

No. 2384

3007A

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. *2394* No. in Register Book *3813*

" "
S.S. *SOUTHERN STAR*

Makers of Engines *Swansea Dock Co. Ltd.*

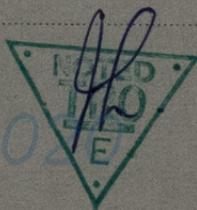
Works No. *394*

Makers of Main Boilers *Richardsons Westgarth Works*

Works No. *D. 210.*

Makers of Donkey Boiler

Works No.



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THE BRITISH CORPORATION FOR THE SURVEY

AND

REGISTRY OF SHIPPING.

Report No. No. in Register Book

Received at Head Office

15th November 1930

Surveyor's Report on the Petrol Engines, Boilers, and Auxiliary Machinery of the ~~Single~~ Secret Whale

"Southern Star"

Official No.

Port of Registry

Stanley, F. I.

Registered Owners

Southern Whaling & Sealing Co. Ltd.

Engines Built by

Southern Docks Co. Ltd.

at

South Bank-on-Sea

Main Boilers Built by

Richardson Westgarth & Co. Ltd.

at

Haithepool.

Donkey " "

at

Date of Completion

8-30

First Visit

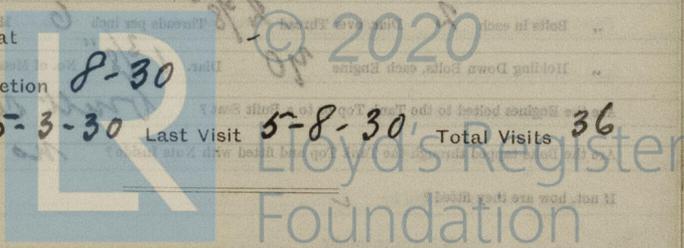
25-3-30

Last Visit

5-8-30

Total Visits

36



RECIPROCATING ENGINES

Works No. **394** No. of Sets **1** Description **Tuple expansion.****30. Berks.**No. of Cylinders each Engine **3** No. of Cranks **3**Diams of Cylinders **16" - 26" - 44"** Stroke **26"**Cubic feet in each L.P. Cylinder **23**Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr? **yes.**" " each Receiver? **yes.**Type of H P. Valves, **piston**

1st I.P. "

2nd I.P., "

L.P. " **slide.**" Valve Gear **Stephenson Link.**" Condenser **Surf.**Diameter of Piston Rods (plain part) **4 1/2** Cooling Surface **1635** sq. ft. Screwed part (bottom of thread) **3 5/32**Material " **steel**Diat. of Connecting Rods (smallest part) **4 1/4** Material **Iron.**" Crosshead Gudgeons **4 3/4** Length of Bearing **11 1/8** Material **S. Steel.**No. of Crosshead Bolts (each) **4** Diar. over Thrd. **2 1/8** Thrd. per inch **8** Material "" Crank Pin " **2** " **2 5/8** " **6** " "" Main Bearings **8 1/2** " Lengths **11 3/8** " " "" Bolts in each **2** Diar. over Thread **2 3/8** Threads per inch **6** Material **steel.**" Holding Down Bolts, each Engine **40** Diar. **1 3/8** No. of Metal Chocks **40**Are the Engines bolted to the Tank Top or to a Built Seat? **built seat.**Are the Bolts tapped through the Tank Top and fitted with Nuts Inside? **no**If not, how are they fitted? **✓**Connecting Rods, Forged by **Blair & Co. Ltd.**

Piston " " " "

Crossheads, " " " "

Connecting Rods, Finished by **Cumtch Rock & Co. Ltd.**

Piston " " " "

Crossheads, " " " "

Date of Harbour Trial **22-7-30**" Trial Trip **5-8-30**Trials run at **In Gas Bay.**Were the Engines tested to full power under Sea-going conditions? **yes.**If so, what was the I.H.P.? **1345**Revs. per min. **178**Pressure in 1st I.P. Receiver, **68** lbs., 2nd I.P., **-** lbs., L.P., **10** lbs., Vacuum, **25** ins.Speed on Trial **no check taken.**

If the Conditions on Trial were such that full power records were not obtained give the following estimated

data:—

Builders' estimated I.H.P.

