

(No. 4065.)

"BON ACCORD" (S.S.)

The Merchant Shipping Acts, 1854 to 1876.

IN the matter of a formal Investigation held at Aberdeen on the 13th, 14th, and 20th days of May 1890, before Sheriff W. A. BROWN, assisted by Captains PARFITT and ANDERSON, and Mr. LANG, Engineer, Assessors, into the circumstances attending the abandonment of the British steamship "Bon Accord," of Aberdeen, off Cape Finisterre, on or about 16th March last.

Report of Court.

The Court, having carefully inquired into the circumstances attending the above-mentioned shipping casualty, finds, for the reasons stated in the annex hereto, that the said steamship foundered from one or more leaks, probably in the ship's side, on each side of the stoke-hole bulkhead, and above the ballast tank. The Court is unable to find the cause of the casualty, but is of opinion that the weight of evidence favours the view that the vessel was strained in a gale, through structural weakness or defective workmanship; but which of these was operative on this assumption of the cause of injury to the vessel, the evidence does not enable the Court to say. The Court reflected on the conduct of the master, in respect he did not take sufficient measures to discover the leaks and to take his ship to a place of safety, but did not feel it necessary to deal with his certificate.

Dated this 21st day of May 1890.

(Signed) W. A. BROWN, Judge.

We concur in the above report.

(Signed) WM. PARFITT,
ABSM. ANDERSON, } Assessors.
WM. C. LANG,

Annex to the Report.

The "Bon Accord," official number 94,542, was a British screw steamship, built at Aberdeen in 1889 by Messrs. A. Hall and Co., and fitted with a triple expansion engine of 160 nominal horse-power, made by Messrs. Blackie Brothers, of Aberdeen. She was built of steel and rigged as a brigantine. Her dimensions, as per register, were:—Length, 244'85 ft.; breadth, 34'2 ft.; and depth of hold, 15'75 ft. Her under-deck tonnage was 1024'34 tons, her gross tonnage 1412'02 tons, and her registered tonnage 909'45 tons. She had four iron water-tight bulkheads, one forward, 16 ft. from the stem; one aft, 14 ft. from the stern post; one at the after part of the engine-room, and one at the fore part of the stoke-hole. All the four bulkheads extended from the main-deck to the bottom of the ship, and in the one at the fore part of the stoke-hole there were two openings, fitted with water-tight doors worked from a platform. She had an iron main-deck extending from the stem to the engine-room. Aft the engine-room there was a break 4 ft. 3 in. high; an iron-deck was continued from this to the break of the poop, where there was a drop of 4 ft. 3 in. to the cabin floor, and a rise of 3 ft. to the poop-deck. The poop-deck was also of iron. Over the engine-room and fore-hold there was a bridge-house extending 106 ft., the deck of which was also of iron. Forward of this house there was a short well 22 ft. in length, the topgallant fore-castle being 27 ft. long. There were no lower-deck beams, but in lieu thereof she was fitted with web frames fore and aft, one at every sixth frame. She had a cellular bottom extending from the forward collision bulkhead to the after one. This cellular bottom was sub-divided, so as to form four water ballast tanks. She was fitted with two main engine bilge pumps and the ordinary bilge injection. A Worthington pump was connected with the engine-room and stoke-hole bilges and the after-well, and it could also be used for draining-out

the ballast tanks. There was also a centrifugal pump for clearing the ballast tanks, which, as well as the Worthington, could be worked from both main and donkey boilers. The main bilge and Worthington pumps were fitted with an open-bottomed cock. Both the fore and after compartment were divided by a bulkhead not water-tight, forming two holds in each. There were two deck bilge pumps in each hold, but with the fore compartment there was no connection with any other pump; and to clear this compartment the water was conveyed to the engine-room through two sluices in the bulkhead forward of the stoke-hole. She had four boats and the usual equipment of compasses, &c., all being in good order. She was classed 100 A 1 at Lloyd's, and during her construction was under the frequent supervision of Lloyd's surveyor at Aberdeen, and Mr. Laing, a consulting engineer acting for the owners. All the steel plates and frames were tested to the satisfaction of Lloyd's surveyor. After being launched she lay in Aberdeen dock afloat for about three months fitting out, when she left Aberdeen in water ballast on the 5th of March last for Blyth, under the command of Mr. Charles R. Davidson, who holds a certificate of competency, number 28,770. She was built for and owned by Messrs. James and Alexander Davidson, of Aberdeen, and others, Messrs. J. and A. Davidson being the managing owners. The contract price of the "Bon Accord" was 19,700*l.*, and after supplying extras, her cost to the owners, at the time she left Aberdeen, was 20,500*l.* She was insured for 20,500*l.*, and 1,000*l.* on freight.

