

Report on the Loss of the "Titanic" (s.s.)

THE MERCHANT SHIPPING ACTS, 1894 to 1906.

IN THE MATTER OF the Formal Investigation held at the Scottish Hall, Buckingham Gate, Westminster, on the 2nd, 3rd, 7th, 8th, 9th, 10th, 14th, 15th, 16th, 17th, 20th, 21st, 22nd, 23rd and 24th May, the 4th, 5th, 6th, 7th, 10th, 11th, 12th, 13th, 14th, 17th, 18th, 19th, 21st, 24th, 25th, 26th, 27th, 28th and 29th June, at the Caxton Hall, Caxton Street, Westminster, on the 1st and 3rd July, and at the Scottish Hall, Buckingham Gate, Westminster, on the 30th July, 1912, before the Right Honourable Lord Mersey, Wreck Commissioner, assisted by Rear Admiral the Honourable S. A. Gough-Calthorpe, C.V.O., R.N.; Captain A. W. Clarke; Commander F. C. A. Lyon, R.N.R.; Professor J. H. Biles, D.Sc., LL.D., and Mr. E. C. Chaston, R.N.R., as Assessors, into the circumstances attending the loss of the steamship "Titanic," of Liverpool, and the loss of 1,490 lives in the North Atlantic Ocean, in lat. 41° 46' N., long. 50° 14' W. on the 15th April last.

REPORT OF THE COURT.

The Court, having carefully enquired into the circumstances of the above mentioned shipping casualty, finds, for the reasons appearing in the Annex hereto, that the loss of the said ship was due to collision with an iceberg, brought about by the excessive speed at which the ship was being navigated.

Dated this 30th day of July, 1912.

MERSEY,

Wreck Commissioner.

We concur in the above Report.

ARTHUR GOUGH-CALTHORPE.

A. W. CLARKE.

F. C. A. LYON.

J. H. BILES.

EDWARD C. CHASTON.

Assessors.

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ANNEX TO THE REPORT.

INTRODUCTION.

On the 23rd April, 1912, the Lord Chancellor appointed a Wreck Commissioner under the Merchant Shipping Acts, and on the 26th April the Home Secretary nominated five assessors. On the 30th April the Board of Trade requested that a Formal Investigation of the circumstances attending the loss of the Steamship "Titanic" should be held, and the Court accordingly commenced to sit on 2nd May. Since that date there have been thirty-seven public sittings, at which ninety-seven witnesses have been examined, while a large number of documents, charts and plans have been produced. The twenty-six questions formulated by the Board of Trade, which are set out in detail below, appear to cover all the circumstances to be enquired into. Briefly summarised, they deal with the history of the ship, her design, construction, size, speed, general equipment, life-saving apparatus, wireless installation, her orders and course, her passengers, her crew, their training, organisation and discipline; they request an account of the casualty, its cause and effect, and of the means taken for saving those on board the ship; and they call for a report on the efficiency of the Rules and Regulations made by the Board of Trade under the Merchant Shipping Acts and on their administration, and, finally, for any recommendations to obviate similar disasters which may appear to the Court to be desirable. The twenty-six questions as subsequently amended are here attached:—

1. When the "Titanic" left Queenstown on or about 11th April last—
 - (a) What was the total number of persons employed in any capacity on board her, and what were their respective ratings?
 - (b) What was the total number of her passengers, distinguishing sexes and classes, and discriminating between adults and children?
2. Before leaving Queenstown on or about 11th April last did the "Titanic" comply with the requirements of the Merchant Shipping Acts, 1894-1906, and the rules and regulations made thereunder with regard to the safety and otherwise of "passenger steamers" and "emigrant ships"?
3. In the actual design and construction of the "Titanic" what special provisions were made for the safety of the vessel and the lives of those on board in the event of collisions and other casualties?
4. Was the "Titanic" sufficiently and efficiently officered and manned? Were the watches of the officers and crew usual and proper? Was the "Titanic" supplied with proper charts?
5. What was the number of the boats of any kind on board the "Titanic"? Were the arrangements for manning and launching the boats on board the "Titanic" in case of emergency proper and sufficient? Had a boat drill been held on board, and, if so, when? What was the carrying capacity of the respective boats?
6. What installations for receiving and transmitting messages by wireless telegraphy were on board the "Titanic"? How many operators were employed on working such installations? Were the installations in good and effective working order, and were the number of operators sufficient to enable messages to be received and transmitted continuously by day and night?
7. At or prior to the sailing of the "Titanic" what, if any, instructions as to navigation were given to the master or known by him to apply to her voyage? Were such instructions, if any, safe, proper and adequate, having regard to the time of year and dangers likely to be encountered during the voyage?

8. What was in fact the track taken by the "Titanic" in crossing the Atlantic Ocean? Did she keep to the track usually followed by liners on voyages from the United Kingdom to New York in the month of April? Are such tracks safe tracks at that time of the year? Had the master any, and, if so, what discretion as regards the track to be taken?

9. After leaving Queenstown on or about the 11th April last did information reach the "Titanic" by wireless messages or otherwise by signals of the existence of ice in certain latitudes? If so, what were such messages or signals and when were they received, and in what position or positions was the ice reported to be, and was the ice reported in or near the track actually being followed by the "Titanic"? Was her course altered in consequence of receiving such information, and, if so, in what way? What replies to such messages or signals did the "Titanic" send, and at what times?

10. If at the times referred to in the last preceding question or later the "Titanic" was warned of or had reason to suppose she would encounter ice, at what time might she have reasonably expected to encounter it? Was a good and proper look-out for ice kept on board? Were any, and, if so, what directions given to vary the speed—if so, were they carried out?

11. Were binoculars provided for and used by the look-out men? Is the use of them necessary or usual in such circumstances? Had the "Titanic" the means of throwing searchlights around her? If so, did she make use of them to discover ice? Should searchlights have been provided and used?

12. What other precautions were taken by the "Titanic" in anticipation of meeting ice? Were they such as are usually adopted by vessels being navigated in waters where ice may be expected to be encountered?

13. Was ice seen and reported by anybody on board the "Titanic" before the casualty occurred? If so, what measures were taken by the officer on watch to avoid it? Were they proper measures and were they promptly taken?

14. What was the speed of the "Titanic" shortly before and at the moment of the casualty? Was such speed excessive under the circumstances?

15. What was the nature of the casualty which happened to the "Titanic" at or about 11.45 p.m. on the 14th April last? In what latitude and longitude did the casualty occur?

16. What steps were taken immediately on the happening of the casualty? How long after the casualty was its seriousness realised by those in charge of the vessel? What steps were then taken? What endeavours were made to save the lives of those on board, and to prevent the vessel from sinking?

17. Was proper discipline maintained on board after the casualty occurred?

18. What messages for assistance were sent by the "Titanic" after the casualty and, at what times respectively? What messages were received by her in response, and at what times respectively? By what vessels were the messages that were sent by the "Titanic" received, and from what vessels did she receive answers? What vessels other than the "Titanic" sent or received messages at or shortly after the casualty in connection with such casualty? What were the vessels that sent or received such messages? Were any vessels prevented from going to the assistance of the "Titanic" or her boats owing to messages received from the "Titanic" or owing to any erroneous messages being sent or received? In regard to such erroneous messages, from what vessels were they sent, and by what vessels were they received and at what times respectively?

19. Was the apparatus for lowering the boats on the "Titanic" at the time of the casualty in good working order? Were the boats swung out, filled, lowered, or otherwise put into the water and got away under proper superintendence? Were the boats sent away in seaworthy condition and properly manned, equipped and provisioned? Did the boats, whether those under davits or otherwise, prove to be efficient and serviceable for the purpose of saving life?

20. What was the number of (a) passengers, (b) crew taken away in each boat on leaving the vessel? How was this number made up, having regard to:—

1. Sex.
2. Class.
3. Rating.

How many were children and how many adults? Did each boat carry its full load, and, if not, why not?

21. How many persons on board the "Titanic" at the time of the casualty were ultimately rescued and by what means? How many lost their lives prior to the arrival of the s.s. "Carpathia" in New York? What was the number of passengers distinguishing between men and women and adults and children of the first, second, and third classes respectively who were saved? What was the number of the crew, discriminating their ratings and sex, that were saved? What is the proportion which each of these numbers bears to the corresponding total number on board immediately before the casualty? What reason is there for the disproportion, if any?

22. What happened to the vessel from the happening of the casualty until she foundered?

23. Where and at what time did the "Titanic" founder?

24. What was the cause of the loss of the "Titanic," and of the loss of life which thereby ensued or occurred? What vessels had the opportunity of rendering assistance to the "Titanic," and, if any, how was it that assistance did not reach the "Titanic" before the s.s. "Carpathia" arrived? Was the construction of the vessel and its arrangements such as to make it difficult for any class of passenger or any portion of the crew to take full advantage of any of the existing provisions for safety?

25. When the "Titanic" left Queenstown on or about 11th April last was she properly constructed and adequately equipped as a passenger steamer and emigrant ship for the Atlantic service?

26. The Court is invited to report upon the Rules and Regulations made under the Merchant Shipping Acts, 1894-1906, and the administration of those Acts and of such Rules and Regulations, so far as the consideration thereof is material to this casualty, and to make any recommendations or suggestions that it may think fit, having regard to the circumstances of the casualty with a view to promoting the safety of vessels and persons at sea.

In framing this Report it has seemed best to divide it into sections in the following manner:—

FIRSTLY.—A description of the ship as she left Southampton on the 10th of April and of her equipment, crew and passengers.

SECONDLY.—An account of her journey across the Atlantic, of the messages she received and of the disaster.

THIRDLY.—A description of the damage to the ship and of its gradual and final effect with observations thereon.

FOURTHLY.—An account of the saving and rescue of those who survived.

FIFTHLY.—The circumstances in connection with the s.s. "Californian."

SIXTHLY.—An account of the Board of Trade's administration.

SEVENTHLY.—The finding of the Court on the questions submitted; and

EIGHTHLY.—The recommendations held to be desirable.

I.—DESCRIPTION OF THE SHIP.

The White Star Line.

The "Titanic" was one of a fleet of thirteen ships employed in the transport of passengers, mails, and cargo between Great Britain and the United States, the usual ports of call for the service in which she was engaged being Southampton, Cherbourg, Plymouth, Queenstown and New York.

Sanderson,
19589-97

The owners are the Oceanic Steam Navigation Company, Limited, usually known as the White Star Line, a British registered company, with a capital of £750,000, all paid up, the directors being Mr. J. Bruce Ismay (Chairman), the Right Hon. Lord Pirrie, and Mr. H. A. Sanderson.

Ismay,
18224-69

The Company are owners of twenty-nine steamers and tenders; they have a large interest in thirteen other steamers, and also own a training sailing ship for officers.

All the shares of the Company, with the exception of eight held by Messrs. E. C. Grenfell, Vivian H. Smith, W. S. M. Burns, James Gray, J. Bruce Ismay, H. A. Sanderson, A. Kerr and the Right Hon. Lord Pirrie, have, since the year 1902, been held by the International Navigation Company, Limited, of Liverpool, a British registered company, with a capital of £700,000, of which all is paid up, the directors being Mr. J. Bruce Ismay (Chairman), and Messrs. H. A. Sanderson, Charles F. Torrey and H. Concanon.

The debentures of the Company, £1,250,000, are held mainly, if not entirely, in the United Kingdom by the general public.

The International Navigation Company, Limited, of Liverpool, in addition to holding the above-mentioned shares of the Oceanic Steam Navigation Company, Limited, is also the owner of:—

1. Practically the whole of the issued share capital of the British and North Atlantic Steam Navigation Company, Limited, and the Mississippi and Dominion Steamship Company, Limited (the Dominion Line).

2. Practically the whole of the issued share capital of the Atlantic Transport Company, Limited (the Atlantic Transport Line).

3. Practically the whole of the issued ordinary share capital and about one-half of the preference share capital of Frederick Leyland and Company, Limited (the Leyland Line).

As against the above-mentioned shares and other property, the International Navigation Company, Limited, have issued share lien certificates for £25,000,000.

Both the shares and share lien certificates of the International Navigation Company, Limited, are now held by the International Mercantile Marine Company of New Jersey, or by trustees for the holders of its debenture bonds.

The Steamship "Titanic."

The "Titanic" was a three-screw vessel of 46,328 tons gross and 21,831 net register tons, built by Messrs. Harland and Wolff for the White Star Line service between Southampton and New York. She was registered as a British steamship at the port of Liverpool, her official number being 131,428. Her registered dimensions were:—

Wilding,
19789
et seq.

Length	...	...	...	...	...	...	...	852.5 ft.
Breadth	...	...	...	...	...	...	...	92.5 "
Depth from top of keel to top of beam at lowest point of sheer of C. Deck, the highest deck which extends continuously from bow to stern	...	...	...	...	...	...	...	64 ft. 9 in.
Depth of hold	...	...	...	...	...	...	...	59.58 ft.
Height from B to C deck	...	...	...	...	...	...	...	9.0 "
" " A to B "	...	...	...	...	...	...	...	9.0 "
" " Boat to A deck	...	...	...	...	...	...	...	9.5 "
" " Boat deck to waterline amidships at time of accident about	...	...	...	...	...	...	...	60.5 "
Displacement at 34 ft. 7 in. is	...	...	...	...	...	...	...	52,310 tons.

The propelling machinery consisted of two sets of four-cylinder reciprocating engines, each driving a wing propeller, and a turbine driving the centre propeller. The registered horse-power of the propelling machinery was 50,000. The power which would probably have been developed was at least 55,000.

Structural arrangements—The structural arrangements of the "Titanic" consisted primarily of:—

(1) An outer shell of steel plating, giving form to the ship up to the top decks.

(2) Steel Decks.—These were enumerated as follows:—

	Height to next deck above.	Distance from 34 ft. 7 in. water line amidships.	
		Above.	Below.
	ft. in.	ft. in.	ft. in.
Boat deck, length about 500 ft. ...	—	58 0	—
A " " " 500 " ...	9 6	48 6	—
B " " " 550 " with 125 ft. forecastle and 105 ft. poop	9 0	39 6	—
C deck, whole length of ship ...	9 0	30 6	—
D " " " " " ...	10 6	20 0	—
		(tapered down at ends)	
E " " " " " ...	9 0	11 0	—
F " " " " " ...	8 6	2 6	—
G deck, 190 ft. forward of boilers, 210 ft. aft of machinery ...	8 0	—	5 6
Orlop deck, 190 ft. forward of boilers, 210 ft. aft of machinery ...	8 0	—	13 6

C, D, E and F were continuous from end to end of the ship. The decks above these were continuous for the greater part of the ship, extending from amidships both forward and aft. The Boat deck and A deck each had two expansion joints, which broke the strength continuity. The decks below were continuous outside the boiler and engine-rooms and extended to the ends of the ship. Except in small patches none of these decks was watertight in the steel parts, except the weather deck and the orlop deck aft.

(3) Transverse Vertical Bulkheads.—There were 15 transverse watertight bulkheads, by which the ship was divided in the direction of her length into 16 separate compartments. These bulkheads are referred to as "A" to "P," commencing forward.

The watertightness of the bulkheads extended up to one or other of the decks D or E; the bulkhead A extended to C, but was only watertight to D deck. The position of the D, E and F decks, which were the only ones to which the watertight bulkheads extended was in relation to the waterline (34 ft. 7 in. draught) approximately as follows:—

Height above waterline (34 ft. 7 in.).					
lowest part amidships.			at bow.		at stern.
	ft.	in.	ft.	in.	ft. in.
D ...	20	0	33	0	25 0
E ...	11	0	24	0	16 0
F ...	2	6	15	6	7 6

These were the three of the four decks which, as already stated, were continuous all fore and aft. The other decks, G and Orlop, which extended only along a part of the ship, were spaced about 8 ft. apart. The G deck forward was about 7 ft. 6 in. above the waterline at the bow and about level with the waterline at bulkhead D, which was at the fore end of boilers. The G deck aft and the Orlop deck at both ends of the vessel were below the waterline. The Orlop deck abaft of the turbine engine-room and forward of the collision bulkhead was watertight. Elsewhere, except in very small patches, the decks were not watertight. All the decks had large openings or hatchways in them in each compartment, so that water could rise freely through them.

There was also a watertight inner bottom, or tank top, about 5 ft. above the top of the keel, which extended for the full breadth of the vessel from bulkhead A to 20 ft. before bulkhead P—i.e., for the whole length of the vessel except a small distance at each end. The transverse watertight divisions of this double bottom practically coincided with the watertight transverse bulkheads; there was an additional watertight division under the middle of the reciprocating engine-room com-

partment (between bulkheads K and L). There were three longitudinal watertight divisions in the double bottom, one at the centre of the ship, extending for about 670 ft., and one on each side, extending for 447 ft.

All the transverse bulkheads were carried up watertight to at least the height of the E deck. Bulkheads A and B, and all bulkheads from K (90 ft. abaft amidships) to P, both inclusive, further extended watertight up to the underside of D deck. A bulkhead further extended to C deck, but it was watertight only to D deck.

Bulkheads A and B forward, and P aft, had no openings in them. All the other bulkheads had openings in them, which were fitted with watertight doors. Bulkheads D to O, both inclusive, had each a vertical sliding watertight door at the level of the floor of the engine and boiler rooms for the use of the engineers and firemen. On the Orlop deck there was one door, on bulkhead N, for access to the refrigerator rooms. On G deck there were no watertight doors in the bulkheads. On both the F and E decks nearly all the bulkheads had watertight doors, mainly for giving communication between the different blocks of passenger accommodation. All the doors, except those in the engine rooms and boiler rooms, were horizontal sliding doors workable by hand both at the door and at the deck above.

There were twelve vertical sliding watertight doors which completed the watertightness of bulkheads D to O inclusive, in the boiler and engine rooms. These were capable of being simultaneously closed from the bridge. The operation of closing was intended to be preceded by the ringing from the bridge of a warning bell.

These doors were closed by the bringing into operation of an electric current and could not be opened until this current was cut off from the bridge. When this was done the doors could only be opened by a mechanical operation manually worked separately at each door. They could, however, be individually lowered again by operating a lever at the door. In addition they would be automatically closed, if open, should water enter the compartment. This operation was done in each case by means of a float actuated by the water which was in either of the compartments which happened to be in the process of being flooded.

There were no sluice valves or means of letting water from one compartment to another.

Detailed description.

The following is a more detailed description of the vessel, her passenger and crew accommodation, and her machinery.

Watertight compartments.

The following table shows the decks to which the bulkheads extended, and the numbers of doors in them:—

Bulkhead letter.	Extends up to under side of Deck.	Engine and boiler spaces (all controlled from bridge).	Orlop to G deck.	F to E deck.	E to D deck.
A	C				
B	D				
C	E				
D	E	*1		1	
E	E	+1		1	
F	E	+1		2	
G	E	+1			
H	E	+1		2	
J	E	+1		2	
K	D	1			2
L	D	1			2
M	D	1			2
N	D	1		1	2
O	D	1	1	1	2
P	D				1

* There was another watertight door at the after end of the watertight passage through the bunker immediately aft of "D" bulkhead. This door and the one on the "D" bulkhead formed a double protection to the forward boiler room.

† The watertight doors for these bulkheads were not on them, but were at the end of a watertight passage (about 9 feet long), leading from the bulkhead through the bunker into the compartment.

The following table shows the actual contents of each separate watertight compartment. The compartments are shown in the left column, the contents of each compartment being read off horizontally. The contents of each watertight compartment is separately given in the deck space in which it is:—

W.T. comp.	Length of each W.T. comp. in fore and aft direction.	Hold.	Orlop to G deck.	G to F deck.	F to E deck.	E to D deck.
Bow to A	46 ft.	Fore peak tank (not used excepting for trimming ship)	Fore peak store room	Fore peak store room.	Fore peak store room.	Fore peak store room.
A-B	45 ft.	Cargo ...	Cargo ...	Living spaces for firemen, &c.	Living spaces for firemen.	Living spaces for firemen.
B-C	51 ft.	Do. ...	Do. ...	3rd class passenger accommodation.	3rd class passenger accommodation.	3rd class passenger and seamen's spaces.
C-D	51 ft.	Alternatively coal and cargo	Luggage and mails.	Baggage, squashrackets and 3rd class passengers.	3rd class passenger accommodation.	3rd class passenger accommodation.
D-E	54 ft.	No. 6 boiler room.	No. 6 boiler room.	Coal and boiler casing.	3rd class passenger accommodation.	1st class passenger accommodation.
E-F	57 ft.	No. 5 do. ...	No. 5 do. ...	Coal bunker and boiler casing and swimming bath.	Linen rooms and swimming bath.	1st class passenger accommodation.
F-G	57 ft.	No. 4 do. ...	No. 4 do. ...	Coal bunker and boiler casing.	Stewards, Turkish baths, &c.	1st. class and stewards.
G-H	57 ft.	No. 3 do. ...	No. 3 do. ...	Coal bunker and boiler casing.	3rd class saloon.	1st and 2nd class and stewards.
H-J	60 ft.	No. 2 do. ...	No. 2 do. ...	Coal bunker and boiler casing.	3rd class saloon.	1st class
J-K	36 ft.	No. 1 do. ...	No. 1 do. ...	Coal bunker and boiler casing.	3rd class galley, stewards, &c.	1st class and stewards.
K-L	69 ft.	Recipg. engine room.	Recipg. engine room.	Reciprocating engine room casing, workshop and engineers' stores	Engineers' and reciprocating engine casing.	1st class and engineers' mess, &c.
L-M	57 ft.	Turbine engine room.	Turbine engine room.	Turbine engine room casing and small stewards' str.	2nd class and turbine eng. room casing.	2nd class and stewards, &c.
M-N	63 ft.	Electric engine room.	Provisions and electric engine casing.	Provisions ...	2nd class ...	2nd and 3rd class.
N-O	54 ft.	Tunnel ...	Refrigerated cargo.	3rd class ...	2nd class ...	2nd and 3rd class.
O-P	57 ft.	Do.	Cargo.	3rd class ...	3rd class ...	3rd class
P to Stern.	36 ft.	After pk. tank for trimming ship	After pk. tank for trimming ship.	Stores ...	Stores ...	Stores

The vessel was constructed under survey of the British Board of Trade for a passenger certificate, and also to comply with the American Immigration Laws.

Steam was supplied from six entirely independent groups of boilers in six separate watertight compartments. The after boiler room No. 1 contained five single-ended boilers. Four other boiler rooms, Nos. 2, 3, 4 and 5, each contained five double-ended boilers. The forward boiler room, No. 6, contained four double-ended boilers. The reciprocating engines and most of the auxiliary machinery were in a seventh separate watertight compartment aft of the boilers; the low-pressure turbine, the main condensers and the thrust blocks of the reciprocating engine were in an eighth separate watertight compartment. The main electrical machinery was in a ninth separate watertight compartment immediately abaft the turbine engine room. Two emergency steam-driven dynamos were placed on the D deck, 21 ft. above the level of the load water-line. These dynamos were arranged to take their supply of steam from any of the three of the boiler rooms Nos. 2, 3 and 5, and were intended to be available in the event of the main dynamo room being flooded.

The ship was equipped with the following:—

- (1) Wireless telegraphy.
- (2) Submarine signalling.
- (3) Electric lights and power systems.
- (4) Telephones for communication between the different working positions in the vessel. In addition to the telephones, the means of communication included engine and docking telegraphs, and duplicate or emergency engine-room telegraph, to be used in the event of any accident to the ordinary telegraph.
- (5) Three electric elevators for taking passengers in the first class up to A deck, immediately below the Boat deck, and one in the second class for taking passengers up to the Boat deck.
- (6) Four electrically-driven boat winches on the Boat deck for hauling up the boats.
- (7) Life-saving appliances to the requirements of the Board of Trade, including boats and life belts.
- (8) Steam whistles on the two foremost funnels, worked on the Willett-Bruce system of automatic control.
- (9) Navigation appliances, including Kelvin's patent sounding machines for finding the depth of water under the ship without stopping; Walker's taffrail log for determining the speed of the ship; and flash signal lamps fitted above the shelters at each end of the navigating bridge for Morse signalling with other ships.

Decks and Accommodation.

The Boat Deck was an uncovered deck, on which the boats were placed. At its lowest point it was about 92 ft. 6 in. above the keel. The overall length of this deck was about 500 ft. The forward end of it was fitted to serve as the navigating bridge of the vessel and was 190 ft. from the bow. On the after end of the bridge was a wheel house, containing the steering wheel and a steering compass. The chart room was immediately abaft this. On the starboard side of the wheel house and funnel casing were the navigating room, the captain's quarters, and some officers' quarters. On the port side were the remainder of the officers' quarters. At the middle line abaft the forward funnel casing were the wireless telegraphy rooms and the operators' quarters. The top of the officers' house formed a short deck. The connections from the Marconi aeriels were made on this deck, and two of the collapsible boats were placed on it. Aft of the officers' house were the first-class passengers' entrance and stairways, and other adjuncts to the passengers' accommodation below. These stairways had a minimum effective width of 8 ft. They had assembling landings at the level of each deck, and three elevators communicating from E to A decks, but not to the Boat deck, immediately on the fore side of the stairway.

All the boats except two Engelhardt life rafts were carried on this deck. There were seven lifeboats on each side, 30 ft. long, 9 ft. wide. There was an emergency cutter, 25 ft. long, on each side at the fore end of the deck. Abreast of each cutter was an Engelhardt life raft. One similar raft was carried on the top of the officers' house on each side. In all there were 14 lifeboats, 2 cutters, and 4 Engelhardt life rafts.

The forward group of four boats and one Engelhardt raft were placed on each side of the deck alongside the officers' quarters and the first-class entrance. Further aft at the middle line on this deck was the special platform for the standard

The following table shows the actual contents of each separate watertight compartment. The compartments are shown in the left column, the contents of each compartment being read off horizontally. The contents of each watertight compartment is separately given in the deck space in which it is:—

W.T. compt.	Length of each W.T. compt. in fore and aft direction.	Hold.	Orlop to G deck.	G to F deck.	F to E deck.	E to D deck.
Bow to A	46 ft.	Fore peak tank (not used excepting for trimming ship)	Fore peak store room	Fore peak store room.	Fore peak store room.	Fore peak store room.
A-B	45 ft.	Cargo ...	Cargo ...	Living spaces for firemen, &c.	Living spaces for firemen.	Living spaces for firemen.
B-C	51 ft.	Do. ...	Do. ...	3rd class passenger accommodation.	3rd class passenger accommodation.	3rd class passenger and seamen's spaces.
C-D	51 ft.	Alternatively coal and cargo	Luggage and mails.	Baggage, squash rackets and 3rd class passengers.	3rd class passenger accommodation.	3rd class passenger accommodation.
D-E	54 ft.	No. 6 boiler room	No. 6 boiler room.	Coal and boiler casing.	3rd class passenger accommodation.	1st class passenger accommodation.
E-F	57 ft.	No. 5 do. ...	No. 5 do. ...	Coal bunker and boiler casing and swimming bath.	Linen rooms and swimming bath.	1st class passenger accommodation.
F-G	57 ft.	No. 4 do. ...	No. 4 do. ...	Coal bunker and boiler casing.	Stewards, Turkish baths, &c.	1st class and stewards.
G-H	57 ft.	No. 3 do. ...	No. 3 do. ...	Coal bunker and boiler casing.	3rd class saloon.	1st and 2nd class and stewards.
H-J	60 ft.	No. 2 do. ...	No. 2 do. ...	Coal bunker and boiler casing.	3rd class saloon.	1st class
J-K	36 ft.	No. 1 do. ...	No. 1 do. ...	Coal bunker and boiler casing.	3rd class galley, stewards, &c.	1st class and stewards.
K-L	69 ft.	Recipg. engine room.	Recipg. engine room.	Reciprocating engine room casing, workshop and engineers' stores	Engineers' and reciprocating engine casing.	1st class and engineers' mess, &c.
L-M	57 ft.	Turbine engine room.	Turbine engine room.	Turbine engine room casing and small stewards' str.	2nd class and turbine eng. room casing.	2nd class and stewards, &c.
M-N	63 ft.	Electric engine room.	Provisions and electric engine casing.	Provisions ...	2nd class ...	2nd and 3rd class.
N-O	54 ft.	Tunnel ...	Refrigerated cargo.	3rd class ...	2nd class ...	2nd and 3rd class.
O-P	57 ft.	Do.	Cargo.	3rd class ...	3rd class ...	3rd class
P to Stern.	36 ft.	After pk. tank for trimming ship	After pk. tank for trimming ship.	Stores ...	Stores ...	Stores

The vessel was constructed under survey of the British Board of Trade for a passenger certificate, and also to comply with the American Immigration Laws.

Steam was supplied from six entirely independent groups of boilers in six separate watertight compartments. The after boiler room No. 1 contained five single-ended boilers. Four other boiler rooms, Nos. 2, 3, 4 and 5, each contained five double-ended boilers. The forward boiler room, No. 6, contained four double-ended boilers. The reciprocating engines and most of the auxiliary machinery were in a seventh separate watertight compartment aft of the boilers; the low-pressure turbine, the main condensers and the thrust blocks of the reciprocating engine were in an eighth separate watertight compartment. The main electrical machinery was in a ninth separate watertight compartment immediately abaft the turbine engine room. Two emergency steam-driven dynamos were placed on the D deck, 21 ft. above the level of the load water-line. These dynamos were arranged to take their supply of steam from any of the three of the boiler rooms Nos. 2, 3 and 5, and were intended to be available in the event of the main dynamo room being flooded.

The ship was equipped with the following:—

- (1) Wireless telegraphy.
- (2) Submarine signalling.
- (3) Electric lights and power systems.
- (4) Telephones for communication between the different working positions in the vessel. In addition to the telephones, the means of communication included engine and docking telegraphs, and duplicate or emergency engine-room telegraph, to be used in the event of any accident to the ordinary telegraph.
- (5) Three electric elevators for taking passengers in the first class up to A deck, immediately below the Boat deck, and one in the second class for taking passengers up to the Boat deck.
- (6) Four electrically-driven boat winches on the Boat deck for hauling up the boats.
- (7) Life-saving appliances to the requirements of the Board of Trade, including boats and life belts.
- (8) Steam whistles on the two foremost funnels, worked on the Willett-Bruce system of automatic control.
- (9) Navigation appliances, including Kelvin's patent sounding machines for finding the depth of water under the ship without stopping; Walker's taffrail log for determining the speed of the ship; and flash signal lamps fitted above the shelters at each end of the navigating bridge for Morse signalling with other ships.

Decks and Accommodation.

The Boat Deck was an uncovered deck, on which the boats were placed. At its lowest point it was about 92 ft. 6 in. above the keel. The overall length of this deck was about 500 ft. The forward end of it was fitted to serve as the navigating bridge of the vessel and was 190 ft. from the bow. On the after end of the bridge was a wheel house, containing the steering wheel and a steering compass. The chart room was immediately abaft this. On the starboard side of the wheel house and funnel casing were the navigating room, the captain's quarters, and some officers' quarters. On the port side were the remainder of the officers' quarters. At the middle line abaft the forward funnel casing were the wireless telegraphy rooms and the operators' quarters. The top of the officers' house formed a short deck. The connections from the Marconi aerials were made on this deck, and two of the collapsible boats were placed on it. Aft of the officers' house were the first-class passengers' entrance and stairways, and other adjuncts to the passengers' accommodation below. These stairways had a minimum effective width of 8 ft. They had assembling landings at the level of each deck, and three elevators communicating from E to A decks, but not to the Boat deck, immediately on the fore side of the stairway.

All the boats except two Engelhardt life rafts were carried on this deck. There were seven lifeboats on each side, 30 ft. long, 9 ft. wide. There was an emergency cutter, 25 ft. long, on each side at the fore end of the deck. Abreast of each cutter was an Engelhardt life raft. One similar raft was carried on the top of the officers' house on each side. In all there were 14 lifeboats, 2 cutters, and 4 Engelhardt life rafts.

The forward group of four boats and one Engelhardt raft were placed on each side of the deck alongside the officers' quarters and the first-class entrance. Further aft at the middle line on this deck was the special platform for the standard

compass. At the after end of this deck was an entrance house for second-class passengers, with a stairway and elevator leading directly down to F deck. There were two vertical iron ladders at the after end of this deck, leading to A deck, for the use of the crew. Alongside and immediately forward of the second-class entrance was the after group of lifeboats, four on each side of the ship.

In addition to the main stairways mentioned, there was a ladder on each side amidships, giving access from the A deck below. At the forward end of the Boat deck there was on each side a ladder leading up from A deck, with a landing there, from which, by a ladder, access to B deck could be obtained direct. Between the reciprocating engine casing and the third funnel casing there was a stewards' stairway, which communicated with all the decks below as far as E deck. Outside the deck houses was promenading space for first class passengers.