Revs. per min.

Estimated Speed **12 knots.**

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SHAFTING.

Are the Crank Shafts Built or Solid?

built.

No. of Lengths in each

1

Angle of Cranks

120°

Diar. by Rule

8 3/4"

Actual 8 1/2"

In Way of Webs

8 7/8"

" of Crank Pins

Greatest Width of Crank Webs

2'-0"

Length between Webs

12"

Thickness

5 1/4"

Least

13"

5 1/4"

Diar. of Keys in Crank Webs

1 1/2"

Length

4"

" Dowels in Crank Pins

1"

Length 3 1/2"

Screwed or Plain

plain.

No. of Bolts each Coupling

6

Diar. at Mid Length

2"

Diar. of Pitch Circle

12 1/2"

Greatest Distance from Edge of Main Bearing to Crank Web

3 1/6"

Type of Thrust Blocks

Korseshae.

No. " Rings

6

Diar. of Thrust Shafts at bottom of Collars

8 1/2"

No. of Collars

6

" " Forward Coupling

8 1/2"

At Aft Coupling

8 1/2"

Diar. of Intermediate Shafting by Rule

"

Actual

No. of Lengths

No. of Bolts, each Coupling

Diar. at Mid Length

Diar. of Pitch Circle

Diar. of Propeller Shafts by Rule

Actual

8 7/8"

At Coupling

8 1/2"

Are Propeller Shafts fitted with Continuous Brass Liners?

yes.

Diar. over Liners

10"

Length of After Bearings

4'-0 1/2"

Of what Material are the After Bearings composed?

Lignum Vitae.

Are Means provided for lubricating the After Bearings with Oil?

no

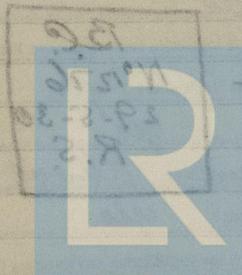
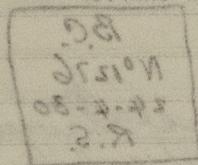
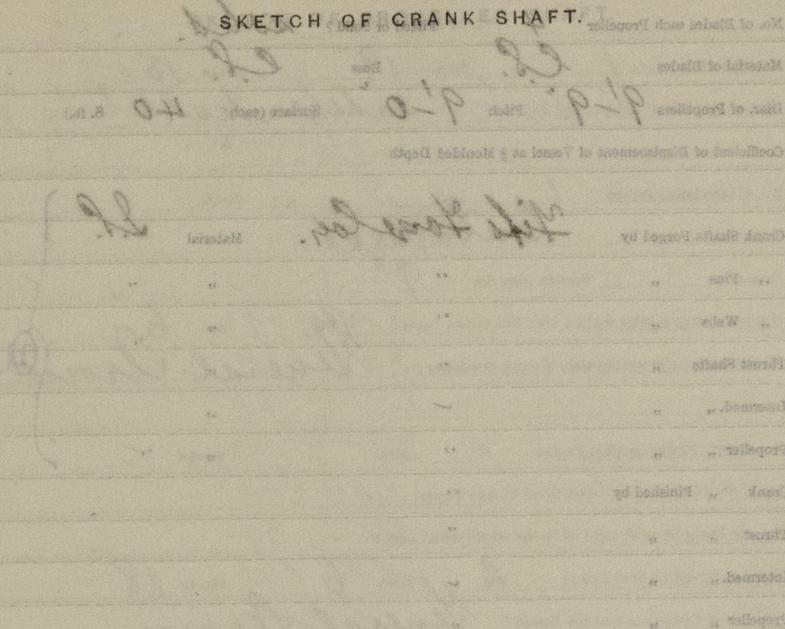
" " to prevent Sea Water entering the Stern Tubes?

no

If so, what Type is adopted?

open to sea.

SKETCH OF CRANK SHAFT.



