

(No. 6650.)

"ST. LAWRENCE" (S.S.).

The Merchant Shipping Act, 1894.

IN the matter of a formal investigation held at the Town Hall, Hull, on the 17th, 18th, 19th, and 20th days of November, 1903, and the 17th and 19th days of February, 1904, before J. G. HAY HALKETT, Esq., assisted by Commander W. F. CABORNE, C.B., R.N.R., and Captain W. COWIE, into the circumstances attending the disappearance of the British steam dredger "ST. LAWRENCE," subsequent to the 29th of May, 1903.

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 probable cause of the disappearance of the vessel was that, having left Gibraltar overladen, she subsequently foundered. The Court finds the owners, the North Eastern Railway Company, and their assistant dock engineer at Hull (Mr. George Shaw) jointly and severally in default, and orders them to pay the sums of one hundred pounds each to the solicitor of the Board of Trade towards the costs and expenses of this inquiry.

Dated this 19th day of February, 1904.

J. G. HAY HALKETT,
Judge.

We concur in the above report.

W. F. CABORNE, }
W. COWIE, } Assessors.

Annex to the Report.

This inquiry was held at the Town Hall, Hull, on the above-mentioned days, when Mr. H. Saxelbye appeared for the Board of Trade, and Mr. R. F. Dunnell for the North Eastern Railway Company, owners, and also for Mr. George Shaw, assistant dock engineer at Hull. Mr. W. Worthington watched the case on behalf of the widow of the late master, Mr. A. B. Law.

The "St. Lawrence," official number 110238, was a British steam dredger, built of steel at Renfrew in 1895, by Messrs. W. Simons & Co., Ltd., and her respective dimensions were:—Length 180.2 ft., breadth 36.1 ft., depth amidships 16.9 ft.; her tonnage being 302.25 tons net register. She was fitted with compound engines of 110 h.p. nominal, giving a speed of 8 knots an hour, and was owned as above. As she was only acquired by her owners shortly before the casualty, the names of her former owners, Messrs. Topham, Jones & Railton, of Westminster, appear on the register. It was stated that her new manager was Mr. Thomas Monk Newell, dock engineer in the employment of the North Eastern Railway Company at Hull.

The "St. Lawrence" was built for the use of H.M. Dockyards, in accordance with plans and specifications supplied by the Admiralty, her construction being superintended by an official belonging to that department. She was what is known as a stern-well hopper dredger. Her two hoppers were designed to carry about six hundred tons of

spoil, and were of the following dimensions:—Length 44 ft. 9 ins., breadth about 8 ft. 8 ins., their depth being that of the vessel. There were three transverse bulkheads in each of the hoppers, but these were not carried up to the deck. Both steam and hand power appliances were provided for closing the hopper doors, and the hoppers were covered by hatches. There were buoyancy spaces on the wing side of each hopper, extending 44 ft. 9 ins. fore and aft, and 3 ft. 6 ins. to the ship's side, their depth being that of the vessel. There were also buoyancy spaces of the same height and depth, and 2 ft. wide, between the well and hoppers, through which the propellor shafting was carried. There were 41 buckets on the ladder, which was 100 ft. long. The ladder was supported at the forward end by an erection, the top of which was 28 ft. above the deck, and the buckets revolved on a shaft, the centre of which was about 23 ft. high. When at work the ladder was suspended from a gallows 25 ft. in height, situated 18 ft. from the taffrail by chains and pulleys, by which means it was raised or lowered, as required. The length of the ladder well was 110 ft., which was 61 per cent. of the length of the vessel, and its normal breadth was 5 ft. 6 ins., but at the after end it widened to 7 ft. There was one coal bunker, constructed to hold 50 tons, which was situated forward of the stokehold—its after end being 22 ft. from the stern. The stokehold and engine-room occupied nearly 40 ft. of the space abaft the coal bunker. Thus the engines were well forward in the vessel, and the length of the propellor shafting was consequently very great—no less than 112 ft. abaft the engine room bulkhead. There were three watertight bulkheads, which were carried right across the vessel:—The collision bulkhead, 16 ft. from the stem, one between the engine-room and the bucket well and hoppers, and one abaft the well. There were also several other small bulkheads. The decks, coamings, skylights, and companions were built of steel, and there were two cowl ventilators to the engine-room and stokehold. She was fitted with hand and steam steering gear.