She arrived at Blyth in due course, where, on pumping out the water-ballast, it was found that some of the joints of the pipe connected with the centrifugal pump were leaking. This was repaired under the supervision of Mr. Laing, and after loading a cargo of 1,868 tons of cargo and bunker coal, she left that port on the 10th March last, bound for Malta, with a crew of 23 hands all told, still under the command of Mr. Davidson. Her draught on leaving Blyth was 16 ft. 2 in. forward and 18 ft. 3 in. aft. While loading at Blyth the vessel touched the ground with her keel on the flowing tide, but the master not apprehending any damage in consequence, proceeded to sea. All went well, with fine weather across the Bay of Biscay, until noon of Friday the 14th of April, when in latitude 46° N., longitude 7°45 W., it commenced to blow from the S.W., and continued to freshen throughout the night and following day, the course being S.W. $\frac{1}{4}$ W., and the speed about 4 knots per hour. The weather was described as having been bad, with a nasty sea, and was at its worst at 4 p.m. of the 15th. The master also stated that the vessel behaved well, and without labouring. At about 6.30 p.m. the second engineer noticed a little more water than usual in the bilges, and he at once put on the two main bilge-pumps, and at 8 p.m., when the chief engineer came on watch, he reported this to him, who watched the water till 10 p.m., when finding it gradually increasing, and that it was as high as the top of the tanks, he put on the bilge injection, and then reported the state of affairs to the master. On going into the stoke-hole the engineer noticed water flowing through the starboard doorway from No. 2 hold into the stoke-hole. On seeing this, he had both the doors and sluices closed. By midnight the water had risen so high that it drowned the starboard fires. In this state of matters he consulted with the master, and they thought it advisable to open the man-hole door of the main ballast tank, so as to let the water escape into it. This was done, and the engine-room and stoke-hole were thereby cleared of water, all available pumps at this time being put on. The chief engineer then observed water running on to the stoke-hole floor from the starboard pocket-bunker, which contained about 12 tons of coal. The starboard fires were re-lighted, and they succeeded in getting steam at about 140 lbs. pressure. After the man-hole door was taken off, the master appears to have realized the danger the vessel was in, finding 1 ft. 6 in. in No. 2 hold, which was dry at 8 p.m., when the carpenter last sounded, whereupon he had the deck pumps set to work, and put the vessel before the wind on a south-east course, estimating that at this time the vessel was about 28 to 30 miles N.W. of Cape Finisterre. He stated that going thus under steam alone she was not making more than 3 to 4 knots per hour, and he assigned as a reason for not setting

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March*

square sail on the vessel, that it would not have increased her speed more than one knot per hour. The "Bon Accord" proceeded in this way, firing rockets from time to time. This attracted the attention of a French steamer, the "Marie," of Dunkirk, which came towards them at 5 a.m. of the 16th, but on being requested to take the "Bon Accord" in tow, she went on her voyage. The "Bon Accord" was stopped for nearly an hour, laying in the trough of the sea, and no engine pumps going, when the engines were set on again, and the vessel resumed her S.E. course. At about 6 a.m. steam was beginning to decrease, and got as low as 100 lbs. pressure. The land was clearly in view, and soon after another steamer, named the "Lucette," belonging to Sunderland, also spoke the "Bon Accord," but after looking at her, she also proceeded on her voyage. At 8 a.m. the "Anglia," of Glasgow, came to their assistance. The two vessels remained in company, waiting till the sea went down before lowering boats, and at 9 a.m. the engines of the "Bon Accord" were stopped for want of steam, the fires being drowned out. They were now about 7 miles off Cape Finisterre. Nine hours had elapsed since the "Bon Accord" bore up, during which she was stopped for one hour. Had she been kept on at an increasing speed of less than a knot an hour, she would have been in safety before this time. At noon attempts were made to take the "Bon Accord" in tow, but on each attempt the tow lines either parted or the bits carried away, and on the last occasion they got a tow rope fast, and the "Anglia" commenced to tow, when it was found that the "Anglia's" lifeboat was unable to reach them, and on attempting to turn to pick up the boat, the towing gear again gave way, and no more attempts to tow were made. The pumps kept working till noon, when they stopped for want of steam. At this time there appears to have been about 4 ft. of water in the engine-room. The weather had now improved, and was fine, and they jettisoned about 40 tons of coal out of No. 2 hold with the assistance of some of the "Anglia's" crew. At about 4 p.m. one of the "Bon Accord's" boats was lowered, and the carpenter and three hands got into her, and shortly afterwards the second officer joined them. At about 6 p.m. the master and engineer consulted, and decided that it would not be advisable to remain on board during the night. Accordingly, they with the fireman all went on board of the "Anglia," hoping and intending the next morning to make another attempt to tow her into safety should she be afloat. Before leaving the master sounded and found 7 ft. water in the hold, and he estimated there was 5 ft. in the engine-room. They also put up three red lights before leaving the vessel, and shortly after 8 p.m. they lost sight of them. At daylight the next morning the "Bon Accord" was not to be seen. The "Anglia" then went on her voyage, and landed the crew at Gibraltar on the 20th April, no lives being lost.

