

# REPORT ON MACHINERY.

THURS. 12 OCT 1893

Port of *Middlesbro' on Tees.*

Received at London Office

18

No. in Survey held at *Stockton on Tees.*  
Reg. Book.

Date, first Survey *4<sup>th</sup> July*

Last Survey *5<sup>th</sup> October 1893*  
(Number of Visits *22*)

Tons { Gross *3276.*  
Net *2111.*

on the Screw Steamer *"Dulwich"*

Master *Coz.* Built at *Stockton* By whom built *Ropner & Son*

When built *1893.*

Engines made at *Stockton on Tees.* By whom made *Blair & Co. Ltd.* when made *1893.*

Boilers made at *Stockton on Tees.* By whom made *Blair & Co. Ltd.* when made *1893.*

Registered Horse Power *300.* Owners *British Steamship Co. Ltd.* Port belonging to *London.*

Nom. Horse Power as per Section 28 *243*  
Manufacturers *H. 220.*

**ENGINES, &c.** — Description of Engines *Triplic expansion.* No. of Cylinders *Three*

Diameter of Cylinders *23 1/2" - 39" - 64"* Length of Stroke *42"* Revolutions per minute *60.* Diameter of Screw shaft *as per rule 11 1/2"*  
*as fitted 13 1/4"*

Diameter of Tunnel shaft *as per rule 10.6"* Diameter of Crank shaft journals *12 3/4"* Diameter of Crank pin *13 1/4"* Size of Crank webs *20 1/2" x 8 5/8"*  
*as fitted 11 1/4"*

Diameter of screw *17'0"* Pitch of screw *15'0"* No. of blades *4* State whether moveable *no.* Total surface *76 sq. ft.*

No. of Feed pumps *2* Diameter of ditto *3"* Stroke *30"* Can one be overhauled while the other is at work *Yes.*

No. of Bilge pumps *2* Diameter of ditto *4 1/2"* Stroke *30"* Can one be overhauled while the other is at work *Yes.*

No. of Donkey Engines *2* Sizes of Pumps *(6" x 4" x 6") (9" x 10")* No. and size of Suctions connected to both Bilge and Donkey pumps  
*In Engine Room Three: 3 1/2" dia. =*

*Hold: Two - 3 1/2" dia. = After Hold: Two - 3 1/2" dia. = Tunnel well: One - 2 1/2" dia. =*

No. of bilge injections *1* sizes *4"* Connected to condenser, or to circulating pump *cp.* Is a separate donkey suction fitted in Engine room & size *Yes: 4"*

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 *Yes.*

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 *last vessel.* Is the screw shaft tunnel watertight *Yes.*

Is it fitted with a watertight door *Yes.* worked from *Top platform in engine room.*

**BOILERS, &c.** — (Letter for record *S.*) Total Heating Surface of Boilers *4200 sq. ft.*

No. and Description of Boilers *Two: cylindrical multitubular* Working Pressure *160 lbs.* Tested by hydraulic pressure to *320 lbs.*

Date of test *8/9/93.* Can each boiler be worked separately *Yes.* Area of fire grate in each boiler *59 sq. ft.* No. and Description of safety valves to  
each boiler *Two: Direct Spring* Area of each valve *8.29"* Pressure to which they are adjusted *167 lbs.* Are they fitted  
with easing gear *Yes.* Smallest distance between boilers or uptakes and bunkers or woodwork *15"* Mean diameter of boilers *15'0 1/2"*

Length *10'3"* Material of shell plates *Steel* Thickness *1 1/4"* Description of riveting: circum. seams *Lap Double* long. seams *D. Butt Straps*  
*one row. 2 rows.*

Diameter of rivet holes in long. seams *1 1/4"* Pitch of rivets *8 1/2"* *4 1/2"* Lap of plates or width of butt straps *1'6 1/2" x 1'16" thick.*

Per centages of strength of longitudinal joint rivets *85.9.* Working pressure of shell by rules *140 lbs.* Size of manhole in shell *16" x 12"*  
plate *85.3.*

Size of compensating ring *28" x 24" x 1 1/4"* No. and Description of Furnaces in each boiler *3: Corrugated* Material *Steel.* Outside diameter *3'10"*

Length of plain part *top 6'6"* Thickness of plates *bottom 3 1/2"* Description of longitudinal joint *welded.* No. of strengthening rings *-*

Working pressure of furnace by the rules *144 lbs.* Combustion chamber plates: Material *Steel* Thickness: Sides *9/16"* Back *9/16"* Top *9/16"* Bottom *1"*

Pitch of stays to ditto: Sides *7/8" x 7/8"* Back *7/8" x 7/8"* Top *7/8" x 7/8"* If stays are fitted with nuts or riveted heads *Nuts.* Working pressure by rules *181 lbs.*