On the 14th of September, 1895, the "St. Lawrence" left Portsmouth for Gibraltar, manned by a naval crew, and convoyed by H.M. first class cruiser "Grafton." The bucket ladder and other gear were hove up, and left in position, but very securely tommed off, lashed, and otherwise prepared for the voyage. The hopper doors were hove up, and fastened as usual, but were not made watertight. There was no weight placed in the hoppers. The bucket well was not closed, nor tied across by means of plates. Ventilators were plugged, and tarpaulins were provided for all hatchways and openings. She carried 75 tons of coal, spare buckets weighing 17 tons, spare propellers weighing 3 tons, anchors weighing 6 tons, spare rope, &c., 3 tons, and fresh water 20 tons, the total being 124 tons. The mean draught of the vessel on leaving Portsmouth was about 10 ft. 5 ins.

The vessel arrived in due course at Gibraltar, where she was employed in dredging the harbour. In 1898 the vessel was acquired from the Government by Messrs. Topham, Jones & Railton, contractors, for the sum of £18,357, her original cost having been about £22,000. She was insured at this time for £18,000, including her spare gear. She was employed by her new owners in dredging work in connection with a Government contract.

In March, 1903, Mr. George Shaw was sent on behalf of the North Eastern Railway Company to Gibraltar, to examine the vessel with a view to purchase. Having seen her in dry dock, and found her in good condition, both inside and out, he returned to England and reported to the Company. In consequence of his report, the Company sent him out again to Gibraltar on May 8th, and on May 14th the purchase was arranged for the sum of £15,527 5s. 10d., which included a considerable quantity of spare gear, part of which was on the vessel, and part of which was ashore.

Mr. Shaw's instructions were to send the vessel to Hull for dredging purposes in the docks. In

pursuance of such instructions he proceeded to get her ready for sea. Instead of following the method adopted by the Admiralty in 1895, viz., of sending the vessel to sea with the buckets and ladder hove up and in position, Mr. Shaw took the ladder down, and placed it over the well, stowed the buckets, and such wheels and other spare gear as would go down the hatchways, in the buoyancy spaces. The ladder was supported on chocks, and made fast to the galleys aft, and to other places. Two large wheels were placed across the well and under the ladder, and secured with chain lashings. Tumblers, spare propellers, and dredging anchors, and other gear were secured about the decks. At this time about 250 tons of dredgings were in the hoppers, and so remained. In the coal bunker 50 tons of coal were placed, and 100 tons were stowed on deck. The weights thus carried, in addition to the vessel's ordinary machinery, were as follows:—

	Tons.
Dredgings in hoppers ...	250
Coal ...	150
Spare gear ...	45
Water ...	8
	453 tons.

This was an excess of 329 tons over the amount carried during the outward voyage. The Court is of opinion that far too large a quantity of coal was carried on deck. The coal appears to have been chiefly in bulk, piled up higher than the bulwarks in the fore part of the vessel surrounding the engine and boiler space, and not secured in any other way than by a margin of bags. This method of disposing of the coal cannot but be regarded as most unsatisfactory, and likely to cause danger to the vessel and to the individual members of the crew. The "St. Lawrence" carried three boats (two of them being life-boats) in davits, and was supplied with the life-saving appliances required by the Merchant Shipping Act and the Board of Trade regulations.

The "St. Lawrence" left Gibraltar, bound for Hull, on May 29th, 1903, under the command of Mr. Andrew Brown Law, who held a certificate of competency as extra master, and manned by a crew of 14 hands all told, 12 of whom had been sent from Hull. The weather at this time was fine, with little wind. Her draught of water upon departure was, according to Mr. Shaw, 13 ft. 3 ins. forward, and 13 ft. 5 ins. aft, and her freeboard about 2 ft. 6 ins. According to Mr. James Williams, who was master of the "St. Lawrence" at Gibraltar for some two years, and prepared her for sea under Mr. Shaw's superintendence, the draught was 13 ft. 5 ins. forward, and 13 ft. 6 ins. aft. The vessel, having been the property of the Government during her outward voyage, had not been assigned any load line by the Board of Trade, but it was in evidence that Messrs. Topham, Jones & Railton had caused certain white marks to be painted on her sides amidships, and on her bow and stern, to indicate the limit to which she might safely be loaded when dredging. There was considerable discrepancy in the evidence as to the position of these marks, whether above or below water, when the dredger left Gibraltar, although the weight of evidence was to the effect that they were submerged. And it by no means follows that a dredger marked for dredging in and about a harbour, would not be overlaid if she proceeded to sea submerged to the level of such marks. Still, as there was some discrepancy, and, in the absence of conclusive testimony upon this point, and taking into consideration the fact that no calculations had been made as to stability, and that no freeboard had been officially assigned, the Court deemed it its duty to order an adjournment for the production of further information.