A Deck.—The next deck below the boat deck was A deck. It extended over a length of about 500 feet. On this deck was a long house, extending nearly the whole length of the deck. It was of irregular shape, varying in width from 24 ft. to 72 ft. At the forward end it contained 34 state-rooms, and abaft these a number of public rooms, etc., for first-class passengers, including two first-class entrances and stairway, reading-room, lounge and the smoke-room. Outside the deck house was a promenade for first-class passengers. The forward end of it on both sides of the ship, below the forward group of boats and for a short distance further aft, was protected against the weather by a steel screen, 192 ft. long, with large windows in it. In addition to the stairway described on the Boat deck, there was near the after-end of the A deck, and immediately forward of the first-class smoke-room, another first-class entrance, giving access as far down as C deck. The second-class stairway at the after-end of this deck (already described under the Boat deck) had no exit on to the A deck. The stewards' staircase opened on to this deck.

B Deck.—The next lowest deck was B deck, which constituted the top deck of the strong structure of the vessel, the decks above and the side plating between them being light plating. This deck extended continuously for 550 ft. There were breaks or wells both forward and aft of it, each about 50 ft. long. It was terminated by a poop and forecastle. On this deck were placed the principal state-rooms of the vessel, 97 in number, having berths for 198 passengers, and aft of these was the first-class stairway and reception-room, as well as the restaurant for first-class passengers and its pantry and galley. Immediately aft of this restaurant were the second-class stairway and smoke-room. At the forward end of the deck outside the house was an assembling area, giving access by the ladders, previously mentioned, leading directly to the Boat deck. From this same space a ladderway led to the forward third-class promenade on C deck. At the after-end of it were two ladders giving access to the after third-class promenade on C deck. At the after-end of this deck, at the middle line, was placed another second-class stairway, which gave access to C, D, E, F and G decks.

At the forward end of the vessel, on the level of the B deck, was situated the forecastle deck, which was 125 ft. long. On it were placed the gear for working the anchors and cables and for warping (or moving) the ship in dock. At the after-end, on the same level, was the poop deck, about 105 ft. long, which carried the after-warping appliances and was a third-class promenading space. Arranged above the poop was a light docking bridge, with telephone, telegraphs, etc., communicating to the main navigating bridge forward.

C Deck.—The next lowest deck was C deck. This was the highest deck which extended continuously from bow to stern. At the forward end of it, under the forecastle, was placed the machinery required for working the anchors and cables and for the warping of the ship referred to on B deck above: there were also the crew's galley and the seamen's and firemen's mess-room accommodation, where their meals were taken. At the after-end of the forecastle, at each side of the ship, were the entrances to the third-class spaces below. On the port side, at the extreme after-end and opening on to the deck, was the lamp-room. The break in B deck between the forecastle and the first-class passenger quarters formed a well about 50 ft. in length, which enabled the space under it on C deck to be used as a third-class promenade. This space contained two hatchways, the No. 2 hatch and the bunker hatch. The latter of these hatchways gave access to the space allotted to the first and second-class baggage hold, the mails, specie and parcel room, and to the lower hold, which was used for cargo or coals. Aft of this well there was a house 450 ft. long and extending for the full breadth of the ship. It contained

148 state-rooms for first class, besides service rooms of various kinds. On this deck, at the forward first-class entrance, were the purser's office and the enquiry office, where passengers' telegrams were received for sending by the Marconi apparatus. Exit doors through the ship's side were fitted abreast of this entrance. Aft of the after-end of this long house was a promenade at the ship's side for second-class passengers, sheltered by bulwarks and bulkheads. In the middle of the promenade stood the second-class library. The two second-class stairways were at the ends of the library, so that from the promenade access was obtained at each end to a second-class main stairway. There was also access by a door from this space into each of the alleyways in the first-class accommodation on each side of the ship, and by two doors at the after-end into the after-well. This after-well was about 50 ft. in length and contained two hatchways called No. 5 and No. 6 hatches. Aft of this well, under the poop, was the main third-class entrance for the after-end of the vessel, leading directly down to G deck, with landings and access at each deck. The effective width of this stairway was 16 ft. to E deck. From E to F it was 8 ft. wide. Aft of this entrance on B deck were the third-class smoke-room and the general room. Between these rooms and the stern was the steam steering gear and the machinery for working the after-capstan gear, which was used for warping the after-end of the vessel. The steam steering gear had three cylinders. The engines were in duplicate, to provide for the possibility of breakdown of one set.

D Deck.—The general height from D deck to C deck was 10 ft. 6 in., this being reduced to 9 ft. at the forward end, and 9 ft. 6 in. at the after end, the taper being obtained gradually by increasing the sheer of the D deck. The forward end of this deck provided accommodation for 108 firemen, who were in two separate watches. There was the necessary lavatory accommodation, abaft the firemen's quarters at the sides of the ship. On each side of the middle line immediately abaft the firemen's quarters there was a vertical spiral staircase leading to the forward end of a tunnel, immediately above the tank top, which extended from the foot of the staircase to the forward stokehole, so that the firemen could pass direct to their work without going through any passenger accommodation or over any passenger decks. On D deck abaft of this staircase was the third class promenade space which was covered in by C deck. From this promenade space there were four separate ladderways with two ladders, 4 ft. wide to each. One ladderway on each side forward led to C deck, and one, the starboard, led to E deck and continued to F deck as a double ladder and to G deck as a single ladder. The two ladderways at the after end led to E deck on both sides and to F deck on the port side. Aft of this promenade space came a block of 50 first-class staterooms. This surrounded the forward funnel. The main first-class reception room and dining saloon were aft of these rooms and surrounded the No. 2 funnel. The reception room and staircase occupied 83 ft. of the length of the ship. The dining saloon occupied 112 ft., and was between the second and third funnels. Aft of this came the first-class pantry, which occupied 56 ft. of the length of the ship. The reciprocating engine hatch came up through this pantry.

Aft of the first-class pantry, the galley, which provides for both first and second-class passengers, occupied 45 ft. of the length of the ship. Aft of this were the turbine engine hatch and the emergency dynamos. Aft of and on the port side of this hatch were the second-class pantry and other spaces used for the saloon service of the passengers. On the starboard side abreast of these there was a series of rooms used for hospitals and their attendants. These spaces occupied about 54 ft. of the length. Aft of these was the second-class saloon occupying 70 ft. of the length. In the next 88 ft. of length there were 38 second-class rooms and the necessary baths and lavatories. From here to the stern was accommodation for third-class passengers and the main third-class lavatories for the passengers in the after end of the ship. The watertight bulkheads come up to this deck throughout the length from the stern as far forward as the bulkhead dividing the after boiler room from the reciprocating engine room. The watertight bulkhead of the two compartments abaft the stem was carried up to this deck.

E Deck.—The watertight bulkheads, other than those mentioned as extending to D deck, all stopped at this deck. At the forward end was provided accommodation for three watches of trimmers, in three separate compartments, each holding 24 trimmers. Aft of this, on the port side, was accommodation for 44 seamen. Aft of this, and also on the starboard side of it, were the lavatories for crew and third-class passengers; further aft again came the forward third-class lavatories. Immediately aft of this was a passageway right across the ship communicating directly with the

ladderways leading to the decks above and below and gangway doors in the ship's side. This passage was 9 ft. wide at the sides and 15 ft. at the centre of the ship.

From the after end of this cross passage main alleyways on each side of the ship ran right through to the after end of the vessel. That on the port side was about 8½ ft. wide. It was the general communication passage for the crew and third-class passengers and was known as the "working passage." In this passage at the centre line in the middle of the length of the ship direct access was obtained to the third-class dining rooms on the deck below by means of a ladderway 20 ft. wide. Between the working passage and the ship's side was the accommodation for the petty officers, most of the stewards, and the engineers' mess room. This accommodation extended for 475 ft. From this passage access was obtained to both engine rooms and the engineers' accommodation, some third-class lavatories and also some third-class accommodation at the after end. There was another cross passage at the end of this accommodation about 9 ft. wide, terminating in gangway doors on each side of the ship. The port side of it was for third-class passengers and the starboard for second class. A door divided the parts, but it could be opened for any useful purpose, or for an emergency. The second-class stairway leading to the Boat deck was in the cross passage way.

The passage on the starboard side ran through the first and then the second-class accommodation, and the forward main first-class stairway and elevators extended to this deck, whilst both the second-class main stairways were also in communication with this starboard passage. There were four first-class, eight first or second alternatively, and 19 second-class rooms leading off this starboard passage.

The remainder of the deck was appropriated to third-class accommodation. This contained the bulk of the third-class accommodation. At the forward end of it was the accommodation for 53 firemen constituting the third watch. Aft of this in three watertight compartments there was third-class accommodation extending to 147 ft. In the next watertight compartment were the swimming bath and linen rooms. In the next watertight compartments were stewards' accommodation on the port side, and the Turkish baths on the starboard side. The next two watertight compartments each contained a third-class dining room.

The third-class stewards' accommodation together with the third-class galley and pantries, filled the watertight compartment. The engineers' accommodation was in the next compartment directly alongside the casing of the reciprocating engine room. The next three compartments were allotted to 64 second-class state rooms. These communicated direct with the second-class main stairways. The after compartments contained third-class accommodation. All spaces on this deck had direct ladderway communication with the deck above, so that if it became necessary to close the watertight doors in the bulkheads an escape was available in all cases. On this deck in way of the boiler rooms were placed the electrically-driven fans which provided ventilation to the stokeholds.

G Deck.—The forward end of this deck had accommodation for 15 leading firemen and 30 greasers. The next watertight compartment contained third-class accommodation in 26 rooms for 106 people. The next watertight compartment contained the first-class baggage room, the post office accommodation, a racquet court, and seven third-class rooms for 34 passengers. From this point to the after end of the boiler room the space was used for the 'tween deck bunkers. Alongside the reciprocating engine room were the engineers' stores and workshop. Abreast of the turbine engine room were some of the ship's stores. In the next watertight compartment abaft the turbine room were the main body of the stores. The next two compartments were appropriated to 186 third-class passengers in 60 rooms; this deck was the lowest on which any passengers or crew were carried.

Below G Deck were two partial decks, the Orlop and Lower Orlop decks, the latter extending only through the fore peak and No. 1 hold; on the former deck, abaft the turbine engine-room, were some store-rooms containing stores for ship's use.

Below these decks again came the inner bottom, extending fore and aft through about nine-tenths of the vessel's length, and on this were placed the boilers, main and auxiliary machinery and the electric light machines. In the remaining spaces below G deck were cargo holds or 'tween decks, seven in all, six forward and one aft. The firemen's passage, giving direct access from their accommodation to the forward boiler room by stairs at the forward end, contained the various pipes and valves connected with the pumping arrangements at the forward end of the ship, and

also the steam pipes conveying steam to the windlass gear forward and exhaust steam pipes leading from winches and other deck machinery. It was made thoroughly watertight throughout its length, and at its after-end was closed by a watertight vertical sliding door of the same character as other doors on the inner bottom. Special arrangements were made for pumping this space out, if necessary. The pipes were placed in this tunnel to protect them from possible damage by coal or cargo, and also to facilitate access to them.

On the decks was provided generally, in the manner above described, accommodation for a maximum number of 1,034 first-class passengers, and at the same time 510 second-class passengers and 1,022 third-class passengers. Some of the accommodation was of an alternative character, and could be used for either of two classes of passengers. In the statement of figures the higher alternative class has been reckoned. This makes a total accommodation for 2,566 passengers.

Accommodation was provided for the crew as follows: about 75 of the deck department, including officers and doctors, 326 of the engine-room department, including engineers, and 544 of the victualling department, including pursers and leading stewards.

Access of passengers to the Boat deck.—The following routes led directly from the various parts of the first-class passenger accommodation to the Boat deck: From the forward ends of A, B, C, D, and E decks by the staircase in the forward first-class entrance direct to the Boat deck. The elevators led from the same decks as far as A deck, where further access was obtained by going up the top flight of the main staircase.

The same route was available for first-class passengers forward of midships on B, C, and E decks.

First-class passengers abaft amidships on B and C decks could use the staircase in the after main entrance to A deck, and then could pass out on to the deck, and by the midships stairs besides the house ascend to the Boat deck. They could also use the stewards' staircase between the reciprocating engine casing and Nos. 1 and 2 boiler casing, which led direct to the Boat deck. This last route was also available for passengers on E deck in the same divisions who could use the forward first-class main stairway and elevators.

Second-class passengers on D deck could use their own after-stairway to B deck, and could then pass up their forward stairway to the Boat deck, or else could cross their saloon and use the same stairway throughout.

Of the second-class passengers on E deck, those abreast of the reciprocating engine casing, unless the watertight door immediately abaft them was closed, went aft and joined the other second-class passengers. If, however, the watertight door at the end of their compartment was closed, they passed through an emergency door into the engine-room, and directly up to the Boat deck, by the ladders and gratings in the engine-room casing.

The second-class passengers on E deck in the compartment abreast the turbine casing on the starboard side, and also those on F deck on both sides below could pass through M watertight bulkhead to the forward second-class main stairway. If this door were closed, they could pass by the stairway up to the serving space at the forward end of the second-class saloon, and go into the saloon and thence up the forward second-class stairway.

Passengers between M and N bulkheads on both E and F decks could pass directly up to the forward second-class stairway to the Boat deck.

Passengers between N and O bulkheads on D, E, F and G decks could pass by the after second-class stairway to B deck, and then cross to the forward second-class stairway and go up to the Boat deck.

Third-class passengers at the fore end of the vessel could pass by the staircases to C deck in the forward well and by ladders on the port and starboard sides at the forward end of the deck-houses, thence direct to the Boat deck outside the officers' accommodation. They might also pass along the working passage on E deck and through the emergency door to the forward first-class main stairway, or through the door on the same deck at the forward end of the first-class alleyway and up the first-class stairway direct to the Boat deck.

The third-class passengers at the after-end of the ship passed up their stairway to E deck, and into the working passage, and through the emergency doors to the two second-class stairways, and so to the Boat deck, like second-class passengers. Or, alternatively, they could continue up their own stairs and entrance to C deck, thence by the two ladders at the after-end of the bridge on to the B deck, and thence by the forward second-class stairway direct to the Boat deck.

Crew.—From each boiler-room an escape or emergency ladder was provided direct to the Boat deck by the fidleys, in the boiler casings, and also into the working passage on E deck, and thence by the stair immediately forward of the reciprocating engine casing, direct to the Boat deck.

From both the engine-rooms ladders and gratings gave direct access to the Boat deck.

From the electric engine room, the after tunnels, and the forward pipe tunnels, escapes were provided direct to the working passage on E deck, and thence by one of the several routes already detailed from that space.

From the crew's quarters they could go forward by their own staircases into the forward well, and thence, like the third-class passengers, to the Boat deck.

The stewards' accommodation being all connected to the working passage or the forward main first-class stairway, they could use one of the routes from thence.

The engineers' accommodation also communicated with the working passage, but, as it was possible for them to be shut between two watertight bulkheads, they had also a direct route by the gratings in the engine room casing to the Boat deck.

On all the principal accommodation decks the alleyways and stairways provided a ready means of access to the Boat deck, and there were clear deck spaces in way of all first, second and third-class main entrances and stairways on Boat deck and all decks below.

Structure.

The vessel was built throughout of steel and had a cellular double bottom of the usual type, with a floor at every frame, its depth at the centre line being 63 in., except in way of the reciprocating machinery, where it was 78 in. For about half of the length of the vessel this double bottom extended up the ship's side to a height of 7 ft. above the keel. Forward and aft of the machinery space the protection of the inner bottom extended to a less height above the keel. It was so divided that there were four separate watertight compartments in the breadth of the vessel. Before and abaft the machinery space there was a watertight division at the centre line only, except in the foremost and aftermost tanks. Above the double bottom the vessel was constructed on the usual transverse frame system, reinforced by web frames, which extended to the highest decks.

At the forward end the framing and plating was strengthened with a view to preventing panting, and damage when meeting thin harbour ice.

Beams were fitted on every frame at all decks, from the Boat deck downwards. An external bilge keel, about 300 ft. long and 25 in. deep, was fitted along the bilge amidships.

The heavy ship's plating was carried right up to the Boat deck, and between the C and B deck was doubled. The stringer or edge plate of the B deck was also doubled. This double plating was hydraulic riveted.

All decks were steel plated throughout.

The transverse strength of the ship was in part dependent on the 15 transverse watertight bulkheads, which were specially stiffened and strengthened to enable them to stand the necessary pressure in the event of accident, and they were connected by double angles to decks, inner bottom, and shell plating.

The two decks above the B deck were of comparatively light scantling, but strong enough to ensure their proving satisfactory in these positions in rough weather.

Watertight Sub-division.—In the preparation of the design of this vessel it was arranged that the bulkheads and divisions should be so placed that the ship would remain afloat in the event of any two adjoining compartments being flooded, and that they should be so built and strengthened that the ship would remain afloat under this condition. The minimum freeboard that the vessel would have, in the event of any two compartments being flooded, was between 2 ft. 6 in. and 3 ft. from the deck adjoining the top of the watertight bulkheads. With this object in view 15 watertight bulkheads were arranged in the vessel. The lower part of C bulkhead was doubled, and was in the form of a cofferdam. So far as possible the bulkheads were carried up in one plane to their upper sides, but in cases where they had for any reason to be stepped forward or aft, the deck, in way of the step, was made into a watertight flat, thus completing the watertightness of the compartment. In addition to this, G deck in the after peak was made a watertight flat. The Orlop deck between bulkheads which formed the top of the tunnel was also watertight. The Orlop deck in the forepeak tank was also a watertight

flat. The electric machinery compartment was further protected by a structure some distance in from the ship's side, forming six separate watertight compartments, which were used for the storage of fresh water.

Where openings were required for the working of the ship in these watertight bulkheads they were closed by watertight sliding doors which could be worked from a position above the top of the watertight bulkhead, and those doors immediately the inner bottom were of a special automatic closing pattern, as described below. By this sub-division there were in all 73 compartments, 29 of these being above the inner bottom.

Watertight doors.—The doors (12 in number) immediately above the inner bottom were in the engine and boiler room spaces. They were of Messrs. Harland and Wolff's latest type, working vertically. The doorplate was of cast iron of heavy section, strongly ribbed. It closed by gravity, and was held in the open position by a clutch which could be released by means of a powerful electro-magnet controlled from the captain's bridge. In the event of accident, or at any time when it might be considered desirable, the captain or officer on duty could, by simply moving an electric switch, immediately close all these doors. The time required for the doors to close was between 25 and 30 seconds. Each door could also be closed from below by operating a hand lever fitted alongside the door. As a further precaution floats were provided beneath the floor level, which, in the event of water accidentally entering any of the compartments, automatically lifted and thus released the clutches, thereby permitting the doors in that particular compartment to close if they had not already been dropped by any other means. These doors were fitted with cataracts which controlled the speed of closing. Due notice of closing from the bridge was given by a warning bell.

A ladder or escape was provided in each boiler room, engine room and similar watertight compartment, in order that the closing of the doors at any time should not imprison the men working therein.

The watertight doors on E deck were of horizontal pattern, with wrought steel door plates. Those on F deck and the one aft on the Orlop deck were of similar type, but had cast iron door plates of heavy section, strongly ribbed. Each of the 'tween deck doors, and each of the vertical doors on the tank top level could be operated by the ordinary hand gear from the deck above the top of the watertight bulkhead, and from a position on the next deck above, almost directly above the door. To facilitate the quick closing of the doors, plates were affixed in suitable positions on the sides of the alleyways indicating the positions of the deck plates, and a box spanner was provided for each door, hanging in suitable clips alongside the deck plate.

Ship's Side Doors.—Large side doors were provided through the side plating, giving access to passengers' or crew's accommodation as follows:—

On the saloon (D) deck on the starboard side in the forward third-class open space, one baggage door.

In way of the forward first-class entrance, two doors close together on each side.

On the upper (E) deck, one door each side at the forward end of the working passage.

On the port side abreast the engine room, one door leading into the working passage. One door each side on the port and starboard sides aft into the forward second-class entrance.

All the doors on the upper deck were secured by lever handles, and were made watertight by means of rubber strips. Those on the saloon deck were closed by lever handles but had no rubber.

Accommodation Ladder.—One teak accommodation ladder was provided, and could be worked on either side of the ship in the gangway door opposite the second-class entrance on the upper deck (E). It had a folding platform and portable lanchions, hand rope, etc. The ladder extended to within 3 ft. 6 in. of the vessel's light draft, and was stowed overhead in the entrance abreast the forward second-class main staircase. Its lower end was arranged so as to be raised and lowered from a davit immediately above.

Masts and Rigging.—The vessel was rigged with two masts, and fore and aft sails. The two pole masts were constructed of steel, and stiffened with angle irons. The poles at the top of the mast were made of teak.

A look-out cage, constructed of steel, was fitted on the foremast at a height of about 95 ft. above the water line. Access to the cage was obtained by an iron vertical ladder inside of the foremast, with an opening at C deck and one at the look-out cage. An iron ladder was fitted on the foremast from the hounds to the mast-head light.

Life-saving Appliances.

Lifebuoys.—Forty-eight, with beackets, were supplied, of pattern approved by the Board of Trade. They were placed about the ship.

Lifebelts.—3,560 lifebelts, of the latest improved overhead pattern approved by the Board of Trade, were supplied and placed on board the vessel, and there inspected by the Board of Trade. These were distributed throughout all the sleeping accommodation.

Lifeboats.—Twenty boats in all were fitted on the vessel, and were of the following dimensions and capacities:—

14 wood lifeboats, each 30 ft. long by 9 ft. 1 in. broad by 4 ft. deep, with a cubic capacity of 655.2 cubic ft., constructed to carry 65 persons each.

1 wood cutter, 25 ft. 2 in. long by 7 ft. 2 in. broad by 3 ft. deep, with a cubic capacity of 326.6 cubic ft., constructed to carry 40 persons.

1 wood cutter, 25 ft. 2 in. long by 7 ft. 1 in. broad by 3 ft. deep, with a cubic capacity of 322.1 cubic ft., constructed to carry 40 persons.

4 Engelhardt collapsible boats, 27 ft. 5 in. long by 8 ft. broad by 3 ft. deep, with a cubic capacity of 376.6 cubic ft., constructed to carry 47 persons each.

Or a total of 11327.9 cubic ft. for 1,178 persons.

The lifeboats and cutters were constructed as follows:—

The keels were of elm. The stems and stern posts were of oak. They were all clinker built of yellow pine, double fastened with copper nails, clinched over rooves. The timbers were of elm, spaced about 9 in. apart, and the seats pitch pine secured with galvanized iron double knees. The buoyancy tanks in the lifeboats were of 18 oz. copper, and of capacity to meet the Board of Trade requirements.

The lifeboats were fitted with Murray's disengaging gear with arrangements for simultaneously freeing both ends if required. The gear was fastened at a suitable distance from the forward and after ends of the boats, to suit the davits. Lifelines were fitted round the gunwales of the lifeboats. The davit blocks were treble for the lifeboats and double for the cutters. They were of elm, with lignum vitæ roller sheaves, and were bound inside with iron, and had swivel eyes. There were manilla rope falls of sufficient length for lowering the boats to the vessel's light draft, and when the boats were lowered, to be able to reach to the boat winches on the Boat deck.

The lifeboats were stowed on hinged wood chocks on the Boat deck, by groups of three at the forward, and four at the after ends. On each side of the Boat deck the cutters were arranged forward of the group of three and fitted to lash outboard as emergency boats. They were immediately abaft the navigating bridge.

The Engelhardt collapsible lifeboats were stowed abreast of the cutters, one on each side of the ship, and the remaining two on top of the officers' house, immediately abaft the navigating bridge.

The boat equipment was in accordance with the Board of Trade requirements. Sails for each lifeboat and cutter were supplied and stowed in painted bags. Covers were supplied for the lifeboats and cutters, and a sea anchor for each boat. Every lifeboat was furnished with a special spirit boat compass and fitting for holding it; these compasses were carried in a locker on the Boat deck. A provision tank and water beaker were supplied to each boat.

Compasses.—Compasses were supplied as follows:—

One Kelvin standard compass, with azimuth mirror on compass platform.

One Kelvin steering compass inside of wheel house.

One Kelvin steering compass on captain's bridge.

One light card compass for docking bridge.

Fourteen spirit compasses for lifeboats.

All the ships' compasses were lighted with oil and electric lamps. They were adjusted by Messrs. C. J. Smith, of Southampton, on the passage from Belfast to Southampton and Southampton to Queenstown.

Charts.—All the necessary charts were supplied.

Distress signals.—These were supplied of number and pattern approved by Board of Trade—i.e., 36 socket signals in lieu of guns, 12 ordinary rockets, 2 Manwell Holmes deck flares, 12 blue lights, and 6 lifebuoy lights.

Pumping Arrangements.

The general arrangement of piping was designed so that it was possible to pump from any flooded compartment by two independent systems of 10 in. mains having cross connections between them. These were controlled from above by rods and wheels led to the level of the bulkhead deck. By these it was possible to isolate any flooded space, together with any suction in it. If any of these should happen accidentally to be left open, and consequently out of reach, it could be shut off from the main by the wheel on the bulkhead deck. This arrangement was specially submitted to the Board of Trade and approved by them.

The double bottom of the vessel was divided by 17 transverse watertight divisions, including those bounding the fore and aft peaks, and again sub-divided by a centre fore and aft bulkhead, and two longitudinal bulkheads, into 46 compartments. Fourteen of these compartments had 8 in. suction, 23 had 6 in. suction, and three had 5 in. suction connected to the 10 in. ballast main suction; six compartments were used exclusively for fresh water.

The following bilge suction were provided for dealing with water above the double bottom, viz., in No. 1 hold two 3½ in. suction, No. 2 hold two 3½ in. and two 3 in. suction, bunker hold two 3½ in. and two 3 in. suction.

The valves in connection with the forward bilge and ballast suction were placed in the firemen's passage, the watertight pipe tunnel extending from No. 6 boiler room to the after end of No. 1 hold. In this tunnel, in addition to two 3 in. bilge suction, one at each end, there was a special 3½ in. suction with valve rod led up to the lower deck above the load line, so as always to have been accessible should the tunnel be flooded accidentally.

In No. 6 boiler room there were three 3½ in., one 4½ in., and two 3 in. suction.

In No. 5 boiler room there were three 3½ in., one 5 in., and two 3 in. suction.

In No. 4 boiler room there were three 3½ in., one 4½ in., and two 3 in. suction.

In No. 3 boiler room there were three 3½ in., one 5 in., and two 3 in. suction.

In No. 2 boiler room there were three 3½ in., one 5 in., and two 3 in. suction.

In No. 1 boiler room there were two 3½ in., one 5 in., and two 3 in. suction.

In the reciprocating engine room there were two 3½ in., six 3 in., two 18 in., and two 5 in. suction.

In the turbine engine room there were two 3½ in., three 3 in., two 18 in., two 5 in., and one 4 in. suction.

In the electric engine room there were four 3½ in. suction.

In the store rooms above the electric engine room there was one 3 in. suction.

In the forward tunnel compartment there were two 3½ in. suction.

In the watertight flat over the tunnel compartment there were two 3 in. suction.

In the tunnel after compartment there were two 3½ in. suction.

In the watertight flat over the tunnel after compartment there were two 3 in. suction.

Electrical Installation.

Main Generating Sets.—There were four engines and dynamos, each having a capacity of 400 kilowatts at 100 volts, and consisting of a vertical three-crank compound-forced lubrication enclosed engine, of sufficient power to drive the electrical plant.

The engines were direct-coupled to their respective dynamos.

These four main sets were situated in a separate watertight compartment about 63 ft. long by 24 ft. high, adjoining the after end of the turbine room at the level of the inner bottom.

Steam to the electric engines was supplied from two separate lengths of steam pipes, connecting on the port side to the five single-ended boilers in compartment No. 1 and two in compartment No. 2, and on the starboard side to the auxiliary steam pipe which derived steam from the five single-ended boilers in No. 1 compartment,

two in No. 2, and two in No. 4. By connections at the engine room forward bulk-head steam could be taken from any boiler in the ship.

Auxiliary Generating Sets.—In addition to the four main generating sets, there were two 30 kilowatt engines and dynamos situated on a platform in the turbine engine room casing on saloon deck level, 20 ft. above the water line. They were of the same general type as the main sets.

These auxiliary emergency sets were connected to the boilers by means of a separate steam pipe running along the working passage above E deck, with branches from three boiler rooms, Nos. 2, 3 and 5, so that should the main sets be temporarily out of action the auxiliary sets could provide current for such lights and power appliances as would be required in the event of emergency.

Electric Lighting.—The total number of incandescent lights was 10,000, ranging from 16 to 100 candle power, the majority being of Tantallum type, except in the cargo spaces and for the portable fittings, where carbon lamps were provided. Special dimming lamps of small amount of light were provided in the first-class rooms.

Electric Heating and Power and Mechanical Ventilation.—Altogether 562 electric heaters and 153 electric motors were installed throughout the vessel, including six 50-cwt. and two 30-cwt. cranes, four 3-ton cargo winches, and four 15-cwt. boat winches.

There were also four electric passenger lifts, three forward of the first-class main entrance and one in the second-class forward entrance, each to carry twelve persons.

Telephones.—Loud speaking telephones of navy pattern were fitted for communication between the following:—

Wheel house on the navigating bridge and the forecastle.

Wheel house on the navigating bridge and the look-out station on the crow's nest.

Wheel house on the navigating bridge and the engine room.

Wheel house on the navigating bridge and the poop.

Chief engineer's cabin and the engine room.

Engine room and Nos. 1, 2, 3, 4, 5 and 6 stokeholds.

These were operated both from the ship's lighting circuit, through a motor generator, and alternatively by a stand-by battery, which by means of an automatic switch could be introduced in the circuit should the main supply fail.

There was also a separate telephone system for intercommunication between a number of the chief officials and service rooms, through a 50-line exchange switch-board.

A number of the pantries and galleys were also in direct telephonic communication.

Wireless Telegraphy.—The wireless telegraphy system was worked by a Marconi 5 kilowatt motor generator. The house for the Marconi instruments was situated on the Boat deck close to the bridge. There were four parallel aerial wires extended between the masts, fastened to light booms; from the aeriels the connecting wires were led to the instruments in the house. There were two complete sets of apparatus, one for the transmitting and one for receiving messages, the former being placed in a sound-proof chamber in one corner of the wireless house.

There was also an independent storage battery and coil, in event of the failure of the current supply, which came from the ship's dynamos.

Submarine signalling.—The Submarine Signal Company's apparatus was provided for receiving signals from the submarine bells. Small tanks containing the microphones were placed on the inside of the hull of the vessel on the port and starboard sides below the water level, and were connected by wires to receivers situated in the navigating room on the port side of the officer's deck-house.

Various.—The whistles were electrically actuated on the Willett Bruce system. The boiler room telegraphs, stoking indicators, rudder indicators, clocks and thermostats were also electrical. The watertight doors were released by electric magnets.

Emergency Circuit.—A separate and distinct installation was fitted in all parts of the vessel, deriving current from the two 30 kilowatt sets above mentioned, so that in the event of the current from the main dynamos being unavailable an

independent supply was obtainable. Connected to the emergency circuit were above 500 incandescent lamps fitted throughout all passenger, crew and machinery compartments, at the end of passages, and near stairways, also on the Boat deck, to enable anyone to find their way from one part of the ship to the other.

The following were also connected to the emergency circuit by means of change-over switches:—Five arc lamps, seven cargo and gangway lanterns, Marconi apparatus, mast, side and stern lights, and all lights on bridge, including those for captain's, navigating and chart rooms, wheelhouse, telegraphs and Morse signalling lanterns, and four electrically-driven boat winches. These latter, situated on the boat deck, were each capable of lifting a load of 15 cwt. at a speed of 100 ft. per minute.

Ventilating.—There were 12 electrically driven fans for supplying air to the stokeholds; six electrically driven fans for engine and turbine room ventilation. There were fans for engine and boiler rooms.

Machinery.

Description.—The propelling machinery was of the combination type, having two sets of reciprocating engines driving the wing propellers, and a low-pressure turbine working the centre propeller. Steam was supplied by 24 double-ended boilers, and five single-ended boilers, arranged for a working pressure of 215 lb. per square inch. The turbine was placed in a separate compartment aft of the reciprocating engine-room and divided from it by a watertight bulkhead. The main condensers, with their circulating pumps and air pumps, were placed in the turbine room. The boilers were arranged in six watertight compartments, the single-ended boilers being placed in the one nearest the main engines, the whole being built under Board of Trade survey for passenger certificate.

