

6. HISTORICAL (Contd)

Quad. Sc. S.S. MAURETANIA

Built 1907 by Swan Hunter & W.R. of Newcastle-on-Tyne.
Parsons Direct Drive Turbines.

The active life of this ship was 27 years compared with the AZQUITANIA's 35 years.

In the design stage of this ship and of the sister vessel the LUSITANIA there was some concern regarding the high stresses in the upper structure. Meetings of the builders, Owners and L.R. are recorded, official and private correspondence and records of steel tests are considerable. As a result it was decided to use high tensile steel (34/38 tns/sq. ins.) for the 6 uppermost strakes of side shell plating, forecastle side plating, upper deck except centre 4 strakes and the plating of the transverse and longitudinal bulkheads. Exhaustive tests were carried out on specimen high tensile steel plates and the steel-works specially approved. Routine inspection required tests from each plate in accordance with Admiralty practice for steel of such tenacity. The question of drilling, or punching, or punching $1/8"$ smaller and reamering was gone into and test results from riveted test pieces were compared and a decision made to approve 'punching $1/8"$ smaller and reamering to size'.

The care and forethought in the design of the hull were amply repaid as during the 27 years service no evidence of hull weakness is recorded though groundings and 'pierhead' collisions were numerous when Liverpool was the terminal port.

The $3\frac{1}{2}"$ anchor chain cable, of iron with side welds, was subjected to special tests during manufacture and it is worth recording that there was only one failure in service. This reflects great credit on the blacksmiths who did the job.

The story of the Machinery is not such a happy one but there can be little doubt that the experience gained from the considerable blading troubles in the Mauretania made it possible to produce the machinery of the Azquitania, 7 years later, which gave almost trouble free service for 35 years.

The original 3 bladed propellers were not satisfactory and involved a number of voyages using 3 screws and on one return voyage from New York to Liverpool only 2 screws were in use. The 3 bladed propellers were replaced by 4 bladed propellers; outers in 1909 and inners in 1911.

Only one screw shaft was renewed on account of fracture. The screw and line shafting were hollow, 20" Diameter and 10" bore.

The reports are not sufficiently detailed to get a full picture of the turbine blading defects but repairs recorded include deepening of the casing and rotor covers in the HP turbines and the blading strings were reinforced generally.

Dr. Bruhn:

It was considered that where both Mild Steel and H.T. steel were used adjacently and the yield point was the same no benefit can be credited for the H.T. steel!

From notes on file:-

	Ord. St.	H.T. Steel Scantlings reduced 10%
U.T.S.	30 T.	35 T.
F. of S.	2.92	3.14
Y.P.	15 T.	20 T.
F. of S.	1.44	1.8

Y.P. broke 25% over Statutory
Breaking Load and links
with 1" deep saw cuts at
weld broke near Stat.
Breaking Load - sound welds
in all cases.

2 Additional side stringers fitted 1923, in fore peak tank.