BOILERS

Works No.

D. 210

No. of Boilers

1

Type

Cylindrical multitubular
single

Single or Double-ended

No. of Furnaces in each

3

Type of Furnaces

Brighton

Date when Plan approved

24-2-30

Approved Working Pressure

200 lb.

Hydraulic Test Pressure

350 lb.

Date of Hydraulic Test

24-5-30

" when Safety Valves set

22-7-30

Pressure at which Valves were set

206 lb.

Date of Accumulation Test

22-7-30

Maximum Pressure under Accumulation Test

206 lb.

System of Draught

C.A.

Can Boilers be worked separately?

yes.
Steel Coy of Scotland.

Makers of Plates

R. B. 1. & Co. Ltd.
Brighton 41 St. L.

" Stay Bars

" Rivets

" Furnaces

Greatest Internal Diam. of Boilers

15'-6"

" " Length "

12'-6"

Square Feet of Heating Surface each Boiler

3050

" " Grate "

No. of Safety Valves each Boiler

2

Rule Diam.

Actual

3"

Are the Safety Valves fitted with Easing Gear?

yes.

No. of Pressure Gauges, each Boiler

2

No. of Water Gauges

1

" Test Cocks

3

" Salinometer Cocks

1



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Thickness of End Plates in Steam Space Approved

15/16"

in plates direct

" " " " in Boilers

15/16"

Pitch of Steam Space Stays

20 1/2" x 19 1/2"

Diar. " " " Approved

3 1/4"

Threads per Inch 6

" " " " in Boilers

3 1/4"

6

Material " " "

steel.

How are Stays Secured?

double-nuts.

Diar. and Thickness of Loose Washers on End Plates

" " " Riveted " "

Width " " Doubling Strips "

double

Thickness of Middle Back End Plates Approved

" " " " in Boilers

Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at

13 1/2" x 8 1/2"

Diar. of Stays Approved

2 1/8" x 1 3/8"

Threads per Inch 9

" " in Boilers

2 1/8" x 1 3/8"

9

Material " " "

steel.

Are Stays fitted with Nuts outside?

yes.

Thickness of Back End Plates at Bottom Approved

7/8"

" " " " in Boilers

7/8"

Pitch of Stays at Wide Spaces between Fireboxes

13 1/2" x 8 1/2"

Thickness of Doublings in

3 3/4"

Thickness of Front End Plates at Bottom Approved

7/8"

" " " " in Boilers

7/8"

No. of Longitudinal Stays in Spaces between Furnaces

6.

2-6 1/2" x 2-5 1/2"

Handwritten notes and calculations on page 19, including:

- Diagrams of stay tubes with dimensions like 1/2", 1/4", 1/8", 1/16", 1/32", 1/64", 1/128", 1/256", 1/512", 1/1024", 1/2048", 1/4096", 1/8192", 1/16384", 1/32768", 1/65536", 1/131072", 1/262144", 1/524288", 1/1048576", 1/2097152", 1/4194304", 1/8388608", 1/16777216", 1/33554432", 1/67108864", 1/134217728", 1/268435456", 1/536870912", 1/1073741824", 1/2147483648", 1/4294967296", 1/8589934592", 1/17179869184", 1/34359738368", 1/68719476736", 1/137438953472, 1/274877906944, 1/549755813888, 1/1099511627776, 1/2199023255552, 1/4398046511104, 1/8796093022208, 1/17592186044416, 1/35184372088832, 1/70368744177664, 1/140737488355328, 1/281474976710656, 1/562949953421312, 1/1125899906842624, 1/2251799813685248, 1/4503599627370496, 1/9007199254740992, 1/18014398509481984, 1/36028797018963968, 1/72057594037927936, 1/144115188075855872, 1/288230376151711744, 1/576460752303423488, 1/1152921504606846976, 1/2305843009213693952, 1/4611686018427387904, 1/9223372036854775808, 1/18446744073709551616, 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Diar. of Stays Approved $2\frac{3}{4}$ " Threads per Inch 6
 " " in Boilers $2\frac{3}{4}$ " " 6