Reciprocating Engines.—The reciprocating engines were of the four-crank triple expansion type. Each set had four inverted, direct-acting cylinders, the high-pressure having a diameter of 54 in., the intermediate pressure of 84 in., and each of the two low-pressure cylinders of 97 in., all with a stroke of 6 ft. 3 in. The valves of the high pressure and intermediate cylinders were of the piston type, and the low-pressure cylinder had double-ported slide valves, fitted with Stephenson link motion. Each engine was reversed by a Brown's type of direct-acting steam and hydraulic engine. There was also a separate steam-driven high-pressure pump fitted for operating either or both of the reversing engines. This alternative arrangement was a stand-by in case of breakdown of the steam pipes to these engines.

Turbine.—The low-pressure turbine was of the Parson's reaction type, direct coupled to the centre line of shafting and arranged for driving in the ahead direction only. It exhausted to the two condensers, placed one on each side of it. A shut-off valve was fitted in each of the eduction pipes leading to the condensers. An emergency governor was fitted and arranged to shut off steam to the turbine and simultaneously change over the exhaust from the reciprocating engines to the condensers, should the speed of the turbine become excessive through the breaking of a shaft or other accident.

Boilers.—All the boilers were 15 ft. 9 in. in diameter, the 24 double-ended boilers being 20 ft. long, and the single-ended 11 ft. 9 in. long. Each double-ended boiler had six, and each single-ended boiler three furnaces, with a total heating surface of 144,142 sq. ft. and a grate surface of 3,466 sq. ft. The boilers were constructed in accordance with the rules of the Board of Trade for a working pressure of 215 lb. per square inch. They were arranged for working under natural draught, assisted by fans, which blew air into the open stokehold.

Auxiliary Steam Pipes.—The five single-ended boilers and those in boiler-rooms Nos. 2 and 4 had separate steam connections to the pipe supplying steam for working the auxiliary machinery, and the five single-ended boilers and the two port boilers in boiler-room No. 2 had separate steam connections to the pipe supplying steam for working the electric light engines. A cross connection was also made between the main and auxiliary pipes in the reciprocating engine-room, so that the auxiliaries could be worked from any boiler in the ship. Steam pipes also were led separately from three of the boiler-rooms (Nos. 2, 3, 5) above the watertight bulkheads and along the working passage to the emergency electric light engines placed above

the load-line in the turbine room. Pipes were also led from this steam supply to the pumps in the engine room, which were connected to the bilges throughout the ship.

Main Steam Pipes.—There were two main lines of steam pipes led to the engine room, with shut-off valves at three of the bulkheads. Besides the shut-off valves at the engine room bulkhead, a quick-acting emergency valve was fitted on each main steam pipe, so that the steam could at once be shut-off in case of rupture of the main pipe.

Condensing Plant and Pumps.—There were two main condensers, having a combined cooling surface of 50,550 square feet, designed to work under a vacuum of 28 ins. with cooling water at 60 deg. Fahr. The condensers were pear-shaped in section, and built of mild steel plates.

Four gunmetal centrifugal pumps were fitted for circulating water through the condensers. Each pump had suction and discharge pipes of 29 in. bore, and was driven by a compound engine. Besides the main sea suction, two of the pumps had direct bilge suction from the turbine room and the other two from the reciprocating engine room. The bilge suction was 18 in. diameter. Four of Weir's "Dual" air pumps were fitted, two to each condenser, and discharged to two feed-tanks placed in the turbine engine room.

Bilge and Ballast Pumps.—The ship was also fitted with the following pumps: Five ballast and bilge pumps, each capable of discharging 250 tons of water per hour; three bilge pumps, each of 150 tons per hour capacity.

One ash ejector was placed in each of the large boiler compartments to work the ash ejectors, and to circulate or feed the boilers as required. This pump was also connected to the bilges, except in the case of three of the boiler rooms, where three of the ballast and bilge pumps were placed. The pumps in each case had direct bilge suction as well as a connection to the main bilge pipe, so that each boiler room might be independent. The remainder of the auxiliary pumps were placed in the reciprocating and turbine engine rooms. Two ballast pumps were placed in the reciprocating engine room, with large suction from the bilges direct and from the bilge main. Two bilge pumps were also arranged to draw from bilges. One bilge pump was placed in the turbine room and one of the hot salt-water pumps had a connection from the bilge main pipe for use in emergency. A 10 in. main ballast pipe was carried fore and aft through the ship with separate connections to each tank, and with filling pipes from the sea connected at intervals for trimming purposes. The five ballast pumps were arranged to draw from this pipe. A double line of bilge main pipe was fitted forward of No. 5 boiler room and aft of No. 1.

General.

There were four elliptical-shaped funnels; the three forward ones took the waste gases from the boiler furnaces, and the after one was placed over the turbine hatch and was used as a ventilator. The galley funnels were led up this funnel. The uptakes by which the waste gases were conveyed to the funnels were united immediately above the watertight bulkhead which separated the boiler rooms.

All overhead discharge from the circulating pumps, ballast pumps, bilge pumps, etc., were below the deep load-line, but above the light line.

The boilers were supported in built steel cradles, and were stayed to the ship's side and to each other athwart ships by strong steel stays. Built steel chocks were also fitted to prevent movement fore and aft.

Silent blow-offs from the main steam pipes were connected direct to both condensers.

Crew and Passengers.

When the "Titanic" left Queenstown on 11th April the total number of persons employed on board in any capacity was 885.

The respective ratings of these persons were as follows:—

Deck Department	...	66
Engine Department	...	325
Victualling Department		494
		— 885

Eight bandsmen were included in the second-class passenger list.

In the Deck Department the

Master, Edward Charles Smith, held an Extra Master's Certificate.
Chief Officer H. F. Wilde held an Ordinary Master's Certificate.
1st Officer W. M. Murdoch held an Ordinary Master's Certificate.
2nd Officer C. H. Lightoller held an Extra Master's Certificate.
3rd Officer H. J. Pitman held an Ordinary Master's Certificate.
4th Officer J. G. Boxall held an Extra Master's Certificate.
5th Officer H. G. Lowe held an Ordinary Master's Certificate.
6th Officer J. P. Moody held an Ordinary Master's Certificate.

In the Engine Department were included the Chief Engineer and 7 senior and 17 assistant engineers.

In the Victualling Department there were 23 women employed.

The total number of passengers on board was 1,316.

	Male.	Female.	Total.
Of these 1st class	180	145	325
2nd class	179	106	285
3rd class	510	196	706
			— 1,316

Of the above 6 children were in the 1st class.

24	2nd class.
79	3rd class.

or 109 in all.

About 410 of the 3rd class passengers were foreigners, and these, with the foreigners in the 1st and 2nd class and in the Victualling Department would make a total of nearly 500 persons on board who were presumably not English speaking, so far as it is possible to ascertain. The disposition of the different classes of passengers and of the crew in the ship has already been described (pp. 10-15). In all 2,201 persons were on board.

2.—ACCOUNT OF THE SHIP'S JOURNEY ACROSS THE ATLANTIC, THE MESSAGES SHE RECEIVED AND THE DISASTER.

The Sailing Orders.

The masters of vessels belonging to the White Star Line are not given any special "sailing orders" before the commencement of any particular voyage. It is understood, however, that the "tracks" or "lane routes" proper to the particular time of the year, and agreed upon by the great steamship companies, are to be generally adhered to. Should any master see fit during this passage to deviate from his route he has to report on and explain this deviation at the end of his voyage. When such deviation has been in the interests of safety, and not merely to shorten his passage, his action has always been approved of by the Company.

A book of "General Ship's Rules and Uniform Regulations" is also issued by the Company as a guide; there are in this book no special instructions in regard to ice, but there is a general instruction that the safety of the lives of the passengers and ship are to be the first consideration.

Besides the book of Ship's Rules, every master when first appointed to command a ship is addressed by special letter from the Company, of which the following passage is an extract:—"You are to dismiss all idea of competitive passages with other vessels and to concentrate your attention upon a cautious, prudent and ever watchful system of navigation, which shall lose time or suffer any other temporary inconvenience rather than incur the slightest risk which can be avoided." Mr. Sanderson, one of the directors, in his evidence says with reference to the above letter:—"We never fail to tell them in handing them these letters that we do not wish them to take it as a mere matter of form; that we wish them to read these letters, and to write an acknowledgment to us that they have read them, and that they will be influenced by what we have said in those letters."

The Route followed.

The "Titanic" left Southampton on Wednesday, 10th April, and, after calling at Cherbourg, proceeded to Queenstown, from which port she sailed on the afternoon of Thursday, 11th April, following what was at that time the accepted outward-bound route for mail steamers from the Fastnet Light, off the south-west coast of Ireland, to the Nantucket Shoal light vessel, off the coast of the United States. It is desirable here to explain that it has been, since 1899, the practice, by common agreement between the great North Atlantic steamship companies, to follow lane routes, to be used by their ships at the different seasons of the year. Speaking generally, it may be said that the selection of these routes has hitherto been based on the importance of avoiding as much as possible the areas where fog and ice are prevalent at certain seasons, without thereby unduly lengthening the passage across the Atlantic; and also with the view of keeping the tracks of "outward" and "homeward" bound mail steamers well clear of one another. A further advantage is that, in case of a breakdown, vessels are likely to receive timely assistance from other vessels following the same route. The decisions arrived at by the steamship companies referred to above have, from time to time, been communicated to the Hydrographic Office, and the routes have there been marked on the North Atlantic route charts printed and published by the Admiralty; and they have also been embodied in the Sailing Directions.

Before the "Titanic" disaster the accepted mail steamers outward track between January 15th and August 14th followed the arc of a great circle between the Fastnet Light and a point in latitude 42° N. and 47° W. (sometimes termed the "turning point"), and from thence by Rhumb Line so as to pass just south of the Nantucket Shoal light vessel, and from this point on to New York. This track, usually called the Outward Southern Track, was that followed by the "Titanic" on her journey.

An examination of the North Atlantic route chart shows that this track passes about 25 miles south (that is outside) of the edge of the area marked "field ice between March and July," but from 100 to 300 miles to the northward (that is inside) of the dotted line on the chart marked, "Icebergs have been seen within this line in April, May and June."

That is to say, assuming the areas indicated to be based on the experience of many years, this track might be taken as passing clear of field ice under the usual conditions of that time of year, but well inside the area in which icebergs might be seen.

It is instructive here to remark that had the "turning point" been in long. 45° W. and lat. 38° N., that is some 240 miles to the south-eastward, the total distance of the passage would only have been increased by about 220 miles, or some 10 hours' steaming for a 22-knot ship. This is the route which was provisionally decided on by the great Transatlantic companies subsequent to the "Titanic" disaster.

It must not be supposed that the lane routes referred to had never been changed before. Owing to the presence of ice in 1903, 1904 and 1905 from about early in April to mid-June or early in July, westward-bound vessels crossed the meridian of 47° W. in lat. 41° N., that is 60 miles further south than the then accepted track.

The publications known as "Sailing Directions," compiled by the Hydrographic Office at the Admiralty, indicate the caution which it is necessary to use in regions where ice is likely to be found.

The following is an extract from one of these books, named "United States Pilot (East Coast)," part I. (second edition, 1909, page 34), referring to the ocean passages of the large Transatlantic mail and passenger steamers:—

"To these vessels, one of the chief dangers in crossing the Atlantic lies in the probability of encountering masses of ice, both in the form of bergs and of extensive fields of solid compact ice, released at the breaking up of winter in the Arctic regions, and drifted down by the Labrador Current across their direct route. Ice is more likely to be encountered in this route between April and August, both months inclusive, than at other times, although icebergs have been seen at all seasons northward of the parallel of 43° N., but not often so far south after August.

"These icebergs are sometimes over 200 ft. in height and of considerable extent. They have been seen as far south as lat. 39° N., to obtain which position they must have crossed the Gulf Stream impelled by the cold Arctic current underrunning the warm waters of the Gulf Stream. That this should happen is not to be wondered at when it is considered that the specific gravity of fresh-water ice, of which these bergs are composed, is about seven-eighths that of sea water; so that, however vast the berg may appear to the eye of the observer, he can in reality see one-eighth of its bulk, the remaining seven-eighths being submerged and subject to the deep-water currents of the ocean. The track of an iceberg is indeed directed mainly by current, so small a portion of its surface being exposed to the action of the winds that its course is but slightly retarded or deflected by moderate breezes. On the Great Bank of Newfoundland bergs are often observed to be moving south or south-east; those that drift westward of Cape Race usually pass between Green and St. Pierre Banks.

"The route chart of the North Atlantic, No. 2058, shows the limits within which both field ice and icebergs may be met with, and where it should be carefully looked out for at all times, but especially during the spring and summer seasons. From this chart it would appear that whilst the southern and eastern limits of field ice are about lat. 42° N. and long. 45° W., icebergs may be met with much farther from Newfoundland; in April, May and June they have been seen as far South as lat. 39° N., and as far east as long. $38^{\circ} 30'$ W."

And again on page 35:—

"It is, in fact, impossible to give, within the outer limits named, any distinct idea of where ice may be expected, and no rule can be laid down to ensure safe navigation, as its position and the quantity met with differs so greatly in different seasons. Everything must depend upon the vigilance, caution and skill with which a vessel is navigated when crossing the dangerous ice-bearing regions of the Atlantic Ocean."

Similar warnings as to ice are also given in the "Nova Scotia (South-East Coast) and Bay of Fundy Pilot" (sixth edition, 1911) which is also published by the Hydrographic Office.

Ismay
18625

18614
18615
18618

18612

18613

18611

18629

Sanderson
19271

Both the above quoted books were supplied to the master of the "Titanic" (together with other necessary charts and books) before that ship left Southampton.

The above extracts show that it is quite incorrect to assume that icebergs had never before been encountered or field ice observed so far south, at the particular time of year when the "Titanic" disaster occurred; but it is true to say that the field ice was certainly at that time further south than it has been seen for many years.

It may be useful here to give some definitions of the various forms of ice to be met with in these latitudes, although there is frequently some confusion in their use.

An *Iceberg* may be defined as a detached portion of a Polar glacier carried out to sea. The ice of an iceberg formed from a glacier is of quite fresh water, only about an eighth of its mass floats above the surface of sea water.

A "*Growler*" is a colloquial term applied to icebergs of small mass, which therefore only show a small portion above the surface. It is not infrequently a berg which has turned over, and is therefore showing what has been termed "black ice," or more correctly, dark blue ice.

Pack Ice is the floating ice which covers wide areas of the Polar seas, broken into large pieces, which are driven ("packed") together by wind and current, so as to form a practically continuous sheet. Such ice is generally frozen from sea water, and not derived from glaciers.

Field Ice is a term usually applied to frozen sea water floating in much looser form than pack ice.

An *Icefloe* is the term generally applied to the same ice (*i.e.*, field ice) in a smaller quantity.

A *Floe Berg* is a stratified mass of floe ice (*i.e.*, sea-water ice).

Ice Messages Received.

The "Titanic" followed the Outward Southern Track until Sunday, the 14th April, in the usual way. At 11.40 p.m. on that day she struck an iceberg and at 2.20 a.m. on the next day she foundered.

At 9 a.m. ("Titanic" time) on that day a wireless message from the s.s. "Caronia" was received by Captain Smith. It was as follows:—

"Captain, 'Titanic.'—West-bound steamers report bergs growlers and field ice in 42° N. from 49° to 51° W., 12th April. Compliments.—Barr."

It will be noticed that this message referred to bergs, growlers and field ice sighted on the 12th April—at least 48 hours before the time of the collision. At the time this message was received the "Titanic's" position was about lat. 43° 35' N. and long. 43° 50' W. Captain Smith acknowledged the receipt of this message.

At 1.42 p.m. a wireless message from the s.s. "Baltic" was received by Captain Smith. It was as follows:—

"Captain Smith, 'Titanic.'—Have had moderate, variable winds and clear, fine weather since leaving. Greek steamer 'Athenai' reports passing icebergs and large quantities of field ice to-day in lat. 41° 51' N., long. 49° 52' W. Last night we spoke German oiltank steamer 'Deutschland,' Stettin to Philadelphia, not under control, short of coal, lat. 40° 42' N., long. 55° 11' W. Wishes to be reported to New York and other steamers. Wish you and 'Titanic' all success.—Commander."

At the time this message was received the "Titanic" position was about 42° 35' N., 45° 50' W. Captain Smith acknowledged the receipt of this message also.

Mr. Ismay, the Managing Director of the White Star Line, was on board the "Titanic," and it appears that the Master handed the Baltic's message to Mr. Ismay almost immediately after it was received. This no doubt was in order that Mr. Ismay might know that ice was to be expected. Mr. Ismay states that he understood from the message that they would get up to the ice "that night." Mr. Ismay showed this message to two ladies, and it is therefore probable that many persons on board became aware of its contents. This message ought in my opinion to have been

put on the board in the chart room as soon as it was received. It remained, however, in Mr. Ismay's possession until 7.15 p.m., when the Master asked Mr. Ismay to return it. It was then that it was first posted in the chart room.

This was considerably before the time at which the vessel reached the position recorded in the message. Nevertheless, I think it was irregular for the Master to part with the document, and improper for Mr. Ismay to retain it, but the incident had, in my opinion, no connection with or influence upon the manner in which the vessel was navigated by the Master.

It appears that about 1.45 p.m. ("Titanic" time) on the 14th a message was sent from the German steamer "Amerika" to the Hydrographic Office in Washington, which was in the following terms:—

"'Amerika' passed two large icebergs in 41° 27' N., 50° 8' W., on the 14th April."

This was a position south of the point of the "Titanic's" disaster. The message does not mention at what hour the bergs had been observed. It was a private message for the Hydrographer at Washington, but it passed to the "Titanic" because she was nearest to Cape Race, to which station it had to be sent in order to reach Washington. Being a message affecting navigation, it should in the ordinary course have been taken to the bridge. So far as can be ascertained, it was never heard of by anyone on board the "Titanic" outside the Marconi room. There were two Marconi operators in the Marconi room, namely, Phillips, who perished, and Bride, who survived and gave evidence. Bride did not receive the "Amerika" message nor did Phillips mention it to him, though the two had much conversation together after it had been received. I am of opinion that when this message reached the Marconi room it was put aside by Phillips to wait until the "Titanic" would be within call of Cape Race (at about 8 or 8.30 p.m.), and that it was never handed to any officer of the "Titanic."

At 5.50 p.m. the "Titanic's" course (which had been S. 62° W.) was changed to bring her on a westerly course for New York. In ordinary circumstances this change in her course should have been made about half an hour earlier, but she seems on this occasion to have continued for about ten miles longer on her south-westerly course before turning, with the result that she found herself, after altering course at 5.50 p.m. about four or five miles south of the customary route on a course S. 86° W. true. Her course, as thus set, would bring her at the time of the collision to a point about two miles to the southward of the customary route and four miles south and considerably to the westward of the indicated position of the "Baltic's" ice. Her position at the time of the collision would also be well to the southward of the indicated position of the ice mentioned in the "Caronia" message. This change of course was so insignificant that in my opinion it cannot have been made in consequence of information as to ice.

In this state of things, at 7.30 p.m. a fourth message was received, and is said by the Marconi operator Bride to have been delivered to the bridge. This message was from the s.s. "Californian" to the s.s. "Antillian," but was picked up by the "Titanic." It was as follows:—

"To Captain, 'Antillian,' 6.30 p.m. apparent ship's time; lat. 42° 3' N., long. 49° 9' W. Three large bergs five miles to southward of us. Regards.—Lord."

Bride does not remember to what officer he delivered this message.

By the time the "Titanic" reached the position of the collision (11.40 p.m.) she had gone about 50 miles to the westward of the indicated position of the ice mentioned in this fourth message. Thus it would appear that before the collision she had gone clear of the indicated positions of ice contained in the messages from the "Baltic" and "Californian." As to the ice advised by the "Caronia" message, so far as it consisted of small bergs and field ice, it had before the time of the collision possibly drifted with the Gulf Stream to the eastward; and so far as it consisted of large bergs (which would be deep enough in the water to reach the Labrador current) it had probably gone to the southward. It was urged by Sir Robert Finlay, who appeared for the owners, that this is strong evidence that the "Titanic" had been carefully and successfully navigated so as to avoid the ice of which she had received warning. Mr. Ismay, however, stated that he understood from the "Baltic" message that "we would get up to the ice that night."

There was a fifth message received in the Marconi room of the "Titanic"

Boxall, 1531

Evans, 8943

Ismay, 1846

Turnbull,
16221

at 9.40 p.m. This was from a steamer called the "Mesaba." It was in the following terms:—

"From 'Mesaba' to 'Titanic' and all east-bound ships. Ice report in lat. 42° N. to 41° 25' N., long. 49° to long. 50° 30' W. Saw much heavy pack ice and great number large icebergs. Also field ice. Weather good, clear."

This message clearly indicated the presence of ice in the immediate vicinity of the "Titanic," and if it had reached the bridge would perhaps have affected the navigation of the vessel. Unfortunately, it does not appear to have been delivered to the Master or to any of the officers. The Marconi operator was very busy from 8 o'clock onward transmitting messages via Cape Race for passengers on board the "Titanic," and the probability is that he failed to grasp the significance and importance of the message, and put it aside until he should be less busy. It was never acknowledged by Captain Smith, and I am satisfied that it was not received by him. But, assuming Sir Robert Finlay's contentions to be well founded that the "Titanic" had been navigated so as to avoid the "Baltic" and the "Californian" ice, and that the "Caronia" ice had drifted to the eastward and to the southward, still there can be no doubt, if the evidence of Mr. Lightoller, the second officer, is to be believed, that both he and the Master knew that the danger of meeting ice still existed. Mr. Lightoller says that the Master showed him the "Caronia" message about 12.45 p.m. on the 14th April when he was on the bridge. He was about to go off watch, and he says he made a rough calculation in his head which satisfied him that the "Titanic" would not reach the position mentioned in the message until he came on watch again at 6 p.m. At 6 p.m. Mr. Lightoller came on the bridge again to take over the ship from Mr. Wilde, the chief officer, (dead). He does not remember being told anything about the "Baltic" message, which had been received at 1.42 p.m. Mr. Lightoller then requested Mr. Moody, the sixth officer, (dead), to let him know "at what time we should reach the vicinity of ice," and says that he thinks Mr. Moody reported "about 11 o'clock." Mr. Lightoller says that 11 o'clock did not agree with a mental calculation he himself had made and which showed 9.30 as the time. This mental calculation he at first said he had made before Mr. Moody gave him 11 o'clock as the time, but later on he corrected this, and said his mental calculation was made between 7 and 8 o'clock, and after Mr. Moody had mentioned 11. He did not point out the difference to him, and thought that perhaps Mr. Moody had made his calculations on the basis of some "other" message. Mr. Lightoller excuses himself for not pointing out the difference by saying that Mr. Moody was busy at the time, probably with stellar observations. It is, however, an odd circumstance that Mr. Lightoller, who believed that the vicinity of ice would be reached before his watch ended at 10 p.m., should not have mentioned the fact to Mr. Moody, and it is also odd that if he thought that Mr. Moody was working on the basis of some "other" message, he did not ask what the other message was or where it came from. The point, however, of Mr. Lightoller's evidence is that they both thought that the vicinity of ice would be reached before midnight. When he was examined as to whether he did not fear that on entering the indicated ice region he might run foul of a growler (a low-lying berg) he answers: "No, I judged I should see it with sufficient distinctness" and at a distance of a "mile and a half, more probably two miles." He then adds: "In the event of meeting ice there are many things we look for. In the first place, a slight breeze. Of course, the stronger the breeze the more visible will the ice be, or, rather, the breakers on the ice." He is then asked whether there was any breeze on this night, and he answers: "When I left the deck at 10 o'clock there was a slight breeze. Oh, pardon me, no; I take that back. No, it was calm, perfectly calm," and almost immediately afterwards he describes the sea as "absolutely flat." It appeared, according to this witness, that about 9 o'clock the Master came on the bridge and that Mr. Lightoller had a conversation with him which lasted half an hour. This conversation, so far as it is material, is described by Mr. Lightoller in the following words: "We commenced to speak about the weather. He said, 'there is not much wind.' I said, 'No, it is a flat calm,' as a matter of fact. He repeated it, he said, 'A flat calm.' I said, 'Quite flat; there is no wind.' I said something about it was rather a pity the breeze had not kept up whilst we were going through the ice region. Of course, my reason was obvious; he knew I meant the water ripples breaking on the base of the berg. . . . We then discussed the indications of ice. I remember saying 'In any case, there will be a certain amount of reflected light from the

'bergs.' He said, 'Oh, yes, there will be a certain amount of reflected light.' I said or he said—blue was said between us—that even though the blue side of the berg was towards us, probably the outline, the white outline, would give us sufficient warning, that we should be able to see it at a good distance, and as far as we could see, we should be able to see it. Of course, it was just with regard to that possibility of the blue side being towards us, and that if it did happen to be turned with the purely blue side towards us, there would still be the white outline." Further on Mr. Lightoller says that he told the Master nothing about his own calculation as to coming up with the ice at 9.30 or about Mr. Moody's calculation as to coming up with it at 11.

The conversation with the Master ended with the Master saying, "If it becomes at all doubtful let me know at once; I will be just inside." This remark Mr. Lightoller says undoubtedly referred to ice.

At 9.30 the Master went to his room, and the first thing that Mr. Lightoller did afterwards was to send a message to the crow's nest "to keep a sharp look-out for ice, particularly small ice and growlers," until daylight. There seems to be no doubt that this message was in fact sent, and that it was passed on to the next look-outs when they came on watch. Hitchens, the quartermaster, says he heard Mr. Lightoller give the message to Mr. Moody, and both the men in the crow's nest at the time (Jewell and Symons) speak to having received it. From 9.30 to 10 o'clock, when his watch ended, Mr. Lightoller remained on the bridge "looking out for ice." He also said that the night order book for the 14th had a footnote about keeping a sharp look-out for ice, and that this note was "initialled by every officer." At 10 o'clock Mr. Lightoller handed over the watch to Mr. Murdoch, the first officer, (dead), telling him that "we might be up around the ice any time now." That Mr. Murdoch knew of the danger of meeting ice appears from the evidence of Hemming, a lamp trimmer, who says that about 7.15 p.m. Mr. Murdoch told him to go forward and see the fore-scuttle hatch closed, "as we are in the vicinity of ice and there is a glow coming from that, and I want everything dark before the bridge."

The foregoing evidence establishes quite clearly that Captain Smith, the master, Mr. Murdoch, the first officer, Mr. Lightoller, the second officer, and Mr. Moody, the sixth officer, all knew on the Sunday evening that the vessel was entering a region where ice might be expected, and this being so, it seems to me to be of little importance to consider whether the Master had by design or otherwise succeeded in avoiding the particular ice indicated in the three messages received by him.

Speed of the Ship.

The entire passage had been made at high speed, though not at the ship's maximum, and this speed was never reduced until the collision was unavoidable. At 10 p.m. the ship was registering 45 knots every two hours by the Cherub log.

The quartermaster on watch aft, when the "Titanic" struck, states that the log, reset at noon, then registered 260 knots, and the fourth officer, when working up the position from 7.30 p.m. to the time of the collision, states he estimated the "Titanic's" speed as 22 knots, and this is also borne out by evidence that the engines were running continuously at 75 revolutions.

The Weather Conditions.

From 6 p.m. onwards to the time of the collision the weather was perfectly clear and fine. There was no moon, the stars were out, and there was not a cloud in the sky. There was, however, a drop in temperature of 10 deg. in slightly less than two hours, and by about 7.30 p.m. the temperature was 33 deg. F., and it eventually fell to 32 deg. F. That this was not necessarily an indication of ice, is borne out by the Sailing Directions. The Nova Scotia (S.E. Coast) and Bay of Fundy Pilot (6th edition, 1911, page 16) says:—

"No reliance can be placed on any warning being conveyed to a mariner by a fall of temperature either of the air or sea, on approaching ice. Some decrease in temperature has occasionally been recorded, but more often none has been observed."

Sir Ernest Shackleton was, however, of opinion that "if there was no wind and the temperature fell abnormally for the time of the year, I would consider that I was approaching an area which might have ice in it."

Lightoller,
13537, 13556

13569

13635

13653

13657

13700

Hemming,
17707

Hitchens 963

Rowe, 17607

Boxall 15645

Lightoller,
13616Shackleton,
25062

Action that should have been taken.

The question is what ought the Master to have done. I am advised that with the knowledge of the proximity of ice which the Master had, two courses were open to him: The one was to stand well to the southward instead of turning up to a westerly course; the other was to reduce speed materially as night approached. He did neither. The alteration of the course at 5.50 p.m. was so insignificant that it cannot be attributed to any intention to avoid ice. This deviation brought the vessel back to within about two miles of the customary route before 11.30 p.m. And there was certainly no reduction of speed. Why, then, did the Master persevere in his course and maintain his speed? The answer is to be found in the evidence. It was shown that for many years past, indeed, for a quarter of a century or more, the practice of liners using this track when in the vicinity of ice at night had been in clear weather to keep the course, to maintain the speed and to trust to a sharp look-out to enable them to avoid the danger. This practice, it was said, had been justified by experience, no casualties having resulted from it. I accept the evidence as to the practice and as to the immunity from casualties which is said to have accompanied it. But the event has proved the practice to be bad. Its root is probably to be found in competition and in the desire of the public for quick passages rather than in the judgment of navigators. But unfortunately experience appeared to justify it. In these circumstances I am not able to blame Captain Smith. He had not the experience which his own misfortune has afforded to those whom he has left behind, and he was doing only that which other skilled men would have done in the same position. It was suggested at the bar that he was yielding to influences which ought not to have affected him: that the presence of Mr. Ismay on board and the knowledge which he perhaps had of a conversation between Mr. Ismay and the Chief Engineer at Queenstown about the speed of the ship and the consumption of coal probably induced him to neglect precautions which he would otherwise have taken. But I do not believe this. The evidence shows that he was not trying to make any record passage or indeed any exceptionally quick passage. He was not trying to please anybody, but was exercising his own discretion in the way he thought best. He made a mistake, a very grievous mistake, but one in which, in face of the practice and of past experience, negligence cannot be said to have had any part; and in the absence of negligence it is, in my opinion, impossible to fix Captain Smith with blame. It is, however, to be hoped that the last has been heard of the practice and that for the future it will be abandoned for what we now know to be more prudent and wiser measures. What was a mistake in the case of the "Titanic" would without doubt be negligence in any similar case in the future.

The Collision.

Mr. Lightoller turned over the ship to Mr. Murdoch, the first officer, at 10 o'clock, telling him that the ship was within the region where ice had been reported. He also told him of the message he had sent to the crow's nest, and of his conversation with the Master, and of the latter's orders.

The ship appears to have run on, on the same course, until, at a little before 11.40, one of the look-outs in the crow's-nest struck three blows on the gong, which was the accepted warning for something ahead, following this immediately afterwards by a telephone message to the bridge "Iceberg right ahead." Almost simultaneously with the three gong signal Mr. Murdoch, the officer of the watch, gave the order "Hard-a-starboard," and immediately telegraphed down to the engine-room "Stop. Full speed astern." The helm was already "hard over," and the ship's head had fallen off about two points to port, when she collided with an iceberg well forward on her starboard side.

Mr. Murdoch at the same time pulled the lever over which closed the watertight doors in the engine and boiler rooms.

The Master "rushed out" on to the bridge and asked Mr. Murdoch what the ship had struck.

Mr. Murdoch replied: "An iceberg, Sir. I hard-a-starboarded and reversed the engines, and I was going to hard-a-port round it but she was too close. I could not do any more. I have closed the watertight doors."

From the evidence given it appears that the "Titanic" had turned about two points to port before the collision occurred. From various experiments subsequently made with the s.s. "Olympic," a sister ship to the "Titanic," it was found that travelling at the same rate as the "Titanic," about 37 seconds would be required

for the ship to change her course to this extent after the helm had been put hard-a-starboard. In this time the ship would travel about 466 yards, and allowing for the few seconds that would be necessary for the order to be given, it may be assumed that 500 yards was about the distance at which the iceberg was sighted either from the bridge or crow's-nest.

That it was quite possible on this night, even with a sharp look-out at the stemhead, crow's-nest and on the bridge, not to see an iceberg at this distance is shown by the evidence of Captain Rostron, of the "Carpathia."

The injuries to the ship, which are described in the next section, were of such a kind that she foundered in two hours and forty minutes.

Rostron
25401

Lightoller,
13710
13720

Hitchins, 969

Boxall, 15346
15352

Hitchins,
1027
15353
15355

3.—DESCRIPTION OF THE DAMAGE TO THE SHIP AND OF ITS GRADUAL AND FINAL EFFECT, WITH OBSERVATIONS THEREON.

The damage done to the ship was as follows:—

Extent of the damage.

