stays to ditto: Sides 9 1/8" x 1 3/4" Back 8 1/4" x 8 1/4" Top 8 3/4" x 8" If stays are fitted with nuts or riveted heads Nuts. Working pressure by rules 194.5

Material 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 3/32" 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 1/16" Material of Lower back plate S. Thickness 8" Greatest pitch of stays 13" Working pressure of plate by rules 223.2

Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" x 3 3/4" Material of tube plates S. Thickness: Front 5/8" 6/16" 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 19.338.4 Girders to Chamber tops: Material S. Depth and thickness 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 worked separately ✓ Diameter ✓ Length ✓ Thickness of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diam. of rivet holes ✓ Pitch of rivets ✓ Working pressure of shell by rules ✓ Diameter of flue ✓ Material of flue plates ✓ Thickness ✓

Is 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  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 rivet

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 of 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 bearings, 1 set coupling bolts, 1 set each Air, Feed, Bilge & Ballast donkey pump valves, 1 set Rambottom king's piston, 1 set Springs L.P. piston, 2 king's piston valves, 2 Safety valve springs, 1 Escape valve spring, 1 set Size, 1 fan & spindle Centrifugal pump, 2 main feed Check valves, 4 Stud & nuts for propeller blades, bolts & nuts assorted & iron of various sizes*

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

*J. W. Northpool*

Dates of Survey while building

During progress of work in ships—**MANAGING DIRECTOR.** 1898 Sept: 10, 12, 14, 16, 20, 23, 27, 29. Oct: 25, 15, 16, 21, 25, 27, 31. Nov: 1, 2, 9, 10, 15, 17, 22, 27, 29, 30. Dec: 25, 16, 19, 20

During erection on board vessel — 20, 23, 29, 1899 Jan: 2, 4, 12, 16, 18, 20, 23, 26, 28, 30. Feb: 7, 11, 14, 17, 19, 22, 24, 25, 28, 29. Mar: 4, 8, 10, 13, 16, 20, 23, 24, 28, 30. Apr: 5, 7, 10, 12, 17, 19, 23, 27, 29. May: 1, 5, 11, 16, 19, 25, 29, 30, 31

Total No. of visits (407) June: 2, 5, 8, 12, 16, 22, 27. July: 12, 29. Aug: 2, 23, 30. Sept: 1, 12, 13, 16, 18, 19

General Remarks (State quality of workmanship, opinions as to class, &c.) *W. Northpool. 1899. May 10. July 26. Aug 3. 14. 21. Oct 25. Nov 15. 21. 22. = 9 visits*

*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.*

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

It is submitted that this vessel is eligible for **THE RECORD** L.M.C. 11.99. Dec. Light. Ref. Mch. F.D

*J.S.* *C.M.*  
 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

*Wm. Lidley-Towell & Richard Stone*  
 Engineer Surveyors to Lloyd's Register of British & Foreign Shipping

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