Material ,, *steel.*

Thickness of Front Tube Plates Approved $\frac{7}{8}$ "
 " " " " in Boilers $\frac{7}{8}$ "

Pitch of Stay Tubes at Spaces between Stacks of Tubes $13\frac{1}{2}$ " x $7\frac{1}{4}$ "

Thickness of Doublings in " " "
 " Stay Tubes at " " " $3\frac{3}{8}$ " $5\frac{1}{16}$ "

Are Stay Tubes fitted with Nuts at Front End *yes.*

Thickness of Back Tube Plates Approved $\frac{3}{4}$ "
 " " " in Boilers $\frac{3}{4}$ "

Pitch of Stay Tubes in Back Tube Plates
 " Plain " $7\frac{1}{4}$ " x $11\frac{1}{4}$ "
 $3\frac{3}{4}$ " x $3\frac{5}{8}$ "

Thickness of Stay Tubes
 " Plain " $2\frac{1}{16}$ " $\frac{3}{8}$ " $5\frac{1}{16}$ "
 8 *W.L.*

External Diar. of Tubes $2\frac{1}{2}$ "
 Material ,, *Iron.*

Thickness of Furnace Plates Approved $2\frac{1}{32}$ "
 " " " in Boilers $2\frac{1}{32}$ "

Smallest outside Diar. of Furnaces $3'-10"$ $13\frac{1}{16}"$

Length between Tube Plates $8'-6"$

Width of Combustion Chambers (Front to Back) $3'-1"$

Thickness of " " Tops Approved $1\frac{1}{16}"$
 " " " in Boilers $1\frac{1}{16}"$

Pitch of Screwed Stays in C.O. Tops $8\frac{3}{8}"$ x $9\frac{1}{2}"$

20
 Threads per Inch $1\frac{1}{4}$ "
 " " " " $1\frac{1}{4}$ "
steel.

Thickness of Front Tube Plates Approved $\frac{11}{16}$ "
 " " " " in Boilers $\frac{11}{16}$ "
 Pitch of Stay Tubes at Spaces between Stacks of Tubes $8\frac{1}{8}"$ x $8\frac{1}{8}"$

Thickness of Doublings in " " "
 " Stay Tubes at " " " $1\frac{1}{8}"$ $1\frac{1}{8}"$

Are Stay Tubes fitted with Nuts at Front End *yes.*

Thickness of Back Tube Plates Approved $\frac{1}{2}$ "
 " " " in Boilers $\frac{1}{2}$ "
 Pitch of Stay Tubes in Back Tube Plates
 " Plain " $8\frac{1}{8}"$ x $8\frac{1}{8}"$
 $2\frac{1}{16}"$ $\frac{3}{8}"$ $5\frac{1}{16}"$

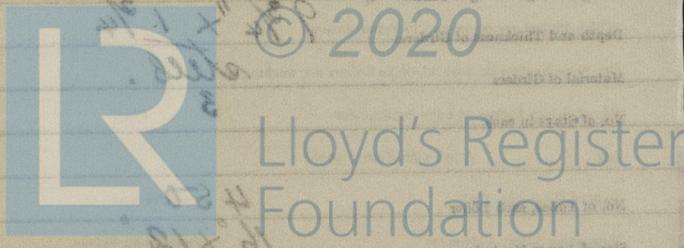
Thickness of Stay Tubes
 " Plain " $2\frac{1}{16}"$ $\frac{3}{8}"$ $5\frac{1}{16}"$
 8 *W.L.*

External Diar. of Tubes $2\frac{1}{2}"$
 Material ,, *Iron.*

Thickness of Furnace Plates Approved $2\frac{1}{32}"$
 " " " in Boilers $2\frac{1}{32}"$

Smallest outside Diar. of Furnaces $3'-10"$ $13\frac{1}{16}"$

Length between Tube Plates $8'-6"$



Diar. of Screwed Stays Approved $1\frac{3}{4}$ " Threads per Inch 9
 " " " in Boilers $1\frac{3}{4}$ " " 9
 Material " " *steel.*

