



THE MERCHANT SHIPPING ACT, 1894

REPORT OF COURT

(No. 7974)

s.s. "Fred Borchard" o.N. 183386

In the matter of a Formal Investigation held at the Law Courts, London, on the 7th, 8th, 9th, 10th and 11th days of January 1952, before Mr. J. V. Naisby, K.C., assisted by Captain C. V. Groves, Mr. E. F. Spanner, and Mr. J. Wallace, C.B.E., into the circumstances attending the loss of the steamship "Fred Borchard" with the loss of two members of her crew.

The Court having carefully inquired into the circumstances attending the above-mentioned shipping casualty, finds for the reasons stated in Annex hereto, that the said loss was due to an incursion of sea-water into the vessel which caused her to capsize.

Dated this 18th day of January 1952.

J. V. NAISBY, *Judge.*

We concur in the above Report,

CHARLES V. GROVES }
E. F. SPANNER } *Assessors*
J. WALLACE }

QUESTIONS AND ANSWERS

The Court's answers to the questions submitted by the Ministry of Transport are as follows :—

- Q. 1. By whom was the "Fred Borchard" owned at the time of her loss ?
- A. Fairplay Towage and Shipping Company Limited.
- Q. 2. By whom was the "Fred Borchard" managed at the time of her loss ?
- A. The designated manager was Mrs. Lucy Borchard. The actual management was in the hands of Mr. E. C. E. Aslett the head of the shipowning department of the owners under the active supervision of Mrs. Lucy Borchard and Mr. K. W. E. Borchard, both of whom were directors of the owning company.
- Q. 3. Where and when was the "Fred Borchard" built ?
- A. Lubeck, Germany, in 1935.
- Q. 4. Was Captain Thomas Eggleston the Master of the "Fred Borchard" on her last voyage ?
- A. Yes.
- Q. 5. What was the total number of the crew of the "Fred Borchard" on her last voyage ?
- A. 29 all told, including the master.

- Q. 6. What cargo was carried by the "Fred Borchard" on her last voyage ?
- A. About 714 standards of sawn timber.
- Q. 7. How was the cargo carried ?
- A. Probably about 130 standards on deck and the remainder below deck.
- Q. 8. Was the cargo properly stowed ?
- A. Yes.
- Q. 9. Was the "Fred Borchard" seaworthy when she last sailed from an English port, and was that port Preston, in Lancashire ?
- A. Yes.
- Q. 10. Was the "Fred Borchard" seaworthy when she last sailed from any port, and was that port Tromso ?
- A. Yes.
- Q. 11. When did the "Fred Borchard" last sail from Tromso and what was the weather, wind and sea at that time ?
- A. About 10 a.m. on the 6th October, 1950. The wind and weather were moderate with a calm sea but worse weather was forecast.
- Q. 12. Was a course set from 5 miles off Killengen Pilot Station and, if so, what was it ?
- A. Yes. 227 degrees true.
- Q. 13. At about 8.30 a.m. on the 8th day of October 1950, was the "Fred Borchard" maintaining about 6 knots, with wind and sea increasing in force and violence ?
- A. The wind and sea were increasing but the speed was only about 4½ knots.
- Q. 14. At about this time was a slight port list observed ?
- A. Yes.
- Q. 15. Did the master discuss the list and its probable cause with the chief engineer ?
- A. Yes.
- Q. 16. Between 9.30 a.m. and 10 a.m. had the port list increased considerably causing the master to go to the engine room, where a further discussion with the chief engineer on the ship's condition took place ?
- A. Yes.

Q. 17. Did the chief engineer report that the stokehold bilges were choked with small coal and that the stokehold was becoming awash and that the water had been shipped through the engine room skylights and that he was not succeeding in pumping out the water, because the bilge line was choked ?

A. Yes.

Q. 18. Was some part of the deck cargo released? What part of the deck cargo was it, and at what time was it released ?

A. See Annex to the Report.

Q. 19. Was a wireless call sent out for assistance and at what time was this done ?

A. Yes. Shortly after 11 a.m. on the 8th October.

Q. 20. Was the call for assistance answered by the trawler "Boston Fury" ?

A. Yes.

Q. 21. At what time did the "Boston Fury" reach the "Fred Borchard" ?

A. About 1.34 p.m. on the 8th October.

Q. 22. What was the condition of the "Fred Borchard" when the "Boston Fury" reached her ?

A. See Annex to the Report.

Q. 23. At what time was the "Fred Borchard" abandoned ?

A. About 2.30 p.m. on the 8th October.

Q. 24. Did the "Boston Fury" pick up 27 members of the "Fred Borchard's" crew of 29 all told ?

A. Yes.

Q. 25. What were the conditions of weather, wind and sea from the time the "Boston Fury" arrived to the time the rescue of the 27 persons was completed ?

