

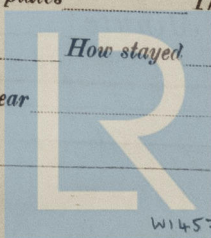
## REPORT ON MACHINERY.

Port of *Newcastle.*

No. in Survey held at *Newcastle.* Date, first Survey *Nov. 24* Last Survey *Sep 12* 1902  
 Reg. Book. on the *S/S Gracchus* (Number of Visits *27*)  
 Master *W. Smith* Built at *Jarrow* By whom built *Palmer & Co. Ltd.* Tons { Gross *2750*  
 Engines made at *Jarrow* By whom made *Palmer & Co. Ltd.* Net *2360*  
 Boilers made at *"* By whom made *"* When built *1902*  
 Registered Horse Power *"* when made *1902*  
 Owners *Archibald Burns & Co.* Port belonging to *Melbourne.*  
 Nom. Horse Power as per Section 28 *483* Is Refrigerating Machinery fitted *no* Is Electric Light fitted *yes*

ENGINES, &c. — Description of Engines *In C.P.D.* No. of Cylinders *3* No. of Cranks *3*  
 Dia. of Cylinders *27" 4 5/8"* Length of Stroke *48* Revs. per minute *78* Dia. of Screw shaft as per rule *15"* as fitted *15 1/8"* Lgth. of stern bush *5' 1"*  
 Dia. of Tunnel shaft as per rule *13 1/4"* as fitted *13 5/8"* Dia. of Crank shaft journals as per rule *14" 08* as fitted *14 1/4"* Dia. of Crank pin *1 1/4"* Size of Crank webs *9 1/4" x 10 1/4"* Dia. of thrust shaft under collars *1 1/4"* Dia. of screw *18" 3* Pitch of screw *18" 6"* No. of blades *4* State whether moveable *yes* Total surface *86.5 sq*  
 No. of Feed pumps *2* Diameter of ditto *4"* Stroke *27"* Can one be overhauled while the other is at work *yes*  
 No. of Bilge pumps *2* Diameter of ditto *4 1/2"* Stroke *27"* Can one be overhauled while the other is at work *yes*  
 No. of Donkey Engines *three* Sizes of Pumps *11" x 11" x 12" 7" x 5" x 8" 6" x 5 1/4" x 6"* No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room *three of 3 1/2"* In Holds, &c. *nos 1-2-3 two of 3 1/2" 2 1/4" 3 of 3"*  
 No. of bilge injections *1* sizes *6"* Connected to condenser, or to circulating pump *C/P* Is a separate donkey suction fitted in Engine room & size *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*  
 That 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*  
 Then were stern tube, propeller, screw shaft, and all connections examined in dry dock *new vessels* Is the screw shaft tunnel watertight *yes*  
 Is it fitted with a watertight door *yes* worked from *top platform*

BOILERS, &c. — (Letter for record *S.*) Total Heating Surface of Boilers *6768 sq* Is forced draft fitted *yes*  
 No. and Description of Boilers *3 Mult. H. S. & C.* Working Pressure *180* Tested by hydraulic pressure to *360*  
 Date of test *14.5.02* Can each boiler be worked separately *yes* Area of fire grate in each boiler *50.5 sq* No. and Description of safety valves to each boiler *2 Spring* Area of each valve *7.06* Pressure to which they are adjusted *185* Are they fitted with easing gear *yes*  
 Smallest distance between boilers or uptakes and bunkers or woodwork *about 20"* Mean dia. of boilers *13.9* Length *11 ft* Material of shell plates *S.*  
 Thickness *1 1/2"* Range of tensile strength *29.32* Are they welded or flanged *end* Descrip. of riveting: cir. seams *D. & R.* long. seams *D. & R. butt.*  
 Diameter of rivet holes in long. seams *1 1/16* Pitch of rivets *8 3/4* Lap of plates or width of butt straps *19 1/2"*  
 Percentages of strength of longitudinal joint rivets *85* Working pressure of shell by rules *202.5* Size of manhole in shell *END 16" x 12"*  
 Description of compensating ring *flanged* No. and Description of Furnaces in each boiler *3 deflection* Material *S.* Outside diameter *3.5 1/4*  
 Length of plain part top *29* bottom *29* Thickness of plates crown *2 1/2"* Description of longitudinal joint *welded* No. of strengthening rings *-*  
 Working pressure of furnace by the rules *183* Combustion chamber plates: Material *S.* Thickness: Sides *5/8 3/32* Back *5/8 3/32* Top *5/8 3/32* Bottom *3/4 3/32*  
 Choice of stays to ditto: Sides *9 x 8 1/4* Back *9 x 8 3/4* Top *9 1/4 x 8 1/2* If stays are fitted with nuts or riveted heads *nuts* Working pressure by rules *186*  
 Material of stays *S.* Diameter at smallest part *2.1"* Area supported by each stay *88.6"* Working pressure by rules *240* End plates in steam space: Material *S.* Thickness *1 1/2 3/32* Pitch of stays *18" x 16* How are stays secured *a nuts* Working pressure by rules *242* Material of stays *S.*  
 Diameter at smallest part *5.79* Area supported by each stay *288.12* Working pressure by rules *200* Material of Front plates at bottom *S.*  
 Thickness *1 1/16* Material of Lower back plate *S.* Thickness *7/8 3/32* Greatest pitch of stays *14"* Working pressure of plate by rules *185 1/2*  
 Diameter of tubes *2 1/2* Pitch of tubes *3 3/4 x 3 5/8* Material of tube plates *S.* Thickness: Front *1 1/16* Back *1 3/16 3/32* Mean pitch of stays *7 3/8"*  
 Ch across wide water spaces *13 1/2* Working pressures by rules *185* Girders to Chamber tops: Material *S.* Depth and thickness of girder at centre *8 1/4 x 15"* Length as per rule *27 1/2"* Distance apart *9 1/4* Number and pitch of Stays in each *2 @ 8 1/2*  
 Working pressure by rules *252.48* 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  
 Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness  
 Fitted 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





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