FOR OFFICIAL USE.

(No. 7795 A.)

"TREVESSA" (S.S.)

THE MERCHANT SHIPPING ACT, 1894.

REPORT OF COURT.

In the matter of an Inquiry held in Mauritius on the 12th day of July, 1923 into the circumstances attending the loss by foundering on the 4th day of June, 1923 of the British steamship "Trevessa" of St. Ives, Cornwall, and the consequent loss of life.

And in the matter of a Re-hearing of this Inquiry held at the Royal Courts of Justice on the 15th, 16th, 19th, 20th, 21st, 22nd, 23rd, 28th, 29th and 30th days of November, 1923, and on the 7th day of December, 1923, before HENRY WILLIAM DISNEY, Esquire, Wreck Commissioner, assisted by Captain DAVID DAVIES, JOHN MCLAREN, Esquire, M.I.Mech.E., M.I.M.E., and A. SCOTT YOUNGER, Esquire, B.Sc., M.I.N.A.

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 British steamship "Trevessa" foundered during a heavy S.S.W. gale on the 4th June, 1923, in latitude 28.45S. and longitude 85.42E. through springing a leak which admitted water rapidly into the ship and filled No. 1 hold. There is no direct evidence to justify a positive finding as to the cause of that leak, but the Court is strongly of opinion that owing to the nature of the cargo and the severe weather she experienced, the ship was subjected to continuous excessive straining which caused a seam or seams to open in the shell plating on one or on both sides.

No. 1 hold was loaded in such a manner that water entering the hold could not reach the bilges or be dealt with by the pumps. This manner of loading created a serious element of danger to the ship, but it has been so general for so many years that in the absence of evidence of any negligence the Court does not consider any individual to blame for following what was an established practice.

The Court is of opinion that it is possible to eliminate this element of danger to a great extent, but it is not within the scope of its duty to suggest means by which this result can be attained. The Court does, however, venture to suggest that the Board of Trade should institute some inquiry to examine the matter and ascertain whether this danger can be avoided with due regard to all mechanical, economic and practical considerations.

The boats were sound, efficient, and properly equipped, and every possible effort was made by the officers to save the lives of the crew. In spite of their efforts, however, eleven lives were unhappily lost. The Court is unable to find words adequately to express its members' admiration of the fine seamanship and resolution of the officers and the splendid discipline and courage of the crew, both European and non-European.

The Court desires to express deep sympathy with the relatives of those who lost their lives.

7th December, 1923.

H. W. DISNEY,
Wreck Commissioner.

We concur in the above Report.

DAVID DAVIES,
JOHN MCLAREN,
A. SCOTT YOUNGER,
} *Assessors.*

(K166) Wt77/P13 375 1/24 H & Sp Gp 77

ANNEX TO REPORT.

This Re-hearing was held at the Royal Courts of Justice on the 15th, 16th, 19th, 20th, 21st, 22nd, 23rd, 28th, 29th and 30th days of November, and on the 7th day of December, 1923. Mr. J. B. ASPINALL (instructed by Mr. T. J. BARNES, C.B.E., Solicitor to the Board of Trade) appeared for the Board of Trade; Mr. G. St. C. PILCHER (instructed by Messrs. T. COOPER & Co.) for the Hain Steamship Company; Mr. WARD HIGGS (of Messrs. REHDER & HIGGS) for Captain Cecil Foster, the master; Mr. JOSEPH COTTER, General President, and Mr. JAMES MCKINLEY, General Secretary, of the Amalgamated Workers' Union, for A. C. Sumner, John Doherty, R. Jones, A. G. Wooley, and Shergang Sherdal, members of the crew of the "Trevessa" and on behalf of Elizabeth McGee, widow of T. McGee (deceased) and of H. C. Allchin, brother of W. S. Allchin (deceased); Mr. E. Cathery, C.B.E., General Secretary of the National Sailors' and Firemen's Union, appeared on behalf of M. Scully and R. H. James, members of the crew of the "Trevessa."

