

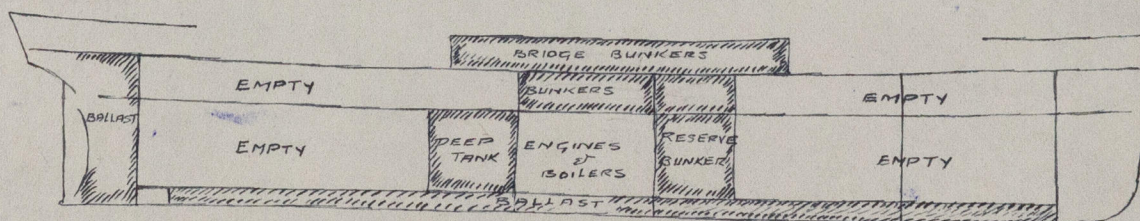
S.S. "GRETASTON"

Dimensions .....401.54 x 52.73 x 30 feet.

This vessel, which has been constructed in accordance with the requirements of the Revised Rules by Messrs. R. Duncan & Co. Ltd., Port Glasgow, was completed in February 1924.

While on her first voyage from Glasgow to Bahia Blanca buckling of the bridge deck plating was reported to have taken place in the vicinity of the machinery casing. The vessel sailed in ballast condition, the double bottom, after peak tank, and the deep tank amidships which holds 860 tons of water, being full. The reserve bunker forward of the machinery space contained 944 tons of coal, an additional coal reserve of about 990 tons being carried in the bridge and 'tween decks amidships. The cargo hold spaces were empty.

The total load placed on board the vessel on leaving Glasgow was 4016 tons, 3274 tons of which was concentrated over a length of 135 feet amidships. The total deadweight of the vessel in the load condition is 8700 tons disposed over the full length of the vessel.



A cargo of grain was shipped at Bahia Blanca for Hull at which port the vessel was examined by Mr. R. D. Cairns of the Glasgow Office, whose report, together with the voyage log extracts, have been received at this Office. Mr. Cairns found the bridge deck plating buckled abreast the boiler casing on the port and starboard sides and cracked for 16 inches on the starboard side and 9½ inches on the port side. The

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buckling extended across the deck to about the middle of the stringer plates. The bulwark plate and rail bar on the bridge deck abreast the forward end of the boiler casing showed slight buckling as did also the upper deck on the starboard side below the buckled plating on the bridge deck.

It was further reported that during the voyage to Bahia signs of panting were observed on the port side of the after machinery space bulkhead. An examination of this bulkhead by Mr. Cairns at Hull from the machinery space only, the deep tank being full of grain at the time, was made, and no signs of straining or bulging could be observed, and no cargo had been damaged.

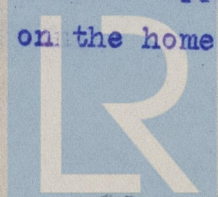
The deep tank was later examined internally and found to be satisfactory.

Detailed calculations have been made to ascertain the bending moments and stress conditions which would arise from the ballast load condition of the vessel when leaving Glasgow. These calculations show that in the sagging condition the compressive stress on the bridge deck plating would be about 9.25 tons per square inch. Normal compressive stresses on the bridge deck for a vessel of this type loaded with homogeneous cargo fore and aft would be about 4 tons per square inch.

From the log extracts it would appear that heavy weather was encountered shortly after leaving Glasgow.

In his letter of 2nd May, Colonel James Lithgow states that it was pointed out to the Owners before the vessel left Glasgow that the loading was the "worst possible for a new ship".

Enquiry has been made to ascertain the reason why such a large quantity of coal was carried and why it was so concentrated in the vessel. It would appear that, as only 170 tons of coal were shipped on the home ward run) the





Owners attempted to provide as far as possible sufficient coal for the round voyage from Glasgow to the Plate and home again, and the concentrated loading was arranged to avoid trimming.

The Society's Revised Rules are based on conditions of normal loading, and where it is desired to submit a vessel to such loading as was adopted in this case, increased moment of resistance and inertia would need to be provided.

As pointed out, for a homogeneously loaded condition a stress of about 4 tons per square inch would result, and while in practice this stress could be exceeded by say 50 per cent ( which would be brought about under conditions of normal ballast loading) with no deleterious effect to the structure, if the load is to be of such quantity and so stowed as to produce a stress of  $9\frac{1}{2}$  tons, then the Owners should make special provision to safeguard against damage.

*Cor. Lithgow & Co. Owners should be informed of the injury*

6.6.24

*WJH*

*H.H.*

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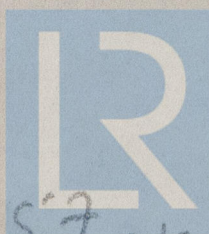
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