(No. 693.)

"ESSEX."

The Merchant Shipping Acts, 1854 to 1876.

In the matter of the formal investigation held at Westminster, on the 30th and 31st of July 1880, before H. C. Rothery, Esquire, Wreck Commissioner, assisted by Captain Forster and Captain Castle, as Assessors, into the circumstances attending the supposed loss of the sailing ship "Essex," of London, whilst on a voyage from Bassein to Queenstown.

Report of Court.

The Court having carefully inquired into the circumstances of the above-mentioned shipping casualty, finds, for the reasons annexed—

1. That when the "Essex" left Bassein, she was, so far as then appeared, in good and seaworthy condition.

2. That she had too great a quantity of cargo on board, having regard to the fact that she was about to round the Cape of Good Hope in the depth of winter; but that there is nothing to shew that, as laden, she had not sufficient stability.

3. That the leak, which was discovered on the 7th of May, was repaired as well as under the circumstances it could be.

4. That the cargo was not properly stowed, and that the system of forming ventilating tunnels with the bags of rice without any support to the sides is not a proper or a safe system.

5. That the bags, or at least every alternate tier, should be stowed athwartships or a-burton, rather than fore and aft, or as longers.

6. That we have no means of knowing whether the box ventilators used in the case of other rice laden vessels are or are not of sufficient strength to resist the pressure put upon them in the event of the vessel encountering heavy weather, but that they are undoubtedly better and less liable to collapse, and so set the cargo in motion, than ventilating tunnels without any supports to the sides.

7. That although the bags of rice, if not filled quite so full, might lie closer and be less liable to shift, there is no reason why, if stowed a-burton, they should not be capable of efficient stowage.

8. That in the opinion of the Court the loss of the vessel is probably due to the quantity of cargo which she had on board, and to the mode in which it was stowed.

The Court makes no order as to costs.

Dated this 31st day of July 1880.

(Signed) H. C. Rothery,
Wreck Commissioner.

We concur in the above report.

(Signed) George H. Forster, } Assessors.
John S. Castle, }

Annex to the Report.

This case was heard at Westminster, on the 30th and 31st of July, 1880, when Mr. Middleton appeared for the Board of Trade, and Mr. Aspinall for the owners of the "Essex." Eight witnesses having been produced by the Board of Trade and examined, and the depositions of four witnesses taken at Bassein having been put in and read, Mr. Middleton asked the opinion of the Court upon the following questions:—

"1. Whether, when the 'Essex' left Bassein, she "was in good and seaworthy condition?

"2. Whether she was overladen, and whether as laden "she had sufficient stability?

"3. Whether the leak discovered on the 7th of May "was properly repaired?

"4. Whether the cargo was properly stowed, and "whether the system of forming ventilators as adopted "in the case of the 'Essex' is a safe and proper "one?

"5. Whether the bags should not be stowed a-burton, "or at least every other tier a-burton, rather than in "longers?

"6. Whether the box ventilators, as used in the case "of other rice laden vessels, are of sufficient strength "to withstand the pressure put upon them in the event "of the vessel encountering heavy weather, and "whether in that event they are not liable to collapse, "and so set in motion the entire cargo?

"7. Whether the bags as filled at Bassein are capable "of efficient stowage, or whether they should not rather "be slack?

"8. What in the opinion of the Court, from the "evidence before them, is the cause of this vessel not "having been heard of since she was spoken by the "'Eastminster' on the 22nd of May 1879?"