At the conclusion of the evidence, the following questions were submitted to the Court by the solicitor for the Board of Trade:—

1. Whether, when the "Bon Accord" left Blyth, she was in all respects in good seaworthy condition?
2. Whether the steel plates and other material used in the construction of the vessel were properly tested and examined? and whether she was so constructed as to be free from structural weakness?
3. Whether the soil pipes and sea connections were properly fitted, and whether they were so arranged as to prevent the possibility of the vessel making water through them without its being discovered?
4. Whether the bulkheads were properly constructed, and whether the openings in them were so arranged that they could be effectually closed?
5. Whether the ventilators and all other deck openings were properly covered and secured?
6. What was the cause of the vessel making water on the 15th March 1890, and thereafter?
7. Was a proper and sufficient examination then made of the soil pipes, sea connections, deck openings, and did the water find its way into the vessel through any of these?
8. Were the openings in the bulkheads and the sluices closed; and if so, how did it happen that the water was not confined to one compartment?
9. Was the ship so subdivided as to enable her to remain afloat with one compartment full of water; and if she was so subdivided, what occasioned her loss?
10. Were the pumps sufficient, properly placed, and fitted for all requirements, and in good order?

11. Was every possible effort made to ascertain the cause of the leak and to stop it?

12. Was every possible effort made to save the vessel?

13. Whether the master, chief officer, first engineer, or either of them, is in default?

In the opinion of the Board of Trade, the certificates of the master, the chief mate, and the chief engineer should be dealt with.

The Court, before replying to the foregoing questions, made the following general statement:—

"We believe that in this case, before proceeding to answer the formal questions put to us by the Board of Trade, we will, with advantage, make a general statement of the grounds on which our judgment is rested. Our remarks will naturally divide themselves under four heads:—(1) The position of the owners; (2) the structure and equipment of the vessel; (3) the cause of the casualty; and (4) the conduct of the master and officers. The first of these may be disposed of in a single sentence, for we are unanimously of opinion that everything was done by the owners, both in Aberdeen and Blyth, to provide a first-rate ship, and that, indeed, is amply established by the specifications produced. We are much alive to the importance of the issue raised under the second branch of the inquiry. We understand the Board of Trade to desire the opinion of the Court, with reference to the particular casualty, and the facts and circumstances it has brought into view in the shape of evidence, whether the "Bon Accord," in being fitted up with web frames instead of hold beams, was in any respect structurally weak? These frames, which are practically girders, present an obvious advantage, through the absence of beams, for the stowage of cargo, and in facilitating its discharge, but beyond that, and in particular on the general question how far the rigidity of the vessel is affected or promoted by these different arrangements, I myself, as the judge trying the case, feel that the Court would not be warranted in expressing any opinion in the meagre state of the evidence, and in that view the nautical assessors concur. It may be pointed out, however, that Lloyd's Committee have given their sanction to