The early history of the steamship "Trevessa," so far as it is known, is of considerable importance. It was given to the Court by Mr. Dowling. The vessel first came under his notice in January, 1921, in his capacity of Assistant Superintending Engineer of the Hain Steamship Company. He was careful to explain that his statements as to matters prior to that date were founded on hearsay.

It appears that as a German ship, named the "Imkenturm," she was interned at Surabaya in the Dutch East Indies and lay in that port throughout the war from 1914 to 1919, when she was taken over by the Ministry of Shipping. She went through the Prize Court. While the vessel was laid up at Surabaya a large amount of general corrosion took place in the bottom of the ship, her German crew only caring for her above the water line. She was dry-docked at Singapore in December, 1919. There she was cleaned and underwent some repairs, and was granted a temporary certificate by Lloyd's to enable her to get to this country. On arrival in the United Kingdom she was dry-docked at Leith and inspected by Lloyd's surveyor. In 1920 she was purchased from the Ministry of Shipping by the Hain Steamship Company of St. Ives, Cornwall, and her name was changed to "Trevessa." She was again dry-docked and was under repair for about four months from October, 1920. In that time she was thoroughly reconditioned at a cost of £36,000 at Messrs. John Redhead & Sons at South Shields, the work being finished in January, 1921. She went through Lloyd's Register Classification, No. 3 Survey. The bottom plates were found to be badly pitted and a great number of rivets were defective. The plates affected were cleaned and scraped, and some 54 plates were renewed. Where the pitting was deepest it was bored out and the holes fitted with new rivets. Over 5,000 rivets were put into the plates. Welding took place on some of the plates. A great many improvements were carried out to bring the vessel up to the requirements of the Hain Steamship Company. A centre line steel bulkhead was fitted throughout the lower holds and 'tween decks to fit her for carrying a grain cargo. Trunk ways were cut through the bunkers on either side of the donkey boiler. All alterations and repairs were carried out under the supervision of Lloyd's Register of Shipping and a 100 A.1 certificate was granted.

At the time of the casualty the "Trevessa" was owned by the Hain Steamship Company, which company is managed by the Peninsular and Oriental Company. The registered manager was Robert Sawle Read of St. Ives, Cornwall. The vessel was built in the year 1909 for German owners by Flensburger Schiffsbau Gesellschaft, Flensburg; as built she was classed in Lloyd's Register of Shipping in the highest class.

She was a steam single screw ship built of steel, of the spar deck type. Her length was 401·2 ft., breadth,

52·7 ft., depth, 28·3 ft. The length of the poop was 51 ft., of the bridge, 123 ft., and of the forecastle 57 ft. The tonnage under deck was 4732·0. The gross tonnage was 5004, the net tonnage 3121. The deck was of steel partly laid with teak wood. A cellular double bottom was fitted throughout the whole length of the vessel. The space under the boilers, however, was used as a dry tank. The total water ballast in the double bottom was 1120 tons. She had also 'tween deck tanks which held 885 tons of water. The fore peak tank held 95 tons of water. The after peak tank held 40 tons of water. The total water ballast in the vessel was 2140 tons. The tank tops had no laid ceiling with the exception of a portion laid in the way of the hatches. She had six watertight bulkheads as usually fitted to a vessel of her class. Her summer load draught was 25 feet 1 inch, the freeboard being 6 feet 2½ inches. Her dead weight carrying capacity was 7735 tons. The capacities of her holds, four in number, were as follows:

No. 1 hold,	'tween deck	23,100	cubic feet.
,, ,,	lower hold	59,500	,, ,,
No. 2 hold,	'tween deck	25,900	,, ,,
,, ,,	lower hold	107,300	,, ,,
No. 3 hold,	'tween deck	27,200	,, ,,
,, ,,	lower hold	61,200	,, ,,
No. 4 hold,	'tween deck	20,800	,, ,,
,, ,,	lower hold	39,200	,, ,,

A wooden bulkhead was fitted to the after part of No. 2 hold for the purpose of carrying coal. She had six hatchways of the following dimensions:

No. 1 Hatch	...	15 feet	9 inches	by	14 feet.
No. 2 ,,	...	29 ,,	3 ,,	by	19 ,,
Bunker ,,	...	11 ,,	3 ,,	by	12 ,,
No. 4 ,,	...	20 ,,	3 ,,	by	14 ,,
No. 5 ,,	...	20 ,,	3 ,,	by	14 ,,
Hatch on poop	...	13 ,,	0 ,,	by	12 ,,

She had four lifeboats and two jolly boats. The four lifeboats were placed on the after part of the bridge deck, all fitted in accordance with the Board of Trade requirements. The jolly boats were placed on the forward part of the bridge deck. She had the usual outfit of compasses, and a sounding machine.

The " Trevessa " was fitted with one set of vertical, direct acting, quadruple expansion engines, and had three cylindrical multitubular steel boilers with a working pressure of 213 lbs. The diameters of the cylinders were

No. 1 23 inches,
No. 2 31½ ,,
No. 3 48 ,, and
No. 4 71 ,,

with a stroke of 51 inches.

Her indicated H.P. was 2,400 and N.H.P. 476. Her speed was about 11½ knots on a coal consumption of about 40 tons per day. The engines and boilers were built and fitted by the builders of the vessel in 1909. She had steam and hand steering gear; the former was controlled from the bridge. She had a ballast pump with a capacity of 120 tons per hour, with connections to all holds and tanks, a large feed pump and a circulating pump for the main condenser with connections to the engine room bilges. All tanks were connected to the pumping arrangement by means of valve boxes placed in the engine room and stokehold. All bilges on each side of the different holds were connected to all pumps by the same means. Ventilators were fitted throughout the ship in accordance with a vessel of her class. Sounding pipes were fitted to all tanks and bilges. She was fitted with wireless apparatus.

The " Trevessa," official number 143920, left Liverpool on 2nd January, 1923, in ballast, bound to Sydney, Cape Breton, in command of Captain Cecil Foster, who had with him a mixed crew of 43 hands. Previous to leaving Liverpool the vessel was dry-docked for the purpose of cleaning and painting, when some minor voyage repairs (which were not completed at Leith) were effected. A couple of days after leaving Liverpool some water was found in the tank top in No. 1 hold. On examination it was found to have come from some leaky rivets in an angle iron on the tank top, and also from a few leaky rivets in the forepeak bulkhead. These were temporarily plugged up and were permanently repaired at Sydney about 16th January. The vessel took in some cargo at Sydney, but had to proceed to Louisberg on account of ice coming down the St. Lawrence and choking the port. After bunkering she proceeded to St. John, New Brunswick, to load a portion of cargo, and then went on to New York to complete. On the voyage she met some sludge ice which did no damage to the vessel beyond scratching some of the paint off her sides at the water line. The vessel completed her loading at New York, and sailed from there bound for New Zealand and Australian ports. She proceeded through the Panama Canal, and experienced fairly good weather in the Pacific. After completing the discharge at New Zealand ports, she proceeded to Melbourne and Sydney, N.S.W. and then on to Newcastle where she bunkered. From Newcastle she proceeded to Port Pirie, South Australia, in ballast. She arrived there on a Sunday and was moored alongside a wharf.

On arrival at Port Pirie the vessel proceeded to her loading berth and the holds were examined and prepared to receive the cargo which consisted of zinc concentrates. It was found that one or two rivets were weeping slightly. These were situated at a point on the ship's side in No. 1 hold about ten or twelve feet up from the turn of the bilge, and three to four feet abaft the forepeak bulkhead on the port side. The evidence shows that this defect was very slight, and on the recommendation of Captain Mars, Lloyd's surveyor, a cement box was fitted over the rivets. This box extended between two frames and was 27 inches long by 10 inches in a vertical direction, and about 7 inches thick. This was considered satisfactory and was passed by Captain Mars in his capacity as Lloyd's surveyor. The cargo consisted of zinc concentrates from the Broken Hill district. The total amount loaded was 6,564 tons, distributed throughout the holds and tween decks as follows:

In No. 1	lower hold	850	tons,	De Bavay slime zinc.
,, ,, 2	,, ,,	2120	,,	Central slime zinc.
,, ,, 3	,, ,,	1640	,,	Broken Hill Proprietary slime zinc.
,, ,, 4	,, ,,	624	,,	De Bavay slime zinc.
In No. 1	'tween decks	230	tons,	Central slime zinc
,, ,, 2	,, ,,	430	,,	Central slime zinc.
,, ,, 3	,, ,,	450	,,	Broken Hill Proprietary slime zinc.
,, ,, 4	,, ,,	220	,,	Broken Hill Proprietary slime zinc.