Mr. Aspinall having then addressed the Court on behalf of the owners, and Mr. Middleton having been heard in reply, the Court proceeded to give judgment on the questions on which its opinion had been asked. The circumstances of the case are as follow:—

The "Essex," which was a wooden sailing ship belonging to the Port of London, of 1,255 tons register, was built at Sunderland in the year 1863, and at the time of her loss was the property of Messieurs George and Walter Gore Marshall, of No. 5, Philpot Lane, in the City of London, shipowners, Mr. George Marshall being the managing owner. On the 28th of April 1879 she cleared from Bassein, in Burmah, with a cargo of 1,679 tons of rice, and a crew consisting of 24 hands and 1 apprentice; and after lying in the stream for two days waiting for a tug she proceeded on the 30th on her voyage, bound to Queenstown for orders. On the 10th of May following she was fallen in with by the "Amana," a vessel which had also been loading rice at Bassein, and which had sailed on the 2nd of that month. Captain Beckett of the "Amana" told us that on sighting her she had a flag flying, stating that they were in want of immediate assistance; he accordingly went on board her, taking with him his carpenter and four of his hands, and was then informed by the captain of the "Essex" that his vessel had sprung a leak on the 7th, and that they had since shifted a quantity of the cargo forward, so as to get the leak out of water. And the weather being fine, and the sea perfectly smooth, they had rigged a platform over the stern, and had torn off some of the copper to endeavour to find out where the leak was. On going below the carpenters found the water coming in near the stern post, but where exactly they could not ascertain; they accordingly replaced the copper on the outside, and caulked her as best they could on the inside, so as to prevent the water from coming in. After this Captain Beckett returned with his men to his own ship, but agreed to remain by her during the night. By the following morning at 10 o'clock the captain of the "Essex" reported that it was all right, and that the whole of the cargo had been replaced; the two vessels, however, remained in company until the 14th, when they parted, and Captain Beckett saw no more of her. She was, however, subsequently fallen in with on the 22nd of the same month, in latitude 3° south, and longitude 93° east, by the "Eastminster," with whom she exchanged signals; but at that time all seemed to be right with her. From that time the "Essex" has not been heard of, and the object of the present inquiry is to ascertain, if possible, what is the cause of her disappearance.

Now the first question upon which our opinion has been asked is, "Whether when the 'Essex' left "Bassein she was in a good and seaworthy condition." It seems that the "Essex" was originally built in the year 1863 by Messrs. Marshall, her owners, and that she remained in their possession from that time until her loss. She was undoubtedly a first class vessel, having been built chiefly of English oak and teak, and was originally classed A 1 for 13 years at Lloyd's. She seems to have been always very well kept up, and in the year 1875 I find her reported upon by Lloyd's as follows: "This vessel has been specially surveyed with a view "to improve the class, and is recommended for an "additional year under the mixed material rule. The "main keelson and a portion of the stern and stern "post apron and dead wood are of teak, 14 years "material. The water ways, plank sheers, sheer "strakes, top sides, wales, the remaining outside "planking to below the light line, are of teak, 14 years "material. The deck beams are of iron, 14 years. "The remaining materials are of 12 years grade and "above. This ship is well fastened, having 14 pairs of "rider knees extending over the bilges, and the work-

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" manship is stated to be very superior. It is respect-
" fully submitted that this appears to be a case for the
" favourable consideration of the committee for an
" additional year, as recommended, namely 12 years
" under Table A, one year under the mixed material
" rule, one year for yellow metal fastenings." She was accordingly classed A 1 for 14 years from 1863, the year in which she was built. In 1877, when her time expired, she was at Calcutta, but upon her return to this country she was placed in Messrs. Fletcher and Company's docks at Limehouse, and there apparently underwent a thorough repair at an expense of 1,600*l.*; after which she was continued on her original class for a further period of 9 years from 1877. She then left with a cargo of iron and creosoted sleepers (and apparently not very deeply laden) for Bombay, and having there discharged her cargo, she proceeded in ballast to Bassein, where she took in her cargo of rice. It does not appear that she suffered any damage on the way out, and there was therefore nothing, so far as we can see, to lead the master, and those concerned in sending her to sea, to suppose that she was not, when she left Bassein, in a thoroughly good and seaworthy condition.

The next question upon which our opinion has been asked is, "Whether she was overladen, and whether as " laden she had sufficient stability?" It seems that she had a cargo of 1,679 tons of rice, contained in 17,500 bags, being about 31 or 32 per cent. above her registered tonnage, which may, at first sight appear not to be too great. It is, however, to be observed that she had, we are told by the owner, 120 tons more on board than on the previous occasion of her taking rice from a Burman port; and it may be well therefore to see what was the amount of her freeboard on this occasion.