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in this case by approving of the plans, and particularly that of the midship section of the vessel; and I am desired by the engineer assessor of the Court to say that he adopts the view of the committee, although not claiming his individual opinion to be a result of the evidence. The question of the equipment of the vessel requires us primarily to consider the extent and condition of its pumping apparatus. Speaking generally, we are of opinion that that was sufficient; but we make two exceptions, both of which we regard as of first-rate importance. The fore-compartment, including the holds described in the evidence as No. 1 and No. 2, depended entirely on sluices and deck hand-pumps, and had no suction from the engines. The after-hold was in a different position, being connected with the Worthington pump in the engine-room; and it is in our opinion a defect that both compartments were not fitted up in this respect in the same manner. Further, the engine-room pumps were provided with an open-bottomed cock instead of a valve chest, and we concur in the opinion expressed by Lloyd's surveyor, Mr. Hindmarsh, that the latter would have been a better arrangement, as admitting of the donkey being worked separately from the main engine pump. In this connection also we think it would have been an improvement if there had been an elevation of the donkey, to be resorted to in the event, which proved to be the case here, of the main engine fires being drowned out. All the assessors have pressed upon me to make it a part of the judgment of the Court to express surprise that, with such defective pumping arrangements as have been pointed out, the "Bon Accord" should have received the highest class at Lloyd's; but I feel that I would not be warranted in doing so. That matter has not been raised by the Board of Trade, and has not been the subject of inquiry, and, however valuable it may be in the public interest to have the benefit of such competent opinion, on which ground I decide not to withhold it, it appears to me that nothingshould become a finding of the Court that has not a basis in the evidence put before it. I myself have no opinion on the question, and express none. The third branch of the inquiry, as above classified, deals with the cause of the casualty,

and the first point that there arises is as to the seat of the injury to the vessel. The officers of the ship were unable to give the Court the benefit even of an approximate opinion on the question, but while admitting that that depends more or less on probabilities, we incline to the view, as deserving most support from the evidence, that the vessel was injured in two places in the ship's side, on each side of the stoke-hole bulkhead, accounting for the water being found in large quantity in the side pocket and in the fore compartment; and we are further of opinion that the damage was above the ballast tanks. A number of suggestions were made in the course of the trial as to the cause of the injury, and it will be our duty to deal with these to the best of our ability; but here again we feel that we do not occupy certain ground, and that our views must be regarded as more or less problematical. It is beyond doubt that the vessel took the ground at Blyth, although that does not appear to have been generally known on board, indicating that it was not very appreciable, but, beyond that, we think this cause of injury is reasonably excluded for two reasons—first, because no damage appears to have been received by the bottom of the ship, as shown by the ballast tank being dry until the man-hole in the engine-room was torn off, and the water allowed to run into it; and, secondly, because the injury would have been sooner discovered when sounding the tanks, which, according to the evidence, was regularly done. The theory that the vessel was injured by floating wreckage is, in our opinion, highly improbable. She was not damaged forward, as her fore peak was perfectly dry, nor, as already pointed out, in the bottom, and as any

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must have been broadside on, it seems to us almost impossible that an impact sufficient to produce such injury as was caused should have been unperceived by all persons on board, especially by those in the stoke-hole and engine-room. The results of a recent inquiry held at the instance of the Board of Trade, and of a report obtained by the Board, have been put in evidence, and from that it appears that on the 6th and 10th of April last two vessels, the "Florence Richard" and the "Benan" came into collision with floating wreck while off the Portuguese coast, one being lost and the other only slightly damaged, but in both cases the shock was very distinctly felt on board. The last explanation of the casualty that has been suggested to us is the straining of the vessel in the gale that prevailed on the 14th and 15th of March. Excluding the causes of injury that have already been dealt with as at any rate highly improbable, we do not see that there is anything else to fall back upon to account for the casualty but the straining of the vessel—a result not to be naturally looked for in a perfectly new and first-class ship; but beyond indicating that that points either to structural weakness somewhere, or faulty workmanship, we do not feel ourselves justified in expressing any opinion. It is also proper to point out as a rider on this abstract view that, according to the evidence of Lloyd's surveyor at Aberdeen, the workmanship of the vessel was tested and checked in the most rigid manner without any flaw being discovered, and that no evidence has been put before us in the course of the inquiry from which the Court would be warranted in coming to a finding either way, in the issue of the structural unsoundness of the vessel. In short, we cannot account for the straining of the vessel except on one or other of these two hypotheses, but we are unable, on the proof led, to say which of the two causes led to that condition of the ship, and, of course, in this connection it will be considered that the engineer assessor of the Court holds the view that the arrangement of web frames is not a source of weakness. The material of which the vessel was constructed, in our opinion, is not in the case. The Court has finally to deal with the conduct of the master and officers in the emergency in which they were suddenly placed. The first intimation made to the master that the vessel was making an unusual quantity of water was by the chief engineer through the chief mate, about 10 p.m. of Saturday, 15th March. He was then on the bridge, and contented himself with looking through the grating in the roof of the stoke-hole, when he saw the water. Some time after midnight it was reported to him by the chief engineer personally that the starboard fires of the main boiler had been drowned out, but still he did not go below; and, indeed, it is distinctly in evidence that he was not in the engine-room till shortly before the vessel was abandoned on the evening of Sunday,

