

# REPORT ON MACHINERY.

No. 5219

(Received in London Office)

No. in Survey held at Dumbarton & Glasgow  
Reg. Book.

Date, first Survey 22<sup>nd</sup> Dec<sup>r</sup> 1879 Last Survey 13<sup>th</sup> Nov<sup>r</sup> 1880

on the S. S. Bersian Monarch

3308  
Tons 2151

Master Guncumbe Built at Dumbarton When built 1880

Engines made at Glasgow By whom made David Rowan when made 1880

Boilers made at " By whom made " when made 1880

Registered Horse Power 500 Owners Royal Exchange Shipping Co<sup>y</sup> Ltd Port belonging to London

## ENGINES, &c.—

Description of Engines Compound Inverted Direct Acting  
Diameter of Cylinders 46" x 84" Length of Stroke 54" No. of Rev. per minute 57 Point of Cut off, High Pressure — Low Pressure —  
Diameter of Screw shaft 16" Diameter of Tunnel shaft 15" Diameter of Crank shaft journals 16" Diameter of Crank pin 16 1/2" size of Crank webs 11 1/2"  
Diameter of screw 18 1/2" Pitch of screw 24 1/2" No. of blades Low ~~state whether~~ moveable — total surface 82 ft<sup>2</sup>  
No. of Feed pumps Two diameter of ditto 6" Stroke 28 1/2" Can one be overhauled while the other is at work Yes  
No. of Bilge pumps Two diameter of ditto 4 1/2" Stroke 28 1/2" Can one be overhauled while the other is at work Yes  
Where do they pump from From the bilge  
No. of Donkey Engines Two Size of Pumps one 9" x 4 1/2" x 10" one 8" x 10" x 10" Where do they pump from The Sea Bilge & Hotwell & Ballast Tanks

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 To Circulating  
How are the pumps worked By Levers  
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 —  
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 pipes to the hold 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 On Ship previous to being launched  
Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from Upper platform

## BOILERS, &c.—

Number of Boilers Three Description Round Horizontal, with two Furnaces in each end  
Working Pressure 80 lbs Tested by hydraulic pressure to 160 lbs Date of test June 25<sup>th</sup> 1880  
Description of superheating apparatus or steam chest Longitudinal Receiver on each Boiler  
Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately No Superheater fitted  
No. of square feet of fire grate surface in each boiler 91 ft<sup>2</sup> Description of safety valves Direct Spring  
No. to each boiler Two area of each valve 23 1/5 Are they fitted with easing gear Yes  
No. of safety valves to superheater No Superheater area of each valve — are they fitted with easing gear —  
Smallest distance between boilers and bunkers or woodwork 7 ft<sup>2</sup>  
Diameter of boilers 12 ft<sup>2</sup> Length of boilers 8.6 description of riveting of shell long. seams Double straps double riveted circum. seams Double riveted  
Thickness of shell plates 14" diameter of rivet holes 1 1/8" whether punched or drilled Drilled pitch of rivets 4 1/2"  
Lap of plating 1 1/2" x 9" straps per centage of strength of longitudinal joint 75% working pressure of shell by rules 86.5 lbs  
Size of manholes in shell 16" x 12" size of compensating rings doubling plate fitted  
No. of Furnaces in each boiler Four outside diameter 4' 1" length, top 7 ft<sup>2</sup> bottom 8' 10"  
Thickness of plates 7/16" description of joint Corrugated if rings are fitted — greatest length between rings —  
Working pressure of furnace by the rules —  
Combustion chamber plating, thickness, sides 7/16" back 7/16" top 7/16"  
Pitch of stays to ditto sides 8 1/2" x 8" back 8 1/2" x 8" top Radial Stays  
If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 130 lbs  
Diameter of stays at smallest part 1 1/8" & 1 1/4" Stays working pressure of ditto by rules 108 lbs  
End plates in steam space, thickness 1 1/16" pitch of stays to ditto 1 1/4" x 1 1/4" how stays are secured By Nuts & Nuts to four palms  
Working pressure by rules — diameter of stays at smallest part 2 1/2" & ends 1 1/2" working pressure by rules —  
Front plates at bottom, thickness 1 1/16" Back plates, thickness no back greatest pitch of stays — working pressure by rules —