A. The weather was very bad, the wind S.W. Force 9, with heavy seas.

Q. 26. Did the "Fred Borchard" capsize and float for a considerable time upside down, until she stranded on rocks near Mosken ?

A. Yes.

Q. 27. What was the cause or probable cause of the capsizing of the s.s. "Fred Borchard" ?

A. The incursion of sea water but the Court is unable to find with any certainty the sources of such incursion.

ANNEX TO THE REPORT

This Inquiry was held at the Law Courts, London, on the 7th, 8th, 9th, 10th and 11th January 1952.

Mr. S. E. Pitts (for the Treasury Solicitor, Ministry of Transport Branch) appeared for the Minister of Transport.

Mr. J. B. Hewson (instructed by Messrs. Constant and Constant) appeared for the owners and designated manager.

Mr. P. F. Broadhead (of Messrs. Ingledew, Brown, Bennison and Garrett) appeared for the Navigators' and Engineer Officers' Union, representing the dependants of the third officer.

Mr. Neil Maclean (of Messrs. Neil Maclean and Company) appeared for the National Union of Seamen, representing the dependants of one able seaman.

Captain Thomas Eggleston (late master of the "Fred Borchard") appeared in person.

The "Fred Borchard" was a steel single screw shelter deck cargo steamer with a forward well and machinery amidships. She had a double bottom under the holds and machinery space. She was built in 1935 by Lubeck Maschinenbau Gesellschaft at Lubeck, in Germany, and was originally under the German flag. During the war she had been used for mine-sweeping and after the war was acquired by the Yorkshire Dale Shipping Company Limited, and converted to a cargo vessel by the Humber Graving Dock and Engineering Company at Immingham. Extensive repairs were carried out at the same time and the repairs and conversion lasted from June 1948 to March 1949. She was registered as a British ship in February 1949, under the name of the "Wensleydale", and in March 1949, was purchased by the Fairplay Towage and Shipping Company Limited: in June 1949, her name was changed to "Fred Borchard". The designated manager of the vessel was Mrs. Lucy Borchard, who was a director of the owning company.

The registered dimensions of the "Fred Borchard" were: 271.9 feet in length by 39.4 feet in beam and 14.6 feet in depth. Her gross tonnage was 1,585.88 and her under deck tonnage 1,297.98.

Four steel transverse watertight bulkheads separated the following compartments:

Fore peak tanks and chain locker
Forward cargo hold
Machinery space and side bunkers
After cargo hold and shaft tunnel
After peak tank.

There was a watertight door in the bulkhead between the machinery space and the shaft tunnel, and two watertight doors in the bulkhead between the stokehold and the forward cargo hold.

The vessel had the following side to side erections: a fore-castle about 30 feet in length and a combined bridge and poop about 214 feet 10 inches long. The bridge space abreast of the machinery casings was used for bunkers and the remainder of the bridge and poop was cargo space. The bunkers were separated from the cargo space by steel bulkheads in which there were openings closed by boards. There were two tonnage openings in the bulkhead at the forward end of the bridge with sills 24 inches high and closed by portable steel plates secured by hook bolts. Above the bridge deck amidships there was a boat deck with a navigating bridge above it. The engine casing extended up to the boat deck and on the boat deck was the engine room skylight, which was closed by steel flaps containing round lights. The boiler casing extended up to the level of the navigating bridge and on the bridge deck there was a door into the boiler casing on both port and starboard sides. There was also a door at the after end opening on to the boat deck. On top of the casing were three fiddley openings closed by hinged steel plates.

The "Fred Borchard" had steel bulwarks 4 feet 3 inches high at the sides of the main deck in the well and 3 feet 3 inches high at the sides of the bridge deck. There were two freeing ports, each 2 feet 8 inches by 1 foot 8 inches on each side of the well, and six freeing ports each 2 feet 1½ inches by 1 foot 8 inches, on each side of the bridge deck. They were fitted with hinged shutters.