The collision with the iceberg, which took place at 11.40 p.m., caused damage to the bottom of the starboard side of the vessel at about 10 feet above the level of the keel, but there was no damage above this height. There was damage in:—

The fore peak, No. 1 hold, No. 2 hold, No. 3 hold, No. 6 boiler room, No. 5 boiler room.

The damage extended over a length of about 300 ft.

Time in which the damage was done.

As the ship was moving at over 20 knots, she would have passed through 300 ft. in less than 10 seconds, so that the damage was done in about this time.

The flooding in first 10 minutes.

At first it is desirable to consider what happened in the first 10 minutes.

The forepeak was not flooded above the Orlop deck—i.e., the peak tank top, from the hole in the bottom of the peak tank.

In No. 1 hold there was 7 ft. of water.

In No. 2 hold five minutes after the collision water was seen rushing in at the bottom of the firemen's passage on the starboard side, so that the ship's side was damaged abaft of bulkhead B sufficiently to open the side of the firemen's passage, which was 3½ ft. from the outer skin of the ship, thereby flooding both the hold and the passage.

In No. 3 hold the mail room was filled soon after the collision. The floor of the mail room is 24 ft. above the keel.

In No. 6 boiler room, when the collision took place, water at once poured in at about 2 feet above the stokehold plates, on the starboard side, at the after end of the boiler room. Some of the firemen immediately went through the watertight door opening to No. 5 boiler room because the water was flooding the place. The watertight doors in the engine-rooms were shut from the bridge almost immediately after the collision. Ten minutes later it was found that there was water to the height of 8 feet above the double bottom in No. 6 boiler room.

No. 5 boiler room was damaged at the ship's side in the starboard forward bunker at a distance of 2 feet above the stokehold plates, at 2 feet from the watertight bulkhead between Nos. 5 and 6 boiler rooms. Water poured in at that place as it would from an ordinary fire hose. At the time of the collision this bunker had no coal in it. The bunker door was closed when water was seen to be entering the ship.

In No. 4 boiler room there was no indication of any damage at the early stages of the sinking.

Gradual effect of the Damage.

It will thus be seen that all the six compartments forward of No. 4 boiler room were open to the sea by damage which existed at about 10 feet above the keel. At 10 minutes after the collision the water seems to have risen to about 14 feet above the keel in all these compartments except No. 5 boiler room. After the first ten minutes, the water rose steadily in all these six compartments. The fore peak above the peak tank was not filled until an hour after the collision when the vessel's bow was submerged to above C deck. The water then flowed in from the top through the deck scuttle forward of the collision bulkhead. It was by this scuttle that access was obtained to all the decks below C down to the peak tank top on the orlop deck.

At 12 o'clock water was coming up in No. 1 hatch. It was getting into the firemen's quarters and driving the firemen out. It was rushing round No. 1 hatch on G deck and coming mostly from the starboard side, so that in 20 minutes the water had risen above G deck in No. 1 hold.

In No. 2 hold about 40 minutes after the collision the water was coming in to the seamen's quarters on E deck through a burst fore and aft wooden bulkhead of a third-class cabin opposite the seamen's wash place. Thus, the water had risen in No. 2 hold to about 3 ft. above E deck in 40 minutes.

In No. 3 hold the mail room was afloat about 20 minutes after the collision. The bottom of the mail room which is on the Orlop deck, is 24 feet above the keel.

The watertight doors on F deck at the fore and after ends of No. 3 compartment were not closed then.

The mail room was filling and water was within 2 ft. of G deck, rising fast, when the order was given to clear the boats.

There was then no water on F deck.

There is a stairway on the port side on G deck which leads down to the first-class baggage room on the Orlop deck immediately below. There was water in this baggage room 25 minutes after the collision. Half an hour after the collision water was up to G deck in the mail room.

Thus the water had risen in this compartment to within 2 ft. of G deck in 20 minutes, and above G deck in 25 to 30 minutes.

No. 6 boiler room was abandoned by the men almost immediately after the collision. Ten minutes later the water had risen to 8 ft. above the top of the double bottom, and probably reached the top of the bulkhead at the after end of the compartment, at the level of E deck, in about one hour after the collision.

In No. 5 boiler room there was no water above the stokehold plates, until a rush of water came through the pass between the boilers from the forward end, and drove the leading stokers out.

It has already been shown in the description of what happened in the first ten minutes, that water was coming into No. 5 boiler room in the forward starboard bunker at 2 ft. above the plates in a stream about the size of a deck hose. The door in this bunker had been dropped probably when water was first discovered, which was a few minutes after the collision. This would cause the water to be retained in the bunker until it rose high enough to burst the door which was weaker than the bunker bulkhead. This happened about an hour after the collision.

No. 4 boiler room.—One hour and 40 minutes after collision water was coming in forward, in No. 4 boiler room, from underneath the floor in the forward part, in small quantities. The men remained in that stokehold till ordered on deck.

Nos. 3, 2 and 1 boiler rooms.—When the men left No. 4 some of them went through Nos. 3, 2 and 1 boiler rooms into the reciprocating engine room, and from there on deck. There was no water in the boiler rooms abaft No. 4 one hour 40 minutes after the collision (1.20 a.m.), and there was then none in the reciprocating and turbine engine rooms.

Electrical engine room and tunnels.—There was no damage to these compartments.

From the foregoing it follows that there was no damage abaft No. 4 boiler room.

All the watertight doors aft of the main engine room were opened after the collision.

Half an hour after the collision the watertight doors from the engine room to the stokehold were opened as far forward as they could be to No. 4 boiler room.

Final effect of the Damage.

The later stages of the sinking cannot be stated with any precision, owing to a confusion of the times which was natural under the circumstances.

The forecastle deck was not under water at 1.35 a.m. Distress signals were fired until two hours after the collision (1.45 a.m.). At this time the fore deck was under water. The forecastle head was not then submerged though it was getting close down to the water, about half an hour before she disappeared (1.50 a.m.).

When the last boat, lowered from davits (D), left the ship, A deck was under water, and water came up the stairway under the Boat deck almost immediately

Poigndestre,
2821-2
Hendrikson,
4859
4856-66
4870
4894

Barrett,
1868
1874
1856
1905
1899
1904
1937
1926

1917
1921
2105
2255
2091
2343

Lee, 2455
2479
2485
Pitman,
14962
14965

Poigndestre
2844
2845
2861

Pitman,
14948
14949

Boxall, 1575
15374
15380

Johnson,
3397

Barrett,
1969
2038
2039
2041

Dillon
3795

3811

Scott,
5590

Lee, 2541
Rowe, 17685
17689
Jewell, 167
Lightoller,
14081
14023
14035

afterwards. After this the other port collapsible (B), which had been stowed on the officers' house, was uncovered, the lashings cut adrift, and she was swung round over the edge of the coamings of the deckhouse on to the Boat deck.

Very shortly afterwards the vessel, according to Mr. Lightoller's account, seemed to take a dive, and he just walked into the water. When he came to the surface all the funnels were above the water.

Her stern was gradually rising out of the water, and the propellers were clear of the water. The ship did not break in two: and she did eventually attain the perpendicular, when the second funnel from aft about reached the water. There were no lights burning then, though they kept alight practically until the last.

Before reaching the perpendicular when at an angle of 50 or 60 degrees, there was a rumbling sound which may be attributed to the boilers leaving their beds and crashing down on to or through the bulkheads. She became more perpendicular and finally absolutely perpendicular, when she went slowly down.

After sinking as far as the after part of the Boat deck she went down more quickly. The ship disappeared at 2.20 a.m.

Observations.

I am advised that the "Titanic" as constructed could not have remained afloat long with such damage as she received. Her bulkheads were spaced to enable her to remain afloat with any two compartments in communication with the sea. She had a sufficient margin of safety with any two of the compartments flooded which were actually damaged.

In fact any three of the four forward compartments could have been flooded by the damage received without sinking the ship to the top of her bulkheads.

Even if the four forward compartments had been flooded the water would not have got into any of the compartments abaft of them though it would have been above the top of some of the forward bulkheads. But the ship, even with these four compartments flooded would have remained afloat. But she could not remain afloat with the four forward compartments and the forward boiler room (No. 6) also flooded.

The flooding of these five compartments alone would have sunk the ship sufficiently deeply to have caused the water to rise above the bulkhead at the after end of the forward boiler room (No. 6) and to flow over into the next boiler room (No. 5), and to fill it up until in turn its after bulkhead would be overwhelmed and the water would thereby flow over and fill No. 4 boiler room, and so on in succession to the other boiler rooms till the ship would ultimately fill and sink.

It has been shown that water came into the five forward compartments to a height of about 14 feet above the keel in the first ten minutes. This was at a rate of inflow with which the ship's pumps could not possibly have coped, so that the damage done to these five compartments alone inevitably sealed the doom of the ship.

The damage done in the boiler rooms Nos. 5 and 4 was too slight to have hastened appreciably the sinking of the ship, for it was given in evidence that no considerable amount of water was in either of these compartments for an hour after the collision. The rate at which water came into No. 6 boiler room makes it highly probable that the compartment was filled in not more than an hour, after which the flow over the top of the bulkhead between 5 and 6 began and continued till No. 5 was filled.

It was shown that the leak in No. 5 boiler room was only about equal to the flow of a deck hose pipe about 3 inches in diameter.

The leak in No. 4, supposing that there was one, was only enough to admit about 3 feet of water in that compartment in 1 hour 40 minutes.

Hence the leaks in Nos. 4 and 5 boiler rooms did not appreciably hasten the sinking of the vessel.

The evidence is very doubtful as to No. 4 being damaged. The pumps were being worked in No. 5 soon after the collision. The 10 inch leather special suction pipe which was carried from aft is more likely to have been carried for use in No. 5 than No. 4 because the doors were ordered to be opened probably soon after the collision when water was known to be coming into No. 5. There is no evidence that the pumps were being worked in No. 4.

The only evidence possibly favourable to the view that the pipe was required for No. 4, and not for No. 5, is that Scott, a greaser, says that he saw engineers

dragging the suction pipe along 1 hour after the collision. But even as late as this it may have been wanted for No. 5 only.

The importance of the question of the damage to No. 5 is small because the ship as actually constructed was doomed as soon as the water in No. 6 boiler room and all compartments forward of it entered in the quantities it actually did.

It is only of importance in dealing with the question of what would have happened to the ship had she been more completely sub-divided.

It was stated in evidence that if No. 4 had not been damaged or had only been damaged to an extent within the powers of the pumps to keep under, then, if the bulkheads had been carried to C deck, the ship might have been saved. Further methods of increased sub-division and their effect upon the fate of the ship are discussed later.

Evidence was given showing that after the watertight doors in the engine and boiler rooms had been all closed, except those forward of No. 4 group of boilers, they were opened again, and there is no evidence to show that they were again closed. Though it is probable that the engineers who remained below would have closed these doors as the water rose in the compartments, yet it was not necessary for them to do this as each door had an automatic closing arrangement which would have come into operation immediately a small amount of water came through the door.

It is probable, however, that the life of the ship would have been lengthened somewhat if these doors had been left open, for the water would have flowed through them to the after part of the ship, and the rate of flow of the water into the ship would have been for a time reduced as the bow might have been kept up a little by the water which flowed aft.

It is thus seen that the efficiency of the automatic arrangements for the closing of the watertight doors, which was questioned during the enquiry, had no important bearing on the question of hastening the sinking of the ship, except that, in the case of the doors not having been closed by the engineers, it might have retarded the sinking of the ship if they had not acted. The engineers would not have prevented the doors from closing unless they had been convinced that the ship was doomed. There is no evidence that they did prevent the doors from closing.

The engineers were applying the pumps when Barrett, leading stoker, left No. 5 boiler room, but even if they had succeeded in getting all the pumps in the ship to work they could not have saved the ship or prolonged her life to any appreciable extent.

Effect of suggested additional sub-division upon floatation.

Watertight decks.—It is in evidence that advantage might be obtained from the point of view of greater safety in having a watertight deck.

Without entering into the general question of the advantage of watertight decks for all ships, it is desirable to form an opinion in the case of the "Titanic" as to whether making the bulkhead deck watertight would have been an advantage in the circumstances of the accident, or in case of accident to ships of this class.

I am advised that it is found that with all the compartments certainly known to have been flooded, viz., those forward of No. 4 boiler room, the ship would have remained afloat if the bulkhead deck had been a watertight deck. If, however, No. 4 boiler room had also been flooded the ship would not have remained afloat unless, in addition to making the bulkhead deck watertight, the transverse bulkhead abaft of No. 4 boiler room had been carried up to D deck.

To make the bulkhead deck effectively watertight for this purpose it would have been necessary to carry watertight trunks round all the openings in the bulkhead deck up to C deck.

It has been shown that with the bulkhead abaft No. 5 boiler room carried to C deck the ship would have remained afloat if the compartments certainly known to have been damaged had been flooded.

I do not desire to express an opinion upon the question whether it would have conduced to safety in the case of the "Titanic" if a watertight deck had been fitted below the water line, as there may be some objections to such a deck. There are many considerations involved, and I think that the matter should be dealt with by the Bulkhead Committee for ships in general.

Wilding
20311-4
20320
20355
20371-4

Dillon,
3738
3745
3766
3769
3770
3783

Archer,
24424

518

24426

Wilding,
20209-37
20282-98
25297-8

Longitudinal sub-division. The advantages and disadvantages of longitudinal sub-division by means of watertight bunker bulkheads were pointed out in evidence.

While not attempting to deal with this question generally for ships, I am advised that if the "Titanic" had been divided in the longitudinal method, instead of in the transverse method only, she would have been able, if damaged as supposed, to remain afloat, though with a list which could have been corrected by putting water ballast into suitable places.

This subject is one, however, which again involves many considerations, and I think that for ships generally the matter should be referred to the Bulkhead Committee for their consideration and report.

Extending double bottom up the sides.—It was shown in evidence that there would be increased protection in carrying the double bottom higher up the side than was done in the "Titanic," and that some of the boiler rooms would probably not then have been flooded, as water could not have entered the ship except in the double bottom.

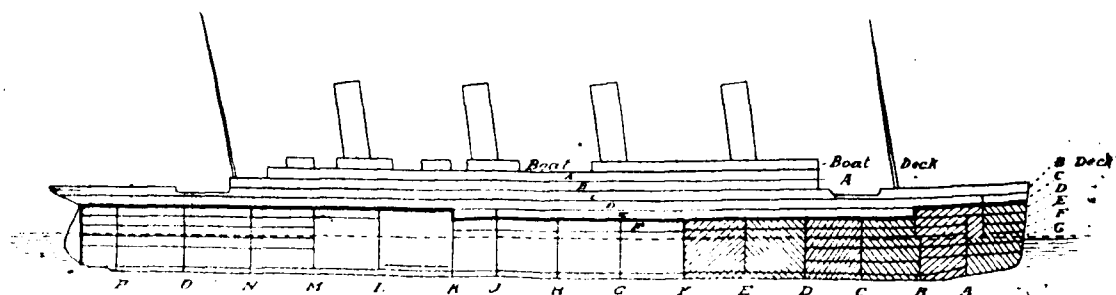
In the case of the "Titanic" I am advised that this would have been an advantage, but it was pointed out in evidence that there are certain disadvantages which in some ships may outweigh the advantages.

In view of what has already been said about the possible advantages of longitudinal subdivision, it is unnecessary further to discuss the question of carrying up the double bottom in ships generally. This matter should also be dealt with by the Bulkhead Committee.

Watertight doors.—With reference to the question of the watertight doors of the ship, there does not appear to have been any appreciable effect upon the sinking of the ship caused by either shutting or not shutting the doors. There does not appear to have been any difficulty in working the watertight doors. They appear to have been shut in good time after the collision.

But in other cases of damage in ships constructed like the "Titanic," it is probable that the efficiency of the closing arrangement of the watertight doors may exert a vital influence on the safety of the ship. It has been represented that in future consideration should be given to the question "as to how far bulkheads should be solid bulkheads, and how far there should be watertight doors, and, if there should be watertight doors, how far they may or may not be automatically operated." This again is a question on which it is not necessary here to express any general opinion, for there are conflicting considerations which vary in individual cases. The matter, however, should come under the effective supervision of the Board of Trade much more than it seems to come at present, and should be referred to the Bulkhead Committee for their consideration with a view to their suggesting in detail where doors should or should not be allowed, and the type of door which should be adopted in the different parts of ships.

S.S. "TITANIC."



NOTE.—The vertical letters signify the different decks.
The horizontal letters signify the watertight bulkheads.
The heavy line shows the top of the watertight bulkheads.
The crosshatched compartments are those opened to the sea at the time of the collision with the iceberg.

4.—ACCOUNT OF THE SAVING AND RESCUE OF THOSE WHO SURVIVED.

The boats.

The "Titanic" was provided with 20 boats. They were all on the Boat deck. Fourteen were life boats. These were hung inboard in davits, seven on the starboard side and seven on the port side, and were designed to carry 65 persons each. Two were emergency boats. These were also in davits, but were hung outboard, one on the starboard side and one on the port side, and were designed to carry 40 persons each. The remaining four boats were Engelhardt or collapsible boats. Two of these were stowed on the Boat deck and two on the roof of the officers' quarters, and were designed to carry 47 persons each. Thus the total boat accommodation was for 1,178 persons. The boats in davits were numbered, the odd numbers being on the starboard side and the even numbers on the port side. The numbering began with the emergency boats which were forward, and ran aft. Thus the boats on the starboard side were numbered 1 (an emergency boat), 3, 5, 7, 9, 11, 13 and 15 (life boats), and those on the port side 2 (an emergency boat), 4, 6, 8, 10, 12, 14 and 16 (life boats). The collapsible boats were lettered, A and B being on the roof of the officers' quarters, and C and D being on the Boat deck; C was abreast of No. 1 (emergency boat) and D abreast of No. 2 (emergency boat). Further particulars as to the boats will be found on page 18.

In ordinary circumstances all these boats (with the exception of 1 and 2) were kept covered up, and contained only a portion of their equipment, such as oars, masts and sails, and water; some of the remaining portion, such as lamps, compasses and biscuits being stowed in the ship in some convenient place, ready for use when required. Much examination was directed at the hearing to showing that some boats left the ship without a lamp and others without a compass and so on, but in the circumstances of confusion and excitement which existed at the time of the disaster this seems to me to be excusable.

Each member of the crew had a boat assigned to him in printed lists which were posted up in convenient places for the men to see; but it appeared that in some cases the men had not looked at these lists and did not know their respective boats.

There had been no proper boat drill nor a boat muster. It was explained that great difficulty frequently exists in getting firemen to take part in a boat drill. They regard it as no part of their work. There seem to be no statutory requirements as to boat drills or musters, although there is a provision (Section 9 of the Merchant Shipping Act of 1906) that when a boat drill does take place the master of the vessel is, under a penalty, to record the fact in his log. I think it is desirable that the Board of Trade should make rules requiring boat drills and boat musters to be held of such a kind and at such times as may be suitable to the ship and to the voyage on which she is engaged. Boat drill, regulated according to the opportunities of the service, should always be held.

It is perhaps worth recording that there was an inspection of the boats themselves at Southampton by Mr. Clarke, the emigration officer; and that, as a result, Mr. Clarke gave his certificate that the boats were satisfactory. For the purpose of this inspection two of the boats were lowered to the water and crews exercised in them.

The collision took place at 11.40 p.m. (ship's time). About midnight it was realised that the vessel could not live, and at about 12.5 the order was given to uncover the 14 boats under davits. The work began on both sides of the ship under the superintendence of five officers. It did not proceed quickly at first; the crew arrived on the Boat deck only gradually, and there was an average of not more than three deck hands to each boat. At 12.20 the order was given to swing out the boats, and this work was at once commenced. There were a few passengers on the deck at this time. Mr. Lightoller, who was one of the officers directing operations, says that the noise of the steam blowing off was so great that his voice could not be heard, and that he had to give directions with his hands.

Before this work had been begun, the stewards were rousing the passengers in their different quarters, helping them to put on lifebelts and getting them up to the Boat deck. At about 12.30 the order was given to place women and children in

Sanderson,
19115-22

Clarke,
24096-108

Pitman,
14945
Boxall, 15367
Lightoller,
13800

13819
Pitman, 14992
Lightoller,
13809
Lowe, 15807
Lightoller,
13811
Hart, 9926
9879
Wheat, 10943
13229
Robinson,
13285

Various witnesses
15809
14987
14048
10393
13326, 703
13187
13835, 13931,
14011
13929, 13984
13819, 15832
2969, 15832
383
16526, 17926

the boats. This was proceeded with at once and at about 12.45 Mr. Murdoch gave the order to lower No. 7 boat (on the starboard side) to the water. The work of uncovering, filling and lowering the boats was done under the following supervision: Mr. Lowe, the fifth officer, saw to Nos. 1, 3, 5 and 7; Mr. Murdoch (lost) saw also to 1 and 7 and to A and C. Mr. Moody (lost) looked after Nos. 9, 11, 13 and 15. Mr. Murdoch also saw to 9 and 11. Mr. Lightoller saw to Nos. 4, 6, 8, B and D. Mr. Wilde (lost) also saw to 8 and D. Mr. Lightoller and Mr. Moody saw to 10 and 16 and Mr. Lowe to 12 and 14. Mr. Wilde also assisted at No. 14, Mr. Boxall helping generally.

The evidence satisfies me that the officers did their work very well and without any thought of themselves. Captain Smith, the Master, Mr. Wilde, the chief officer, Mr. Murdoch, the first officer, and Mr. Moody, the sixth officer, all went down with the ship while performing their duties. The others, with the exception of Mr. Lightoller, took charge of boats and thus were saved. Mr. Lightoller was swept off the deck as the vessel went down and was subsequently picked up.

So far as can be ascertained the boats left the ship at the following times, but I think it is necessary to say that these, and, indeed, all the times subsequent to the collision which are mentioned by the witnesses, are unreliable:—

No.	Starboard side.	No.	Port side.
7	At 12.45 a.m.	6	At 12.55 a.m.
5	" 12.55	8	" 1.10
3	" 1.0	10	" 1.20
1	" 1.10	12	" 1.25
9	" 1.20	14	" 1.30
11	" 1.25	16	" 1.35
13	" 1.35	2	" 1.45
15	" 1.35	4	" 1.55
C	" 1.40	D	" 2.5
A	Floated off when the ship sank and was utilised as a raft.	B	Floated off when the ship sank and was utilised as a raft.

As regards the collapsible boats, C and D were properly lowered; as to A and B, which were on the roof of the officers' house, they were left until the last. There was difficulty in getting these boats down to the deck, and the ship had at this time a list. Very few of the deck hands were left in the ship, as they had nearly all gone to man the lifeboats, and the stewards and firemen were unaccustomed to work the collapsible boats. Work appears to have been going on in connection with these two boats at the time that the ship sank. The boats seem to have floated from the deck and to have served in the water as rafts.

The following table shows the numbers of the male crew, male passengers, and women and children who, according to the evidence, left the ship in each boat. In three or four instances the numbers of women and children are only arrived at by subtracting the numbers of crew and male passengers from the total said to be in the boat (these are in italics). In each case the lowest figures given are taken:—

Starboard Side Boat. No.	Men of Crew.	Men Passengers.	Women and Children.	Total.	Port Side Boat. No.	Men of Crew.	Men Passengers.	Women and Children.	Total.
7	8	4	20	27	6	2	2	24	28
5	5	6	80	41	8	4	—	95	89
8	15	10	25	50	10	5	—	50	55
1	7	8	2	12	2	4	1	21	26
9	8	6	42	56	12	2	—	40	42
11	9	1	60	70	14	8	—	58	63
13	5	—	59	64	16	6	—	50	56
15	13	4	53	70	4	4	—	96	40
C	5	2	64	71	D	2	2	40	44
A utilized after the ship sank.					B utilized after the ship sank.				
Totals	70	86	855	461		97	7	849	898

General Total ... 107 men of the crew.
48 men passengers.
704 women and children.

This shows in all 107 men of the crew, 43 male passengers and 704 women and children, or a total of 854 in 18 boats. In addition, about 60 persons, two of whom were women, were said to have been transferred, subsequently, from A and B collapsible boats to other boats, or rescued from the water, making a total of 914 who escaped with their lives. It is obvious that these figures are quite unreliable, for only 712 were, in fact, saved by the "Carpathia," the steamer which came to the rescue at about 4 a.m., and all the boats were accounted for. Another remarkable discrepancy is that, of the 712 saved, 189 were, in fact, men of the crew, 129 were male passengers and 394 were women and children. In other words, the real proportion of women to men saved was much less than the proportion appearing in the evidence from the boats. Allowing for those subsequently picked up, of the 712 persons saved only 652 can have left the "Titanic" in boats, or an average of about 36 per boat. There was a tendency in the evidence to exaggerate the numbers in each boat, to exaggerate the proportion of women to men and to diminish the number of crew. I do not attribute this to any wish on the part of the witnesses to mislead the Court, but to a natural desire to make the best case for themselves and their ship. The seamen who gave evidence were too frequently encouraged when under examination in the witness-box to understate the number of crew in the boats. The number of crew actually saved was 189, giving an average of ten per boat: and if from this figure the 58 men of the 60 persons above mentioned be deducted the average number of crew leaving the ship in the boats must still have been at least 7. The probability, however, is that many of the 60 picked up were passengers.

The discipline both among passengers and crew during the lowering of the boats was good, but the organisation should have been better, and if it had been it is possible that more lives would have been saved.

The real difficulty in dealing with the question of the boats is to find the explanation of so many of them leaving the ship with comparatively few persons in them. No. 1 certainly left with only 12; this was an emergency boat with a carrying capacity of 40. No. 7 left with only 27, and No. 6 with only 28; these were lifeboats with a carrying capacity of 65 each; and several of the others, according to the evidence and certainly according to the truth, must have left only partly filled. Many explanations are forthcoming, one being that the passengers were unwilling to leave the ship. When the earlier boats left, and before the "Titanic" had begun materially to settle down, there was a drop of 65 feet from the Boat deck to the water, and the women feared to get into the boats. Many people thought that the risk in the ship was less than the risk in the boats. This explanation is supported by the evidence of Captain Rostron of the "Carpathia." He says that after those who were saved got on board his ship, he was told by some of them that when the boats first left the "Titanic" the people "really would not be put in the boats; they did not want to go in." There was a large body of evidence from the "Titanic" to the same effect, and I have no doubt that many people, particularly women, refused to leave the deck for the boats. At one time the Master appears to have had the intention of putting the people into the boats from the gangway doors in the side of the ship. This was possibly with a view to allay the fears of the passengers, for from these doors the water could be reached by means of ladders, and the lowering of some of the earlier boats when only partly filled may be accounted for in this way. There is no doubt that the Master did order some of the partly filled boats to row to a position under one of the doors with the object of taking in passengers at that point. It appears, however, that these doors were never opened. Another explanation is that some women refused to leave their husbands. It is said further that the officers engaged in putting the people into the boats feared that the boats might buckle if they were filled; but this proved to be an unfounded apprehension, for one or more boats were completely filled and then successfully lowered to the water.

At 12.35 the message from the "Carpathia" was received announcing that she was making for the "Titanic." This probably became known and may have tended to make the passengers still more unwilling to leave the ship: and the lights of a ship (the "Californian") which were seen by many people may have encouraged the passengers to hope that assistance was at hand. These explanations are perhaps sufficient to account for so many of the lifeboats leaving without a full boat load; but I think, nevertheless, that if the boats had been kept a little longer before being lowered, or if the after gangway doors had been opened, more passengers might have been induced to enter the boats. And if women could

15809, 147,
156, 15593,
15000, 17911,
4937, 4987,
11071, 2134,
10120, 13303,
13200, 2268,
5647, 10456,
5950, 1018,
1054, 1085,
1094, 13931,
5841, 17920,
14014, 15426,
15832, 14068

Brown, 10530
Lightoller,
14011
14035

Brown, 10542
Lightoller,
14069

Various witnesses,
104, 723,
14006, 1504,
6448

1127, 1146,
5955, 13996,
15931, 9924,
25666

131, 13896,
15906, 14186,
15451

13887
13954
16011
17897
2156

Bride,
16798

not be induced to enter the boats, the boats ought then to have been filled up with men. It is difficult to account for so many of the lifeboats being sent from the sinking ship, in a smooth sea, far from full. These boats left behind them many hundreds of lives to perish. I do not, however, desire these observations to be read as casting any reflection on the officers of the ship or on the crew who were working on the Boat deck. They all worked admirably, but I think that if there had been better organisation the results would have been more satisfactory.

I heard much evidence as to the conduct of the boats after the "Titanic" sank and when there must have been many struggling people in the water, and I regret to say that in my opinion some, at all events, of the boats failed to attempt to save lives when they might have done so, and might have done so successfully. This was particularly the case with boat No. 1. It may reasonably have been thought that the risk of making the attempt was too great; but it seems to me that if the attempt had been made by some of these boats it might have been the means of saving a few more lives. Subject to these few adverse comments, I have nothing but praise for both passengers and crew. All the witnesses speak well of their behaviour. It is to be remembered that the night was dark, the noise of the escaping steam was terrifying, the peril, though perhaps not generally recognised, was imminent and great, and many passengers who were unable to speak or to understand English, were being collected together and hurried into the boats.

Conduct of Sir C. Duff Gordon and Mr. Ismay.

An attack was made in the course of the Enquiry on the moral conduct of two of the passengers, namely, Sir Cosmo Duff Gordon and Mr. Bruce Ismay. It is no part of the business of the Court to enquire into such matters, and I should pass them by in silence if I did not fear that my silence might be misunderstood. The very gross charge against Sir Cosmo Duff Gordon that, having got into No. 1 boat he bribed the men in it to row away from drowning people is unfounded. I have said that the members of the crew in that boat might have made some attempt to save the people in the water, and that such an attempt would probably have been successful; but I do not believe that the men were deterred from making the attempt by any act of Sir Cosmo Duff Gordon's. At the same time I think that if he had encouraged the men to return to the position where the "Titanic" had foundered they would probably have made an effort to do so and could have saved some lives.

As to the attack on Mr. Bruce Ismay, it resolved itself into the suggestion that, occupying the position of Managing Director of the Steamship Company, some moral duty was imposed upon him to wait on board until the vessel foundered. I do not agree. Mr. Ismay, after rendering assistance to many passengers, found "C" collapsible, the last boat on the starboard side, actually being lowered. No other people were there at the time. There was room for him and he jumped in. Had he not jumped in he would merely have added one more life, namely, his own, to the number of those lost.

The third-class passengers.

It had been suggested before the Enquiry that the third-class passengers had been unfairly treated; that their access to the Boat deck had been impeded, and that when at last they reached that deck the first and second-class passengers were given precedence in getting places in the boats. There appears to have been no truth in these suggestions. It is no doubt true that the proportion of third-class passengers saved falls far short of the proportion of the first and second class, but this is accounted for by the greater reluctance of the third-class passengers to leave the ship, by their unwillingness to part with their baggage, by the difficulty in getting them up from their quarters, which were at the extreme ends of the ship, and by other similar causes. The interests of the relatives of some of the third-class passengers who had perished were in the hands of Mr. Harbinson, who attended the Enquiry on their behalf. He said at the end of his address to the Court: "I wish to say distinctly that no evidence has been given in the course of this case which would substantiate a charge that any attempt was made to keep back the third-class passengers. . . . I desire further to say that there is no evidence that when they did reach the boat deck there was any discrimination practised either by the officers or the sailors in putting them into the boats."

I am satisfied that the explanation of the excessive proportion of third-class passengers lost is not to be found in the suggestion that the third-class passengers were in any way unfairly treated. They were not unfairly treated.

Means taken to procure assistance.

As soon as the dangerous condition of the ship was realised, messages were sent by the Master's orders to all steamers within reach. At 12.15 a.m. the distress signal C.Q.D. was sent. This was heard by several steamships and by Cape Race. By 12.25, Mr. Boxall, the fourth officer, had worked out the correct position of the "Titanic," and then another message was sent: "Come at once, we have struck a berg." This was heard by the Cunard steamer "Carpathia," which was at this time bound from New York to Liverpool and 58 miles away. The "Carpathia" answered, saying that she was coming to the assistance of the "Titanic." This was reported to Captain Smith on the Boat deck. At 12.26 a message was sent out, "Sinking; cannot hear for noise of steam." Many other messages were also sent, but as they were only heard by steamers which were too far away to render help it is not necessary to refer to them. At 1.45 a message was heard by the "Carpathia," "Engine room full up to boilers." The last message sent out was "C.Q.," which was faintly heard by the steamer "Virginian." This message was sent at 2.17. It thus appears that the Marconi apparatus was at work until within a few minutes of the foundering of the "Titanic."