According to the pilot who took her down the river, her draught aft was 21 feet 8 inches, but he could not tell us either her draught forward, or the amount of her freeboard. So also the Custom House officer at Bassein tells us that she drew 21 feet 8 inches aft, but he did not know what was her draught forward, or her freeboard. The owner, however, produced a letter from the master, written as he was on the point of leaving Bassein, and in which he states that she drew 21 feet 8 inches aft, and 21 feet 4 forward, giving a mean of 21 feet 6. This, taken in connection with the depositions of the pilot and the Custom House officer, leaves no doubt that her draught on leaving Bassein was 21 feet 6. Let us see then what amount of freeboard this would give her.

The owner brought in a statement, which had been compiled by Mr. Martell from the particulars furnished to Lloyd's, when she was classed, shewing her total depth at the side to have been 26 feet and a quarter of an inch which with a draught of 21 feet 6 inches would give her a freeboard of 4 feet 6¼. It appears, however, from the records of the Custom House in this country, that on leaving London the load-line was at 4 feet 10 inches below the deck; and as it may fairly be assumed that it was not altered during the voyage, she would with a freeboard of only 4 feet 6¼ inches have had the load-line nearly 4 inches below the surface of the water. We must add, however, from 4 to 5 inches on passing from fresh to salt water, so that we may assume her freeboard when she got to sea to have been about 4 feet 11 inches. Now a freeboard of 4 feet 11 on a depth of hold of 23·4 feet, gives as nearly as possible 2½ inches to every foot of hold; and this, according to Mr. Sampson, one of the engineer surveyors to the Board of Trade, would be sufficient; but then Mr. Sampson can hardly be regarded as an authority, seeing that it is no part of his duty to say what amount of freeboard a vessel should have, and that, although he had formerly been to sea, it was only as an engineer. On the other hand the assessors are of opinion, seeing that she had to come round the Cape in mid-winter, when in all probability she would encounter very tempestuous weather, that 2½ inches to the foot was not sufficient, and that she ought not to have had less than about 2·8 or 3 inches of freeboard for every foot of hold, or from 5 feet 6 to 5 feet 10. This is apparently the freeboard which she had on the previous occasion, when she carried 120 tons less cargo, 12 tons being required to sink her about 1 inch. Whilst, then, we are of opinion that the vessel on leaving Bassein was too heavily laden, we are at the same time anxious to acquit the owner, Mr. Marshall, of all blame in connection therewith. He seems to have left it, as he naturally would do, to the captain and to Messrs. Bullock, the shippers, and the responsibility therefore must rest with them. As to whether, "as laden, she had sufficient " stability," we can only say that we have no reason to think that she had not; rice being a heavy cargo, which would tend to lower the centre of gravity, which would of course increase her stability.

The third question upon which our opinion has been asked is, "Whether the leak discovered on the 7th of " May was properly repaired?" No doubt they did the best they could under the circumstances, but it must be remembered that they were in the open sea, and that they could hardly have done it so well or so effectually as if they had been in port. It is possible that if they afterwards encountered bad weather, the packing or stuffing by which they had stopped the leak might have come out and so endangered the safety of the vessel, but they did the best they could, and we have no reason to think that the master, or anyone connected with the vessel, had any idea, when they left Bassein, that she would be likely to spring a leak.

The fourth question upon which our opinion has been asked is, "Whether the cargo was properly stowed, " and whether the system of forming ventilators, such " as was adopted in the case of the 'Essex,' is a safe " and proper one?" This, which is the most important question in the case, must be considered under the several heads into which it necessarily divides itself.

