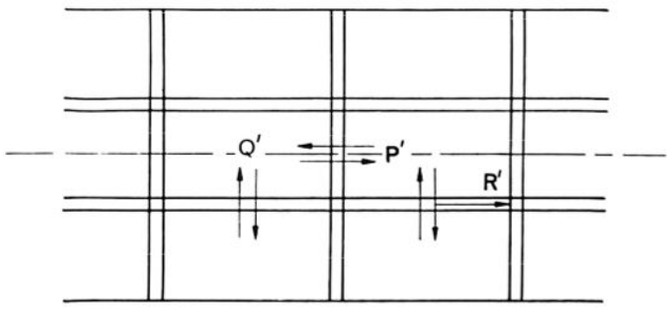

Figure 39.

$$R' = \frac{-6NR(P'b + R'a)}{a t_e\left(\frac{G}{E}L + \frac{B^2}{L}\right)} \quad (47)$$

$$Q' = \frac{6mK\{P'(2-m) + mR'\}}{n^2 + 12mnK} \quad (48)$$

These quantities represent the shearforces in the sections as shown in Fig. 39.

Since at these sections no bending moments are present the bending moment distribution along the structure can be determined.

Conclusion

A number of structural arrangements found in ships with large hatch openings has been examined and it appears possible to arrive at reasonable nominal stresses without excessively heavy scantlings, cargo in alternate holds is a definite possibility.

Deformation of hatch openings due to the loading discussed in this section does not seem to be worrying.

As far as efficiency in longitudinal strength is concerned of structure between hatches, the reasons for a drop in stress in this structure are fairly well understood but determining numerical values for a given arrangement requires quite sophisticated methods of analysis and then it is still uncertain how well it ties in with actual stresses measured on board.

Acknowledgements

The author wishes to thank the Committee of Lloyd's Register of Shipping for their permission to publish this article and he gratefully acknowledges the assistance received from Mr. W. H. Creber, B. Sc., Mr. K. F. G. Urwin, B. Sc., and Miss M. Prince. The experimental set up for the torsion tests was devised by Mr. A. C. Wordsworth who also carried out the experiments.

References

Sprengel, H., 'Tiha' ein Offenes Schiff für den Holztransport' - Hansa 1965 Nr. 16.

Errata
Part I,
International Shipbuilding Progress,
January 1967.

a. Figure 19 b and d, D - h should be $D - \frac{h}{2}$

b. Page 25, righthand column, $C = \frac{4A^2G}{\Sigma(37)}$ should be $C = \frac{8A^2G}{\Sigma(37)}$