The main cargo hatches on the "Fred Borchard" were:

To forward hold and forward bridge space.

No. 1 hatch on Main deck (in well)—

20 feet 10 inches × 15 feet 9 inches

No. 2 hatch on Bridge Deck—	31 feet 3 inches × 17 feet 1 inch
No. 2 hatch on Main deck—	33 feet 4 inches × 20 feet 8 inches
To after hold and after bridge space.	
No. 3 hatch on Bridge deck—	24 feet 11 inches × 17 feet 1 inch
No. 3 hatch on Main deck—	27 feet 1 inch × 20 feet 8 inches
No. 4 hatch on Bridge deck—	24 feet 11 inches × 17 feet 1 inch
No. 4 hatch on Main deck—	27 feet 1 inch × 20 feet 8 inches

The hatch coamings were steel 3 feet 5½ inches high in the well, 2 feet 11½ inches high at the bridge deck and 12 inches high in the bridge space.

The hatches were battened down by the usual arrangement of wood covers, tarpaulins, cleats, battens and wedges. Two tarpaulins were supplied for each weather deck hatchway and one for each of the hatchways in the bridge space. Lashings were provided.

Bunker hatchways and Bunker scuttles.

The 'tween deck bunkers were served by one hatch each side 6 feet by 2 feet 9 inches, situated on the boat deck and trunked between the bridge deck and boat deck. The coaming was steel, 2 feet 8 inches high (above the wood deck). The 'tween deck bunkers were also served by three cast-iron flush bunker scuttles on each side of the bridge deck ; they were of the bayonet joint type.

The bunkers at the sides of the machinery space were served by a hatchway 4 feet 2 inches by 13 feet 0 inches on the boat deck. The coamings were steel, 2 feet 4 inches high above the boat deck. The hatchway was trunked through the house on the bridge deck and through the 'tween decks and a saddle back over the machinery space directed the coal to the port and starboard bunkers. The side bunkers were also served from the 'tween deck bunkers by three hatches, each side 6 feet to 8 feet long by 2 feet 1½ inches wide with 9 inches coamings. The hatches were battened down by the usual arrangement of wood covers, tarpaulins, cleats, battens and wedges. Two tarpaulins were provided for each weather deck hatchway and one for each hatchway in the 'tween decks.

Sundry hatchways

On the bridge deck were three small hatchways leading to the 'tween decks. They had steel coamings 2 feet 8 inches high and were closed by hinged watertight steel lids.

In the bridge 'tween decks there were eight trimming hatchways and two other access hatches leading to the holds. These hatchways had 9 inches coamings and could be battened down with wood covers, tarpaulins, battens and wedges.

In the holds and bridge space there were steel centre line bulkheads clear of the hatchways.

The total bunker capacity was 331 tons based on a stowage factor of 45 cubic feet to the ton, and was divided as follows :

Lower bunker port	61 tons
Lower bunker starboard	85 "
'Tween deck bunker port	78 "
'Tween deck bunker starboard	83 "
Middle line coal trunk serving the lower bunkers	17 "
Side trunks over the 'tween decks	7 "

All the double bottom tanks were divided into port and starboard tanks by watertight centre girder.

The capacities of the tanks were :

Fore peak	23 tons fresh water
Fore peak upper	4 " " "
No. 1 D.B. (Total)	29 " salt "
No. 2 D.B.	82 " " "
No. 3 D.B.	93 " " "
No. 4 D.B.	20 " fresh "
No. 5 D.B.	40 " dry tank "
No. 6 D.B.	40 " fresh water "
No. 7 D.B.	91 " salt "
No. 8 D.B.	51 " " "
After Peak	71 " fresh "

Ventilators

"Fred Borchard" had the following ventilators :—

To the boiler room :

Two—30 inches diameter on the top of the boiler casing

To the engine room :

Three—15 inches diameter on the top of the engine casing

To the forward hold :

One—24 inches diameter on the forecastle.

To the forward hold and bridge 'tween deck space :

Two—24 inches diameter on the bridge deck abreast the foremast

Two—16 inches diameter on the bridge deck at the fore end of deck house

Two—15 inches × 15 inches in the deck house

To the after hold and bridge 'tween deck space :

Two—16 inches diameter at the after end of the deck house

Two—22 inches diameter on the bridge deck abreast of the main mast

One—16 inches diameter on the poop deck.