Thickness of Combustion Chamber Sides Approved $\frac{1}{16}$ "
 " " " " in Boilers $\frac{1}{16}$ "
 Pitch of Screwed Stays in C.C. Sides $8\frac{1}{2}$ " x $8\frac{3}{8}$ "
 Diar. " " Approved $1\frac{5}{8}$ " Threads per Inch 9
 " " " in Boilers $1\frac{5}{8}$ " " 9
 Material " " *steel.*

Thickness of Combustion Chamber Backs Approved $2\frac{1}{32}$ "
 " " " " in Boilers $2\frac{1}{32}$ "
 Pitch of Screwed Stays in C.C. Backs $8\frac{1}{2}$ " x 8 "
 Diar. " " Approved $2\frac{1}{8}$ " $1\frac{7}{8}$ " $1\frac{5}{8}$ " Threads per Inch 9
 " " " in Boilers $2\frac{1}{8}$ " $1\frac{7}{8}$ " $1\frac{5}{8}$ " " 9
 Material " " *steel.*

Are all Screwed Stays fitted with Nuts inside C.C.? *Yes.*
 Thickness of Combustion Chamber Bottoms $\frac{1}{8}$ "

No. of Girders over each Wing Chamber 4
 " " " Centre " 4
 Depth and Thickness of Girders $9\frac{3}{4}$ " x $1\frac{3}{4}$ "
 Material of Girders *steel.*
 No. of Stays in each 3

No. of Tubes, each Boiler 450
 Size of Lower Manholes 16 " x 12 "

VERTICAL DONKEY BOILERS

No. of Boilers
 Type
 Greatest Int. Diar.
 Height
 Height of Boiler Crown above Fire Grate
 Are Boiler Crowns Flat or Dishd?
 Internal Radius of Dishd Heads
 Thickness of Plates
 Description of Stays in Boiler Crowns
 Diam. of Fire Holes
 Place
 Height of Firebox Crown above Fire Grate
 Are Firebox Crowns Flat or Dishd?
 Internal Radius of Dishd Crowns
 No. of Cross Stays
 Internal Diam. of Firebox at Top
 Thickness of Plates
 No. of Water Tubes
 Material of Water Tubes
 Size of Manholes in Shell
 Dimensions of Compensation Pipe
 Heating Surface, each Boiler
 Gross Surface

SUPERHEATERS



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VERTICAL DONKEY BOILERS.

No. of Boilers Type *1 1/4*

Greatest Int. Diar. Height *2 1/2*

Height of Boiler Crown above Fire Grate

Are Boiler Crowns Flat or Dished?

Internal Radius of Dished Ends Thickness of Plates

Description of Seams in Boiler Crowns

Diar. of Rivet Holes Pitch Width of Overlap

Height of Firebox Crowns above Fire Grate

Are Firebox Crowns Flat or Dished? *steel*

External Radius of Dished Crowns Thickness of Plates

No. of Crown Stays Diar. Material

External Diar. of Firebox at Top Bottom Thickness of Plates

No. of Water Tubes Ext. Diar. Thickness

Material of Water Tubes

Size of Manhole in Shell

Dimensions of Compensating Ring

Heating Surface, each Boiler Grate Surface

SUPERHEATERS.

Description of Superheaters

Where situated?

Which Boilers are connected to Superheaters? *1 1/4*

Can Superheaters be shut off while Boilers are working?

No. of Safety Valves on each Superheater Diar.

Are " " fitted with Easing Gear?

Date of Hydraulic Test Test Pressure

Date when Safety Valves set Pressure on Valves

MAIN STEAM PIPES

No. of Pipes

Material

How are Pipes secured?

Internal Diar.

Thickness

How are Pipes secured?

Date of Hydraulic Test

Test Pressure

No. of Pipes

Material

How are Pipes secured?

Internal Diar.

Thickness

How are Pipes secured?

Date of Hydraulic Test

Test Pressure

10-7-30
14-7-30
10-7-30
14-7-30
10-7-30
14-7-30



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MAIN STEAM PIPES.

