

THE LISMORE DISASTER.

SHIPMASTERS' THEORY OF LOSS.

DID VESSEL STRIKE SUNKEN WRECKAGE?

METACENTRIC HEIGHT.

EXPERT EVIDENCE AT INQUIRY.

The inquiry into the loss of the Lismore on the Wexford coast on the night of July 10th has been remarkable, among other features, for the sparsity of theories put forward by witnesses to account for the disaster. Unexplained and unexplainable are adjectives which have been repeatedly used in connection with the foundering.

It was only yesterday, when the proceedings were nearing their close, that Captain Humphreys, marine superintendent of the City of Cork Steam Packet Co., put forward the hypothesis that the vessel struck some wreckage attached to a foundered ship which might have been floating near the surface. He added the interesting belief that the Lismore went down on an even keel, filling with water and righting herself as she went down.

Yesterday was a day of experts. Mr. Wall, a naval architect, formerly with Messrs. Cammell Laird at Birkenhead, said he would recommend a greater metacentric height for a ship of the type of the Lismore. Shifting cargo or access of water might be the causes of the increase of the list.

Mr. Hegarty, from the Ministry, did not see why the ship should not be in a seaworthy condition, notwithstanding that she might be affected by heavy seas.

Captain Clarke, chief surveyor of the department, who had issued a certificate that the construction of the Lismore was correct, declared that if she were properly loaded she was safe and seaworthy.

ARCHITECT'S ASSUMPTIONS. EXPERT EVIDENCE REGARDING LIST.

(From Our Own Reporter.)

DUBLIN, Tuesday.

WHEN the inquiry into the circumstances surrounding the foundering of the coasting steamer Lismore was resumed at Dublin Castle to-day, before Mr. G. Cussen and four nautical assessors, Mr. David Frew, naval architect for the builders, was recalled.

Witness stated that in any opinion he gave it must be borne in mind that he had to assume certain things; he had to assume cattle in the forehold weighing about thirty-five tons, in regard to which

there was no indication as to the centre of weight. It was a mass made up of various sizes and various weights, consequently some heavy weights might be at the bottom and some at the top.

In these circumstances he had to assume that the centre of the weight was in the centre of the mass.

With regard to the cargo in the after hold he had to assume, in the absence of knowledge of the exact disposition, that the centre of weight was in the centre of the mass. Based on that assumption he had arrived at a figure, which could only be treated as approximate, of six inches G.M.

He explained that in the Lismore there was a water tank by means of which any list in the vessel up to four degrees could be rectified by pumping out water from one side or the other.

Asked by Mr. Swayne, for the Ministry, whether, assuming the evidence was accurate, the list could be attributed to anything but the loading, witness said he could not say what contributed to the list without knowing the facts. "It does not follow," said he, "because a vessel has an initial list that she is not quite stable. Given a metacentric of six inches the vessel would require careful handling and seamanship."

BUILDERS' MARGIN OF SAFETY.

Replying to Mr. Overend, for the owners of the Lismore, he agreed that in designing a ship builders leave a margin of safety. In a snowstorm as much as ten tons additional weight might fall upon the deck, and of this about one-third would be on the boat deck, which would require a greater weight below to counteract it.

Mr. Overend.—Those are the kind of considerations which builders or designers take into account in designing a vessel and allowing a substantial margin of safety?—Yes.

Do I take it you provided for a vessel which might have to carry cargo or cattle or both?—Yes.

Are these stability conditions which you have issued fair samples and sufficient for a master?—Yes.

Without any special note being added?—Yes.

He agreed with Mr. Horgan, who appeared for the consignor of cattle, that the possible causes of foundering in such a case were uneven distribution of weight, free surface in the tanks and negative stability. In an upright position the second was very seldom the cause of total loss. In this case the cause could not have been negative stability, but transverse distribution of cargo was the likely cause. He added that even a safe ship could be loaded to a point of instability.

SHIPMASTERS' EVIDENCE.

Thomas Herdman, master of the Kenmare, of the City of Cork Steampacket Co., stated he saw the Lismore leaving Cork on July 10th. She had a very slight list to port, but there was nothing peculiar in it. The list was less than a degree and would scarcely be noticeable to anyone except a seaman.

Thomas Murray M'Farlane, now master of the Denbigh Coast, and formerly first officer of the Kenmare, said he did not notice any list on the Lismore as she left Cork for her last voyage. He noticed that she had no rolling movement such as cattle boats often have.

Mr. John Humphreys, marine superintendent of the City of Cork Steampacket Co., who holds a master's certificate, said he had 15 years' experience of cross-channel service, and

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had been with the company four years. He was on the *Lismore* on her trials and he chose the crew, endeavouring to get the best men he could. The *Lismore* was in a perfectly seaworthy condition, and the cargo was in every respect properly stowed, according to the particulars he had.

"Why," asked Mr. Costello, "do you suggest she had a list to port?"

"There are," witness replied, "several factors which might account for it; probably there was more coal on one side of the bunkers than the other, or there might have been more cargo or cattle on one side than the other. Again, there might have been more water in one side of the free tank than in the other, or more water in one boiler than the other. It is quite usual to see a ship leaving port with a list of a degree or so and sometimes up to four or five."

"Would you not correct it?" asked Mr. Costello.

"Not until we got out," was the reply of the witness.

SUBMERGED WRECKAGE THEORY.