Material of stays *Iron* Diameter at smallest part *1 1/8" Iron* Area supported by each stay *56"* Working pressure by rules *143 lbs.* End plates in steam space:  
*C. on top. Steel 15"* Pitch of stays *15 1/2" x 15"* How are stays secured *Steel nuts & washers.* Working pressure by rules *149 lbs.* Material of stays *Steel.*

Diameter at smallest part *2 3/8"* Area supported by each stay *228 3/4"* Working pressure by rules *144 lbs.* Material of Front plates at bottom *Steel*

Thickness *1"* Material of Lower back plate *Steel* Thickness *1"* Greatest pitch of stays *11 1/4"* Working pressure of plate by rules *185 lbs.*

Diameter of tubes *3 1/2"* Pitch of tubes *4 3/4" x 4 3/8"* Material of tube plates *Steel.* Thickness: Front *1"* Back *13/16"* Mean pitch of stays *9.6"*

Pitch across wide water spaces *14"* Working pressures by rules *195 lbs. & 235 lbs.* Girders to Chamber tops: Material *Steel.* Depth and  
thickness of girder at centre *6 3/4" x 15 1/8"* Length as per rule *27 1/2"* Distance apart *4 1/2"* Number and pitch of Stays in each *3: 7/4"*

Working pressure by rules *145 lbs.* 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

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



510 168-0153

**DONKEY BOILER**— Description *Vertical Multitubular; Meredith patent.*  
 Made at *Stockton* By whom made *Riley Bros.* When made *9/9/93* Where fixed *on Deck.*  
 Working pressure *90 lbs* tested by hydraulic pressure to *180 lbs.* No. of Certificate *409.* Fire grate area *24* <sup>sq</sup> Description of safety valves *Direct Spring*  
 No. of safety valves *2* Area of each *7.06* <sup>sq</sup> Pressure to which they are adjusted *95 lbs.* If fitted with easing gear *Yes.* If steam from main boilers can  
 enter the donkey boiler *No* Diameter of donkey boiler *6' 9"* Length *15' 0"* Material of shell plates *Steel.* Thickness *1/2"*  
 Description of riveting long seams *Lap Double.* Diameter of rivet holes *5/16"* Whether punched or drilled *punched.* Pitch of rivets *3/4"*  
 Lap of plating *4 1/2"* Per centage of strength of joint Rivets *42.2* Plates *41.1* Thickness of shell crown plates *1/2"* Radius of do. *Hemispherical* No. of Stays to do. *None*  
 Dia. of stays. — Diameter of furnace Top *4' 6"* Bottom *5' 10"* Length of furnace *3' 3"* Thickness of furnace plates *5-8"* Description of  
 joint *Lap Single* Thickness of furnace crown plates *9/16"* Stayed by *Hemispherical* Working pressure of shell by rules *94 lbs*  
 Working pressure of furnace by rules *89 lbs:* Diameter of tubes *3"* Thickness of tube plates *5/16" 3/32"* Thickness of water tubes *7/16" top 3/8"*

**SPARE GEAR.** State the articles supplied:— *Propeller, 2 main Bearing Bolts, 2 Crank pin  
 Bolts, 2 crosshead Bolts, 1 set Coupling Bolts, 1 set piston Spring  
 1 set Feed & Bilge pump valves. Bolt nuts; 4 Iron of various sizes*

The foregoing is a correct description,

**FOR BLAIR & CO., LIMITED** Manufacturer of *all main Engines & Boilers.*  
*R. H. Blair*

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

*The Engines and Boilers of this vessel have been con-  
 structed under special survey and the workmanship  
 throughout is good. When completed they were examined  
 under steam at moorings in the River Tees and worked  
 satisfactorily.*

*The Machinery is now in good and efficient  
 condition, and eligible in my opinion to have the  
 notation **L.M.C. 10, 93.** marked in the Society's Register Book.*

*It is submitted that  
 this vessel is eligible for  
 THE RECORD + L.M.C. 10-93*

*W.A.  
 12-10-93*

*Large handwritten signature in blue ink, possibly 'C. G. G. G.'*

Certificate (if required) to be sent to

The amount of Entry Fee..	£ 3 : "	When applied for,	11. 10. 93
Special .. .. .	£ 23 : 13	When received,	11. 10. 93
Donkey Boiler Fee .. .	£ :		
Travelling Expenses (if any) £	:		

**MACHINERY CERTIFICATE**  
 WRITTEN.

*R.H.D. Wm. R. Austin.*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

**FRI 13 OCT 1893**

Assigned

*+ L.M.C. 10.93.*



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 Foundation

The Surveys are required not to write on or below the space for Committee's Minute