16th March, on which occasion the final soundings were taken. The master justifies this conduct on the ground that his first duty was on deck, directing the navigation of the vessel and the operations of the deck pumps, and that he had every confidence in the chief engineer doing his best to ascertain, and, if he found it, to reduce the leak. We are very far, indeed, from thinking this confidence was misplaced as regards the capacity and character of the chief engineer; but we are quite clearly of opinion that it was the duty of the master to think and act for himself in this crisis, and that he seriously erred in not personally seeing to the state of matters below. There is evidence that without leaving the deck he gave directions to the engineer—the man-hole above the ballast tank having been removed with his approval. But without seeing any point in the objection that he did not hold formal consultation with the other officers, we think he plainly failed in not assuming the command which belonged to him. He followed a proper and indeed laudable course in altering the course of the vessel at midnight, and bringing her into the track of other vessels, and it is only fair to him to keep in view that the safety of all on board materially depended on the result then attained; but in our opinion he was unduly dominated by this idea, having almost from the outset, after he came to realize his position, practically abandoned the thought of endeavouring to save the ship as well. We cannot, further, concur in the view expressed by the master and others as to the impracticability of clearing the starboard side pocket of coal—at least partially—so as to trace the leak. The comparative want of space in the stoke-hole would undoubtedly have made that a difficult operation, but we think that much of the difficulty would have been overcome by drawing the coal up in ash buckets through the ventilators on to the deck, and in our opinion such an effort should have been made, notwithstanding that, on the theory which most approves itself to us, the injury on the other side of the bulkhead might remain undisposed of, and not be capable of being dealt with in the same manner. Nor can we admit that the master carried out the policy to which he committed himself of getting outside assistance in the most effective manner. According to his own statement he knew of two sheltered bays well under his lee, and when at midnight on the 15th he altered his course from S.W. to S.E. before the wind, and headed for Cape Finisterre, our opinion is that he should have set square sail to have taken advantage of the fresh breeze that prevailed, the reason assigned by him and the chief mate why that course was not thought of and adopted being wholly inadequate. In these circumstances we have had it under very serious consideration whether, as suggested by the Board of Trade, our duty does not require us to deal with the master's certificate. He was undoubtedly guilty in more than one respect of grave error in judgment, but considering the suddenness and occult nature of the disaster, the consequent uncertainty as to the time at his disposal to combine all the interests which fell under his charge, and the result, which we think is fairly due to his management, that loss of life was averted, we are unanimously of opinion, subject to the views we have already expressed, that such fault is not qualified as would justify us in disturbing his position as a certificated master. The chief mate was practically superseded on the occasion, and the question of his liability does not arise. The chief engineer, in our opinion, acted with exemplary coolness and judgment in an emergency in which he was entitled to look for more assistance than he received."

The Court replied to the questions as follows:—

1. We answer this question in the affirmative, subject to the limitations contained in the foregoing statement.
2. The steel plates and other material used in the construction of the vessel were properly tested and examined. We refer to the foregoing statement for our answer to the second part of the question.
3. They were.
4. They were.
5. They were.
6. We are of opinion that the weight of the evidence favors the view, above all other suggestions, that the vessel made water on the 15th of March, and thereafter, through being strained in the bad weather which prevailed on that and the preceding day, but what was the cause of the straining we are not able to say.

7. A proper and sufficient examination was made of the soil pipes, sea connections, and deck openings, and the water did not find its way into the vessel through any of these.

8. The openings in the bulkheads and the sluices were closed, but the water was not confined to one compartment. In explanation of this we consider it a probable view, upon the evidence, that there was a leak in the vessel's side on each side of the bulkhead.

9. The ship was not so subdivided as to enable her to remain afloat when loaded, if any one of her compartments had been full of water.

10. The pumps were sufficient, and properly fitted and placed, with the exceptions made in the foregoing statement.

11. Every possible effort was not made to ascertain the cause of the leak and to stop it.

12. Every possible effort was not made to save the vessel.

13. We refer to the foregoing statement for our answer to this question.

(Signed) W. C. BROWN, Judge.

We concur.

(Signed) WM. PARFITT,
ABSM. ANDERSON, } Assessors.
WM. C. LIANG,



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