And first as regards the preparation of the hold. Mr. Batson, an assistant in the Firm of Messieurs Bullock Brothers and Co., of Bassein, under whose superintendence the cargo appears to have been shipped, tells us " that the hold was prepared for the reception of the " cargo thus:—from the foremast to the mizenmast a " substantial platform was laid from the turn of the " bilge to the top of the keelson, which at its highest " point might have been 20 to 24 inches high. On " other portions of the ceiling ordinary dunnage wood " was laid to a level with the top of the keelson. From " the turn of the bilge to the 'tween decks, and thence " to the main deck, the sides were covered with crossed " bamboos. Over all dunnage mats were placed." There were also double rows of shifting boards, ⅞ths to 1 inch in thickness, extending from the keelson through the 'tween decks to the upper deck. In the lower holds the shifting boards were nailed securely to each side of the wooden stanchions; but in the 'tween decks, where the stanchions were of iron, the shifting boards were secured to them by strands of rope, but they were not shored off at the sides. The system is, perhaps, not so secure as where there are double rows of stanchions, and the shifting boards are passed between, but we are told that it was sufficiently secure, the whole of the cargo being in bags; and we have the fact before us, that although the cargo of the "Amana," which was stowed in exactly the same way as that of the "Essex," shifted, as we shall presently see, in the course of the voyage, the shifting boards remained perfectly firm. So far, therefore, as the preparation of the hold for the reception of the cargo, the dunnage, and the shifting boards, we have no reason to suppose that the cargo was not properly stowed.

Secondly, as regards the ventilation. It seems that formerly, when rice used to be more generally hand-dried, and was in consequence much drier, the bags of rice used to be packed quite tight in the hold, trodden down and beaten with mallets, so as to form almost a solid mass; there was then no settlement, no vacant spaces in the hold, and consequently no chance of the cargo shifting on the voyage. When, however, the export from Burmah became so important, it was found necessary, owing to the extreme dampness of the atmosphere, and the uncleaned condition of the rice, to provide means of ventilation in the cargo to prevent it becoming damp and discolored on the voyage. With this view two modes seem to have been generally adopted, the box ventilator system, and Heap's or the space system, as it is called. According to Mr. McWhinnie, who was formerly a master mariner, but is now the marine superintendent to Messrs. Bullock's firm in this country, and who superintends the discharge of their rice cargoes on arrival, the box ventilator system used to be adopted by them from 1873 to 1877, but from 1877 to the present time they have more generally followed the Heap's or space system. In both systems ventilating tunnels are constructed, running fore and aft through the cargo, midway between the shifting boards and the sides of the ship, and terminating, either in an open space or in a shaft at each end, so that a free current of air is thus made to pass through the cargo, which carries off the heat and moisture. But the essential distinction between the two is, that in the box ventilator system the sides of the tunnels are formed of two boards held together by pieces of wood nailed to the top and bottom, thus forming a tunnel about 7½ inches deep by 8½ inches wide; whereas in the Heap's,

or space system, the sides of the tunnels are formed of the bags themselves, placed fore and aft, or as longers, leaving an empty space, about a foot wide, which forms the ventilating tunnel, and over which, at intervals of about a foot, are placed battens, on which other bags are laid as longers.