Upon the re-assembling of the Court on the 17th of February, 1904, Mr. David William Archer, principal shipwright surveyor to the Board of Trade, London, having made the necessary calculations, stated that the "St. Lawrence," for a summer voyage, should have had a freeboard of three feet and half an inch; that with a mean draught of 13 ft. 4 ins. (that given by Mr. Shaw) her freeboard would be 2 ft. 7½ ins., and that with a mean

draught of 13 ft. 5½ ins. (that given by Mr. Williams) her freeboard would be 2 ft. 5½ ins. Mr. McGregor's calculation was that, as laden when she left Gibraltar, her mean draught in salt water would be 13 ft. 5 ins. The Court has compared the weights carried by the vessel, and her draught when leaving both Renfrew and Portsmouth, with the weights and draught upon her leaving Gibraltar, and has come to the conclusion that, with the excess on board in the latter instance, her draught would be fully that stated by Mr. Williams.

Under these circumstances the Court had no alternative but to find that the vessel was overlaid on leaving Gibraltar by about 7 ins. It was urged on behalf of the owners and Mr. Shaw that the 250 tons of dredgings would in all probability be discharged from the hoppers after the vessel got to sea, and that she would thereby be considerably lightened. The dredgings were, according to the evidence, retained in the hoppers when the vessel went to sea in order to give her stability, and there is no reason to suppose that they were subsequently got rid of. It was also urged that a portion of the coal would be consumed, which would ease the vessel, but it is obviously impossible to say how much this would be. The duty of the Court has been to consider what the condition of the vessel was on leaving port. The evidence of Mr. Archer was to the effect that the result of the vessel going to sea so overlaid would be to bring greater strains upon the structure than it was calculated to bear.

Nothing has been heard of the vessel since she was off Tarifa. Mr. Shaw in his evidence stated that, when off Cape Finisterre on his way home in the P. and O. steamship "Caledonia," he thought he saw the "St. Lawrence," but as the distance off was great, and he was uncertain, the Court does not attach importance to this. Mr. Shaw stated that the weather he experienced in crossing the Bay of Biscay was somewhat severe, the wind varying from N.W. to N.E., and that the "Caledonia" was delayed in consequence for 6 hours.

If the "St. Lawrence" experienced any weather at all similar to this, it is highly improbable that, in her overlaid condition, she could have outlived it.

It was stated by Mr. W. I. Maunder, inspector of shipwrights at Portsmouth dockyard, that a dredger of similar construction to the "St. Lawrence" had strained very severely in bad weather. The two sides of her well appeared to work separately, and so caused the shores securing the ladder to be broken. In consequence of this danger, the Admiralty have decided, when taking dredgers to sea, to fix two temporary tie plates vertically in the well, to bind the sides together, these being also secured to a tie plate across the bottom. An examination of the midship cross-section of the "St. Lawrence" will show how necessary some such precaution is. The Court would also draw attention to the great length of the propeller shafting, and the danger that would be caused to it by any play in the different parts of the vessel. In order to increase the buoyancy of such vessels it would also be advisable, when they are sent to sea without convoy, that the hopper doors should be closed and made watertight.

Mr. I. B. McGregor, chief draughtsman to Messrs. W. Simon & Co., the builders, stated that the "St. Lawrence," as laden when she left Gibraltar, had a metacentric height of 7.29 ft., that her surplus buoyancy at a draught of 13 ft. 6 ins. would be 428 tons, and her displacement 1337 tons. This metacentric height was far too great to permit of the vessel being easy in a seaway. It would have been somewhat lessened had the Admiralty plan of keeping the bucket ladder up been adopted.

Before sending the "St. Lawrence" to sea from Gibraltar it was the clear duty of Mr. George Shaw to take steps to ascertain what the vessel's proper freeboard should have been, especially as she was so peculiar a type of vessel. He apparently, without any adequate inquiry, assumed that the white dredging marks before mentioned, were the vessel's load line, and sent her to sea loaded to that extent, if not deeper.

The following is a list of the missing crew, with the remarks desired to express its sympathy.

Andrew Brown Law,
George Cross, m.
George H. Breckinridge,
Owen Flynn, sec.
John L. Morgan,
William Williams,
E. T. Rogers, sec.
I. P. Devries, sec.
W. Reed, seaman,
Carl Perrson, sec.
J. F. Gardiner,
James Hemmel,
Charles König,
Anthony Joseph,

At the conclusion of the proceedings on behalf of the Board of Trade, the following questions for the consideration of the Court were put:

(1) When the "St. Lawrence" left Gibraltar on the 29th May last,—

- Was she in good condition as regards hull and machinery?
- Were the gear, and the cargo, properly stowed, and so distributed in a seaway?
- As laden had she sufficient freeboard?
- Was she properly trimmed?
- Was she overlaid?
- Was she supplied with life-saving appliances and life-saving appliances?