28380

Diameter of tubes  $3\frac{1}{2}$ " pitch of tubes  $4\frac{3}{4}$ " thickness of tube plates, front  $\frac{1}{16}$ " back  $\frac{11}{16}$ "  
How stayed *By Tubes* pitch of stays  $9\frac{1}{4} \times 9\frac{1}{4}$ " width of water spaces  $9\frac{1}{4} \times 6\frac{1}{4}$ "  
Diameter of ~~Superheater~~ or Steam chest  $3\frac{1}{2}$ " length  $18\frac{1}{2}$ "  
Thickness of plates  $\frac{1}{16}$ " description of longitudinal joint *Double riveted* diameter of rivet holes  $\frac{1}{16}$ " pitch of rivets  $3$ "  
Working pressure of shell by rules  $133\frac{1}{2}$  lbs Diameter of flue  $9$ " thickness of plates  $\frac{1}{16}$ "  
If stiffened with rings  $\frac{1}{16}$ " distance between rings  $\frac{1}{16}$ " Working pressure by rules  $\frac{1}{16}$ "  
End plates of superheater, or steam chest; thickness  $\frac{1}{16}$ " How stayed *By angle iron & web plate*  
~~Superheater~~ or steam chest; how connected to boiler *By two neck pieces*

## DONKEY BOILERS

Description

*Cochrane's patent. Round Vertical Multitubular*

Made at *Birkenhead*

By whom made

*Cochrane*

when made *1880*

Where fixed *On Main Deck*

working pressure

*80 lbs*

Tested by hydraulic pressure to *160 lbs*

No. of Certificate

Fire grate area *16 sq ft*

Description of safety valves

*Direct Spring*

No. of safety valves *Two*

area of each *2*

If fitted with easing gear

*Yes*

If steam from main boilers can enter the donkey boiler *No*

Diameter of donkey boiler  $5\frac{1}{2}$ "

length

*11 ft*

description of riveting

*Double & single*

thickness of shell plates  $\frac{1}{16}$ "

diameter of rivet holes

$\frac{1}{16}$ "

whether punched or drilled

*punched*

pitch of rivets  $3\frac{1}{2}$ "

lap of plating

$3\frac{1}{2}$ "

per centage of strength of joint

*76%*

thickness of crown plates  $\frac{3}{8}$ "

stayed by

*5 Gunmetal plates*

Diameter of furnace, top  $4\frac{1}{2}$ "

bottom

length of furnace  $1\frac{1}{2}$ "

thickness of plates  $\frac{1}{16}$ "

description of joint

*Lap*

thickness of furnace crown plates  $\frac{1}{16}$ "

stayed by

*Upstate and dished*

Working pressure of shell by rules *90 lbs*

working pressure of furnace by rules

diameter of uptake  $15$ "

thickness of plates  $\frac{1}{16}$ "

thickness of water tubes

*No Water Tubes.*

The foregoing is a correct description, of Main Engines & Boilers

*Mr. David Roxan*

Manufacturer.

*Gavin Nelson*

## General Remarks

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

*The Engines & Boilers are*

*of good workmanship and now in good order and safe working condition and eligible in my opinion to be listed in the Register Book + Lloyd's M.C. 11.80*

*It is submitted that this vessel is eligible to have the notifications of Lloyd's M.C. recorded in the Register Book M 19/1/80*

The amount of Entry Fee  $\pounds 3$  : : : received by me,

Special

$\pounds 45$  : : :

*£134*

Certificate (if required)  $\pounds$

*Quarter's dues 1880*

To be sent as per margin.

(Travelling Expenses, if any,  $\pounds 2.2.0$ )

Committee's Minute

*1880*

*+ Lloyd's M.C.*

*James Morrison*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

*Clyde District*  
Lloyd's Register  
Foundation