On the forecastle deck were cowl ventilators and mushroom ventilators to the accommodation in the forecastle.

On the bridge deck at the sides of the deck house there were 3½ inches diameter gooseneck ventilators to the 'tween deck and lower bunkers.

On the poop deck were cowl ventilators and mushroom ventilators to the after accommodation.

Wood plugs and canvas covers were supplied for ventilator coamings other than those fitted with screw down tops or with patent tops.

Air pipes

There were 2 inches diameter of 3 inches diameter air pipes to the peaks and double bottom tanks ; they were situated close to the bulwarks.

On forecastle :

- 1 to the fore peak
- 2 to the No. 1 double bottom tank

On the main deck in the well :

- 2 to No. 2 double bottom tank

On the bridge and poop deck :

- 2 to No. 3 double bottom tank
- 2 " " 4 " " "
- 2 " " 5 " " "
- 2 " " 6 " " "
- 2 " " 7 " " "
- 2 " " 8 " " "
- 3 to after peak tank.

Scuppers

Deck scuppers from weather decks were cut through the stringer angles.

Scuppers and sanitary discharges from the accommodation in the fore-castle and poop were led overboard through the ship's side below the main deck; those from accommodation on the bridge deck were led overboard through the ship's side in the 'tween decks; all were fitted with clack valves.

At the after end of the forward bridge 'tween deck cargo space were scuppers fitted with a pipe which led down into the stokehold towards the centre line of the ship. At the forward end of the after 'tween deck cargo space were similar scuppers with pipes leading into the engine room bilges. All these pipes were fitted with weighted cocks.

Ash shoots

At each side of the boiler casing on the bridge deck was an ash space in which there was an ash shoot led overboard through the ship's side in the tween deck bunker space. From each ash space was a door on to the bridge deck.

Propelling machinery: Speed: Coal consumption

The propelling machinery of "Fred Borchard" comprised:—

One reciprocating double compound vertical steam engine and two single ended Scotch boilers fitted with superheaters.

The engine was made in 1935 by Ottensener Masch, Geo., Altona, Germany, and the boilers were made in 1935 by Ottensen Eisenwerk, A.G., Altona, Germany.

The engine had four cylinders—2 at 31½ inches and 2 at 14⅝ inches diameter: the stroke was 31½ inches.

The I.H.P. was about 1,100 and the designed speed about 11 knots.

The coal consumption was about 20 tons per day.

Bilge Pumping Arrangements

Throughout the holds and machinery space there were the usual bilges formed by sloping margin plates. At the after end of the engine room perforations in the margin plates allowed the bilge water to drain into a well, two frame spaces long, extending the full width and depth of the double bottom. There were two main engine driven ram pumps, the after one having a suction to the engine room well and the forward connected to the bilge main. Suctions on the bilge main included leads to the port and starboard bilges of the machinery space.

A general service pump was connected to the bilge main and could draw directly from engine room well.

A ballast pump could also be connected to the bilge main and could draw from the engine room well.

The usual bilge injection valve, connected to the main circulating pump which was driven independently of the main engine, had a suction pipe led to the port bilge of the engine room.

Life Saving Appliances

The vessel carried one wood lifeboat under mechanical davits on each side of the boat deck, each of which was capable of carrying more than the total number of persons on board the "Fred Borchard" and her life saving appliances were in order. The "Fred Borchard" was equipped with a radio transmitter/receiver, a short wave transmitter, a direction finder, and an echo sounder.

Classification

The vessel had been built under the survey of Germanischer Lloyd, and her conversion in 1949 was carried out under the supervision of the British Corporation Register of Shipping and Aircraft, and she was thereafter classed in that Society's highest class which she maintained until the time of her loss.

Load Line Certificate: Freeboards

The "Fred Borchard" was issued with a load line certificate by British Corporation Register of Shipping and Aircraft on 8th February, 1949—to remain in force until 7th February, 1954.

At the summer load line, the freeboard was 6 inches below the top of the steel main deck at side. The corresponding midship draft was 16 feet 2¼ inches.

The ship was also assigned timber deck cargo load lines. At the summer timber load line, the freeboard was 2½ inches below the top of the steel main deck at side. The corresponding midship draft was 16 feet 6¼ inches.

The fresh water allowance for all freeboards was 4 inches.