There were as will be noticed different grades of ore loaded, but these were almost identical in their physical properties. The density varied from 16⅔ to 20 cubic feet per ton. The material as loaded contained 5 to 10 per cent. of moisture and had a consistency something like half-set cement so that it would retain its form when loaded in a heap in the hold and would not require the use of shifting boards. When dry the cargo formed a fine dust which necessitated certain precautions in preparing the holds to receive it.

In preparing the holds Captain Mars as surveyor for cargo gave instructions that all the limbers and close ceiling, fore and aft, in the ship should be " chinsed " or caulked, in order to prevent the fine dust from the cargo finding its way between the limber boards into the bilges and thus choking the pumps. This was carried out by the ship's crew before loading commenced.

The cargo was loaded into the ship by means of iron tubs holding about one ton and lifted on board with the ship's gear. They were lowered to about

the level of the 'tween deck and tipped down shoots which distributed the cargo in the hold as required by the stevedore. In No. 1 hold the cargo was heaped up in the middle of the hold to within a few feet of the 'tween deck level and extended to each side of the vessel and well up the after bulkhead. It sloped forward to a line on the tank top about 12 feet aft of the forepeak bulkhead, thus leaving the limbers at the fore part of No. 1 hold clear of cargo. As already stated these limbers had already been "chinsed" or caulked. The other holds had the limbers completely covered by the cargo. In the No. 1 'tween decks there were 230 tons of cargo stowed round the hatch to a depth of about three feet and extending to the ship's side. This was kept in position by a temporary wooden coaming secured to the permanent stanchion.

It should be here pointed out that this "chinsing" or caulking of the limbers for all practical purposes converted the holds into water-tight compartments, so that, even if the nature of the cargo had been such as to allow water to penetrate, little could have reached the bilges and shown itself when taking soundings. The subsequent narrative shows that probably water was for some time in No. 1 hold in considerable quantities but its presence was not detected until too late. Possibly the inrush of water was beyond the capacity of the ship's pumps, viz., 120 tons per hour, but had its presence in the ship been detected earlier an opportunity would have arisen for the officers of the ship to investigate the matter, and they might have been able to devise means for stopping the leak and thus saving the ship.

The cargo was loaded under the Standard Ore Charter Party, 1909, one of the conditions of which stipulates that the vessel should be always afloat. It appears, however, that this condition was not observed as it was admitted in evidence that the vessel took the ground for several hours daily during the last few days while loading. It was pointed out, however, that this practice was the custom of the port, and as the berth was stated to consist of soft mud the Court formed the opinion that no straining or damage was sustained by the vessel on this account. The loading continued at this berth until the draught of the vessel reached the limit at which she could cross the bar below Port Pirie, and she then proceeded to an anchorage below the bar where about 600 tons were loaded from barges by means of tubs lifted by the ship's gear. The evidence showed that no damage was sustained by the vessel during this operation by tubs or barges striking the ship's side.