Meanwhile Mr. Boxall was sending up distress signals from the deck. These signals (rockets) were sent off at intervals from a socket by No. 1 emergency boat on the Boat deck. They were the ordinary distress signals, exploding in the air and throwing off white stars. The firing of these signals began about the time that No. 7 boat was lowered (12.45 a.m.), and it continued until Mr. Boxall left the ship at about 1.45.

Mr. Boxall was also using a Morse light from the bridge in the direction of a ship whose lights he saw about half a point on the port bow of the "Titanic" at a distance, as he thought, of about five or six miles. He got no answer. In all, Mr. Boxall fired about eight rockets. There appears to be no doubt that the vessel whose lights he saw was the "Californian." The evidence from the "Californian" speaks of eight rockets having been seen between 12.30 and 1.40. The "Californian" heard none of the "Titanic's" messages; she had only one Marconi operator on board and he was asleep.

The rescue by the S.S. "Carpathia."

On the 15th of April the s.s. "Carpathia," 13,600 tons gross, of the Cunard Line, Mr. Arthur Henry Rostron, Master, was on her passage to Liverpool from New York. She carried some 740 passengers and 325 crew.

On receipt of the "Titanic's" first distress message the Captain immediately ordered the ship to be turned round and driven at her highest speed (17½ knots) in the direction of the "Titanic." He also informed the "Titanic" by wireless that he was coming to her assistance, and he subsequently received various messages from her. At about 2.40 a.m. he saw a green flare which, as the evidence shows, was being sent up by Mr. Boxall in No. 2 boat. From this time until 4 a.m. Captain Rostron was altering his course continually in order to avoid icebergs. He fired rockets in answer to the signals he saw from Boxall's boat. At 4 o'clock he considered he was practically up to the position given and he stopped his ship at 4.5. He sighted the first boat (No. 2) and picked her up at 4.10. There was then a large number of icebergs round him, and it was just daylight. Eventually he picked up in all 13 lifeboats, two emergency boats and two collapsible boats, all of which were taken on board the "Carpathia," the other boats being abandoned as damaged or useless. From these boats he took on board 712 persons, one of whom died shortly afterwards. The boats were scattered over an area of four to five miles, and it was 8 a.m. before they had all been picked up. He saw very little wreckage when he got near to the scene of the disaster, only a few deck chairs, cork lifebelts, etc., and only one body. The position was then 41° 46' N., 50° 14' W.

The "Carpathia" subsequently returned to New York with the passengers and crew she had rescued.

The Court desires to record its great admiration of Captain Rostron's conduct. He did the very best that could be done.

Hendrikson,
5011
Symons,
11501
11527

Duff Gordon,
12586
et seq.

Ismay,
18559

Bride, 16508

Boxall, 15390

Bride, 16517

Cottam, 17114

Boxall, 15394

15593

15420

Lightoller,
14160

Gill, 18156-61
Stone
7830 et seq.

Rostron,
25361 et seq.

25385

25390

25401

25551

Numbers saved.

The following were the numbers saved:—

<i>1st class.</i>			
Adult males	...	57	out of 175 or 32.57 per cent.
Adult females	...	140	out of 144 or 97.22 "
Male children	...	5	All saved.
Female children	...	1	All saved.

203 out of 325 or 62.46 "

<i>2nd class.</i>			
Adult males	...	14	out of 168 or 8.33 per cent.
Adult females	...	80	out of 93 or 86.02 "
Male children	...	11	All saved.
Female children	...	13	All saved.

118 out of 285 or 41.40 "

<i>3rd class.</i>			
Adult males	...	75	out of 462 or 16.23 per cent.
Adult females	...	76	out of 165 or 46.06 "
Male children	...	13	out of 48 or 27.08 "
Female children	...	14	out of 31 or 45.16 "

178 out of 706 or 25.21 "

Total ... 499 out of 1,316 or 37.94 "

Crew saved.

Deck Department	...	43	out of 66 or 65.15 per cent.
Engine Room Department	...	72	out of 325 or 22.15 "
Victualling Department, (including 20 women out of 23)	...	97	out of 494 or 19.63 "

Total ... 212 out of 885 or 23.95 "

Total on board saved. 711 out of 2,201 or 32.30 "

Passengers and Crew.

Adult males	...	338	out of 1,667 or 20.27 per cent.
Adult females	...	316	out of 425 or 74.35 "
Children	...	57	out of 109 or 52.29 "

Total ... 711 out of 2,201 or 32.30 "

5.—THE CIRCUMSTANCES IN CONNECTION WITH THE S.S. "CALIFORNIAN."

It is here necessary to consider the circumstances relating to the s.s. "Californian."

On the 14th of April, the s.s. "Californian" of the Leyland Line, Mr. Stanley Lord, Master, was on her passage from London, which port she left on April 5th, to Boston, U.S., where she subsequently arrived on April 19th. She was a vessel of 6,223 tons gross and 4,038 net. Her full speed was $12\frac{1}{2}$ to 13 knots. She had a passenger certificate, but was not carrying any passengers at the time. She belonged to the International Mercantile Marine Company, the owners of the "Titanic."

At 7.30 p.m., ship's time, on 14th April, a wireless message was sent from this ship to the "Antillian." "To Captain, 'Antillian,' 6.30 p.m., apparent ship's time, lat. $42^{\circ} 3' N.$, long. $49^{\circ} 9' W.$ Three large bergs, 5 miles to southward of us. "Regards.—Lord." Evans, 8941, 8943

The message was intercepted by the "Titanic," and when the Marconi operator (Evans) of the "Californian" offered this ice report to the Marconi operator of the "Titanic," shortly after 7.30 p.m., the latter replied, "It is all right. I heard you sending it to the 'Antillian,' and I have got it." 8972

The "Californian" proceeded on her course S. $89^{\circ} W.$ true until 10.20 p.m., ship's time, when she was obliged to stop and reverse engines because she was running into field ice, which stretched as far as could then be seen to the northward and southward. Lord, 6710

The Master told the Court that he made her position at that time to be $42^{\circ} 5' N.$, $57^{\circ} 7' W.$ This position is recorded in the log book, which was written up from the scrap log book by the Chief Officer. The scrap log is destroyed. It is a position about 19 miles N. by E. of the position of the "Titanic" when she foundered, and is said to have been fixed by dead reckoning and verified by observations. I am satisfied that this position is not accurate. The Master "twisted her head" to E.N.E. by the compass and she remained approximately stationary until 5.15 a.m. on the following morning. The ship was slowly swinging round to starboard during the night. 6704

At about 11 p.m. a steamer's light was seen approaching from the eastward. The Master went to Evans' room and asked, "What ships he had." The latter replied: "I think the 'Titanic' is near us. I have got her." The Master said: "You had better advise the 'Titanic' we are stopped and surrounded with ice." This Evans did, calling up the "Titanic" and sending: "We are stopped and surrounded by ice." The "Titanic" replied: "Keep out." The "Titanic" was in communication with Cape Race, which station was then sending messages to her. The reason why the "Titanic" answered, "Keep out," was that her Marconi operator could not hear what Cape Race was saying, as from her proximity, the message from the "Californian" was much stronger than any message being taken in by the "Titanic" from Cape Race, which was much further off. Evans heard the "Titanic" continuing to communicate with Cape Race up to the time he turned in at 11.30 p.m. 8993, 8994, 9004

The Master of the "Californian" states that when observing the approaching steamer as she got nearer, he saw more lights, a few deck lights, and also her green side light. He considered that at 11 o'clock she was approximately six or seven miles away, and at some time between 11 and 11.30, he first saw her green light, she was then about 5 miles off. He noticed that about 11.30 she stopped. In his opinion this steamer was of about the same size as the "Californian"; a medium-sized steamer, "something like ourselves." 9022

From the evidence of Mr. Groves, third officer of the "Californian," who was the officer of the first watch, it would appear that the Master was not actually on the bridge when the steamer was sighted. Lord, 6761

Mr. Groves made out two masthead lights: the steamer was changing her bearing slowly as she got closer, and as she approached he went to the chart room and reported this to the Master; he added, "she is evidently a passenger steamer." In fact, Mr. Groves never appears to have had any doubt on this subject; in answer to a question during his examination, "Had she much light," he said, "Yes, a lot 8174 8175

"of light. There was absolutely no doubt of her being a passenger steamer, at least in my mind."

Gill, 18136 Gill, the assistant donkey-man of the "Californian," who was on deck at midnight said, referring to this steamer: "It could not have been anything but a passenger boat, she was too large."

Groves, 8182 By the evidence of Mr. Groves, the Master, in reply to his report, said: "Call her up on the Morse lamp, and see if you can get any answer." This he proceeded to do. The Master came up and joined him on the bridge and remarked: 8197 "That does not look like a passenger steamer." Mr. Groves replied "It is, Sir. 8203 "When she stopped, her lights seemed to go out, and I suppose they have been put 8217 "out for the night." Mr. Groves states that these lights went out at 11.40, and remembers that time because "one bell was struck to call the middle watch." The Master did not join him on the bridge until shortly afterwards, and consequently after the steamer had stopped.

8228 In his examination Mr. Groves admitted that if this steamer's head was turning to port after she stopped, it might account for the diminution of lights, by many of them being shut out. Her steaming lights were still visible and also her port side light.

8241 The Captain only remained upon the bridge for a few minutes. In his evi- Lord, 6866 dence he stated that Mr. Groves had made no observations to him about the steamer's deck lights going out. Mr. Groves' Morse signalling appears to have been ineffectual (although at one moment he thought he was being answered), and he gave it up. He remained on the bridge until relieved by Mr. Stone, the second officer, just after midnight. In turning the "Californian" over to him, he pointed out the steamer and said: "she has been stopped since 11.40; she is a passenger steamer. 8244-51 "At about the moment she stopped she put her lights out." When Mr. Groves Stone, 7810 was in the witness-box the following questions were put to him by me: "Speaking Groves, 8441 "as an experienced seaman and knowing what you do know now, do you think that "steamer that you know was throwing up rockets, and that you say was a passen- "ger steamer, was the 'Titanic'?—Do I think it? Yes?—From what I have heard "subsequently? Yes?—Most decidedly I do, but I do not put myself as being "an experienced man. But that is your opinion as far as your experience goes?— "Yes, it is, my Lord."

Stone, 7815 Mr. Stone states that the Master, who was also up (but apparently not on the bridge), pointed out the steamer to him with instructions to tell him if her bearings altered or if she got any closer; he also stated that Mr. Groves had called her up on the Morse lamp and had received no reply.

Gibson, 7424 Mr. Stone had with him during the middle watch an apprentice named Gibson, whose attention was first drawn to the steamer's lights at about 12.20 a.m. He could see a masthead light, her red light (with glasses) and a "glare of white 7443 "lights on her after deck." He first thought her masthead light was flickering Gill, 18156-61 and next thought it was a Morse light, "calling us up." He replied, but could not get into communication, and finally came to the conclusion that it was, as he had first supposed, the masthead light flickering. Some time after 12.30 a.m., Gill, the donkeyman, states that he saw two rockets fired from the ship which he had been observing, and about 1.10 a.m., Mr. Stone reported to the Captain by voice pipe, that he had seen five white rockets from the direction of the steamer. He Stone, 7870 states that the Master answered, "Are they Company's signals?" and that he replied, "I do not know, but they appear to me to be white rockets." The Master told him to "go on Morsing," and, when he received any information, to send the 7879 apprentice down to him with it. Gibson states that Mr. Stone informed him that he had reported to the Master, and that the Master had said the steamer was to be Gibson, 7479 called up by Morse light. This witness thinks the time was 12.55; he at once proceeded again to call the steamer up by Morse. He got no reply, but the vessel fired three more white rockets; these rockets were also seen by Mr. Stone.

7515 Both Mr. Stone and the apprentice kept the steamer under observation, looking at her from time to time with their glasses. Between 1 o'clock and 1.40 some conversation passed between them. Mr. Stone remarked to Gibson: "Look at 7529 "her now, she looks very queer out of water, her lights look queer." He also is said by Gibson to have remarked, "A ship is not going to fire rockets at sea for Stone, 7804 "nothing;" and admits himself that he may possibly have used that expression.

7949 Mr. Stone states that he saw the last of the rockets fired at about 1.40, and after watching the steamer for some twenty minutes more he sent Gibson down to the Master. "I told Gibson to go down to the Master, and be sure and wake him, and

"tell him that altogether we had seen eight of these white lights like white rockets in "the direction of this other steamer; that this steamer was disappearing in the "south-west, that we had called her up repeatedly on the Morse lamp and received "no information whatsoever."

Gibson states that he went down to the chart room and told the Master; Gibson, 7553 that the Master asked him if all the rockets were white, and also asked him the time. Gibson stated that at this time the Master was awake. It was five minutes past two, and Gibson returned to the bridge to Mr. Stone and reported. They both continued to keep the ship under observation until she disappeared. Mr. Stone Stone, 7857 describes this as "A gradual disappearing of all her lights, which would be perfectly "natural with a ship steaming away from us."

At about 2.40 a.m. Mr. Stone again called up the Master by voice pipe and 7976 told him that the ship from which he had seen the rockets come had disappeared bearing S.W. $\frac{1}{2}$ W., the last he had seen of the light; and the Master again asked him if he was certain there was no colour in the lights. "I again assured him they 7999 were all white, just white rockets." There is considerable discrepancy between the evidence of Mr. Stone and that of the Master. The latter states that he went to the voice pipe at about 1.15, but was told then of a white rocket (not five white rockets). Lord, 6790 Moreover, between 1.30 and 4.30, when he was called by the chief officer (Mr. Stewart), he had no recollection of anything being reported to him at all, although 6859 he remembered Gibson opening and closing the chart room door.

Mr. Stewart relieved Mr. Stone at 4 a.m. The latter told him he had Stewart, 8577 seen a ship four or five miles off when he went on deck at 12 o'clock, and at 1 o'clock he had seen some white rockets, and that the moment the ship started firing them she started to steam away. Just at this time (about 4 a.m.) a 8582 steamer came in sight with two white masthead lights and a few lights amidships. 8598 He asked Mr. Stone whether he thought this was the steamer which had fired rockets, and Mr. Stone said he did not think it was. At 4.30 he called the Master and informed 8615 him that Mr. Stone had told him he had seen rockets in the middle watch. The Master said, "Yes, I know, he has been telling me." The Master came at once on 8619 to the bridge, and apparently took the fresh steamer for the one which had fired 8632 rockets, and said, "She looks all right; she is not making any signals now." This mistake was not corrected. He, however, had the wireless operator called.

At about 6 a.m. Captain Lord heard from the "Virginian" that "the Lord, 7002 "'Titanic' had struck a berg, passengers in boats, ship sinking"; and he at once started through the field ice at full speed for the position given.

Captain Lord stated that about 7.30 a.m. he passed the "Mount Temple" 7014 stopped, and that she was in the vicinity of the position given him as where the 7026 "Titanic" had collided (lat. $41^{\circ} 46' N.$; long. $50^{\circ} 14' W.$). He saw no wreckage 7030 there, but did later on near the "Carpathia," which ship he closed soon afterwards, and he stated that the position where he subsequently left this wreckage was $41^{\circ} 33' N.$; $50^{\circ} 1' W.$ It is said in the evidence of Mr. Stewart that the position of the "Californian" was verified by stellar observations at 7.30 p.m. on the Sunday evening, and that he verified the Captain's position given when the ship stopped ($42^{\circ} 5' N.$; $50^{\circ} 7' W.$) as accurate on the next day. The position in which the wreckage was said to have been seen on the Monday morning was verified by sights taken on that morning.

All the officers are stated to have taken sights, and Mr. Stewart in his Stewart, 8820 evidence remarks that they all agreed. If it is admitted that these positions were correct, then it follows that the "Titanic's" position as given by that ship when making the C.Q.D. signal was approximately S. 16° W. (true), 19 miles from the "Californian"; and further that the position in which the "Californian" was stopped during the night, was thirty miles away from where the wreckage was seen by her in the morning, or that the wreckage had drifted eleven miles in a little more than five hours.

7020 There are contradictions and inconsistencies in the story as told by the different witnesses. But the truth of the matter is plain. The "Titanic" collided with the berg at 11.40. The vessel seen by the "Californian" stopped at this time. The rockets sent up from the "Titanic" were distress signals. The "Californian" saw distress signals. The number sent up by the "Titanic" was about eight. The "Californian" saw eight. The time over which the rockets from the "Titanic" were sent up was from about 12.45 to 1.45 o'clock. It was about this time that the "Californian" saw the rockets. At 2.40 Mr. Stone called to the Master that the ship from which he had seen the rockets had disappeared.

At 2.20 a.m. the "Titanic" had foundered. It was suggested that the rockets seen by the "Californian" were from some other ship, not the "Titanic." But no other ship to fit this theory has ever been heard of.

These circumstances convince me that the ship seen by the "Californian" was the "Titanic," and if so, according to Captain Lord, the two vessels were about five miles apart at the time of the disaster. The evidence from the "Titanic" corroborates this estimate, but I am advised that the distance was probably greater, though not more than eight to ten miles. The ice by which the "Californian" was surrounded was loose ice extending for a distance of not more than two or three miles in the direction of the "Titanic." The night was clear and the sea was smooth. When she first saw the rockets the "Californian" could have pushed through the ice to the open water without any serious risk and so have come to the assistance of the "Titanic." Had she done so she might have saved many if not all of the lives that were lost.

6.—THE BOARD OF TRADE'S ADMINISTRATION.

The Court was invited by the Board of Trade "to report upon the Rules and Regulations made under the Merchant Shipping Acts 1894-1906, and the administration of those Acts, and of such Rules and Regulations so far as the consideration thereof is material to this casualty" (No. 26 of the Questions submitted to the Court by the Board of Trade). Charges were made against the Board of Trade during the progress of the Enquiry of a twofold kind. First it was said that the Board had been negligent in that they had failed to keep up to date their Rules and Regulations relating generally to the provision of life saving appliances at sea, and secondly it was said that their officials had in the particular instance of the "Titanic" failed to exercise due care in the supervision of the vessel's plans and the inspection of the work done upon her.

B. T. Deptl.
Pap. 246.

With reference to the first of these charges, it was reduced in the course of the Enquiry to a charge of neglect to keep the Board's scale for the provision of lifeboat accommodation up to date. The circumstances are these. In March, 1886, the Board appointed a Departmental Committee consisting of three of their principal officers to enquire into the question of boats, rafts and life-saving apparatus carried by sea-going merchant ships. In their report this Committee pointed out that as regards boats for ocean-going steamers carrying large numbers of passengers, the boats would be of little use in saving life (although they might for a time prolong its existence) unless succour were at hand from other ships, or from proximity to shore; and speaking with special reference to passenger steam vessels carrying emigrants across the Atlantic to ports on the east coast of North America, they said as follows:—

Howell, 22268

"Considering the number of vessels employed in this trade, and the large number of passengers they carry, and also taking into consideration the stormy character of the ocean they have to cross, and the thick and foggy weather encountered, we think this class is the most important of any, and we cannot pass over the fact that of late years this traffic has been carried on with remarkable immunity from loss of life.

"The boat accommodation these vessels are forced to carry when sailing with emigrants is regulated by the scale in the Passengers Act, 1855, which provides for boat accommodation for 216 people as a maximum, so that supposing a vessel leaves with 1,000 passengers and 200 crew under the present statutory requirements, she need only carry sufficient boat accommodation for 216 of these people. Thus it will be seen that the boats carried by this class of vessel are also quite inadequate as an effectual means of saving life should a disaster happen to a ship with her full complement of passengers on board. We are glad to be able to say that there are many liberal and careful shipowners who do all in their power to provide for the safety of their passengers by equipping their vessels with boats far in excess of the number required by statute. But, at the same time, there are others carrying large numbers of emigrants who do no more than they are required to do by law.

"We have gone into this question with reference to this class of vessel very fully, and have visited many of them, and we think that the boats required by Act should be increased 100 per cent., and in addition to them that the owners should be induced to carry sufficient collapsible boats and approved rafts, so that each ship shall have sufficient life-saving gear for all on board at any one time, provided, as said before, that no ship need carry more boat accommodation than is sufficient for all on board at that time."

In 1887 a Select Committee of the House of Commons, of which Lord Charles Beresford was the Chairman, was appointed to report on Saving Life at Sea, and they found in their report "That many passenger ships could not, without great inconvenience, carry so many of the ordinary wooden boats as would suffice to carry the whole of the passengers and crew with safety in bad weather. Under such circumstances the crew would not be sufficient to man so many boats; nor could they all be got into the water in sufficient time in the event of very rapid

22272-5

"foundering. Having regard, however, to the fact that accidents occur probably as often in moderate weather as in bad, and having regard also to the fact that the very cause of the accident frequently incapacitates many of the boats, and to the further fact that an insufficiency of boats undoubtedly tends to cause panic, we are of opinion that all sea-going passenger ships should be compelled by law to carry such boats, and other life-saving apparatus, as would in the aggregate best provide for the safety of all on board in moderate weather."

As a result of these reports, the "Merchant Shipping (Life Saving Appliances) Act, 1888," appears to have been passed, under which rules were made by the Board of Trade at different dates. The Merchant Shipping Act, 1894, repealed the Act of 1888, and substituted therefor sections 427 to 431 and the seventeenth schedule of the new Act. Under this Act (1894), a Table showing the minimum number of boats to be placed under davits, and their minimum cubic contents was issued by the Board. It was dated the 9 March, 1894, and came into operation on the 1 June of that year. This table was based on the gross tonnage of the vessels to which it was to apply, and not upon the numbers carried, and it provided that the number of boats and their capacity should increase as the tonnage increased. The table, however, stopped short at the point where the gross tonnage of the vessels reached "10,000 and upwards." As to all such vessels, whatever their size might be, the minimum number of boats under davits was fixed by the table at 16, with a total minimum capacity of 5,500 cubic feet.

But as regarded emigrant steamships there was a rule which provided that if the boats under davits required by the table did not furnish sufficient accommodation for all on board, then additional boats of approved description (whether under davits or not) or approved life rafts should be carried, and that these additional boats or rafts should be of at least such carrying capacity that they and the boats required by the table should provide together in vessels of 5,000 tons and upwards three-fourths more than the minimum cubic contents required by the table, so that in the case of an emigrant ship such as the "Titanic" the requirements under the rules and table together exacted a provision of 9,625 cubic feet of lifeboat and raft accommodation (5,500 feet in boats under davits with three-fourths, namely, 4,125, added). Taken at 10 cubic feet per person, this would be equivalent to a provision for 962 persons. No doubt at the time these rules were made and this table was drawn up it was thought that, having regard to the size of vessels then built and building, it was unnecessary to carry the table further. The largest emigrant steamer then afloat was the "Lucania," of 12,952 tons.

In the report of the Select Committee of the House of Commons a reference to watertight bulkheads had been made, which was in the following terms:—

"Though the question of construction was clearly not included in the reference to the Committee, still they think it only right to state, after having heard the evidence, that the proper placing of bulkheads, so as to enable a ship to keep afloat for some length of time after an accident has occurred, is most important for saving life at sea, and a thing upon which the full efficiency of life-saving appliances largely depends."

This passage probably explains the insertion in the Board of Trade's Rules for Life Saving Appliances of Rule No. 12, which is as follows:—

"*Watertight compartments.*—When ships of any class are divided into efficient watertight compartments to the satisfaction of the Board of Trade, they shall only be required to carry additional boats, rafts and buoyant apparatus of one-half of the capacity required by these Rules, but the exemption shall not extend to life-jackets or similar approved articles of equal buoyancy suitable to be worn on the person."

If this rule had become applicable to the "Titanic," then the total cubical lifeboat or raft accommodation which she would have been required to carry would not have been more than 7,562 (equivalent to accommodation for 756 persons). It did not, however, become applicable for the owners never required the Board of Trade to express any opinion under the rule as to the efficiency of the watertight compartments. The "Titanic," in fact, carried boat accommodation for 1,178 persons, a number far in excess of the requirements of the Table and Rules, and therefore no concession under Rule 12 was needed. Speaking generally, recourse to this Rule (12) by shipowners has been so insignificant that the rule itself may be regarded as of no practical account.

The foregoing Rules with the Table were laid before Parliament in the usual way, and so received the required statutory sanction.

After 1894 steamers were built of a much larger tonnage than 10,000, the increase culminating in the "Titanic," with a gross tonnage of 46,328. As the vessels built increased in size, so one would have thought the necessity for increased lifeboat accommodation would grow; but the rules and table remained stationary, and nothing was done to them by way of change. The explanation of this long delay (from 1894-1912) was given before me by Sir Alfred Chalmers, who had served under the Board of Trade as Nautical Advisor from 1896 to August, 1911. He is now retired. I think it will be well if I give his explanation in his own words. He says: "I considered the matter very closely from time to time. I first of all considered the record of the trade—that is to say, the record of the casualties—and to see what immunity from loss there was. I found it was the safest mode of travel in the world, and I thought it was neither right nor the duty of a State Department to impose regulations upon that mode of travel as long as the record was a clean one. Secondly, I found that, as ships grew bigger, there were such improvements made in their construction that they were stronger and better ships, both from the point of view of watertight compartments and also absolute strength, and I considered that that was the road along which the shipowners were going to travel, and that they should not be interfered with. I then went to the maximum that is down in the Table—16 boats and upwards, together with the supplementary boats, and I considered from my experience that that was the maximum number that could be rapidly dealt with at sea and that could be safely housed without encumbering the vessel's decks unduly. In the next place, I considered that the traffic was very safe on account of the routes—the definite routes being agreed upon by the different companies, which tended to lessen the risk of collision, and to avoid ice and fog. Then, again, there was the question of wireless telegraphy, which had already come into force on board of these passenger ships. I was seized of the fact that in July, 1901, the 'Lucania' had been fitted with wireless telegraphy, and the Cunard Line, generally, fitted it during that year to all their ships. The Allan Line fitted it in 1902, and I am not sure that in 1904 it had not become quite general on the trans-Atlantic ships. That, of course, entered into my consideration as well. Then another point was the manning. It was quite evident to me that if you went on crowding the ships with boats you would require a crew which were not required otherwise for the safe navigation of the ship, or for the proper upkeep of the ship, but you are providing a crew which would be carried uselessly across the ocean, that never would be required to man the boats. Then the last point, and not the least, was this, that the voluntary action of the owners was carrying them beyond the requirements of our scale, and when voluntary action on the part of shipowners is doing that, I think that any State Department should hold its hand before it steps in to make a hard-and-fast scale for that particular type of shipping. I considered that that scale fitted all sizes of ships that were then afloat, and I did not consider it necessary to increase it, and that was my advice to Sir Walter Howell."

I appreciate this explanation, and I think there is much force in it. At the same time, it seems to me that it does not justify the delay. Even taking all these matters into consideration, it cannot be that the provision for boat accommodation made in 1894 for vessels of 10,000 tons and upwards remained sufficient to 1910, when vessels of 45,000 tons were being built. Two considerations demonstrate this. The first is that some shipowners recognised the insufficiency of the requirements of the Board of Trade, and voluntarily exceeded those requirements by providing larger boat accommodation than the old rules and table exacted. The second is that shortly before Sir Alfred Chalmers left the Board of Trade, the Board had begun to direct attention to the amending of their rules in this connection.

It appears that in November, 1910, a question was asked in the House of Commons as to whether the attention of the President of the Board of Trade had been called to the fact that the "Olympic," a sister ship of the "Titanic," was provided with 14 lifeboats only. The answer given was that the "Olympic" (which was then in course of construction) would carry 14 lifeboats and two ordinary boats of an aggregate capacity of 9,752 cubic feet, which was in excess of the requirements of the statutory rules. On the 15th February, 1911, a further question was asked as to the date of the last regulations, and whether, having regard to the increased tonnage of modern ships, the desirability of revising the regulations would be considered by the Board of Trade. The answer by the President was: "Those regulations were last revised in 1894. The question of their further revision is engaging the serious attention of the Board of Trade, and I have decided to refer the matter to the Merchant

"Shipping Advisory Committee for consideration and advice." Three days afterwards, namely, on the 18th of February, 1911, a circular letter was sent out by the Board of Trade to the Board's principal officers at Liverpool, London and Glasgow, asking each of those gentlemen to draft such an extension of the existing boat scale as he might think satisfactory and reasonable for the conditions of large passenger steamers. This circular letter was answered by the principal officer in Glasgow (Mr. Harris) on the 24th February, 1911, by the principal officer in London (Mr. Park) on the 27th February, 1911, and by the principal officer in Liverpool (Mr. Young) on the 3rd March, 1911. It is sufficient to say of these answers that they all suggested a large extension of the statutory requirements.

Meanwhile, namely, on the 28th February, 1911, Mr. Archer, the Board of Trade's principal ship surveyor, had also drawn up a scale. This was a more exacting scale than that of any of the three principal officers. By his scale a vessel of the tonnage of the "Titanic" would have had to carry boat accommodation equivalent to at least 24,937 cubic feet, which would have been sufficient to hold all, and more than all, the persons who were on board at the time of the disaster (2,201). It would not, however, have been nearly sufficient to have held all that the vessel might lawfully have carried, viz., 3,547, and it is to be observed with reference to Mr. Archer's scale that in it he suggests an extension of Rule 12, by which (if the vessel were divided into efficient watertight compartments) the total boat accommodation might be reduced much more than Rule 12 as it stands would permit. If this reduction be taken into account, the boat accommodation would fall so that it would be sufficient only for 1,750 persons. Mr. Archer's view was that shipowners should be encouraged to increase the flotability of the ships they built, and that the way to encourage them was to relax the legal requirements as to boats as their plans advanced in that direction. The great object was so to build the ship that in the event of a disaster she would be her own lifeboat.*

Having obtained these four reports, the Board of Trade, on the 4th April, 1911, submitted the matter to their Advisory Committee, and obtained the Committee's report on the 4th July, 1911. The following are copies (with omissions of immaterial passages) of the Board of Trade's letter of the 4th April, 1911, and of the Advisory Committee's report of the 4th July, 1911:—

Board of Trade, Marine Department,
7. Whitehall Gardens, London, S.W.,
4th April, 1911.

Sir,

I am directed by the Board of Trade to enclose herewith, for the information of the Merchant Shipping Advisory Committee, a copy of a question asked in the House of Commons on the 15th February and of the answer given by the President of the Board of Trade with reference to the Life-Saving Appliances Rules made under section 427 of the Merchant Shipping Act, 1894.

The Board are of opinion that the Table in the Appendix to the Rules should be extended upwards in the form indicated in the accompanying scale, so as to provide for vessels of tonnage up to 50,000 tons gross and upwards.

It appears to the Board that the number of boats and the boat capacity need not necessarily increase in a regular proportion according to the increase in tonnage, and that due regard should be paid to what is reasonable and practicable in passenger steamers exceeding 10,000 tons.

I am to state that the Board would be obliged if the Merchant Shipping Advisory Committee would be so good as to suggest in what manner the scale (*see* accompanying copy) should be continued upwards having due regard to the considerations indicated above.

I am further to state that the Board would be glad to learn whether the Advisory Committee are of opinion that Rule 12 should or should not be revised so as to exempt altogether from the requirement of additional boats and/or rafts those vessels which are divided into efficient watertight compartments to the satisfaction of the Board of Trade.

I am, etc,

(Signed) WALTER J. HOWELL.

The Secretary,
Merchant Shipping
Advisory Committee.

MERCHANT SHIPPING ADVISORY COMMITTEE.

Sir,

4th July, 1911.

WE have the honour to report that your letter of the 4th April with reference to the minimum number of lifeboats to be carried on vessels of 10,000 tons gross tonnage and upwards, and your letter of the 17th May on the subject of the depth of lifeboats, have been very carefully considered by the Merchant Shipping Advisory Committee, and that it was unanimously decided at a meeting held on the 29th ultimo to adopt the report of a Sub-Committee which was specially appointed to inquire into these questions.

* It may be mentioned that Mr. Archer stated in the witness-box that since the disaster to the "Titanic" he had modified his views and thought that Rule 12 should be discontinued.

A copy of the report is accordingly forwarded herewith, and the Committee desire us to suggest for the consideration of the Board of Trade, that effect should be given to the recommendations contained in it.

We are, &c.,

(Signed) NORMAN HILL,
Chairman.

(Signed) R. W. MATTHEW,
Secretary.

Sir Walter J. Howell,
Assistant Secretary,
Marine Department,
Board of Trade.

Report of the Life-Saving Appliances Sub-Committee to the Merchant Shipping Advisory Committee.

In accordance with the decision of the Merchant Shipping Advisory Committee at their meeting on Friday, the 28th April, we have given careful consideration to the letter of the 4th April from the Board of Trade, in which the Committee were asked to advise:—

- (1) as to the manner in which the table in the Appendix to the Life Saving Appliances Rules should be extended so as to provide for vessels of tonnage up to 50,000 tons gross and upwards; and
- (2) as to whether Rule 12 should, or should not, be revised so as to exempt altogether from the requirement of additional boats and/or rafts, those vessels which are divided into efficient water-tight compartments to the satisfaction of the Board of Trade.