Between March 1949 and October 1950, the vessel was surveyed afloat on five occasions and once in dry dock, the survey in dry dock taking place in November 1949.

Shortly after her conversion the "Fred Borchard" received slight damage to her stem through contact with another vessel, but this damage was of so slight a nature that its repair was deferred, and it is clear that it did not affect the seaworthiness of the vessel and has no bearing on the casualty.

All the evidence tended to show that the vessel had been well maintained, and the only criticism that was levied against her maintenance was in respect of her boiler tubes, some of which had been stoppered. The tubes had been surveyed by the Classification Society's surveyors and the vessel permitted to continue to retain her class, subject to examination and repair at the next boiler survey. New tubes had been ordered and had in fact been delivered and arrangements had been made to fit them in the boilers at the end of the voyage on which the vessel was lost.

The "Fred Borchard" proceeded to the port of Mezen, in Russia, and there loaded under deck about 347 standards of sawn timber. Thereafter, she proceeded to Kem, where a further quantity of about 367 standards was loaded, partly under deck and partly on deck. The evidence as to the quantity stowed on deck was somewhat indeterminate but the probabilities are that it was about 130 standards.

After completing loading at Kem the vessel proceeded to Tromso, where she took in bunkers and fresh water, leaving Tromso on the 6th October 1950, bound for the Thames. The evidence as to the drafts of the vessel, both at Kem and Tromso, and as to the quantities of water, bunkers and stores on board was not sufficiently precise to enable a scientific calculation to be made of the vessel's stability.

After the vessel was converted inclining experiments were carried out, and a copy of the results of those experiments, coupled with instructions to the master as to loading the vessel, was supplied by the Humber Graving Dock Company Limited and was in the possession of the master at the time of the loss. Two voyages earlier, the vessel had carried a sawn timber cargo from Russia of about 726 standards. She was then under the command of a different master, but a plan showing the stowage of the timber on that occasion and a book containing particulars of the cargo and calculations as to metacentric height had been handed over to, and were, in the possession of the master and chief officer of the vessel on her final voyage. The instructions to the master as to his loading recommended a metacentric height of .75 of a foot, that no more than 17 per cent. of the total cargo should be carried above the weather deck and that the height should not exceed 12 feet. Substantially the cargo was stowed in accordance with those instructions, and calculations by the surveyor to the Ministry of

Transport, on estimated figures for water, bunkers and stores, gave a metacentric height varying from nine to six inches, the variation depending upon assumed variations in the weight of the deck cargo due to the absorption of water. While the Court is unable to find what the precise metacentric height was, it is satisfied that when the vessel left Tromsø she was substantially upright and that up to the time the trouble began to develop her metacentric height was probably never less than six inches. The draft on leaving Tromsø was almost certainly in the neighbourhood of 16 feet 6 inches mean.

The voyage started in moderate weather and proceeded without incident in worsening weather until the morning of the 8th October. During the four to eight watch on that morning the course of the vessel was altered a little in order to get the wind dead ahead and her revolutions were reduced from 90 to 75. Owing partly to weather conditions, partly to the quality of the coal and perhaps partly to the state of her boiler tubes, the vessel was only making about 4½ knots. About 8 a.m. the vessel was noticed to have a slight port list. Soundings taken between 7 and 8 a.m. had revealed nothing abnormal.

The evidence as to the sequence of events from 8 a.m. onwards is contradictory and the differences in times for the same events given by different witnesses are wide, but the probabilities are that it was not till some time after, and maybe substantially after, 8.30 a.m., that any trouble began. Perhaps due to the vessel falling a little off her course, she seems to have shipped a heavy sea which reached as high as the boat deck, and a quantity of water went down the port bunker hatch, which was open, stove in the port fiddley door, and a small amount went down the engine room skylight. The sea also broke the port lifeboat adrift and damaged it. The immediate effect of this sea was to wet the coal in the port bunker and to cause water to accumulate in the port stokehold bilge and increase the list of the vessel to port to a substantial degree. It seems probable also that a certain amount of water would remain amongst the deck cargo, particularly on the port side. The port bunker hatch was battened down and the fiddley door reclosed, although the bottom of the door was distorted leaving a small opening between the door and the sill. The port lifeboat was also resecured.

