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LOADING OF VESSELS.

It will be remembered by many of our readers that complaints were made last autumn by captains of vessels loading with grain at the Port of Montreal that they were subject to unnecessarily severe restrictions and overweight in the matter of loading. It was even said, we believe, that such a course, if persisted in would be of great damage to the port inasmuch as these severe regulations would have the effect of leading ship owners to seek some other port for such freight. The subject is an extremely important one in itself and in its relation to Canadian commerce. The vast products of the Western States and of our own Dominion in the West are every year seeking more and more the St. Lawrence as the shortest and most natural outlet to the Great European Market; and this branch of trade in itself promises at no distant period to become of gigantic proportions. Under these circumstances it is plainly evident that all restrictions which can be removed from the development of this industry should be removed as soon and as completely as possible. But on the other hand there is very much to be said. It is a well-known fact that vessels are now to a very great extent overlaid and badly laden. Then again grain is known to be a treacherous cargo, especially when, as is the general case now, it is stowed in bulk. This danger arises from the fact that the cargo poured in quickly by elevators has not time to settle at all, and even if it does settle somewhat it soon settles more during the voyage and thus leaves an empty space under the deck. The grain thus is at liberty to move from side to side with the motion of the vessel, or to shift over to one side and give the vessel a permanent list. This is avoided, to a certain extent, by the use of shifting boards fitted vertically along the middle line of

the vessel from end to end of the hold and also by transverse bulkheads dividing the hold, so as to enable the grain to be trimmed closer up under the beams. In the case of steamships, however, these precautions have not been deemed so necessary, since they are not so liable to be heeled over by canvass as sailing ships, and it is stated that many steamships have been sent to sea without provisions of this nature. As a consequence of the nature of the cargo and, also, of a certain amount of carelessness in handling it there have been so many losses during the past year or two that the subject has received scientific investigation. The Committee of Lloyd's has recently published a very interesting pamphlet on the stowage of grain cargoes, containing "Reports upon the Theory of Rolling and Stability as affecting the Seaworthiness of Vessels, and on the Stowage of Grain Cargo," by Mr. Simon Fraser Mackie, of Lloyd's Agency, New York, and by the Surveyors of Lloyd's Register of British and Foreign Shipping. Mr. Mackie says that grain in bulk may be classed as a semifluid having an angle of repose of 30 degrees at rest, but that when accompanied by motion, as in the case of a ship at sea, it should be taken at about one-half of what it is when ashore, or say 15 degrees. He says also that loose grain in the hold of a vessel will evidently commence to move as soon as the list of the vessel exceeds the angle of repose; and as it is almost certain that a vessel will roll through a greater angle than 15 degrees, it is almost certain that bulk grain will move more or less on every voyage. But the mere movement or working of a grain cargo is not what is meant by a shift of cargo; and the great danger of a grain cargo lies in its liability to move.

The practical application of all the statement and theory and its peculiar interest to us will appear on glancing at the following list of steamers lost at sea between the 1st January 1872, and the 31st March, 1873:

Ship's name.	Gross Tonnage.	From	Voyage. To
Carolina.....	1174	Baltimore,	Queensland.
Churruca.....	905	New York,	Waterford.
Gravina.....	950	Montreal,	Dublin.
James Marychurch.....	905	"	Queenstown
Alexander Tod.....	913	Rostock,	Leith.
Cresswell.....	1147	Berdianski,	Falmouth.
Devon.....	1254	Montreal,	United Kingdom.
Mary.....	614	Danube,	Falmouth.
Scanderia.....	1983	New York,	Queenstown.
Annie Broughton.....	1229	Nicolaieff,	Leith.
Commander.....	1160	Montreal,	United Kingdom
Counsellor.....	809	Nicolaieff,	Falmouth.
E. S. Jenkins.....	889	Sulina,	"
George Cairns.....	1146	Montreal,	Limerick.
Marcus.....	644	Ibrail,	Yarmouth.
Reindeer.....	1025	Nicolaieff,	United States.
Retriever.....	726	Salonica,	"
Shannon.....	1210	Montreal,	London.
Sphinx.....	849	Kustendj,	"
Malta.....	945	Cronstadt	"

Total 20 steamers 20,477

We are indebted for the above list to the columns of *Engineering*, which remarks as follows: "Of 62 (or 63) steamers lost during the above mentioned dates) no less than 20 were laden with grain on the homeward voyage and they represented a tonnage of over 20,000 tons gross, and a money value of nearly half a million sterling. Of the twenty steamers laden with grain that never reached port, six are known to have capsized in consequence of the cargo having shifted, and as in most of the others all hands were lost and the vessels were principally news ones, it is fair to assume that a large proportion of them foundered by capsizing, owing to the bad stowage