In considering these questions, we have had specially in mind the fact that the number of passengers carried does not necessarily increase in proportion to the increase in the tonnage of the vessel. This is particularly true in the case of vessels exceeding 10,000 tons, a type of vessel which is practically only built to provide special accommodation for large numbers of first and second class passengers.

Similarly there is no fixed relation between the tonnage of vessels and the deck space available for the carrying of lifeboats under davits. Increase in the length of a vessel is only one of the factors, and often not the most material factor contributing to the increase in its tonnage, and it should also be remembered, in estimating the space available for the launching of lifeboats, that it is impossible to place davits forward of the bridge, and very undesirable to have them on the quarters of the vessel.

We are strongly of opinion that every encouragement should be given to secure the provision of vessels which by their construction have been rendered as unsinkable as possible, and which are provided with efficient means for communicating with the shore or with other vessels in case of disaster.

In view of these considerations, we have agreed upon the following recommendations:—

1. That it is questionable whether it is practicable to increase the number of davits;
2. That any increase in the number of lifeboats to be carried can probably be best effected by providing for the launching of further boats from the existing davits;
3. That the table should be extended in the manner indicated below, viz.:—

Gross Tonnage.	Minimum Number of Boats to be placed under Davits.	Minimum Number of Additional Boats to be readily available for Attachment to Davits.	Total Minimum Cubic Contents of Boats required by Columns 2 and 3.
(1)	(2)	(3)	(4)
10,000 and under 12,000 ...	16	—	Cubic Feet. 5,500
12,000 and under 20,000 ...	16	2	6,200
20,000 and under 35,000 ...	16	4	6,900
35,000 and under 45,000 ...	16	6	7,600
45,000 and upwards...	16	8	8,300

It is further recommended that all passenger vessels of 10,000 tons gross tonnage and upwards should be required to be fitted with wireless telegraphy apparatus;

4. That the Rules should be amended so as to admit of decked lifeboats of an approved type being stowed on top of one another or under an open lifeboat, subject to suitable arrangements being made for launching promptly the boats so stowed;
5. That the additional boats and rafts required under the provisions of Division A, Class 1 (d) of the Life-Saving Appliances Rules shall be of at least such carrying capacity that they, and the boats required by columns 2 and 3 of the above Table, provide together three-fourths more than the minimum cubic contents required by column 4 of that Table;
6. That vessels divided into efficient water-tight compartments to the satisfaction of the Board of Trade should (provided they are fitted with wireless telegraphy apparatus) be exempt from the requirement of additional boats and/or rafts. The Committee suggest, in this connection, that the Board of Trade should review the requirements designed to attain the standards as to water-tight compartments at present enforced by them under Rule 12,

having regard to the developments of shipbuilding since the report of the Committee on the spacing and construction of watertight bulkheads.

We have also had before us the Board's further letter of the 17th May enquiring whether, in the opinion of the Advisory Committee, it would be advisable to prescribe a maximum depth for lifeboats as compared with their breadth, and, if so, what that proportion should be.

In connection with this letter, we have been supplied by the Board of Trade with reports from their principal officers in Great Britain, giving the dimensions and cubic capacities of the various kinds of boats on five typical ships in each of eight ports.

We recommend that the Board should be advised to alter the Life Saving Appliances Rules so as to provide that, in future, the depth of lifeboats supplied to a British merchant vessel shall not exceed 44 per cent. of their breadth.

(Signed) NORMAN HILL.
A. M. CARLISLE.
S. CROSS.
WM. THEODORE DOXFORD.
GEO. N. HAMPSON.
ROBERT A. OGILVIE.
T. ROYDEN.
T. ROME.
THOMAS SPENCER.
J. HAVELOCK WILSON.

It will be observed that if effect had been given by the Board of Trade to the Report of the Advisory Committee the requirements for a vessel of the size of the "Titanic" would have reached 14,525 cubic feet (8,300 plus $\frac{3}{4}$ ths of 8,300, namely, 6,225), with, however, this qualification that if the vessel were divided into efficient watertight compartments (as she probably was) and fitted with wireless telegraphy (as she certainly was) a provision of a boat capacity of 8,300 cubic feet, equivalent to space for 830 persons, would have been legally sufficient. This would have been much less than the accommodation with which the "Titanic" when she put to sea was, in fact, provided (namely for 1,178 persons).

Effect, however, was not given to the report. A question arose with reference to the dimensions of lifeboats, and it was thought better to get that question settled before proceeding to revise the rules. The examination of this question involved making several experiments which caused delay: and it was not until the 16th April, 1912, that a reply was sent by the Board of Trade to the Advisory Committee. It will be noticed that the date of this reply is just after the disaster to the "Titanic" became known. I am, however, quite satisfied that instructions for the preparation of this letter had been given in the offices of the Board of Trade some days before the 16th, and that the letter was not sent in consequence of the disaster. It is desirable to set it out.

Board of Trade, Marine Department,
7, Whitehall Gardens, London, S.W., 16th April 1912.

SIR,

WITH reference to your letter of the 4th July last respecting certain questions raised in connection with the proposed revision of the Life Saving Appliances Rules, I am directed by the Board of Trade to state, for the information of the Advisory Committee, that they have given very careful consideration to the report of the Life Saving Appliances Sub-Committee which was forwarded with your letter.

As regards the recommendations with reference to the proposed extension of the Table (Appendix to the Life Saving Appliances Rules) showing the minimum number of boats to be placed under davits, the Board are glad to observe that the Committee agree that alterations and additions are now necessary to meet the changed conditions due to recent developments in the size of passenger steamships and in the number of persons which these vessels can accommodate.

The Board of Trade note that the gradations of tonnage in the extension of the scale suggested by the Advisory Committee are not the same as those in the form of scale submitted to them by the Board; while the increase in the number of boats is not in the number to be placed under davits, but in the number of additional boats required to be readily available for attachment to davits. It is observed that the Committee hold the view that "it is questionable whether it is practicable to increase the number of davits," and "that any increase in the number of lifeboats to be carried can probably be best effected by providing for the launching of further boats from the existing davits."

The Board presume that, in arriving at these conclusions, the Committee have had regard to ships already built rather than to new ships, as they see no reason why there would be any difficulty in having more than eight pairs of davits on each side of the ship, provided that the requirements of Life Saving Appliances rules were known before the plans were prepared.

The Board are of opinion that a very careful and thorough revision of the table should now be made, and I am to transmit herewith a copy of a memorandum and tables prepared by the Professional Adviser to the Marine Department, containing a full and considered opinion on the subject of the extension of the boat scale and cognate questions.

As regards the proposed amendment of the Rules, so as to admit of decked lifeboats of an approved type being stowed one above another, or under an open lifeboat, I am to state that this question is now under consideration, and a communication will be addressed to you shortly on the subject.

With reference to the Advisory Committee's recommendation regarding the amendment of Rule 12 of the General Rules, the Board desire me to state that the questions raised in the recommendation are of wide application, and of such importance that the Board do not think that they can be adequately considered except by a Committee of equal standing to the Committee which reported in 1891 on the Spacing and Construction of Watertight Bulkheads in the Mercantile Marine. The Board have the question of the appointment of a Committee under consideration.

In connection with the Advisory Committee's recommendation that the depth of lifeboats shall not exceed 44 per cent. of their breadth, I am to transmit herewith, for their consideration, a draft amendment of Rules Nos. 1, 2, and 3 of the General Rules with reference to the construction of ships' boats.

The Board have made full inquiry into the question of the construction of ships' boats, and obtained some useful information as to the average depth of boat which is deemed desirable for safety and utility, and the ratio of that depth to the breadth, and they attach so much importance to this element of boat construction that they think it should receive the careful attention of the Committee. The Board think that the Committee, in the light of this additional information, may reconsider the opinions expressed on this point in their letter of the 4th July.

I am therefore to transmit herewith copies of memoranda by the Professional Adviser to the Marine Department and the acting Principal Ship Surveyor.

The Board desire me to state that they would be glad to be furnished with the Advisory Committee's views as to the application of the proposed new rules and boat scale, *e.g.*, whether they should apply to ships already built, and if so, to what extent. They regard it as of great importance, on the one hand, that all British vessels should be provided with a proper and sufficient equipment of life-saving appliances, and, on the other, that regulations should not be enforced without notice which would necessitate important structural alterations and consequent heavy expense in vessels already built.

I am to add that in order to make the constitution of the Committee, when considering this question, agree with that of the Statutory Life-Saving Appliances Committee indicated in the Seventeenth Schedule to the Merchant Shipping Act, 1894, the Board have followed the course adopted on previous occasions, and have invited Lloyd's Register of British and Foreign Shipping and the Institute of London Underwriters to select a representative who will be available to sit on the Advisory Committee when the question is under consideration.

I am, &c.,
(Signed) WALTER J. HOWELL.
The Secretary,
Merchant Shipping
Advisory Committee,
7, Whitehall Gardens, S.W.

Extension of Life-Saving Apparatus Tables.

It will be seen that I have given priority in importance to the form of ships' boats rather than to their number on the principle that a few reliable boats are of greater value than a large number of indifferent ones; but if the former desirable condition can be obtained by the proposed alterations in our rules as to measurement, &c., we are freer to approach the question of adding to the number of boats provided for in the existing tables.

As with the question of ratio D : B dealt with by the Advisory Committee last year, so with the question of boat increase and relative increase of cubic capacity dealt with by them on the same occasion, perhaps the Board might inform the Committee that they are not satisfied that a slightly different recommendation might not have been made had the matter been still further considered at the time.

Referring to the table of boat capacities computed by them particularly it might be helpful if the Board laid before them for consideration the table, which I attach hereto and submit, as showing a more reasonable proportionate increase in capacity than appears so far, in my opinion, in the other papers before us. It will be seen in this statement that the number of boats recommended by the Advisory Committee is practically retained, but the unit of increase in capacity is put at 300 cubic feet.

Perhaps I should state here what actuated me in fixing upon this rate of increase. I realised that in all probability it would become the practice on these large liners to provide boats under davits which would contain the entire cubic feet required by the L.S.A. Rules, that is—the quantity required by rule under davits plus the addition of $\frac{3}{4}$ ths and it occurred to me that if, after the figure 5,500 cubic feet the increase of capacity were uniform and moderate it would result in a total at $1\frac{1}{2}$ which would by incidence fit in with the scale of boats already recommended as requisite in the Report of the Advisory Committee and in my own, *i.e.*, assuming that the boats are of 500 cubic feet. *Example:* take a vessel of 30,000 tons and under 35,000 tons, according to the table I submit she would be required to have by the $1\frac{1}{2}$ rule a total boat capacity of 12,250 cubic feet which at 500 cubic feet per boat equals 24 boats nearly. There should be no difficulty on the large ships in carrying this quantity under davits, *i.e.*, 18 directly under davits and six boats inboard.

Please see incidental table attached.

A. H. Y.
28.3.12.

(Mr. A. H. Young, Professional Adviser of the Board of Trade.)

Proposed Extension of Boat Scale.

Gross Tons.	Boats.	Minimum Total Cubic Contents of Boats required to be carried under Davits.
10,000 and under 12,000 ...	16	5,500 c. ft.
12,000 " 15,000 ...	18	5,800 c. ft.
15,000 " 20,000 ...	20	6,100 c. ft.
20,000 " 25,000 ...	22	6,400 c. ft.
25,000 " 30,000 ...	24	6,700 c. ft.
30,000 " 35,000 ...	24	7,000 c. ft.
35,000 " 40,000 ...	24	7,300 c. ft.
40,000 " 45,000 ...	24	7,600 c. ft.
45,000 " 50,000 ...	26	7,900 c. ft.
50,000 and upwards ...	26	8,200 c. ft.

Please see the accompanying incidental table showing how this number of boats can provide for the three-quarters additional capacity also, if of about 500 cubic ft. per boat to 600 cubic ft.

A. H. Y.

Table of incidence (informative).

Gross Tons.	Number of Boats.	Cubic Feet.	Cubic Feet Additional.	Total Cubic Feet at 1½.	Equivalent Boats.
					At 500 Cu. Ft. At 600 Cu. Ft.
10,000 and under 12,000	16	5,500	4,125	9,625	19 say or 16
12,000 " 15,000	18	5,800	4,350	10,150	20 " " 16
15,000 " 20,000	20	6,100	4,575	10,675	21 " " 18
20,000 " 25,000	22	6,400	4,800	11,200	22 " " 19
25,000 " 30,000	24	6,700	5,025	11,725	24 " " 20
30,000 " 35,000	24	7,000	5,250	12,250	24 " " 20
35,000 " 40,000	24	7,300	5,475	12,775	25 " " 21
40,000 " 45,000	24	7,600	5,700	13,300	26 " " 22
45,000 " 50,000	26	7,900	5,925	13,825	27 " " 23
50,000 and upwards ...	26	8,200	6,150	14,350	28 " " 24

One-fourth of the above boats may be carried inboard, but they should not exceed 500 cubic ft. in capacity, so that they may be readily drawn up to the davits.

A. H. Y.
30.3.12.*Draft Amendment of General Rules.*

(1) *Boats.*—All boats shall be constructed and properly equipped as provided by these rules, and shall be of such form and proportions that they shall have sufficient freeboard, and ample stability in a sea-way, when loaded with their full complement of persons and equipment.

All thwart and side seats must be fitted as low in the boat as practicable, and bottom boards must be fitted so that the thwarts shall not be more than 2 ft. 9 in. above them.

All boats and other life-saving appliances are to be kept ready for use to the satisfaction of the Board of Trade. Internal buoyancy apparatus may be constructed of wood, or of copper or yellow metal of not less than 18 oz. to the superficial foot, or of other durable material.

Section (A). A boat of this section shall be a lifeboat of whale-boat form, properly constructed of wood or metal, having for every 10 cubic ft. of her capacity, computed as in Rule (2), at least 1 cubic ft. of strong and serviceable inclosed air-tight compartments, so constructed that water cannot find its way into them. In the case of metal boats an addition will have to be made to the cubic capacity of the air-tight compartments, so as to give them buoyancy equal to that of the wooden boat.

Section (B). A boat of this section shall be a lifeboat, of whaleboat form, properly constructed of wood or metal, having inside and outside buoyancy apparatus together equal in efficiency to the buoyancy apparatus provided for a boat of section (A). At least one-half of the buoyancy apparatus must be attached to the outside of the boat.

Section (C). A boat of this section shall be a lifeboat, properly constructed of wood or metal, having some buoyancy apparatus attached to the inside and (or) outside of the boat, equal in efficiency to one-half of the buoyancy apparatus provided for a boat of section (A) or section (B). At least one-half of the buoyancy apparatus must be attached to the outside of the boat.

Section (D). A boat of this section shall be a properly constructed boat of wood or metal.

Section (E). A boat of this section shall be a boat of approved construction, form, and material, and may be collapsible.

(2) *Cubic Capacity.*—The cubic capacity of an open boat, and of a deck boat of section (D) or section (E) shall be ascertained by multiplying the product of the length, breadth, and depth by 6, subject, however, to the following provisions:—

The length shall be measured from the foreside of the rabbet on the stem to the afterside of the rabbet on the stern post, and the breadth shall be measured from the outside of plank to the outside of plank amidships. The actual depth shall be measured from the top of the gunwale to the top of the bottom plank next to the keel, but the depth used in calculating the cubic capacity shall not in any case exceed 3'6 ft.; and if the actual depth measured is equal to or less than 3'6 ft., the depth used in calculating the cubic capacity shall not exceed 45 per cent. of the breadth measured as indicated above.

If the oars are pulled in rowlocks, the bottom of the rowlock is to be considered as the gunwale in measuring the depth of the boat.

If any question is raised requiring absolute accuracy, the cubic capacity of a boat shall be ascertained by Stirling's rule; subject to the foregoing provisions as to depth.

(3) *Number of Persons for Boats.*—(A) Subject to the provisions of paragraphs (b), (c), and (d) of this clause the number of persons* an open boat of section (A) shall be deemed fit to carry shall be the number of cubic feet ascertained as in Rule (2) divided by 10, and the number of persons* an open boat of section (B) or section (C), or an open or decked boat of section (D) or section (E) shall be deemed fit to carry shall be the number of cubic feet ascertained as in Rule (2) divided by 8. The space in the boat shall be sufficient for the seating of the persons carried in it, and for the proper use of the oars.

(B)—An open boat of section (A) or section (B) or section (C) or section (D) or section (E), shall not be deemed to be fit to carry the number of persons ascertained as in paragraph (A) of this clause unless the boat is so constructed that it has a mean sheer of at least half an inch for each foot of its length, and that the boat's half-girth amidships measured outside the planking from the side of the keel to the top of the gunwale is at least equal to nine-tenths of the sum of the boat's depth inside and half its maximum breadth amidships, and that the mean of the half-girths measured in the same manner at two points, one-quarter of the length of the boat from the stem and stern-post respectively, is at least equal to eight-tenths of the sum of the depth inside and half the maximum breadth amidships.

(C)—A decked boat of section (D) or section (E) shall not be deemed to be fit to carry the number of persons ascertained as in paragraph (A) of this clause, unless the top of the deck amidships is at a height above the water approved by the Board of Trade, when the boat is so loaded.

(D)—If the surveyor is doubtful as to the number of persons any open or decked boat is fit to carry, he may require the boat to be tested afloat with the intended number of persons on board.

(E)—The rules Numbers 1, 2, and 3, as now amended, are not to be retrospective, and are to apply only to boats built after

Ship's Boats.

The salient feature of the Reports of the Board's officers on this subject is the consensus of opinion that the form of a boat is the chief factor to be considered in determining its value as a life-saving appliance.

It has been found that while there are many boats of good form supplied to ships, there is yet a large proportion where the boats are not only not so good, but which can only be regarded as unsafe if they had on board anything approaching the number of persons for which they measure.

It is the latter type we are chiefly concerned with; how is it that the form has so deteriorated as to create this concern in our minds? I think the cause is not far to seek; it appears to be the outcome of (1) the shipowner's desire to carry the maximum number of persons in the minimum number of boats; (2) in the efforts of the shipbuilder, as a rule, to carry out the specification in which he has contracted to supply the owners with boats at a price, often very low, and naturally he does not sublet his contract with the boatbuilder at a loss; (3) the aim of the competing boatbuilder, which is to build his boats at as little cost price as possible, and yet to provide accommodation for the prescribed number of persons. He is probably limited as to length, and therefore relies on the breadth and depth; in this direction, he is unintentionally assisted by the Board's rule for measurement, viz., $\frac{L \times B \times D \times 6}{10}$ or 8; so long, therefore, as he can obtain his breadth

at one point for measurement purposes, it is quite immaterial to him how soon he fines away to the ends, with the result that the stability of the boat becomes almost entirely dependent upon the form of a very limited midship section, or the still smaller proportion of same that would be under water when in the loaded condition.

The boatbuilder may be further restricted as to breadth, and, therefore, he again detracts from the form a boat should have by dispensing with sheer and increasing the depth from

* See Rule of 14.6.11.

keel to gunwale amidships. This method of building boats enables him to obtain the capacity required by the owner at the expense of the boat's stability and utility.

No doubt when the Life-Saving Appliances Rules came into being, the divisors 10 and 8 for the different sections were deemed safe on the supposition that the usual full form of boat would not be largely departed from; experience has shown, however, that form is frequently sacrificed for the unworthy objects referred to above, and it follows, therefore, that either the form should be improved or a heavier divisor laid down.

It would, I think, be more effective to deal with form, and devise a rule by which we can ensure that a boat will be reasonably safe with its load, not merely in smooth water—as in our recent test—but in a sea-way. It is essential, therefore, to draw the attention of the Advisory Committee to the value the Board attach to form, and particularly to that part of it under water, emphasising the great necessity there is for an increase to the bearing surface of the under-water portion of boats, and this end can, no doubt, be best attained by the putting into practice of the suggestions made by the Principal Ship Surveyor for amending the rules, and which aim at prolonging the form or fullness of dimension of the midship body under-water well towards the ends of the boat. It is well known that by extending the body in this way greater buoyancy and stability are secured without materially affecting the speed. It is often supposed that defective stability due to bad form can be rectified by the disposition of the persons or things, but anyone with real experience of boats in a sea-way cannot fail to realise that this is the wrong principle to work on; granted, therefore, that the question of form must take priority—how can it be best attained? and if we refer to Mr. Archer's method of measurement, as stated in his amendment to the Rules, it will be seen how simple and effective it is. For the purpose of illustration we might take the model of a ship's boat obtained through the Board's surveyors at Glasgow, the dimensions of which enlarged to scale represent a boat of $\frac{L}{30.0} \times \frac{B}{8.5} \times \frac{D}{3.5}$ and is an embodiment of the proportions amidships and at quarter distance from each end, proposed by Mr. Archer.

It cannot be too strongly urged that for a ship's lifeboat to be fit to carry the number of persons it measures for in any degree of safety, whenever it may be required at sea, the under-water or bearing surface should be carried out to the ends as much as possible and all straight lines avoided. The bows of many of the existing types of boat are examples of the worst possible form for safety, and the counters are as bad—if they can be said to have any.

Depth.—It appears from the reports that the most generally approved ratio of depth to the breadth is $\frac{4}{10}$. This has been established, not only by our long experience, but by the numerous tests recently conducted by the Board's surveyors at various ports, and the attention of the Advisory Committee might be drawn to this fact.

It is, of course, necessary also to have a good free-board, but a well-proportioned boat does not require so much free-board as the commoner type, as with proper sheer and under-water surface she is easy in a sea-way. If the gunwale is too high there is loss of power over the oars, which is serious when for the safety of the boat she is required to be kept head-on to sea, and with a fresh breeze, even in a good boat, this is not always an easy matter.

It is matter for consideration that at the tests made by our surveyors the conditions were most favourable, being usually in smooth water of a sheltered dock, and, in not a few instances, considerable anxiety was felt for the safety of those on board when crowded in accordance to the existing rules. If it was thus in smooth water one dare hardly contemplate the results in a sea-way. If the shipowner does not see to it that a safe type of boat is provided, then the number of persons to be accommodated in boats which do not come up to the proportions deemed safe by the Board of Trade should be very considerably curtailed.

A. H. Y.,
23.3.12.

Construction of Ship's Boats.

It will, I think, be useful to consider the principal factors that govern the dimensions of boats forming part of the life-saving apparatus in merchant ships.

The minimum number and capacity of boats are determined by the regulations, and the capacity is determined by the product of the length, breadth, and depth of the boats. As the space on the ship in which to stow the boats is generally limited, it is generally found easier to increase their depth than the length or breadth, and this is further encouraged, I believe, by the cost of boats being quoted at so much per foot in length. The builder or owner determines the dimensions of the boat; the boatbuilder is concerned merely with the construction and, in most cases, usually their form or lines.

Attention has been called by the Mark Lane Surveyors to the form and proportions of the boats used in the Royal Navy. The proportion of depth to breadth is greater than is apparent from the particulars given, as all boats larger than a 30-ft. gig have $6\frac{1}{2}$ -in. washboards above the gunwale, and even the gigs and many of the smaller boats have portable washboards. It must also be remembered that all the navy boats are square-sterned, except the whaleboat, and are designed with easy lines so as to make good sailers, no air cases are fitted, and the seats are kept very low. The boats are not provided simply as life-saving appliances; as a matter of fact the life-saving equipment of a warship is extremely small.

It is true that each type of boat is given a certain "life-saving capacity," which is ascertained by crowding in as many men as practicable with boat in still water and all equipment on board. This number agrees closely with that obtained by the Board's rule $L \times B \times D \times 6$.

These boats, moreover, have a much smaller freeboard than is considered desirable in the merchant navy; but the occupants are all under discipline and in charge of experienced seamen. In the mercantile marine it may, and often does, happen, that the boats are crowded with panic-stricken men, women, and children, and instances have occurred, I believe, wherein there has not been a single man in the boat who has ever handled an oar before. Having these points in view, I do not agree that the navy type of boat is the most suitable for our purpose.

The chief desiderata in a ship's boat as a life-saving appliance are—

- (1) To carry the maximum number of people without overcrowding; and with
- (2) A reasonable amount of stability and freeboard;
- (3) And without undue interference with the use of oars.

(1) is almost wholly dependent on the length and breadth of the boat; provided (2) is satisfied; depth has very little influence on it. For example, take a boat $30 \times 9 \times 3.5$, 567 cubic ft. by our rule, as a section (D) or (E) boat it should carry 567 $\div 8 = 72$ people; such a boat should allow $30 \times 9 \times 8 \div 72 = 3$ sq. ft. of area per person at the gunwale, which should be ample if all sit in the bottom who cannot find seating room on the side benches or thwarts.

(2) Stability and freeboard are dependent upon the boat's breadth, depth, and form. The element of length does not enter into it, and it would be most unreasonable to limit the ratio of length to breadth, as suggested from Liverpool, or to limit the depth to the cube root of the length, as proposed by one of the London surveyors. Mr. Gemmell gives particulars, M. 26,298, of four boats tested, which proved to have ample accommodation and stability for the complements allowed by the regulations; the ratio of depth to breadth varied from .41 to .45.

Captain O'Sullivan also reported five boats which he tested with ratios of D to B, varying from .4 to .44, all except one being satisfactory, the exception being rather tender and overcrowded, due to poor lines. The freeboards of all these boats when loaded were, I think, sufficient. The depth in no case exceeded 3.6, and only in one case did the ratio exceed .44.

The Surveyors, Liverpool, tested a boat 3.75 deep and having a ratio of D/b = .41, which proved satisfactory.

Captain Griffiths tested a boat 4.1 deep, having a ratio D/b = .455, which he considered to be unsafe with the full complement on board.

The consensus of opinion is that the depth should not exceed 3 ft. 5 in. or 3 ft. 6 in., and the ratio of D/b should not exceed .44. This, however, is not sufficient to guarantee sufficient seating and stability. Captain Clarke tested a boat $24.4 \times 6.55 \times 2.45$, which was very unsafe with the rule complement on board. The ratio D/b is only .38 in this case. It will be seen, however, that this craft has exceptionally fine lines and is evidently quite unsuited to carry the rule complement. It is quite evident that the form of the boat must be taken into account.

The dimensions of boats vary so greatly that generally the boatbuilder builds his boats "to the eye," using only a midship mould; it follows that the forms of boats of the same dimensions will vary considerably and with different workmen. Something more is required than a limitation in the ratio of depth to breadth. It is desirable that the sheer should be ample, and the form not unduly fined away within the midship half length. From consideration of the particulars and lines of the boats mentioned in the surveyor's reports, I think a simple rule to regulate the form may be devised such as I will indicate later.

It is, I think, necessary to limit the depth as a factor for ascertaining the number to be accommodated. The increase of depth beyond a certain point, while unduly increasing the number of people that may be carried, increases proportionately the required air case capacity, to meet which the seats have to be raised with a corresponding increase in the height of the centre of gravity and decrease in the stability and difficulty in rowing. A boat 3.6 deep would have the thwarts about 3 ft. above the bottom, and any increase in this height makes it very difficult for any ordinary man to row when sitting down. In rough sea the men would have very little control over the oars if standing up. A further objection to the very deep boat is its small stability in the light condition. It is not, I believe, an unusual occurrence for such boats to capsize in rough weather, before the passengers or crew can be got into them, and I have myself seen such a boat capsize in dock with only two men in it; due to lumpy water and a stiff breeze catching it on the beam when coming out of the shelter afforded by the dock wall.

I do not think, however, any limit of depth should be imposed, except as a measure of capacity. Any rules that may be devised should be such as are of easy and ready application, and which will not bear harshly on the boats that have already been accepted. I therefore suggest that the present rules will sufficiently meet the case, with the following modification.

In no case should the depth to be used in General Rule (2) exceed 3.6 ft. and 45 per cent. of the breadth. In all cases where the actual depth is 45 per cent. of the breadth or less, the maximum number of persons, as ascertained by Rule (3) should not be allowed unless the boat has been found capable of carrying that number by actual test in the water, or unless the boat has at least $\frac{1}{2}$ in. of sheer per foot of length, and the half-girth amidships, measured outside the plank, from the side of the keel to the top of the gunwale, is at least 90 per cent. of the sum of the depth and the half breadth, and the mean of the half girths as similarly measured at one quarter the boat's length from the stem and stern post are at least 80 per cent. of the sum of the midship depth and half breadth.

The thwarts and side benches should be kept as low as practicable, and the bottom boards should be so fitted that the height of the thwarts above them will not exceed 2 ft. 9 in.

(Intd.) A. J. D.,
27.1.12.

(Mr. A. J. Daniel, Acting Principal Ship Surveyor
to the Board of Trade.)

It should be stated that the new Committee on Bulkheads mentioned in the paragraph of this letter which deals with Rule 12 has now been formed.

Subsequently Sir Walter Howell wrote and sent three letters to the Advisory Committee which were as follows:—

Board of Trade, Marine Department,
7, Whitehall Gardens, London, S.W.,
20th April, 1912.

Immediate.

SIR,

WITH reference to previous correspondence between the Department and your Committee respecting the revision of the statutory rules for Life-Saving Appliances on British ships, and particularly to the letter from this Department of the 16th April, I am directed by the Board of Trade to state that as an entirely new situation has been created by the recent disaster to the s.s. "Titanic" they assume that the Committee, in reconsidering the matter in connection with the suggestions already put before them by the Board will have full regard to this new situation, and the facts of the disaster so far as ascertained.

As you are doubtless aware, suggestions have been made in the House of Commons and elsewhere to the effect that, in view of the loss of the "Titanic," action should be taken by the Board of Trade in regard to certain questions other than those expressly dealt with in the Life-Saving Appliances Rules, *e.g.*, in regard to (1) steamship routes in the North Atlantic; (2) the speed of steamers where there may be dangers to navigation; and (3) the provision and use of searchlights on large passenger steamers; and the Board would be glad to know the Committee's views in regard to these, and any other suggestions which may have come to their knowledge, intended to diminish the risk, or to mitigate the effects of accidents to passenger vessels at sea.

I am, &c.,
(Signed) WALTER J. HOWELL.

The Secretary,
Merchant Shipping Advisory Committee.

Board of Trade, Marine Department,
7, Whitehall Gardens, London, S.W.,
24th April, 1912.

SIR,

WITH reference to previous correspondence between this Department and your Committee respecting the revision of the statutory rules for life-saving appliances on British ships, and particularly to the letter from this Department of the 16th April, in which you were informed that the question of the proposed amendment of the rules so as to admit of decked lifeboats being stowed one above another or one under an open lifeboat, was under consideration, I am directed by the Board of Trade to state, for the information of your Committee, that the Board of Trade will be glad if the Committee will consider whether any, and if so what, amendments of the rules, and in particular of the rule of the 19th April, 1910, and the rule of the 14th June, 1911, are in their opinion desirable with the object of supplementing the boats immediately under davits by as much additional boat accommodation as is practicable, having regard to the new situation which has been created by the recent disaster to the s.s. "Titanic."

A plan illustrating the principle is being prepared so as to be in readiness for your Committee by Friday.

I am, &c.,
(Signed) WALTER J. HOWELL.

The Secretary,
Merchant Shipping Advisory Committee.

Board of Trade, Marine Department,
7, Whitehall Gardens, London, S.W.,
25th April, 1912.

SIR,

WITH reference to previous correspondence respecting the proposed revision of the statutory regulations as to boats and life-saving appliances on ships, I am directed by the Board of Trade to state, for the information of the Merchant Shipping Advisory Committee, that, apart from the questions which have been raised regarding the boat accommodation on vessels over 10,000 tons, it seems desirable to consider whether the provision of boats and other life-saving appliances required by the rules in the case of vessels under 10,000 tons is satisfactory, or whether the rules or the boat scale should be altered in respect of their application to such vessels; and the Board would be glad to be favoured with the observations of the Committee on this point in addition to those that have already been referred to them.

I am, &c.,
(Signed) WALTER J. HOWELL.
The Secretary,
Merchant Shipping Advisory Committee.

To these letters the Advisory Committee sent the following answer:—

Merchant Shipping Advisory Committee,
7, Whitehall Gardens, London, S.W.,
27th April, 1912.

SIR,

WE are desired by the Merchant Shipping Advisory Committee to inform you that your letters of the 16th, 20th, 24th and 25th instant were brought before the Committee at a meeting held yesterday.

The Committee fully recognise that the proved impossibility of keeping such a vessel as the "Titanic" afloat after a collision with ice, until the arrival of outside succour, has created an entirely new situation which was neither in the contemplation of the Board of Trade nor of the Committee in the consideration of the extension of the existing boat scale in regard to vessels of 10,000 tons and upwards.