By this time the wind had reached gale force with a short steep sea, and the vessel continued to ship water, particularly on the port side, at intervals, and shortly afterwards she was observed to have a port list of 22 degrees. The list continued to increase owing to the continued incursion of sea water, but the Court is unable to determine through what aperture or apertures this water entered. The possible sources of entry were :—

1. The ash shoots. There was evidence of a small quantity of water having entered the stokehold through the starboard ash shoot on one occasion. The port shoot was the more vulnerable, but the evidence was that this shoot was not used, that the lid was down with furnace bars stowed on top of it, and there was no evidence of any water having entered the vessel through the port ash shoot.

2. Bunker scuttles on the bridge deck. These scuttles, when secured, should have been a tight fit, but there was evidence that at least two of them on the port side had been found to be loose when walked on, which may have been due to the scuttle not having been turned into the locked position, wear and tear, or the presence of grit. It does not seem probable that any of these scuttles were off or were displaced by the sea, but if not locked when the bridge deck became swash probably would permit water to enter, but not in large quantities.

3. Gooseneck ventilators on the bridge deck were fitted with plugs, and it was stated, canvas covers, but the evidence as to the plugs being in position was not wholly satisfactory. Even if unplugged, they were not a source of danger until the vessel assumed a sufficient list to submerge them. If then unplugged each one could have admitted water at the rate of about 40 tons per hour or a little more.

4. The bunker hatches on the boat deck. The sea, to which a reference has already been made, resulted in water going through the bunker hatch on the port side, but this was thereafter battened down although later the tarpaulin was probably displaced and torn.

5. The fiddley doors. There is no evidence to suggest that any quantity of water ever entered through the starboard fiddley door, but, as stated above, the bottom of the port fiddley door was distorted leaving an opening between it and the sill, and thereafter when the water rose to the height of the sill would be a source of entry of water.

6. Fiddley openings on the casing top. Again there was evidence of a small quantity of water gaining access in this way, but the amount so entering the vessel must have been small.

7. The engine room skylight. There was only evidence of one lot of water entering through the engine room skylight, as stated above, and this was not a substantial quantity.

8. The cross bunker hatch on the boat deck. There was no evidence of water entering the vessel through this source.

9. The 'tween deck spaces forward and aft of the machinery space. Again there was no evidence of any water having entered in this way, and the Court sees no reason to think that it did.

10. Through some fracture of the shell plating. Here again there was no direct evidence of any such damage having taken place, but owing to the inconclusive nature of the evidence, the Court is unable to rule out the possibility of such a fracture having taken place.

In addition to water entering the vessel and increasing the list there must have been a certain weight of water on the port side of the deck also tending to increase the list, and the master decided to try and turn the vessel round, but owing to the wetness of the coal and, no doubt, the increasing difficulty in firing, steam pressure had dropped and he was unable to get the vessel round more than about half way. The decision to turn the ship was partly to run before the weather and partly in the hope that in the course of the turn she would take a starboard list, because, as hereafter described, the engineers were having trouble in clearing the water from the machinery space due to chokage of the bilge lines and pumps, and moreover, the pumps were on the port side of the vessel. In this position she took another heavy sea over the port side and it is probable that at this time some of the forward deck cargo shifted slightly to port and there was evidence that the list thereafter was about 48 degrees. As the water rose in the stokehold it reached the port fires and very quickly the steam dropped back, the stokehold had to be abandoned and the engines stopped.

The first water noticed in the vessel was noticed by the fireman in the stokehold when small coal, mixed with water, flowed out of the port side bunker. The fireman who was stoking the port boiler looked into the bunker, saw that the hatch at the top was off, went up on to the boat deck and replaced the hatch covers and battened it down as described above. Thereafter, it was noticed that water accumulated in the stokehold bilge and this was reported to the engineer on watch in the engine room.

The various valves in the engine room had originally been labelled in German. Most of the labels had been replaced by labels in English and a full set of English labels had been provided although they had not all been affixed. The donkeyman on duty in the engine room opened a valve which in fact led to the forward hold bilge but which he thought also led to the port stokehold bilge. The pump almost immediately began to race, which he thought was due to the fact that the strum was choked, whereas the probability is it was due to the fact that the forward hold bilge was dry. Unfortunately, the only engineer who was available to give evidence at the Inquiry was the second engineer, who at this stage of the proceedings was not in the engine room and who, when he was summoned to the engine room by the chief engineer, was detailed to supervise the working of the engines and the attempt to maintain and increase the steam pressure. Depositions taken from the chief and fourth engineers were put in evidence, but the evidence of the engineers was in many respects irreconcilable and the Court was unable to ascertain with any degree of accuracy what happened in the engine room by way of an attempt to pump out the water which was entering the vessel. It is, however, clear that both ballast and general service pumps were put on to the bilges and that trouble was experienced with their operation owing to the strums being choked by ashes and small coal, and that the trouble caused thereby extended to the pumps themselves. It is also very probable that at some time, probably at a fairly late stage of the proceedings, an attempt was made to clear the water by closing the main injection valve and opening the bilge injection.