Witness produced a chart of the course taken by the *Lismore* showing several wrecks. He believed the *Lismore* went down very quickly. The wrecks were in 29 or 30 fathoms, and his suggestion was that the *Lismore* may have struck some wreckage attached to a wreck but floating within a few feet of the surface. A derrick which had been found 24 hours afterwards, he suggested, might have been freed by contact with the *Lismore*. It was certain that only a vessel with high masts could have been in such a position below water as to allow any of its floating parts to touch a floating vessel, and that involved its lying in an upright position, which is not unusual.

"I am of opinion," said witness, "that the *Lismore* after turning turtle righted herself and settled down on an even keel. As she went down she would fill with water and right herself again. A lifeboat which was found floating must have been freed by the coming adrift of the derricks, which could not have happened except on the hypothesis I mention. I think, too, that probably the lifeboats helped to pull her up on an even keel."

In reply to a question, he said he had examined the stability conditions carefully and, assuming the diagram as being accurate, his opinion was that Captain Sayle may be regarded as having loaded his vessel properly.

METACENTRIC HEIGHT AND WEATHER.

Arthur Thomas Wall, a naval architect in private practice, formerly chief naval architect to Messrs. Cammell Laird, shipbuilders, of Birkenhead, said he was consulted by the owners of the *Lismore* with reference to some of their vessels. As a matter of fact he was approached in the first instance with a view to settling the design of a vessel for the Wexford trade.

Mr. Swayne.—Would you as a naval architect think the metacentric height, being only six inches, that it was a proper design, or was it taking too much risk?

Witness.—Do you mean, would I recommend that a ship should sail with six inches metacentric height?—Yes.

Witness.—I should prefer not, although it depends on the kind of weather conditions which were going to be met. A vessel like the *Lismore* should have ten to twelve inches, I should say, to meet all possible contingencies.

Mr. Swayne.—Assuming the cargo was stowed in the way shown, and that the vessel had a list when leaving, to what extent did that interfere with her stability?—If she is already over to port she has got a start that way, and the righting levers are greater and the greater the metacentric height.

If she has that list, the tendency of course is for everything on board to go on the low side?—Yes, if she has got a natural list to port; if it is a small angle it is not serious, but if it has got up into three or four degrees

everything tends to go on to the low side. If a ship is rolling at sea everything that can move will move and finish up on the low side. The weight will gradually accumulate on the low side and increase the list. This might go on increasing to such an extent that presently some space in the ship becomes open to the sea and the inflow of water further increases the list.

Proceeding, witness said he would recommend a higher metacentric for a ship of that type. He saw no reason why she should not have weathered a moderate or calm sea with such a metacentric height.

Asked to what he attributed the increase of the list, he said it might be due to shifting cargo or access of water.

"IMPROPER STOWAGE."

Mr. Hegarty, ship surveyor in the Ministry of Industry and Commerce, in reply to a question as to whether in his opinion the *Lismore* was properly stowed, said "I don't see why the ship should not be in a seaworthy condition, but she might be affected by heavy seas. It is evident that she was not safe if exposed to varying conditions with a metacentric height of 6 inches. The vessel had cargo in exempted areas and also above these spaces, and this was improper stowage. The poop and forecabin, where there was some cargo, were not reserved for tonnage."

Continuing, witness said the cause of the list to port was improper distribution of cargo, and the only reason to which he could ascribe it was that more cargo was placed to port than to starboard.

In reply to Mr. Overend, he declared that many vessels had capsized owing to being improperly stowed. Among others, there were the *Fishguard*, *Rodine*, *Cato*, and *Thames*. They were lost because they were not properly loaded. He did not agree with one of the witnesses who said it was proper to place cargo on the forecabin or poop, as had been done in the case of the *Lismore*.

Captain Clarke, chief surveyor of the Department of Industry and Commerce, said he issued a certificate that the construction of the *Lismore* was correct. If properly loaded, she was safe and seaworthy. Judging from the plans and the descriptions of the cargo, he would not say there was a proper stowage when the *Lismore* left Cork. He did not think it was good stowage to have cattle and cargo in the same hold without proper division between the wings. His opinion was that a terrible stampede occurred among the cattle when the cargo broke adrift and got in among them.

"I don't think," said witness, "that any sailor would agree that it was proper to place cargo on the forecabin head, which was built into the ship for the sake of buoyancy, and not for carrying cargo. It was also improper to have cargo placed on the poop, though this was not so important as the forecabin."

THE SHIP'S CREW.

In response to an invitation to express an opinion as to whether the crew was sufficient to do what was necessary from the point of view of general navigation, witness said, "I do not consider you could work a ship with four hands. You want a man on the lookout, one at the wheel, and certainly one to look after the lights at night and the log and take readings, and, if necessary, take a cast of the lead. I don't think four men sufficient, although it may be the custom."

Mr. Idle, surveyor to the Commissioners of Irish Lights, said in his opinion the weights on the ship moving further to the port side would increase the initial list, and he believed that was the cause of her ultimate capsizing.

This concluding the evidence,

Mr. Swayne read the questions upon which the court's findings are requested. They include an additional question as to whether loading plans were supplied by the builders to the owners, and as to whether the cargo was properly loaded in accordance therewith.

Another question is as to whether the cargo was properly stowed over stability plans, and was it battened down and properly stowed.

A further query was as to whether she struck any submerged or other wreckage during or in the course of her last voyage, and if so, was the same the cause or contributing cause of the loss of the vessel.

The inquiry was adjourned until September 3rd for counsels' speeches.

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