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

2

Copper.

C.S.

4 1/4"

5 W.P.

braked.

10-7-30 14-7-30

480 lbs.

EVAPORATORS

2 Independent Feed Pumps
 1 Centrifugal pump
 1 Duplex Reciprocating pump
 1 Independent Feed Pump

FEED WATER HEATERS

1 Babcock & Wilcox
 1 Babcock & Wilcox
 200 lbs.
 10/2/30

FEED WATER FILTERS

1 Regulator
 1 Filter



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EVAPORATORS.

No.	Type	Tons per Day
Makers		
Working Pressure	Test Pressure	Date of Test
Date of Test of Safety Valves under Steam		

FEED WATER HEATERS.

No.	1	Type	Surface, Cochran steam.
Makers			Walden Brook. Caird & Co.
Working Pressure	200 lbs.	Test Pressure	400 lbs.
		Date of Test	19/5/30

FEED WATER FILTERS.

No.	1	Type	Gravitation	Size
Makers			Suethor & Co. Ltd.	
Working Pressure		Test Pressure		Date of Test

LIST OF DONKEY PUMPS.

2 Independent Feed Pumps.
 1 Centrifugal pump.
 1 Duplex General Service pump.
 1 Siles pump.
 1 Independent Air pump.

Raynor



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REFRIGERATORS.

No. of Machines *2* Capacity of each *2*

Makers *6*

Description *6*

No. of Steam Cylinders, each Machine *4* No. of Compressors *4* No. of Cranks *2*

Particulars of Pumps in connection with Refrigerating Plant and whether worked by Refrigerating Machines or Independently

Propeller shafts *1* Propellers *1* Propeller Shafts *1*

Condenser Tubes *8* Condenser Shafts *12* Condenser Valves *30*

System of Refrigeration

,, Insulation

Are Brine and other Regulating Valves placed so as to be accessible without entering the Insulated Spaces?

Are all Pipes, Air Trunks, &c., well secured and protected from risk of damage?

Are all Bilge, Sounding and Air Pipes in Insulated Spaces properly insulated?

Are Thermometer Tubes so arranged that Water cannot enter and freeze in them?

Date of Test under Working Conditions

RESULTS OF TRIALS.

COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after hours.
<i>Navigation 12</i>	<i>380</i>	<i>3.8</i>	<i>7/2</i>	<i>110</i>
<i>Quadrants 17</i>	<i>240</i>	<i>2.4</i>		
<i>Eng. Room 17</i>	<i>240</i>	<i>2.4</i>		
<i>Off. Accom 6</i>	<i>180</i>	<i>1.8</i>		

Articles of Spare Gear for Refrigerating Plant carried on board:—



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GENERAL CONSTRUCTION.

Have the Machinery and Boilers been constructed in accordance with the requirements of the Rules and the

Approved Plans? *Yes.*

If not, give details of the points of difference, and state when these were sanctioned by the Chief

Surveyor.

Are the Materials used in the Construction of Engines and Boilers, so far as could be seen, sound and trustworthy? *Yes.*

Is the Workmanship throughout thoroughly satisfactory? *Yes.*

The above correctly describes the Machinery of the S.S. **SOUTHERN STAR**

as ascertained by me from personal examination

J. D. Stephenson
 Engineer Surveyor to the British Corporation for the
 Survey and Registry of Shipping.

Fees—

MAIN BOILERS.		£	s.	d.
H.S.	3050 Sq. ft.	:	:	:
G.S.	" "	:	:	:
DONKEY BOILERS.				
H.S.	" Sq. ft.	:	:	:
G.S.	" "	:	:	:
		£	:	:
ENGINES.				
L.P.C.	23 Cub. ft.	:	:	:
		£	:	:
Testing, &c. ...		:	:	:
		£	:	:
Expenses ...		:	:	:
		£	:	:
Total ...		£	:	:

It is submitted that this Report be approved,

J. D. Stephenson
 Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the 26th November 1930.

Fees advised

Fees paid

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 Secretary.



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