In advising on such extension in July last, the Committee aimed at providing ample boat accommodation on large passenger vessels in accordance with the principles that were adopted by the original Life-Saving Appliances Committee, and which principles had apparently been fully justified by many years of experience. It is with satisfaction that the Committee note that the Board of Trade, apart from the new possibilities demonstrated by the loss of the "Titanic," agreed in the essentials with the recommendation of the Committee.

In face of the new facts, the Committee at their meeting yesterday re-opened entirely the question of the revision of the boat scale for large passenger vessels with a view of providing the maximum of protection for the passengers and crew in the event of an overwhelming disaster, whilst, at the same time, maintaining the principles in regard to the stability and sea-going qualities of the ship itself, and to the prompt and efficient handling of the boats carried under the existing scale, which hitherto have proved not only essential to safety, but also adequate for all ordinary emergencies. The questions involved are not free from difficulty, but they will receive the immediate attention of the Committee. Pending their consideration, the Committee note that assurances have been received by the Board of Trade from representatives of most of the large passenger lines to the effect that every effort will be made to equip their vessels, at the earliest possible moment, with boats and rafts sufficient to accommodate all persons on board.

In regard to the recommendation forwarded with the Committee's letter of the 4th July last, that the Board of Trade should, having regard to the developments in shipbuilding since the Report of the Committee of 1891 on Spacing and Construction of Watertight Bulkheads, review the requirements designed to attain the standards at present enforced under Rule 12, the Advisory Committee note that the Board of Trade have under consideration the appointment of a Committee of equal standing to that of the Committee of 1891. In view of the great importance of this question the Advisory Committee desire us respectfully to urge that such a Committee be appointed at as early a date as possible.

The subject of the general revision of the statutory regulations as to boats and life-saving appliances on all ships, which, apart from the questions regarding the boat accommodation on vessels over 10,000 tons, is for the first time referred to the Advisory Committee by the letter of the 25th instant, together with the particular questions raised in the letters of the 16th, 20th, and 24th instant, are also receiving the immediate attention of the Committee.

At yesterday's meeting sub-committees were appointed to give immediate consideration to the subjects requiring detailed examination. These sub-committees will pursue their enquiries concurrently, and we are desired by the Advisory Committee to inform you that their investigation into the revision of the Life-Saving Appliances Rules will be proceeded with as expeditiously as possible.

We are, &c.,
(Signed) NORMAN HILL,
Chairman.
(Signed) R. W. MATTHEW,
Secretary.

SIR WALTER J. HOWELL, K.C.B.,
Assistant Secretary,
Marine Department,
Board of Trade.

This letter was acknowledged by the Board of Trade on the 10th May, 1912, as follows:—

Board of Trade, Marine Department,
7, Whitehall Gardens, London, S.W.,
10th May, 1912.

SIR,

I AM directed by the Board of Trade to acknowledge the receipt of, and to thank you for, your letter of the 27th April, stating that their letters of the 16th, 20th, 24th, and 25th April, have been considered by the Merchant Shipping Advisory Committee.

The Board observe with satisfaction that, in view of the entirely new situation which has arisen, the Advisory Committee have decided to re-open the question of the revision of the Table in the Life-Saving Appliances Rules in so far as it governs the boat accommodation in vessels over 10,000 tons gross. The Board are further glad to observe that the question of a general revision of the Life-Saving Appliances Rules is also under consideration by the Committee, and in this connection they presume that, in considering the question of a general revision of the rules including the Table, the Committee will consider the principles on which the requirements as to boat accommodation should be based, including, *inter alia*, whether the Table should continue to be based on tonnage. Any conclusion reached by the Committee on this question would naturally affect the revision of the present Table as applying to vessels of more than 10,000 tons, upon which the Committee has already been engaged.

The Board agree with the view expressed by the Advisory Committee that the appointment of another Committee on the Spacing and Construction of Watertight Bulkheads is desirable. Steps have already been taken by the President to form such a Committee, and he hopes to be able to announce the names within a few days. A further communication on this point will be addressed to the Committee in the course of a few days.

The Board are glad to note that Sub-Committees have been appointed to deal concurrently with the subjects requiring detailed consideration in connection with the revision of the Life-Saving Appliances Rules.

The Board desire me to add that they assume that the Committee, in considering the matters referred to them, will have regard to all important aspects of the question of Life-Saving Appliances, whether expressly dealt with in the Statutory Rules or not, and in particular to the essential question of the adequacy of the provision for lowering and manning the boats and rafts carried by vessels.

The Secretary,
Merchant Shipping Advisory Committee,
7, Whitehall Gardens, S.W.

I am, &c.,
(Signed) WALTER J. HOWELL.

This finishes the history of the action of the Board of Trade in relation to the provision of boat accommodation on emigrant ships. The outstanding circumstance in it is the omission, during so many years, to revise the rules of 1894 and this, I think, was blameable, notwithstanding the excuse or explanation put forward by Sir Alfred Chalmers. I am, however, doubtful whether even if the rules had been revised, the change would have been such as to have required boat accommodation which would have increased the number of lives saved. Having regard to the recommendations of the Advisory Committee, the Board of Trade would probably not have felt justified in making rules which would have required more boat accommodation than that with which the "Titanic" was actually provided: and it is not to be forgotten that the "Titanic" boat accommodation was utilized to less than two-thirds of its capacity. These considerations, however, afford no excuse for the delay of the Board of Trade.

The gross tonnage of a vessel is not, in my opinion, a satisfactory basis on which to calculate the provision of boat accommodation. Hitherto, I believe, it has been accepted as the best basis by all nations. But there seems much more to be said in favour of making the number of lives carried the basis and for providing boat or raft accommodation for all on board. Rule 12 of the Life Saving Appliances Rules of 1902, which deals with watertight compartments and boat accommodation, ought to be abolished. The provision of such compartments is of supreme importance but it is clear that it should not be sought at the expense of a decrease in boat accommodation. When naval architects have devised practical means for rendering ships unsinkable, the question of boat accommodation may have to be reconsidered, but until that time arrives boat accommodation should, where practicable, be carried for all on board. This suggestion may be thought by some to be extravagant. It has never been enforced in the mercantile marine of Great Britain, nor as far as I know in that of any foreign Nation. But it appears, nevertheless, to be admitted by all that it is possible without undue inconvenience or undue interference with commerce to increase considerably in many cases the accommodation hitherto carried and it seems, therefore, reasonable that the law should require an increase to be made. As far as foreign going

passenger and emigrant steamships are concerned, I am of opinion that, unless justification be shown for deviating from this course, such ships should carry boats or rafts for all on board.

With reference to the second branch of the complaint against the Board of Trade, namely that their officials had failed to exercise due care in the supervision of the vessel's plans and in the inspection of the work done upon her, the charges broke down. Suggestions were made that the Board's requirements fell short of those of Lloyd's Registry; but no evidence was forthcoming to support the suggestions. The investigation of the charges took much time, but it only served to show that the officials had discharged their duties carefully and well.

Powers of the Board of Trade as regards the supervision of designs of vessels.

The "Titanic" was efficiently designed and constructed to meet the contingencies which she was intended to meet.

The bulkheads were of ample strength. They were sufficiently closely spaced and were carried up in the vessel to a height greater than sufficient to meet the requirements of the 1891 Bulkheads Committee.

But I am advised that the ship could have been further subdivided so that she would probably have remained afloat longer than she did. The Board of Trade have, however, apparently no power to exercise any real supervision in the matter of sub-division. All they have express power to insist upon in this connection with respect to any steam vessel is that there shall be four watertight bulkheads—a provision quite inadequate for safety in a collision damaging the vessel abaft the collision bulkhead. They can also, if invited by the shipowner (but not otherwise), exercise supervision under Rule 12. This supervision I am told they have been invited to exercise in only 103 cases over a period of 18 years. In 69 of these cases the Board have expressed their satisfaction with the sub-division provided. It seems to me that the Board should be empowered to require the production of the designs of all passenger steamers at an early period of their construction and to direct such alterations as may appear to them to be necessary and practicable for the purpose of securing proper watertight sub-division.

FINDING OF THE COURT.

It is now convenient to answer the twenty-six questions submitted by the Board of Trade.

1. When the "Titanic" left Queenstown on or about 11th April last—
 (a) What was the total number of persons employed in any capacity on board her, and what were their respective ratings?
 (b) What was the total number of her passengers, distinguishing sexes and classes, and discriminating between adults and children?

Answer:

- (a) The total number of persons employed in any capacity on board the "Titanic" was:

885

The respective ratings of these persons were as follows:—

Deck Department	...	...	66
Engine Department	...	...	325
Victualling Department	...	...	494

885

N.B.—The eight bandsmen are not included in this number as their names appear in the 2nd Class Passenger List.

- (b) The total number of passengers was 1,316.

Of these:

	Male	Female	Total
1st Class	180	145	325
2nd Class	179	106	285
3rd Class	510	196	706

1,316

Of the above, 6 children were in the 1st Class, 24 in the 2nd Class and 79 in the 3rd Class. Total 109.

2. Before leaving Queenstown on or about 11th April last did the "Titanic" comply with the requirements of the Merchant Shipping Acts, 1894–1906, and the rules and regulations made thereunder with regard to the safety and otherwise of "passenger steamers" and "emigrant ships"?

Answer:

Yes.

3. In the actual design and construction of the "Titanic" what special provisions were made for the safety of the vessel and the lives of those on board in the event of collisions and other casualties?

Answer:

These have been already described.

4. (a) Was the "Titanic" sufficiently and efficiently officered and manned?
 (b) Were the watches of the officers and crew usual and proper? (c) Was the "Titanic" supplied with proper charts?

Answer:

- (a) Yes.
 (b) Yes.
 (c) Yes.

5. (a) What was the number of the boats of any kind on board the "Titanic"?
 (b) Were the arrangements for manning and launching the boats on board the "Titanic" in case of emergency proper and sufficient? (c) Had a boat drill been held on board, and if so, when? (d) What was the carrying capacity of the respective boats?

Answer:

- (a) 2 Emergency boats.
 14 Lifeboats.
 4 Engelhardt boats.

- (b) No, but see page 38.

- (c) No.

- (d) The carrying capacity of the:

2 Emergency boats was for	80 persons.
14 Lifeboats was for	910 "
4 Engelhardt boats was for	188 "
or a total of	1,178 "

6. (a) What installations for receiving and transmitting messages by wireless telegraphy were on board the "Titanic"? (b) How many operators were employed on working such installations? (c) Were the installations in good and effective working order, and were the number of operators sufficient to enable messages to be received and transmitted continuously by day and night?

Answer:

- (a) A Marconi 5 Kilowatt motor generator with two complete sets of apparatus supplied from the ship's dynamos, with an independent storage battery and coil for emergency, was fitted in a house on the Boat Deck.

- (b) Two.

- (c) Yes.

7. (a) At or prior to the sailing of the "Titanic" what, if any, instructions as to navigation were given to the master or known by him to apply to her voyage? (b) Were such instructions, if any, safe, proper and adequate, having regard to the time of year and dangers likely to be encountered during the voyage?

Answer:

- (a) No special instructions were given, but he had general instructions contained in the book of Rules and Regulations supplied by the Company. (See p. 24.)

- (b) Yes, but having regard to subsequent events they would have been better if a reference had been made to the course to be adopted in the event of reaching the region of ice.

8. (a) What was in fact the track taken by the "Titanic" in crossing the Atlantic Ocean? (b) Did she keep to the track usually followed by liners on voyages from the United Kingdom to New York in the month of April? (c) Are such tracks safe tracks at that time of the year? (d) Had the master any, and, if so, what discretion as regards the track to be taken?

Answer:

- (a) The Outward Southern Track from Queenstown to New York, usually followed in April by large steam vessels. (See page 24.)

- (b) Yes, with the exception that instead of altering her course on approaching the position 42° N. 47° W. she stood on on her previous course for some 10 miles further South West, turning to S. 86° W. true at 5.50 p.m.

- (c) The Outward and Homeward bound Southern tracks were decided on as the outcome of many years' experience of the normal movement of ice. They were reasonably safe tracks for the time of year, provided, of course, that great caution and vigilance when crossing the ice region were observed.

- (d) Yes. Captain Smith was not fettered by any orders to remain on the track should information as to the position of ice make it in his opinion undesirable to adhere to it. The fact, however, of Lane Routes having been laid down for the common safety of all, would necessarily influence him to keep on (or very near) the accepted route, unless circumstances as indicated above should induce him to deviate largely from it.

9. (a) After leaving Queenstown on or about the 11th April last did information reach the "Titanic" by wireless messages or otherwise by signals of the existence of ice in certain latitudes? (b) If so, what were such messages or signals and when were they received, and in what position or positions was the ice reported to be, and was the ice reported in or near the track actually being followed by the "Titanic"? (c) Was her course altered in consequence of receiving such information, and, if so, in what way? (d) What replies to such messages or signals did the "Titanic" send, and at what times?

Answer:

- (a) Yes.

- (b) See particulars of ice messages already set out (pp. 26-28).

- (c) No. Her course was altered as hereinbefore described, but not in consequence of the information received as to ice.
- (d) The material answers were:—
At 12-55 p.m. ss. "Titanic." "To Commander, 'Baltic.' Thanks for your message and good wishes. Had fine weather since leaving. Smith."
At 1-26 p.m. ss. "Titanic." "To Captain, 'Caronia.' Thanks for message and information. Have had variable weather throughout. Smith."

10. (a) If at the times referred to in the last preceding question or later the "Titanic" was warned of or had reason to suppose she would encounter ice, at what time might she have reasonably expected to encounter it? (b) Was a good and proper look-out for ice kept on board? (c) Were any, and, if so, what directions given to vary the speed—if so, were they carried out?

Answer:

- (a) At, or even before, 9.30 p.m. ship's time, on the night of the disaster.
- (b) No. The men in the crow's nest were warned at 9-30 p.m. to keep a sharp look-out for ice; the officer of the watch was then aware that he had reached the reported ice region, and so also was the officer who relieved him at 10 p.m. Without implying that those actually on duty were not keeping a good look-out, in view of the night being moonless, there being no wind and perhaps very little swell, and especially in view of the high speed at which the vessel was running, it is not considered that the look-out was sufficient. An extra look-out should, under the circumstances, have been placed at the stemhead, and a sharp look-out should have been kept from both sides of the bridge by an officer.
- (c) No directions were given to reduce speed.

11. (a) Were binoculars provided for and used by the look-out men? (b) Is the use of them necessary or usual in such circumstances? (c) Had the "Titanic" the means of throwing searchlights around her? (d) If so, did she make use of them to discover ice? (e) Should searchlights have been provided and used?

Answer:

- (a) No.
- (b) No.
- (c) No.
- (d) No.
- (e) No, but searchlights may at times be of service. The evidence before the Court does not allow of a more precise answer.

12. (a) What other precautions were taken by the "Titanic" in anticipation of meeting ice? (b) Were they such as are usually adopted by vessels being navigated in waters where ice may be expected to be encountered?

Answer:

- (a) Special orders were given to the men in the crow's nest to keep a sharp look-out for ice, particularly small ice and growlers. The fore scuttle hatch was closed to keep everything dark before the bridge.
- (b) Yes, though there is evidence to show that some masters would have placed a look-out at the stemhead of the ship.

13. (a) Was ice seen and reported by anybody on board the "Titanic" before the casualty occurred? (b) If so, what measures were taken by the officer on watch to avoid it? (c) Were they proper measures and were they promptly taken?

Answer:

- (a) Yes, immediately before the collision.
- (b) The helm was put hard-a-starboard and the engines were stopped and put full speed astern.
- (c) Yes.

14. (a) What was the speed of the "Titanic" shortly before and at the moment of the casualty? (b) Was such speed excessive under the circumstances?

Answer:

- (a) About 22 knots.
- (b) Yes.

15. (a) What was the nature of the casualty which happened to the "Titanic" at or about 11-45 p.m. on the 14th April last? (b) In what latitude and longitude did the casualty occur?

Answer:

- (a) A collision with an iceberg which pierced the starboard side of the vessel in several places below the water line between the fore peak tank and No. 4 boiler room.
- (b) In latitude 41° 46' N., longitude 50° 14' W.

16. (a) What steps were taken immediately on the happening of the casualty? (b) How long after the casualty was its seriousness realised by those in charge of the vessel? (c) What steps were then taken? (d) What endeavours were made to save the lives of those on board, and to prevent the vessel from sinking?

- (a) The 12 watertight doors in the engine and boiler rooms were closed from the bridge, some of the boiler fires were drawn, and the bilge pumps abaft No. 6 boiler room were started.
- (b) About 15-20 minutes.
- (c) and (d) The boats were ordered to be cleared away. The passengers were roused and orders given to get them on deck, and lifebelts were served out. Some of the watertight doors, other than those in the boiler and engine rooms, were closed. Marconigrams were sent out asking for help. Distress signals (rockets) were fired, and attempts were made to call up by Morse a ship whose lights were seen. Eighteen of the boats were swung out and lowered, and the remaining two floated off the ship and were subsequently utilized as rafts.

17. Was proper discipline maintained on board after the casualty occurred?

Answer:

Yes.

18. (a) What messages for assistance were sent by the "Titanic" after the casualty and, at what times respectively? (b) What messages were received by her in response, and at what times respectively? (c) By what vessels were the messages that were sent by the "Titanic" received, and from what vessels did she receive answers? (d) What vessels other than the "Titanic" sent or received messages at or shortly after the casualty in connection with such casualty? (e) What were the vessels that sent or received such messages? (f) Were any vessels prevented from going to the assistance of the "Titanic" or her boats owing to messages received from the "Titanic" or owing to any erroneous messages being sent or received? (g) In regard to such erroneous messages, from what vessels were they sent and by what vessels were they received and at what times respectively?

- (a) (b) (c) (d) and (e) are answered together.
- (f) Several vessels did not go owing to their distance.
- (g) There were no erroneous messages.

New York Time.	"Titanic" Time (Approx.)	Communications.
10-25 p.m.	12-15 a.m.	... "La Provence" receives "Titanic" distress signals.
10-25 p.m.	12-15 a.m.	... "Mount Temple" heard "Titanic" sending C.Q.D. Says require assistance. Gives position. Cannot hear me.
10-25 p.m.	12-15 a.m.	... Advise my Captain his position 41.46 N. 50.24 W.
10-28 p.m.	12-18 a.m.	... Cape Race hears "Titanic" giving position on C.Q.D. 41.44 N. 50.24 W.
10-28 p.m.	12-18 a.m.	... "Ypiranga" hears C.Q.D. from "Titanic." "Titanic" gives C.Q.D. here. Position 41.44 N., 50.24 W. Require assistance (calls about 10 times).
10-35 p.m.	12-25 a.m.	... C.Q.D. call received from "Titanic" by "Carpathia."
10-35 p.m.	12-25 a.m.	... "Titanic" said "Come at once. We have struck a berg. It's a C.Q.D. O.M. Position 41.46 N. 50.14 W."
10-35 p.m.	12-25 a.m.	... Cape Race hears M.G.Y. ("Titanic") give corrected position 41.46 N. 50.14 W. Calling him, no answer.

New York Time.	"Titanic" Time (Approx.)	Communications.
10-36 p.m.	12-26 a.m.	... M.G.Y. ("Titanic") says C.Q.D. Here corrected position 41.46 N., 50.14 W. Require immediate assistance. We have collision with iceberg. Sinking. Can nothing hear for noise of steam. Sent about 15 to 20 times to "Ypiranga."
10-37 p.m.	12-27 a.m.	... "Titanic" sends following: "I require assistance immediately. Struck by iceberg in 41.46 N. 50.14 W."
10-40 p.m.	12-30 a.m.	... "Titanic" gives his position to "Frankfurt," and says, "Tell your Captain to come to our help. We are on the ice."
10-40 p.m.	12-30 a.m.	... "Caronia" sent C.Q. message to M.B.C. "Baltic" and C.Q.D.: M.G.Y. ("Titanic") struck iceberg, require immediate assistance.
10-40 p.m.		"Mount Temple" hears M.G.Y. ("Titanic") still calling C.Q.D. Our Captain reverses ship. We are about 50 miles off.
10-46 p.m.	12-26 a.m.	... D.K.F. ("Prinz Friedrich Wilhelm") calls M.G.Y. ("Titanic") and gives position at 12 a.m. 39.47 N. 50.10 W. M.G.Y. ("Titanic") says, "Are you coming to our?" D.F.T. ("Frankfurt") says, "What is the matter with u?" M.G.Y. ("Titanic") "We have collision with iceberg. Sinking. Please tell Captain to come." D.F.T. ("Frankfurt") says, "O.K. will tell?"
10-48 p.m.	12-38 a.m.	... "Mount Temple" hears "Frankfurt" give M.G.Y. ("Titanic") his position 39.47 N. 52.10 W.
10-55 p.m.	12-45 a.m.	... "Titanic" calls "Olympic" S.O.S.
11- 0 p.m.	12-50 a.m.	... "Titanic" calls C.Q.D. and says, "I require immediate assistance. Position 41.46 N. 50.14 W." Received by "Celtic."
11- 3 p.m.	12-53 a.m.	... "Caronia" to M.B.C. ("Baltic") and S.O.S., "M.G.Y. ("Titanic") C.Q.D. in 41.46 N., 50.14 W. Wants immediate assistance."
11-10 p.m.	1-0 a.m.	... M.G.Y. gives distress signal. D.D.C. replies. M.G.Y.'s position 41.46 N., 50.14 W. Assistance from D.D.C. not necessary as M.K.C. shortly afterwards answers distress call.
11-10 p.m.	1-0 a.m.	... "Titanic" replies to "Olympic" and gives his position as 41.46 N., 50.14 W., and says, "We have struck an iceberg."
11-12 p.m.	1-2 a.m.	... "Titanic" calls "Asian" and said, "Want immediate assistance." "Asian" answered at once and received "Titanic's" position as 41.46 N., 50.14 W., which he immediately takes to the bridge. Captain instructs operator to have "Titanic's" position repeated.
11-12 p.m.	1-2 a.m.	... "Virginian" calls "Titanic" but gets no response. Cape Race tells "Virginian" to report to his Captain the "Titanic" has struck iceberg and requires immediate assistance.
11-20 p.m.	1-10 a.m.	... "Titanic" to M.K.C. ("Olympic"), "We are in collision with berg. Sinking Head down. 41.46 N., 50.14 W. Come soon as possible."
11-20 p.m.	1-10 a.m.	... "Titanic" to M.K.C. ("Olympic"), Captain says, "Get your boats ready. What is your position?"
11-25 p.m.	1-15 a.m.	... "Baltic" to "Caronia," "Please tell 'Titanic' we are making towards her."
11-30 p.m.	1-20 a.m.	... "Virginian" hears M.C.E. (Cape Race) inform M.G.Y. ("Titanic") "that we are going to his assistance. Our position 170 miles N. of 'Titanic.'"

New York Time.	"Titanic" Time (Approx.)	Communications.
11-35 p.m.	1-25 a.m.	... "Caronia" tells "Titanic," "'Baltic' coming to your assistance."
11-35 p.m.	1-25 a.m.	... "Olympic" sends position to "Titanic" 4-24 a.m. G.M.T. 40.52 N., 61.18 W. "Are you steering southerly to meet us?" "Titanic" replies, "We are putting the women off in the boats."
11-35 p.m.	1-25 a.m.	... "Titanic" and "Olympic" work together.
11-37 p.m.	1-27 a.m.	... M.G.Y. ("Titanic") says, "We are putting the women off in the boats."
11-40 p.m.	1-30 a.m.	... "Titanic" tells "Olympic," "We are putting passengers off in small boats."
11-45 p.m.	1-35 a.m.	... "Olympic" asks "Titanic" what weather he had. "Titanic" replies, "Clear and calm."
11-45 p.m.	1-35 a.m.	... "Baltic" hears "Titanic" say "Engine room getting flooded."
11-45 p.m.	1-35 a.m.	... "Mount Temple" hears D.F.T. ("Frankfurt") ask "are there any boats around you already?" No reply.
11-47 p.m.	1-37 a.m.	... "Baltic" tells "Titanic," "We are rushing to you."
11-50 p.m.	1-40 a.m.	... "Olympic" to "Titanic," "Am lighting up all possible boilers as fast as can."
11-50 p.m.	1-40 a.m.	... Cape Race says to "Virginian": "Please tell your Captain this: 'The 'Olympic' is making all speed for 'Titanic,' but his ('Olympic's') position is 40.32 N., 61.18 W. You are much nearer to 'Titanic.' The 'Titanic' is already putting women off in the boats, and he says the weather there is calm and clear. The 'Olympic' is the only ship we have heard say, 'Going to the assistance of the 'Titanic.' The others must be a long way from the 'Titanic.'"
11-55 p.m.	1-45 a.m.	... Last signals heard from "Titanic" by "Carpathia," "Engine-room full up to boilers."
11-55 p.m.	1-45 a.m.	... "Mount Temple" hears D.F.T. ("Frankfurt") calling M.G.Y. ("Titanic"). No reply.
11-57 p.m.	1-47 a.m.	... "Caronia" hears M.G.Y. ("Titanic") though signals unreadable still.
11-58 p.m.	1-48 a.m.	... "Asian" heard "Titanic" call S.O.S. "Asian" answers "Titanic" but receives no answer.
Midnight.	1-50 a.m.	... "Caronia" hears "Frankfurt" working to "Titanic." "Frankfurt" according to position 172 miles from M.G.Y. ("Titanic") at time first S.O.S. sent out.
12-5 a.m.	1-55 a.m.	... Cape Race says to "Virginian" "we have not heard 'Titanic' for about half an hour. His power may be gone."
12-10 a.m.	2-0 a.m.	... "Virginian" hears "Titanic" calling very faintly, his power being greatly reduced.
12-20 a.m.	2-10 a.m.	... "Virginian" hears 2 v's signalled faintly in spark similar to "Titanic's" probably adjusting spark.
12-27 a.m.	2-17 a.m.	... "Virginian" hears "Titanic" call C.Q., but unable to read him. "Titanic's" signals end very abruptly as power suddenly switched off. His spark rather blurred or ragged. Called M.G.Y. ("Titanic") and suggested he should try emergency set, but heard no response.
12-30 a.m.	2-20 a.m.	... "Olympic," his sigs. strong, asked him if he had heard anything about M.G.Y. ("Titanic") he says, No. Keeping strict watch, but hear nothing more from M.G.Y. ("Titanic"). No reply from him.

New York Time.	Communications.
12-52 a.m.	This was the official time the "Titanic" foundered in 41.46 N., 50.14 W. as given by the "Carpathia" in message to the "Olympic"; about 2-20 a.m.
1-15 a.m.	... "Virginian" exchanges signals "Baltic." He tries send us M.S.G. for M.G.Y. ("Titanic"), but his signals died utterly away.
1-25 a.m.	... Mount Temple hears M.P.A. ("Carpathia") send, "If you are there we are firing rockets."
1-35 a.m.	... "Baltic" sent 1 M.S.G. to "Virginian" for "Titanic."
1-40 a.m.	... M.P.A. ("Carpathia") calling M.G.Y. ("Titanic").
1-58 a.m.	... S.B.A. ("Birma") thinks he hears "Titanic" so sends, "Steaming full speed for you. Shall arrive you 6-0 in morning. Hope you are safe. We are only 50 miles now."
2-0 a.m. ...	... M.P.A. ("Carpathia") calling M.G.Y. ("Titanic").
2-0 a.m. ...	... Have not heard "Titanic" since 11-50 p.m. Received from "Ypiranga."
2-28 a.m.	... "La Provence" to "Celtic," "Nobody has heard the "Titanic" for about 2 hours."
3-24 a.m.	... S.B.A. ("Birma") says we are 30 miles S.W. off "Titanic."
3-35 a.m....	... "Celtic" sends message to "Caronia" for the "Titanic." "Caronia" after trying for two hours to get through to the "Titanic" tells the "Celtic" impossible to clear his message to "Titanic." "Celtic" then cancels message.
3-45 a.m....	... "Californian" exchanges signals with M.L.Q. (Mount Temple). He gave position of "Titanic."
4-10 a.m...	... "Californian" receives M.S.G. from M.G.N ("Virginian").
5-5 a.m. ...	... "Baltic" signals M.P.A. ("Carpathia").
5-40 a.m....	... "Parisian" hears weak signals from M.P.A. ("Carpathia") or some station saying "Titanic" struck iceberg. "Carpathia" has passengers from lifeboats.
5-40 a.m....	... "Olympic Tr Asian," with German oil tank in tow for "Halifax" asked what news of M.G.Y. ("Titanic"). Sends service later saying heard M.G.Y. ("Titanic") v. faint wkg. C. Race up to 10.0 p.m., local time. Finished calling S.O.S. midnight.
6-5 a.m. ...	... "Parisian" exchanges TRs "Virginian" O.K. nil. Informed Captain Haines what I heard passing between ships regarding "Titanic," and he decided not to return as M.P.A. ("Carpathia") was there, and "Californian" was 50 miles astern of us but requested me to stand by in case required.
6-45 a.m....	... Mount Temple hears M.P.A. ("Carpathia") report rescued 20 boat loads.
7-7 a.m. ...	... "Baltic" sends following to "Carpathia": "Can I be of any assistance to you as regards taking some of the passengers from you? Will be in position about 4-30. Let me know if you alter your position."
7-10 a.m....	... "Baltic" in communication with M.P.A. ("Carpathia"). Exchanged traffic re passengers, and get instructions to proceed to Liverpool.
7-15 a.m....	... "Baltic" turns round for Liverpool, having steamed 134 miles W. towards "Titanic."
7-40 a.m....	... Mount Temple hears M.P.A. ("Carpathia") call C.Q. and say, no need to std. bi him. Advise my Captain, who has been cruising round the icefield with no result. Ship reversed.
7-45 a.m....	... "Olympic" sent M.S.G. to Owners, New York via Sable Island, saying, "Have not communicated with 'Titanic' since midnight."
7-55 a.m....	... "Carpathia" replies to "Baltic," "Am proceeding to Halifax or New York full speed. You had better proceed to Liverpool. Have about 800 passengers on board."
8-0 a.m....	... "Carpathia" to "Virginian": "We are leaving here with all on board about 800 passengers. Please return to your Northern course."

19. (a) Was the apparatus for lowering the boats on the "Titanic" at the time of the casualty in good working order? (b) Were the boats swung out, filled, lowered, or otherwise put into the water and got away under proper superintendence? (c) Were the boats sent away in seaworthy condition and properly manned, equipped and provisioned? (d) Did the boats, whether those under davits or otherwise, prove to be efficient and serviceable for the purpose of saving life?

Answer:

(a) Yes.

(b) Yes.

(c) The fourteen lifeboats, two emergency boats, and C and D collapsible boats were sent away in a seaworthy condition, but some of them were possibly undermanned. The evidence on this point was unsatisfactory. The total number of crew taken on board the "Carpathia" exceeded the number which would be required for for manning the boats. The collapsible boats A and B appear to have floated off the ship at the time she foundered. The necessary equipment and provisions for the boats were carried in the ship, but some of the boats, nevertheless, left without having their full equipment in them.

(d) Yes.

20. (a) What was the number of (a) passengers, (b) crew taken away in each boat on leaving the vessel? (b) How was this number made up, having regard to:—

1. Sex.

2. Class.

3. Rating.

(c) How many were children and how many adults? (d) Did each boat carry its full load and, if not, why not?

Answer:

(a) (b) (c) It is impossible exactly to say how many persons were carried in each boat or what was their sex, class and rating, as the totals given in evidence do not correspond with the numbers taken on board the "Carpathia."

The boats eventually contained in all 712 persons made up as shown in the answer to Question 21.

(d) No.

At least 8 boats did not carry their full loads for the following reasons:—

1. Many people did not realise the danger or care to leave the ship at first.
2. Some boats were ordered to be lowered with an idea of their coming round to the gangway doors to complete loading.
3. The officers were not certain of the strength and capacity of the boats in all cases (and see p. 39).

21. (a) How many persons on board the "Titanic" at the time of the casualty were ultimately rescued and by what means? (b) How many lost their lives prior to the arrival of the ss. "Carpathia" in New York? (c) What was the number of passengers, distinguishing between men and women and adults and children of the 1st, 2nd, and 3rd classes respectively who were saved? (d) What was the number of the crew, discriminating their ratings and sex, that were saved? (e) What is the proportion which each of these numbers bears to the corresponding total number on board immediately before the casualty? (f) What reason is there for the disproportion, if any?

Answer:

(a) 712, rescued by "Carpathia" from the boats.

(b) One.

(c) (d) and (e) are answered together.

The following is a list of the saved :—

1st Class.			
Adult Males	...	57	out of 175, or 32.57 per cent.
Adult Females	...	140	out of 144, or 97.22 per cent.
Male children	...	5	All saved.
Female children	...	1	All saved.
		203	out of 325 or 62.46 per cent.