Now Mr. McWhinnie, who seems to have been the author of this last system, has given us five reasons why, in his opinion, the space, or Heap's system, is better than the box ventilator system. His first reason is, that the box system entails some additional expense in the making of the boxes, which may be admitted. The second is, that the box system prevents them from carrying as much cargo by about 10 tons; but this is not quite so clear, seeing that the box ventilators are only 7½ by 8½ inches, whereas we are told that the empty spaces left by the other system are about a foot wide. There is, however, no doubt the additional weight of the boxes, but which would not be very considerable. A third objection is, that the boxes were liable to tear the bags, and thus let out the rice; but, on being pressed, Mr. McWhinnie was obliged to admit that it was only in the event of the boxes collapsing that he had found the bags to be torn. A fourth objection was, that the ventilation was not so complete with the box ventilator system; but he was obliged to admit that he had never known of a cargo having been injured from want of ventilation, unless the box ventilators had collapsed, and when the fore and aft tunnels had free communication with the open air by an up and down shaft. His fifth objection was, that the box ventilators were more liable to collapse; but he was quite unable to tell us why the tunnels were more likely to give way when the sides were supported by strong boxes, than when they had no supports at all; and it is clear that the pressure which would be required to break in the boxes would be more than sufficient to cause the bags to fall into and stop up the ventilating tunnels, if the sides were not supported. It comes, therefore, to this, that the only real objection to the box ventilator system was the cost of making the boxes, and possibly also that, if they had to fit in the boxes, they might not be able to load the cargo quite so quickly; but these are objections which ought not for one moment to weigh against safety to human life. Notwithstanding then Mr. McWhinnie's objections, we think that the box system is much better and much safer than the system adopted in the case of the "Essex," which was the Heap's, or space system; that, too, there is danger of the tunnels collapsing, and of the cargo shifting under the latter system, is clear from what occurred to the "Amana" after she had parted from the "Essex." It seems that on the 2nd of July, when off Plattenberg Bay, the vessel was caught in a heavy gale of wind, took a sudden lurch to starboard, and shifted her cargo. She lay with her gunwale under water for 36 hours, but on the storm abating they got her in under the shelter of the land, and on opening the hatches found that the whole of the cargo in the 'tween decks, which had been stowed in the same way as that of the "Essex," had shifted over to starboard, and that all the ventilating tunnels had been obliterated. Captain Beckett told us that the cargo had shifted to such an extent that he could get along the port side from end to end of the vessel, and that in some places the deck itself was exposed. In the lower holds also the upper part of the cargo had shifted, but not to so great an extent. After a time they succeeded in re-stowing the cargo, but without, of course, leaving any empty spaces or ventilating tunnels; and having righted the vessel, they were able to complete the voyage in safety. In our opinion, therefore, the system adopted in the "Essex," of forming ventilating tunnels with the bags of rice alone, and without any supports to the sides, is not a safe or proper one, and that the box ventilator system is much better.

The next question upon which our opinion has been asked is, "Whether the bags should not be stowed a-burton, or, at least, every other tier a-burton, rather than in longers?" Rice bags, especially such as are shipped at Bassein, which are very full and round, are, it is obvious, much more likely to shift by the rolling of the ship if stowed fore and aft, or in longers, than if stowed athwartships or a-burton; the more so, if it is necessary to leave any empty spaces for ventilation, as was done in the cases of the "Essex" and the "Amana." We think, therefore, that there can be no doubt that it would be better that the bags should be stowed a-burton, which is the mode recommended by the authorities in the North American ports as that which long experience has shewn them to be most conducive to the safety of life and property.

The sixth question upon which our opinion has been asked is, "Whether the box ventilators, as used in the "case of other rice-laden vessels, are of sufficient "strength to withstand the pressure put upon them in "the event of the vessel encountering heavy weather, "and whether in that event they are not liable to "collapse, and so set in motion the entire cargo?" What is the strength of the box ventilators which are usually employed in rice vessels, we do not know; but if they are of the same construction and strength as those tested by Mr. Kirkaldy they would appear to be capable of bearing a pressure, applied vertically, of 46,935 lbs.; applied laterally, of 1,882 lbs., and applied diagonally, of only 329 lbs. No doubt a force of only 329 lbs. appears at first sight to be hardly sufficient to resist the pressure of bags of rice which weigh about 2 cwts. each, and Mr. Sampson has suggested that the boxes might be considerably strengthened by pieces of board placed at short intervals across the tunnel, and securely nailed to the sides, the transverse pieces filling up the whole of the tunnel, but being pierced with holes to allow the air to pass. But the objection to this plan seems to be that, unless the tunnel was considerably enlarged, the passage of the air would be greatly impeded; and it appears to us that the additional strength required would be equally well obtained by bars placed in the direction of the diagonal of a section of the tunnel, and securely nailed to the sides at each end, in addition to the cross pieces already existing at top and bottom; or it might be done, as suggested by Mr. Sampson, by making the cross pieces wider and stronger, and securing them to the sides by three nails instead of only one as at present. But whether such additional strength is required or not, it is clear that, even with the present boxes, the ventilating tunnels are not so liable to collapse and to set in motion the cargo as if there were no boxes at all.