At the after end of the engine room, and extending across its whole width for two frame spaces, was a well from which the suction for the engine room bilges were led. This well was covered over and had two manhole doors in the top. At each side was a perforated margin plate 18 inches by 12 inches with $\frac{3}{8}$ inch holes in it and its purpose was to act as a strum plate. The second engineer stated that the well had been sounded and was found to be dry and that he accordingly suggested taking off the manhole doors and allowing the water in the bottom of the engine room to enter the well and enable the bilge suction to clear it. Some difficulty seems to have been experienced in taking off the manhole doors, and success in this regard was not reached until about the time the pumps ceased to work owing to lack of steam. Whilst the Court is unable to decide exactly what was done in the engine room and in what sequence during this period, it is felt that a more resolute and determined effort to rid the vessel of water in the initial stages might have met with more success.

After the steam fell an attempt was made to bale out the engine room by hand, but it never had any chance of success and after a period was discontinued. Meanwhile, a wireless distress signal had been sent out which met with an early response from the trawler "Boston Fury", which was some 25 or 30 miles away and which immediately proceeded to the assistance of the "Fred Borchard".

At some time which was not clearly determined but which was probably after the attempt to turn stern to sea had failed, an attempt was made to jettison some of the deck cargo on the port side forward. The lashings were cast off, but the uprights which had been placed in position on the port side held and very

little deck cargo went overboard. The evidence was that it was washed overboard almost piece by piece. As the list increased, however, the deck cargo forward went overboard more rapidly and by the time of the arrival of the "Boston Fury" the vessel had probably lost most of the deck cargo on the port side and some on the starboard side. The trawler fired a line across the "Fred Borchard", where it was secured, but almost immediately the vessel, no doubt owing to the loss of deck cargo on the port side, assumed a starboard list, and the line snapped.

Very shortly afterwards the starboard lifeboat of the "Fred Borchard", which her crew had been unable to launch as long as she had a heavy port list, floated clear, and one deckhand jumped into it whilst it was doing so. The "Boston Fury" thereupon proceeded round to the starboard side of the vessel to pick up the man in the lifeboat, and about this time the "Fred Borchard" turned over to starboard and capsized. Just as the vessel was about to capsize the crew, all of whom were supplied with lifejackets, began jumping into the water. The last man to leave the ship seems to have been the master, who was in fact carried down with her for a time.

The weather at this time was described by the master of the "Boston Fury" as very bad with a southwesterly wind of force 9. This evidence is substantially corroborated by the weather reports.

By skilful manoeuvring amidst the floating timber the "Boston Fury" was able to pick up 27 of the 29 members of the crew of the "Fred Borchard", although in order to do so, some five members of the trawler's crew, with lines round them, had to go into the water.

The position in which the vessel capsized was approximately 67 degrees 16 minutes North and 11 degrees 11 minutes East.

In the opinion of the Court this is yet another case which demonstrates the imperative necessity of all possible sources of entry of sea water being properly closed and secured, and early and resolute steps being taken to deal with water in the bilges. It is not sufficiently realised that with small vessels a few tons of water in the bilges, creating originally a comparatively small list, can quickly develop into a source of danger and the situation become out of hand.

The Court also recommends that consideration might be given to it being made a requirement that a flexible suction hose should be carried in the engine room and that provision should be made for its attachment to one of the pumps. The provision of clear markings of all valves is also recommended.

During the Inquiry, tributes to the rescue work performed by the master and crew of the steam trawler "Boston Fury" were paid by all parties, and the Court would like to place on record its opinion that the rescue of 27 out of 29 of the members of the crew of the "Fred Borchard" was a highly commendable piece of work involving skilful seamanship and personal risk.

J. V. NAISBY, *Judge*.

CHARLES V. GROVES }
E. F. SPANNER } *Assessors*
J. WALLACE }

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