The vessel left the anchorage below the bar and proceeded to sea, bound for Fremantle, to replenish bunkers. On this passage of over 2,000 miles bad weather was encountered, but the ship behaved very well. The tanks and bilges were sounded morning and evening and were found practically dry. She arrived at Fremantle and there took on board 360 to 400 tons of coal from a hulk. This was stowed mostly in cross bunkers, making total bunkers on leaving Fremantle about 980 tons, sufficient for the passage to Durban which was the next coaling port. Some of the ventilators were unshipped after leaving Port Pirie, but they were again shipped in their places as the chief officer stated that there was some difficulty as to where to stow them away securely; so that on leaving Fremantle all the ventilators were shipped in their places. All the main deck hatches were well battened down on leaving Port Pirie, and were not disturbed thereafter. The vessel left Fremantle on the 25th May, 1923, drawing 25 feet 1 inch mean, this being the same draught as she had when she left Port Pirie. She was just down to her marks. She proceeded on her voyage and experienced more or less bad weather until the morning of the 3rd June, when the wind shifted to S.S.W. and increased to a gale with very heavy seas. She shipped a sea amidships which lifted two of the lifeboats out of their chocks, and broke the door of the engineer's room. Previous to this she had been going along at a reduced speed, but at this time she was hove to, and her speed was regulated so as to maintain sufficient steerage way to keep her head to the sea, which was described as running from 20 to 30 feet high. She continually shipped water forward. In consequence the look-out man was stationed on the bridge. There is no evidence of any deck damages. The chief officer was on watch up to 8 p.m. on this day, when he was relieved by the third officer. He stated that when he left the bridge he had a look round and did not notice anything wrong anywhere nor anything unusual in the behaviour of the vessel. He had a conversation with the master at 10.30 p.m. and he then went below to his berth, and to bed. The third officer who was on watch from 8 to 12 p.m. stated that the weather was bad, and that she was shipping a good deal of water over the forecastle. It was a dark night, but he stated that he could see right forward, and that if anything had happened to any of the ventilators he would have noticed it. The seaman who was on the look-out on the bridge, and the master who was on the bridge off and on during this watch, corroborated this statement. There is evidence from several members of the crew who were in the forecastle forward that a crash was heard about 10.30 p.m., but this was not heard by anyone who was on watch. However, a seaman named Scully (who was kept on day work, and who was then in bed) got up and took steps to ascertain if the vessel had sustained any damage forward as a result of the noise which some described as if the windlass had been torn away off the forecastle deck, but nothing unusual was discovered. Before midnight, however, noises were heard in the hold as if water and floating timber were washing about and knocking against the bulkhead and sides. Scully satisfied himself by listening and lowering a bucket down the ventilator that water filled the hold and was half way up the 'tween deck. He immediately reported this to the master, who at once ordered the tanks and bilges to be sounded. The carpenter stated that he was unable to take soundings of the bilges owing to the water washing about and covering the pipes, but he managed to sound No. 1 tank (the pipe being amidships and sheltered by the foremast and hatch coamings). This tank was found to be dry. The master conducted an investigation into the cause of the noises. He ascertained that the fore hold was practically full of water. He together with the chief engineer went into the forepeak tank, which was dry, and they decided to have some rivets in the bulkhead knocked out to allow the water to run into this tank from which it could be pumped out. However, before this had been done, it was discovered that the bulkhead was bulging out by the weight of water, etc., behind it, so this was abandoned, and the engineer went on deck. It was then about 0.30 a.m. on June 4th, and it was apparent to them that the vessel was settling down by the head. The master, after consultation with the chief officer and chief engineer, decided to abandon the vessel, and orders were given to get the boats ready. Some extra provisions were put into them, as much as they could get hold of in the short time at their disposal. Lifebelts were served out to each member of the crew, and two lifeboats were successfully launched. All the crew got into them without any mishap, with the exception of one man who fell into the water but was shortly after assisted into one of the boats. The boats kept in the vicinity of the steamer. In about half an hour the foremast headlight disappeared, and the mainmast light also disappeared shortly after. This was about 2.30 a.m. on June 4th. Before leaving the vessel S.O.S. signals were sent out giving the position of the "Trevessa," viz., latitude 28°45 South, and longitude 85°42 East, and these signals were picked up by the s.s. "Runic," which passed them on to all vessels within range, with a view to finding out which was the nearest to the position given. They were subsequently picked up by the s.s. "Trevean" (one of

the Hain Steamship Company's steamers), and this boat steamed to the scene of the casualty. She cruised about for several days looking for survivors, but without success.