The seventh question upon which our opinion has been asked is, "Whether the bags as filled at Bassein "are capable of efficient stowage, or whether they "should not rather be slacker?" No doubt, if the bags had been somewhat slacker, as we are told they generally are at Calcutta, they would have fitted closer together and have been less liable to shift; but there is no evidence before us that they were not capable of efficient stowage had they been stowed, as they should have been, a-burton.

The last point upon which our opinion has been asked is, "What, in the opinion of the Court, from the "evidence before it, is the cause of the vessel not "having been heard of since she was spoken by the "'Eastminster'?" Various circumstances have, in our opinion, contributed to this disaster. In the first place, the vessel, although in herself a first class vessel and thoroughly well built, was more deeply laden than she should have been. In the next place, the ventilating tunnels with which the vessel was fitted, owing to their sides being wholly unsupported, were not unlikely to collapse, as those of the "Amana" did, and the cargo to shift, which would be a source of very great danger to the vessel, loaded as she was. Thirdly, the leak, which had only been temporarily stopped from the inside, might very well have broken out again when the vessel got into heavy weather. Lastly, the cargo appears to have been loaded with excessive haste. Mr. McWhinnie told us that the most common cause of the foundering of these rice vessels was, in his opinion, the extreme haste with which they were sometimes laden; and he told us that sometimes as many as 3,000 bags were put on board in one day, and that it would be quite impossible to stow properly so large a number in the time. When, however, we turn to the certificate of the Custom House officer at Bassein, we find that the vessel arrived there on the 12th of April, and had completed her cargo and cleared out by the 28th, and that on two days, the 26th and 27th, she loaded 4,100 and 3,350 bags respectively, a quantity which, according to Mr. McWhinnie, could not have been properly stowed in the time.

It seems that this was Captain Barrett's first command, and it is, therefore, not improbable that he might have been anxious to shew what a large quantity of cargo he could take, and how quickly he could ship it; hence, apparently, the reason of her having had 120 tons more cargo than on the previous occasion, and of the extreme rapidity with which it was shipped. Indeed, I am told by the assessors that it is a well known fact at Lloyd's that a very large proportion of losses take place with captains on their first voyages, when they are anxious to shew their smartness and eagerness for the interests of their owners, and have not yet

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acquired the necessary caution which experience gives. It is, therefore, to the master, and to the shippers, Messrs. Bullock, of Bassein, that the blame for the amount of the cargo put on board, and for the mode in which it was stowed, is to be attributed, and not to Mr. Marshall, the owner.

No application was made by the Board of Trade for costs, and an application on behalf of the owner for his costs was refused, it being, in the opinion of the Court, a very proper case for an inquiry.

Since the hearing, I have received a letter from Mr. Marshall, the owner, in which he informs me that in the estimate given in of the depth of the vessel to the top of deck at side, Mr. Martell had made a mistake of 5 inches, by not allowing for the false keel, and that this would make the total depth at side 26 feet 5¼ inches, which, with a draught of 21 feet 6 inches, would give a freeboard of 4 feet 11¼ inches on leaving Bassein, and of about 5 feet 4 inches when she got out to sea. The mistake is, no doubt, very greatly to be regretted, but the Court could only decide the case upon the evidence before it. We were told at the hearing that the estimate of the vessel's side had been made by the able and accomplished chief surveyor to Lloyd's, Mr. Martell, from records of the vessel in their possession; and the calculations were, at my request, checked by the owner and by another of Lloyd's surveyors then in court, so that it might have been thought that we could hardly have had better evidence. Had we, however, known at the time that her freeboard, when she got to sea, was 5 feet 4 inches instead of only 4 feet 11, it would have made some difference in the opinion which we formed that the vessel was overladen; but, as I have already said, we were bound to decide the case on the evidence before us.

(Signed) H. C. Rothery,
Wreck Commissioner.

We concur.

(Signed) George H. Forster,
John S. Castle, } Assessors.