(2) What is the cause of the vessel not having been heard of since she left the Bay on the 29th May last?

(3) What was the cost of the vessel, and what insurances were effected on her?

Mr. Dunnell, having answered the questions on behalf of the owners and Mr. Shaw, and having replied for the Court gave judgment, and answers:—

(1) When the "St. Lawrence" left Gibraltar on the 29th May last,—

- She was in good condition as regards equipment, and was repaired, but, having been constructed, though even if the vessel had her two sides secured across the well, it would not have been attended by consequences.

The following is a list of the members of the missing crew, with the relatives of whom the Court desires to express its sympathy:—

Andrew Brown Law, master.
George Cross, mate.
George H. Brecken, chief engineer.
Owen Flynn, second engineer.
John L. Morgan, third engineer.
William Williams, boatswain.
E. T. Rogers, seaman.
I. P. Devries, seaman.
W. Reed, seaman.
Carl Perrson, seaman.
J. F. Gardiner, fireman.
James Hemmel, fireman.
Charles König, fireman.
Anthony Joseph, fireman.

At the conclusion of the evidence, Mr. Saxelbye, on behalf of the Board of Trade, submitted the following questions for the opinion of the Court:—

(1) When the "St. Lawrence" left Gibraltar on the 29th May last,—

- (a) Was she in good and seaworthy condition as regards hull and equipments?
- (b) Were the gear, coals, and ballast on board properly stowed and secured, and the weight so distributed as to make her easy in a seaway?
- (c) As laden had she sufficient stability and freeboard?
- (d) Was she properly and efficiently manned?
- (e) Was she overladen?
- (f) Was she supplied with the necessary boats and life-saving appliances as required by the Merchant Shipping Act, 1894, and Board of Trade rules?

(2) What is the cause of the "St. Lawrence" not having been heard of since she left Gibraltar Bay on the 29th May last?

(3) What was the cost of the vessel to her owners, what insurances were effected, and how were they apportioned?

Mr. Dunnell, having addressed the Court on behalf of the owners and Mr. Shaw, and Mr. Saxelbye having replied for the Board of Trade, the Court gave judgment, and returned the following answers:—

(1) When the "St. Lawrence" left Gibraltar on the 29th May last,—

- (a) She was in good and seaworthy condition as regards equipments. The hull was in good repair, but, having regard to its peculiar construction, the Court is of opinion that, even if the vessel had not been overladen, her two sides should have been securely tied across the well before she attempted, unattended by convoy, to cross the Bay of

Biscay. As things actually were, had this been done, and had the hoppers been closed and made watertight, the danger would have been lessened.

- (b) In the opinion of the Court the manner in which the gear of the vessel was stowed and secured by the Admiralty on the voyage out to Gibraltar in 1895 was preferable to the method adopted for her return. Had the former plan been again resorted to, the metacentric height would have been reduced, and the vessel consequently easier in a seaway. Considering the low freeboard of this class of vessel, too much coal was carried on deck, and the major portion of it was not contained, as it ought to have been, in bags. The ballast was properly stowed and secured. The aggregate weight, however, of spare gear, coals, and ballast on board was excessive.
- (c) As laden, she had sufficient stability, but not sufficient freeboard.
- (d) She was properly and efficiently manned.
- (e) She was overladen.
- (f) She was supplied with the necessary boats and life-saving appliances required by the Merchant Shipping Act, 1894, and Board of Trade rules.

(2) It is impossible for the Court to say what was the exact cause of the loss of the "St. Lawrence." She left Gibraltar overladen by about seven inches, carrying weight which would produce structural strains greater than she was designed to bear. Under these circumstances the Court can only conclude that the "St. Lawrence" foundered in a heavy sea through being overladen.

(3) The vessel, including her gear, cost her owners £15,527 5s. 10d. Her hull was insured for £10,000, and her machinery and spare gear for £8,000, which sums have been paid to her owners.

The Court, on the facts, finds the North Eastern Railway Company and Mr. George Shaw, the Company's assistant dock engineer at Hull, jointly and severally in default, and orders them to pay the sums of one hundred pounds each to the solicitor of the Board of Trade towards the costs and expenses of this inquiry.

J. G. HAY HALKETT,

Judge.

We concur.

W. F. CABORNE, }
W. COWIE, } Assessors.

(Issued in London by the Board of Trade on the 15th day of March, 1904.)