The master and chief officer, each in command of a boat, had decided to keep together if they could, and to try and reach the island of Mauritius, which was about 1,700 miles away. However, after several days, it was found that the master's boat sailed faster than the chief officer's, so they decided that each boat should make the best of it and reach land as soon as was possible. The boats were of the standard type, as designed by the Board of Trade, and they were fully equipped. A slight mishap occurred to the step of the mast in the master's boat, but this was soon put right. The compasses in the boats were spirit compasses, being an improvement on the compasses formerly in use. However, the master and the chief officer stated that these spirit compasses were not very efficient, being too slow in their movement. The Court is of opinion that in boats smaller compasses would prove much more efficient. The officers steered by the aid of the stars at night, and were guided by the direction in which the sea was running, and by the sun during the day. The compasses which they had, no doubt, also proved of some help in checking the other means above-mentioned.

There was no chart in the captain's boat. There were twenty men all told in this boat, the chief and third engineers, third officer, carpenter, one apprentice, and the marconi operator, together with four able seamen and seven coloured firemen. Two of these coloured men died owing to exhaustion and to the effects of drinking salt water. Twenty days after the vessel sank the men in this boat sighted the Island of Rodriguez. After dark they sighted a light which turned out to be a light on the Eastern Telegraph Cable Station. They also sighted a steamer at anchor. Someone on the steamer hailed the boat, and when they found it contained shipwrecked sailors they sent a boat to pilot them through the reefs to a little jetty by the town. They remained about four days on this island, then were taken on to Mauritius on H.M.S. "Colombo."

The chief officer had 23 men with him in his boat: the second officer, second and fourth engineers, boatswain, two able seamen, four apprentices, and thirteen others—the donkeyman, greasers, firemen, cooks and stewards. The chief officer had a chart, a sextant, and an epitome. They steered a course for Mauritius. During this passage the second engineer fell overboard and was drowned, and seven other men died through exposure and exhaustion accelerated by drinking salt water. This boat reached Mauritius on the 28th of June after a passage of 24 days. Neither of the two boats sighted any vessel during their respective passages.

An Investigation was held by a Marine Court at Mauritius, on the 12th day of July, 1923, after which the crew were brought home on the steamer "Goorkha," and later the captain's boat was brought home to London on the steamer "Gaika."

The chief officer's logbook and scrap logs were lost with the vessel, and there is therefore some slight uncertainty as to the accuracy of some of the details, and as to times and dates previous to and concerning the casualty.

Some doubts have been expressed as to the condition of the lifebelts supplied to the crew when leaving the vessel. The Court is of opinion that any suggestions as to their unsoundness are unfounded.

The following is a list of those who lost their lives:

Jacob Ali,	Fireman and trimmer.
Unshin Ali,	,, ,,
Jimmy Fraser,	,, ,,
Joseph Abrahim,	,, ,,
John Ali,	,, ,,
Thomas McGee,	Able Seaman.
William H. Barton,	Assistant Cook.
David John Mordecai,	Second Engineer.
Henry Edward Sparks,	Apprentice.
Joe Baptist,	Donkeyman.
William S. Allchin,	Ship's Cook.

As there was no direct evidence most of the witnesses were asked their opinion as to the cause of the casualty. Several theories were advanced and all of them have been carefully considered by the Court, but only those dealt with below are deserving of serious examination. It was agreed that no discovery of water in the vessel was made until the amount present was nearly sufficient to fill the No. 1 lower hold, and that from that time matters developed quickly and the inrush of water was so rapid that no steps taken by the crew could avail to save the ship.

Some of the witnesses thought the vessel must have struck submerged wreckage. Had this happened, however, there must have been a shock due to the striking, which would have been felt by the crew; but as none of them appears to have noticed anything of this nature the Court does not consider this as at all probable. It was suggested that the water might have got down the hold ventilators, of which there were four, or that a weak shell plate might have given way, but the evidence did not, in the opinion of the Court, support these theories.

The Court considers that in all probability the cause of the disaster was the continuous excessive straining of the vessel due to the heavy weather experienced from the time she left Fremantle until the time of the casualty. This straining would be aggravated by the heavy nature of the cargo stowed in the 'tween decks. The dead weight of the cargo and the working of the ship may possibly have led to the 'tween decks sagging and causing leakage at the shell seams in way of the 'tween deck beam attachment to the side framing.

It is possible that the leakage may have begun more or less gradually, and gone on unobserved for some time, and then some unusually heavy sea, such as was referred to by one witness, might have seriously developed the leakage and led to the rapid filling of No. 1 hold. If this is correct, then the early slight leakage would not have been discovered by the daily soundings, so no steps could be taken by the crew to remedy the defect or prevent it getting worse.

The Court is of opinion that with a view to preventing similar occurrences means should be taken of so preparing the holds for cargo that slight leakage into the hold should readily find its way to the bilges and thus be disclosed when soundings are taken.

The long and arduous voyage to Mauritius and the high qualities of courage and seamanship displayed by the officers and men have been commented upon elsewhere. It seems, however, that some reference might be made to the advantage to the shipwrecked crews of the additional stores put on board the boats before leaving the "Trevessa." Among these stores were some tins of condensed milk, and it appears to the Court that the relatively small loss of life is partly attributable to the use of this article of diet, and that it, or some other suitable form of concentrated food might perhaps with advantage be stored in lifeboats as supplementary to the biscuits now required by the Board of Trade to be carried.

At the conclusion of the evidence of witnesses called by the Board of Trade, Mr. J. B. Aspinall submitted the following questions for the consideration of the Court:

1. On arrival at Port Pirie in or about May last was the s.s. "Trevessa" in good and seaworthy condition as regards hull and equipments?

2. Were the holds of the vessel properly prepared at Port Pirie for the reception of the cargo before it was shipped?

What defects, if any, were found in the hull of the ship at Port Pirie?

Were they properly repaired and were such repairs inspected and passed by a responsible person before loading commenced?

3. What was the amount and description of cargo shipped on board the s.s. " Trevessa " at Port Pirie in May last?

Was the cargo properly stowed and secured from shifting?

Were the weights of the cargo stowed in the various holds or compartments so distributed as to make the vessel easy in a seaway?

4. Did the vessel take the ground whilst loading at the wharf at Port Pirie?

If so, was she strained or damaged thereby?

5. What amount of bunker coal did the vessel carry?

Where was it stowed?

6. On leaving Port Pirie on the 15th May last—

(*a*) What was the vessel's draught of water and freeboard?

(*b*) Had the vessel the freeboard required for a summer voyage?

(*c*) As loaded were the arrangements on board such as to enable the pumps to deal effectively with the water, if any was made in the holds or compartments in which the cargo was stowed?

7. What was the cause of the vessel making water in No. 1 hold on the night of the 3rd of June last?

Was every effort made to keep the water under and to save the vessel?

8. What was the cause of the loss of the s.s. " Trevessa "?

9. Was the vessel supplied with the boats and life-saving appliances required by the Merchant Shipping Act and Rules?

Were the boats in which the crew left the ship equipped with all the requisites required by the Rules?

Were the water breakers for each boat full of water?

Was the mast of each boat properly fitted and strong enough to carry a sail?

10. How many lives were lost subsequent to the abandonment of the vessel?

What was the cause of such loss of life?

Mr. Pilcher and Mr. Cotter called witnesses. Mr. Ward Higgs, Mr. McKinlay, Mr. Cathery and Mr. Pilcher addressed the Court. Mr. Aspinall replied on behalf of the Board of Trade. The Court gave judgment and returned the following answers to questions:

1. On arrival at Port Pirie on or about May last, the s.s. " Trevessa " was in good and seaworthy condition as regards hull and equipment.

2. Before the cargo was shipped, the holds of the vessel were properly prepared at Port Pirie for the reception of cargo intended to be stowed in the manner this cargo was stowed, which was in accordance with the practice at Port Pirie for cargoes of this nature.

On arrival at Port Pirie while preparing No. 1 hold for cargo, a number of rivets on the port side, about ten or twelve feet up from the turn of the bilge, and a few feet aft from the forepeak bulkhead were found to be weeping slightly. This defect was very slight, and was satisfactorily dealt with by fitting a cement box over the space affected. The work was subsequently passed as satisfactory by Captain A. M. Mars, in his capacity as a Lloyd's surveyor.

3. The " Trevessa " loaded a full cargo of zinc concentrates amounting in all to 6,564 tons at Port Pirie in May last.

The cargo was properly secured from shifting, but it was not properly stowed, inasmuch as it was stowed, as described in the answer to Question 6, in a manner which created a serious element of danger to the ship. This manner of loading, however, has been in general use for many years, and in the absence of any evidence of negligence, the Court is unable to say that blame attaches to any person. The Court is satisfied from the evidence that until the 3rd June, 1923, the ship was easy in a seaway, and that she behaved well in all weathers, and the Court is unable to say that any different distribution of the cargo would have caused the ship to be easier.

4. The vessel did take the ground whilst loading at the wharf at Port Pirie.

She was not strained or damaged thereby.

5. The vessel called at Fremantle for bunkers and took on board there from 360 to 400 tons. She left that port with about 980 tons total bunkers.

This was stowed partly in a cross bunker at the after end of No. 2 hold, and partly in the permanent bunkers.

6. (*a*) On leaving Port Pirie on the 15th May last, the " Trevessa's " mean draught of water was 25 feet 1 inch, and her freeboard was 6 feet 2½ inches.

(*b*) The vessel had the freeboard required for a summer voyage.

(*c*) The cargo was composed of a substance of high specific gravity which was almost impermeable by water. It was loaded in such a manner as to convert each hold into a compartment which was for all practicable purposes water-tight. Owing to this arrangement water entering a hold could not escape to the bilges and its presence could not be ascertained by sounding. The pumps were therefore unable to deal with the water, if any were made in the holds or compartments in which the cargo was stowed.

If water entering a hold through a leak could have reached the sounding pipes, the officers would have probably discovered such water soon after it began to enter.

In that case, opportunity might have been given to enter the hold and deal with the leak before it had become so serious that in no event could the pumps have kept pace with the inflow or kept the water down.

7. There is no positive evidence as to what was the cause of the vessel making water in No. 1 hold on the night of the 3rd June last, but the Court is of opinion that owing to the nature of the cargo and the severe weather she experienced the ship was subjected to continuous excessive straining which caused a seam or seams to open in the shell plating on one or on both sides. Every effort was made to keep the water under and to save the vessel.

8. The cause of the loss of the s.s. " Trevessa " was loss of buoyancy due to the inflow of water into No. 1 hold causing the ship to sink by the head.

9. The vessel was supplied with the boats and life-saving appliances required by the Merchant Shipping Act and Rules.

The boats in which the crew left the ship were equipped with all the requisites required by the Rules.

The water breakers in each boat were not quite full, probably owing to evaporation, but as breakers were taken from other boats which went down with

the ship, the total amount of water carried in each of the two boats which left the ship was greatly in excess of that required by the Rules.

The mast of each boat was properly fitted and strong enough to carry a sail. A slight accident happened to the step of the mast of the master's boat, but it was soon rectified and the mast proved efficient for the rest of the long voyage.

10. Eleven lives were lost subsequent to the abandonment of the vessel, two from the master's boat, and nine from the chief officer's boat.

The two who lost their lives in the master's boat died from exposure and exhaustion. One, David John Mordecai, second engineer, fell overboard from the chief officer's boat in bad weather about 16 days after the sinking of the ship and it was found impossible to save him. Seven men died in this boat from exposure and exhaustion and one, William S. Allchin, the ship's cook, died from the same cause soon after the boat arrived at Mauritius. In a few cases death was probably accelerated by the drinking of salt water.

H. W. DISNEY,
Wreck Commissioner.

We concur:

DAVID DAVIES,
JOHN MCLAREN,
A. SCOTT YOUNGER,
} *Assessors.*

7 December, 1923.

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