2nd Class.			
Adult Males	...	14	out of 168, or 8.33 per cent.
Adult Females	...	80	out of 93, or 86.02 per cent.
Male children	...	11	All saved.
Female children	...	13	All saved.
		118	out of 285, or 41.40 per cent.

3rd Class.			
Adult Males	...	75	out of 462, or 16.23 per cent.
Adult Females	...	76	out of 165, or 46.06 per cent.
Male children	...	13	out of 48, or 27.08 per cent.
Female children	...	14	out of 31, or 45.16 per cent.
		178	out of 706, or 25.21 per cent.
Total Passengers	...	499	out of 1,316, or 37.94 per cent.

Crew saved.			
Deck Department	...	43	out of 66, or 65.15 per cent.
Engine Room Department	...	72	out of 325, or 22.15 per cent.
Victualling Department	...	97	out of 494, or 19.63 per cent.
Including Women	...	20	out of 23, or 86.95 per cent.
		212	out of 885, or 23.95 per cent.

Total on board saved ... 711 out of 2,201, or 32.30 per cent.

- (f) The disproportion between the numbers of the passengers saved in the first, second, and third classes is due to various causes, among which the difference in the position of their quarters and the fact that many of the third class passengers were foreigners, are perhaps the most important. Of the Irish emigrants in the third class a large proportion was saved. The disproportion was certainly not due to any discrimination by the officers or crew in assisting the passengers to the boats. The disproportion between the numbers of the passengers and crew saved is due to the fact that the crew, for the most part, all attended to their duties to the last, and until all the boats were gone.

22. What happened to the vessel from the happening of the casualty until she foundered ?

Answer :

A detailed description has already been given (see pages 32-34.)

23. Where and at what time did the "Titanic" founder ?

Answer :

2-20 a.m. (ship's time) 15th April.
Latitude 41° 46' N., longitude 50° 14' W.

24. (a) What was the cause of the loss of the "Titanic," and of the loss of life which thereby ensued or occurred ? (b) What vessels had the opportunity of rendering assistance to the "Titanic" and, if any, how was it that assistance did not reach the "Titanic" before the ss. "Carpathia" arrived ? (c) Was the construction of the vessel and its arrangements such as to make it difficult for any class of passenger or any portion of the crew to take full advantage of any of the existing provisions for safety ?

Answer :

- (a) Collision with an iceberg and the subsequent foundering of the ship.
(b) The "Californian." She could have reached the "Titanic" if she had made the attempt when she saw the first rocket. She made no attempt.
(c) No.

25. When the "Titanic" left Queenstown on or about April 11th last was she properly constructed, and adequately equipped as a passenger steamer and emigrant ship for the Atlantic service ?

Answer :

Yes.

26. The Court is invited to report upon the Rules and Regulations made under the Merchant Shipping Acts, 1894-1906, and the administration of those Acts and of such Rules and Regulations, so far as the consideration thereof is material to this casualty, and to make any recommendations or suggestions that it may think fit, having regard to the circumstances of the casualty, with a view to promoting the safety of vessels and persons at sea.

Answer :

An account of the Board of Trade's Administration has already been given and certain recommendations are subsequently made.

RECOMMENDATIONS.

The following Recommendations are made. They refer to foreign-going Passenger and Emigrant Steamships.

Water-tight Sub-division.

1. That the newly appointed Bulkhead Committee should enquire and report, among other matters, on the desirability and practicability of providing ships with (a) a double skin carried up above the waterline: or, as an alternative, with (b) a longitudinal, vertical, watertight bulkhead on each side of the ship, extending as far forward and aft as convenient: or (c) with a combination of (a) and (b). Any one of the three (a), (b) and (c) to be in addition to watertight transverse bulkheads.

2. That the Committee should also enquire and report as to the desirability and practicability of fitting ships with (a) a deck or decks at a convenient distance or distances above the waterline which shall be watertight throughout a part or the whole of the ship's length: and should in this connection report upon (b) the means by which the necessary openings in such deck or decks should be made watertight, whether by watertight doors or watertight trunks or by any other and what means.

3. That the Committee should consider and report generally on the practicability of increasing the protection given by sub-division; the object being to secure that the ship shall remain afloat with the greatest practicable proportion of her length in free communication with the sea.

4. That when the Committee has reported upon the matters before mentioned, the Board of Trade should take the report into their consideration and to the extent to which they approve of it should seek Statutory powers to enforce it in all newly built ships, but with a discretion to relax the requirements in special cases where it may seem right to them to do so.

5. That the Board of Trade should be empowered by the Legislature to require the production of the designs and specifications of all ships in their early stages of construction and to direct such amendments of the same as may be thought necessary and practicable for the safety of life at sea in ships. (This should apply to all passenger carrying ships.)

Lifeboats and Rafts.

6. That the provision of life boat and raft accommodation on board such ships should be based on the number of persons intended to be carried in the ship and not upon tonnage.

7. That the question of such accommodation should be treated independently of the question of the sub-division of the ship into watertight compartments. (This involves the abolition of Rule 12 of the Life Saving Appliances Rules of 1902.)

8. That the accommodation should be sufficient for all persons on board, with, however, the qualification that in special cases where, in the opinion of the Board of Trade, such provision is impracticable, the requirements may be modified as the Board may think right. (In order to give effect to this recommendation changes may be necessary in the sizes and types of boats to be carried and in the method of stowing and floating them. It may also be necessary to set apart one or more of the boat decks exclusively for carrying boats and drilling the crew, and to consider the distribution of decks in relation to the passengers' quarters. These, however, are matters of detail to be settled with reference to the particular circumstance affecting the ship).

9. That all boats should be fitted with a protective, continuous fender, to lessen the risk of damage when being lowered in a seaway.

10. That the Board of Trade should be empowered to direct that one or more of the boats be fitted with some form of mechanical propulsion.

11. That there should be a Board of Trade regulation requiring all boat equipment (under sections 5 and 6, page 15 of the Rules, dated February, 1902, made by the Board of Trade under section 427 Merchant Shipping Act, 1894) to be in the boats as soon as the ship leaves harbour. The sections quoted above should be amended so as to provide also that all boats and rafts should carry lamps and pyrotechnic lights for purposes of signalling. All boats should be provided with compasses and provisions, and should be very distinctly marked in such a way as to indicate plainly the number of adult persons each boat can carry when being lowered.

12. That the Board of Trade inspection of boats and life-saving appliances should be of a more searching character than hitherto.

Manning the Boats and Boat Drills.

13. That in cases where the deck hands are not sufficient to man the boats enough other members of the crew should be men trained in boat work to make up the deficiency. These men should be required to pass a test in boat work.

14. That in view of the necessity of having on board men trained in boat work, steps should be taken to encourage the training of boys for the Merchant Service.

15. That the operation of Section 115 and Section 134 (a) of the Merchant Shipping Act, 1894, should be examined, with a view to amending the same so as to secure greater continuity of service than hitherto.

16. That the men who are to man the boats should have more frequent drills than hitherto. That in all ships a boat drill, a fire-drill and a watertight door drill should be held as soon as possible after leaving the original port of departure and at convenient intervals of not less than once a week during the voyage. Such drills to be recorded in the official log.

17. That the Board of Trade should be satisfied in each case before the ship leaves port that a scheme has been devised and communicated to each officer of the ship for securing an efficient working of the boats.

General.

18. That every man taking a look-out in such ships should undergo a sight test at reasonable intervals.

19. That in all such ships a police system should be organised so as to secure obedience to orders, and proper control and guidance of all on board in times of emergency.

20. *That in all such ships there should be an installation of wireless telegraphy, and that such installation should be worked with a sufficient number of trained operators to secure a continuous service by night and day. In this connection regard should be had to the resolutions of the International Conference on Wireless Telegraphy recently held under the presidency of Sir H. Babington Smith. That where practicable a silent chamber for "receiving" messages should form part of the installation.

21. That instruction should be given in all Steamship Companies' Regulations that when ice is reported in or near the track the ship should proceed in the dark hours at a moderate speed or alter her course so as to go well clear of the danger zone.

22. That the attention of Masters of vessels should be drawn by the Board of Trade to the effect that under the Maritime Conventions Act, 1911, it is a misdemeanour not to go to the relief of a vessel in distress when possible to do so.

23. That the same protection as to the safety of life in the event of casualty which is afforded to emigrant ships by means of supervision and inspection should be extended to all foreign-going passenger ships.

24. That (unless already done) steps should be taken to call an International Conference to consider and as far as possible to agree upon a common line of conduct in respect of (a) the subdivision of ships; (b) the provision and working of life-saving appliances; (c) the installation of wireless telegraphy and the method of working the same, (d) the reduction of speed or the alteration of course in the vicinity of ice, and (e) the use of searchlights.

MERSEY,

Wreck Commissioner.

We concur

ARTHUR GOUGH-CALTHORPE,

A. W. CLARKE,

F. C. A. LYON,

J. H. BILES,

EDWARD C. CHASTON.

Assessors.

30th July, 1912.

MERCHANT SHIPPING.—LIFE-SAVING APPLIANCES AND SAFETY OF LIFE AT SEA.

REPORT

OF THE

MERCHANT SHIPPING ADVISORY COMMITTEE

RESPECTING

THE STATUTORY REGULATIONS AS TO BOATS AND LIFE-SAVING APPLIANCES AND OTHER MEANS OF ENSURING SAFETY OF LIFE AT SEA,

WITH

APPENDICES.

Presented to both Houses of Parliament by Command of His Majesty.



LONDON:
PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE.
To be purchased, either directly or through any Bookseller, from
WYMAN AND SONS, LTD., FETTER LANE, E.C., and 32, ABINGDON STREET, S.W.; or
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E. PONSONBY, LTD., 116, GRAFTON STREET, DUBLIN.

PRINTED BY
DARLING AND SON, LTD., BACON STREET, E.
1912.

Id. 6353.] Price 2s.

THE RIGHT HON. SYDNEY C. BUXTON, M.P., PRESIDENT OF THE
BOARD OF TRADE.

SIR,

WE have given careful consideration to :—

- (i) The existing Statutory Regulations as to Boats and Life-saving Appliances on ships generally, and in particular the special points in relation thereto raised in the Board of Trade's letters of the 16th, 20th, 24th and 25th April and 10th May, 1912, and
- (ii) All suggestions which have come to our knowledge calculated to diminish the risk or to mitigate the effects of accidents to vessels at sea.

CONSTITUTION OF THE COMMITTEE AND OF ITS
SUB-COMMITTEES.

2. To assist us in the consideration of these questions we co-opted as members of the Committee Mr. T. Royden, the President of the Chamber of Shipping and Deputy Chairman of the Cunard Steamship Company Limited, Captain J. B. Watt, late Commodore of the Cunard Line, Dr. S. J. P. Thearle, of Lloyd's Register of British and Foreign Shipping, Mr. W. J. Luke, of Messrs. John Brown & Co., Mr. J. Foster King, of the British Corporation for the Survey and Registry of Shipping, and Mr. Trevisa Clarke, of Messrs. Swan, Hunter & Wigham Richardson. Inasmuch as we are advising as the Statutory Life Saving Appliances Committee under the Seventeenth Schedule to the Merchant Shipping Act, 1894, we limited the selection of the members we co-opted to the classes indicated in that Schedule.

3. We appointed from amongst our members five Sub-Committees to investigate and report upon the following subjects :—

(1) TYPE OF OPEN LIFE BOATS SUB-COMMITTEE: Mr. S. Cross (*Chairman*), Mr. C. Barrie, Captain W. Corkhill, Mr. J. Henson, Mr. M. Joyce, Sir Walter Runciman, Mr. T. Spencer, and Sir Norman Hill.

(2) WIRELESS TELEGRAPHY SUB-COMMITTEE: Sir Norman Hill (*Chairman*), Sir Raymond Beck, Captain G. N. Hampson, Dr. John Inglis, Mr. R. A. Ogilvie, Mr. Henry Radcliffe, Mr. John A. Roxburgh, Mr. F. Shadforth Watts, and Mr. T. Spencer.

This Sub-Committee had the advantage throughout their enquiry of the assistance of Commander F. G. Loring and Mr. J. I. de Wardt of the Post Office, and of Lieutenant J. A. Slee of the Admiralty.

(3) STEAMSHIP ROUTES SUB-COMMITTEE: Sir Norman Hill (*Chairman*), Mr. Charles Barrie, Mr. E. Cathery, Captain W. Corkhill, Mr. S. Cross, Captain G. N. Hampson, Mr. Thomas Rome, Mr. T. Royden, Mr. T. Spencer and Captain James B. Watt. This Sub-Committee had the benefit of the advice of Commander M. W. Campbell Hepworth, C.B., R.D., R.N.R., the Marine Superintendent of the Meteorological Office, and of Captain J. F. Parry, R.N., Assistant Hydrographer of the Navy.

(4) HOME TRADE PASSENGER SHIPS SUB-COMMITTEE: Mr. J. A. Roxburgh (*Chairman*), Captain G. N. Hampson, Mr. J. Henson, Mr. M. Joyce, Dr. J. Inglis, Mr. Cuthbert Laws, Mr. W. H. Raeburn, Mr. G. Shearer, and Sir Norman Hill.

(5) STATISTICAL INFORMATION SUB-COMMITTEE: Sir Norman Hill (*Chairman*), and the Secretary.

REPORTS OF THE SUB-COMMITTEES.

The reports of these five Sub-Committees are attached to and form part of this Report. They were adopted unanimously by the General Committee, subject to reservations by certain members as set out in the notes appended to the Reports of the Sub-Committees on Home Trade Passenger Vessels and the Type of Open Lifeboats.

GENERAL SAFETY REGULATIONS.

4. Under the existing Life Saving Regulations a distinction of principle is made in all Trades, between (1) Passenger, including Emigrant, ships and (2) Cargo ships, and in the same way these two classes of vessels are dealt with separately under the general Safety Regulations contained in the Merchant Shipping Acts.

A ship before it can be certified as either a Passenger or an Emigrant Ship must pass the initial surveys of both a shipwright and an engineer Surveyor of the Board of Trade as built in accordance with the detailed requirements of the Board, in regard to hull, machinery and equipment; and in addition, if it is a Passenger Ship, it comes up for re-survey by the Board's Surveyors at least once a year; and if it is an Emigrant Ship it must, before the beginning of each voyage, obtain a certificate of the Emigration Officer that it is seaworthy, in safe trim, and in all respects fit for the intended voyage. (*Sections 271, 272, 289 and 314 of the Merchant Shipping Act, 1894.*)

A Cargo Ship is not subjected to any compulsory surveys although most of such vessels are built under the initial survey, and pass the periodical surveys, of one of the Classification Societies.

But all ships, including both Cargo and Passenger Ships, are liable at any time to be detained by the Board's Officers if, by reason of the defective condition of the hull, equipments or machinery, or by reason of overloading or improper loading, or by reason of their being under-manned, they are unfit to proceed to sea without serious danger to human life. (*Section 459 of the Merchant Shipping Act, 1894, and Section 1 of the Merchant Shipping Act, 1897.*)

NUMBERS AND CLASSES OF VESSELS ON THE REGISTER.

5. During the year 1910 (*Report of Statistical Sub-Committee, page 49*) there were 14,388 vessels registered in the United Kingdom employed in the Home and Foreign Trades divided between sail and steam tonnage as under:—

	Number.	Tonnage net register.
Sailing ships	4,967	890,172
Steam „	9,421	10,409,196
Total	14,388	11,299,368

6. The form in which the annual Returns are prepared, and the varying conditions of employment amongst some of the smaller vessels, do not permit of all the ships on the register being grouped in accordance with the classification adopted in the Life Saving Appliances Rules, but it is possible to make the following general approximate classification:—

	Sail.	Steam.	Total.
Fishing vessels—			
Under 50 tons	1,117	1,535	
Between 50 and 100 tons	193	1,151	
Between 100 and 150 tons	—	195	
	1,310	2,881	4,191
Vessels other than fishing under 50 tons—			
Sail		1,498	
Steam		662	
			2,160
Cargo vessels in Home and Foreign Trade above 50 tons—			
Sail		2,159	
Steam		4,291	
			6,450
Steamships holding Passengers Certificates		—	1,587
			14,388

7: Under the existing regulations the 4,191 fishing vessels, so far as they are capable of carrying boats, and the 2,160 other vessels, under 50 tons, provide boat accommodation for all on board, and we have therefore directed our enquiry chiefly to the other vessels, i.e.—

Cargo vessels in Home and Foreign Trades	6,450
Passenger „ „ „ „	1,587
	8,037

HISTORY OF THE EXISTING LIFE SAVING REGULATIONS AND THE RECORDS OF SEA CASUALTIES.

8. Having indicated generally the numbers and classes of vessels which have formed the subject of our enquiry it is, we think, desirable that we should review shortly the history of the existing Life Saving Regulations and the records of sea casualties both before and since the adoption of such Regulations.

The existing Life Saving Appliances Rules resulted from recommendations made in 1887 by a Select Committee of the House of Commons presided over by Lord Charles Beresford. Under the Regulations which they superseded a boat scale regulated solely by the tonnage of the vessel, but dealing only with a maximum of 1,500 tons register had been enforced in regard to Emigrant vessels, whilst the scale for other passenger vessels only provided for a maximum of 1,000 tons register. The latter scale was equally applicable to Cargo ships, but Sir Thomas Gray stated before the Select Committee in 1887 that in regard to vessels of that class it had been a dead letter, as the Board of Trade had had no power to enforce upon them its observance. Beyond the boat scale the old Regulations, which had remained in force since 1854–55, provided practically no life-saving appliances.

The existing Rules, which came in force on the 31st March, 1890, adopted the principle that on all Foreign and Home Trade Cargo vessels the boat accommodation should be sufficient for all on board, and that on steamships engaged in such trade such accommodation should be provided in boats under davits on each side of the ship. It further extended the tonnage boat scale on Emigrant and Passenger ships up to “9,000 tons and upwards” (which limit was increased in June, 1894, to “10,000 tons and upwards”), and it supplemented largely the boat accommodation provided under the tonnage scale in the case of all Foreign going and Home Trade Passenger Ships on which the tonnage scale did not provide sufficient accommodation for all on board. It substituted gross tonnage for registered tonnage as the basis of the scale, and thereby increased the boat accommodation in steamships by about 50 per cent., and it further adopted the principle that on all sea-going vessels life-belts or other buoyant apparatus must be provided for all on board. The provisions for the saving of life at sea in the event of disaster were therefore by the existing Rules increased most substantially.

9. Before comparing the records in regard to sea casualties which were placed before the Select Committee in 1887 with those covering the period since the introduction of the existing Regulations in 1890, it is necessary to direct attention to the great change that has taken place during the same period in the class of vessels forming the British Mercantile Marine. A comparison (*see Report of Statistical Sub-Committee, page 48*) of the average figures for the nine years 1877 to 1885, which were placed before the Select Committee of 1887, with the average figures for the nine years 1902 to 1910 shows that:—

- (1) The number of sailing ships decreased from 14,992 to 5,843.
- (2) The tonnage of sailing ships decreased from 3,607,596 to 1,339,982 tons register.
- (3) The crews carried on sailing ships decreased from 117,835 to 34,887.
- (4) The number of steamships increased from 4,117 to 8,630.
- (5) The tonnage of steamships increased from 2,960,631 to 9,396,554 tons register.
- (6) The crews carried on steamships increased from 95,403 to 189,848.

For the purposes of comparison lascars are excluded from the figures relating to the crews.

As percentages these figures show that :—

Sailing ships decreased in number 61 per cent.

" " " " tonnage 63 "

" " " " crews 70 "

Steamships increased in number 110 "

" " " " tonnage 217 "

" " " " crews 98 "

Not only has there been in the period under review an entire change in the class of vessels forming the British Mercantile Marine, but it is also clear from such records as are available that the total number of lives carried during the last nine years has largely exceeded the numbers carried in the nine years dealt with by the Select Committee of 1887.

10. A comparison (*Report of Statistical Sub-Committee, page 52*) of the average figures for the nine years 1876-7 to 1884-5 with the average figures for the nine years 1902-3 to 1910-11 shows that the number of lives lost in sea casualties has been as follows :—

Period.	Sailing.				Steam.				Sailing or Steam.			
	No. of Cases in which Lives were Lost.	Lives Lost.			No. of Cases in which Lives were Lost.	Lives Lost.			No. of Cases in which Lives were Lost.	Lives Lost.		
		Crew.	Pas-sengers.	Total.		Crew.	Pas-sengers.	Total.		Crew.	Pas-sengers.	Total.
Nine years ended 30th June, 1885.	253	1,318	52	1,370	68	578	102	680	321	1,896	154	2,050
Nine years ended 30th June, 1911.	85	294	12	306	60	332	66	398	145	626	78	704

As percentages the comparison between the same periods is as under :—

Year.	Sailing Ships.		Steam Ships.	
	Number of vessels suffering sea casualties in which life was lost as a percentage on total number of vessels.	Number of crew lost as a percentage on total number of crews.	Number of vessels suffering sea casualties in which life was lost as a percentage on total number of vessels.	Number of crew lost as a percentage on total number of crews.
9 years ended 30th June, 1885.	1·68	1·12	1·65	·61
9 years ended 30th June, 1911.	1·49	·88	·70	·14

To arrive at the number of lives in immediate peril in Sea Casualties we have, following the basis of returns placed before the Select Committee of 1887, added to the number of lives lost the number of lives saved from shipwreck, and the comparison (*Report of Statistical Sub-Committee, page 52*) of the average figures for the two periods under review is as follows :—

	Lives Lost.	Lives Saved.	Total.
9 years ended 30th June, 1885 ...	2,050	12,194	14,244
9 years ended 30th June, 1911 ...	704	7,025	7,729

A detailed examination into the means by which the above-mentioned lives were saved from shipwreck, shows the following average number as saved in

the ship's own boats, or by other ships, and therefore probably with the assistance of boats.

	Saved by other ships.	Saved by the ships' own boats.	Total saved with the assistance of boats.
Nine years ended 30th June, 1885 ...	2,430	6,692	9,122
Nine years ended 30th June, 1911 ...	1,937	3,501	5,438

As percentages the comparison between the above figures is as under :—

	PERCENTAGES ON THE TOTAL NUMBER OF LIVES SAVED.		
	Saved by other ships.	Saved by the ships' own boats.	Total saved with the assistance of boats.
Nine years ended 30th June, 1885 ...	19·93	54·87	74·80
Nine years ended 30th June, 1911 ...	27·57	49·83	77·40

CONCLUSIONS TO BE DRAWN FROM THE RECORDS OF SEA CASUALTIES.

11. These figures establish that since the introduction of the existing Life Saving Regulations there has, notwithstanding a great increase in the number of lives carried, been a marked diminution in the loss of life at sea ; but it is, we think, clear that this marked diminution in loss of life has resulted mainly, if not entirely, from the prevention of casualties necessitating recourse to the boats and other life-saving appliances and not from the succour afforded by such appliances after such disasters have taken place. And this fact is the more noteworthy as, with the exception of possibly one case (*Report of Statistical Sub-Committee, page 55*), there is no evidence of any life having been lost owing to the lack of boat accommodation since the introduction of the existing Life Saving Regulations.

It will be noted that during a period of 20 years the average loss of life on sailing ships, calculated as a percentage on the total number of the crews carried, decreased by only 20 per cent., whilst in the case of steamships this decrease amounted to 75 per cent. It will be further noted that the average percentage of loss of life on sailing ships, which was double, is now six times as great as that on steamships. It is therefore clearly the substitution of steam for sail and the improvements in the type of steamships that has contributed mainly to the increased safety of life at sea. It will be further noted that although the boat accommodation was so greatly increased by the regulations adopted in 1890 the number of lives saved by the ships' own boats, as a percentage on the total number of lives in immediate peril, has actually decreased. For the nine years ended the 30th June, 1895, 55 per cent. of the lives so in peril were saved by the ships' own boats, whilst during the nine years ended 30th June, 1911, the percentage was only 50 per cent.

A detailed examination of the records in relation to vessels registered in the United Kingdom which were totally lost at sea or met with sea casualties attended with loss of life, during the 20 years ended 30th June, 1911, while on voyages between ports in the United Kingdom and ports on the east coast of North America, fully confirms this view. (*Report of Statistical Sub-Committee, page 57.*) There were 171 of such casualties, in which boats could conceivably have played a part, resulting in the loss of 1,097 lives. These casualties, as between the different classes of vessel, and the approximate total number of voyages made by each of those classes, during the 20 years, may be divided as under :—

Class of Vessel.	Estimated Total Number of Voyages made.	Total Number of Casualties.	Total Number of Lives Lost.
Sailing vessels ...	5,700	43	131
Steamships, not carrying passengers ...	65,361	115	848
Passenger vessels ...	24,000	13	118
	95,061	171	1,097

The following is a comparison of the above figures showing the number of voyages upon which casualties occurred as a percentage of the total number of voyages :—

Sailing vessels	...	...	...	...	...	75
Steamships other than passenger ships	...	...	...	...	...	18
Passenger ships	...	...	...	...	...	05

It is not possible to compare the loss of life as percentages on the total numbers carried in each of these classes of vessel as it is only in the case of passenger ships that the records are available ; but as, in round figures, 9,000,000 persons were carried in the passenger ships on the voyages under consideration, it is clear that as a percentage the loss of the 118 lives on vessels of that type is far below the loss on the two other classes, although the boat accommodation provided on those other two classes, and in particular on the cargo steamships, has been in excess of that provided on the passenger ships.

THE LOSS OF THE "TITANIC."

12. We fully recognise that the proved impossibility of keeping the "Titanic" afloat after her collision with the iceberg until the arrival of outside succour has created a new situation, but it is important to bear in mind that the "Titanic" was a vessel belonging to a special and limited class. Therefore although the circumstances attendant on the loss of the "Titanic" must be taken into most careful consideration in regard to the life-saving equipment of all passenger ships, they have little, if any, relation to the equipment on the 6,450 cargo vessels engaged in the Home and Foreign trades, and they have no relation to the equipment to be carried on the remaining 6,351 vessels, of which all but 195 are under 100 tons, of the British Mercantile Marine.

Further, the circumstances attendant on the loss of the "Titanic" have demonstrated the extraordinary difficulty, even in calm weather, of using to the full on a passenger vessel carrying large numbers the boat accommodation already provided, and thereby emphasized the view we expressed in our Report of the 4th July, 1911, as to the necessity for taking all possible precautions to provide for the buoyancy of the vessel after the casualty and efficient means for communicating with the shore or with other vessels. We are satisfied that it is by proceeding on these lines that the safety of the passengers can be best secured, and it is with great satisfaction that we have learned that the Board of Trade have acted on our recommendation of the 4th July, 1911, and appointed a Committee to consider the question of the efficient sub-division of merchant ships into water-tight compartments.

THE EXISTING REGULATIONS AND THE AMENDMENTS RECOMMENDED.

13. In reviewing the existing Regulations generally it is in our opinion of the utmost importance that the principles under the existing Scale in regard to the stability and sea-going qualities of the ship itself and to the carriage of the boats required so that they may be promptly and efficiently handled, should be rigidly maintained. Such principles have, by the experience of the last 20 years, proved to be not only essential to safety but also adequate for all ordinary emergencies.

14. Having summarised the general position we proceed to report separately upon each of the classes of vessels dealt with in the existing Regulations. These classes are as under :—

Division A.—Class 1.—Steamships carrying Emigrant Passengers.

Class 2.—Foreign-going Passenger Steamships not carrying Emigrants.

Class 3.—Passenger Steamships authorised to ply anywhere within Home Trade limits.

Class 4.—Foreign-going Cargo Steamships.

Division B.—Classes 1, 2 & 4.—Sailing Ships carrying Emigrants and Passengers in the Foreign and Home Trades, of which there are now none.

Class 3.—Foreign-going Cargo Sailing Ships.

Division C.—Class 1.—Cargo Steamships plying anywhere within Home Trade limits.

Class 2.—Cargo Sailing Ships plying anywhere within Home Trade limits.

Division D.—Class 1.—Steamships carrying Passengers on short specified voyages along the coast of the United Kingdom, or between Great Britain and Ireland, or between Great Britain or Ireland and the Isle of Man.

Class 2.—Steamships carrying Passengers in estuaries or mouths of rivers or on short excursions to sea.

Class 3.—Cargo Steamships employed solely in the Coasting Trade.

Class 4.—Cargo Sailing Ships employed solely in the Coasting Trade.

Class 5.—Steam Fish Carriers, Tug Boats and Steam Lighters which proceed to sea.

Class 6.—Steam Launches proceeding for short distances to sea.

Division E.—Class 1.—Steamships carrying Passengers on rivers, lakes or land-locked inland waters.

Class 2.—Tug Boats and Steam Lighters which do not proceed to sea.

Class 3.—Hulks, Dredgers, Steam Hoppers, &c.

Division (A), Classes 1 and 2.—Steamships carrying Emigrant Passengers and Foreign-going Passenger Steamships not carrying Emigrants.

15. The existing Regulations require vessels of these classes to carry boats placed under davits in accordance with a scale which is based on the gross tonnage of the vessel ; but it is permissible, in the case of a vessel which, under the scale is required to carry eight or more boats, to carry in-board not exceeding in all one-fourth of the total number required, provided each boat carried in-board is stowed alongside a boat which is directly under davits, and is so arranged that it can be launched promptly. If the boats to be carried, in accordance with the scale, do not provide sufficient accommodation for all persons on board, then "additional wood, metal, collapsible or other boats of approved description (whether placed under davits or otherwise), or approved life rafts" are to be carried, having at least such carrying capacity that they and the boats under the scale provide together in the aggregate, in vessels of 5,000 tons gross and upwards, three-fourths, and in vessels of less than 5,000 tons, one-half more than the minimum cubic contents required by the scale. Vessels of these classes must, in addition, carry one approved lifebuoy for every boat placed under davits, and approved lifebelts or other similar approved articles of equal buoyancy, suitable for being worn on the person, sufficient for all persons on board.

16. There were on the register on the 31st December, 1910, 581 foreign-going passenger (including emigrant) ships, and of these 164 were emigrant, and 417 passenger ships.

We have ascertained the boat accommodation provided on all of these vessels which actually held their certificates on the 25th April, 1912, numbering 521, and we find that in the case of 343 of these vessels, or 66 per cent. of the total, the existing tonnage scale provided boat accommodation under davits sufficient for all persons for whom the vessel was certified. In the case of 75 of these vessels, or 14 per cent. of the total, the existing tonnage scale provided with the compulsory additional boats or life rafts, sufficient accommodation for all persons for whom the vessel was certified, and on 49 out of these 75 vessels such additional accommodation was actually provided by boats under davits. (*Report of Statistical Sub-Committee, page 53.*)

The existing Tonnage Scale therefore provides, compulsorily, boat or life-raft accommodation for all persons for whom the vessel is certified on 80 per cent. of the vessels of the class under consideration.*

The remaining 20 per cent. are made up of vessels of various types and sizes which may be summarised as under :—

Size of Vessels.				Number of Vessels.	Average cubic capacity required by existing scale under davits and in additional boats and life-rafts as a percentage on total numbers certified for.
EMIGRANT SHIPS.					Percentages.
6,000-7,000 tons	...	...	...	2	81
7,000-8,000 "	...	...	...	2	66
8,000-9,000 "	...	...	...	4	69
9,000-10,000 "	...	...	...	5	70
10,000-11,000 "	...	...	...	8	61
11,000-12,000 "	...	...	...	6	59
12,000-13,000 "	...	...	...	12	72
13,000-14,000 "	...	...	...	3	75
14,000-15,000 "	...	...	...	6	43
15,000-16,000 "	...	...	...	1	54
17,000-18,000 "	...	...	...	1	45
18,000-19,000 "	...	...	...	2	31
19,000-20,000 "	...	...	...	2	27
20,000-21,000 "	...	...	...	1	62
21,000-25,000 "	...	...	...	2	41
25,000-35,000 "	...	...	...	2	33
45,000 tons	...	...	...	1	28
Total	...	...	...	60	

PASSENGER SHIPS.

1,000–1,500 tons	...	...	...	1	76
1,500–2,000 "	...	...	...	7	66
2,000–2,500 "	...	...	...	1	32
2,500–3,000 "	...	...	...	2	34
3,000–4,000 "	...	...	...	3	44
4,000–5,000 "	...	...	...	3	84
5,000–6,000 "	...	...	...	7	82
6,000–7,000 "	...	...	...	4	90
7,000–8,000 "	...	...	...	1	97
8,000–9,000 "	...	...	...	1	66
9,000–10,000 "	...	...	...	3	60
10,000–11,000 "	...	...	...	4	79
11,000–12,000 "	...	...	...	2	65
12,000–13,000 "	...	...	...	2	73
13,000–14,000 "	...	...	...	1	33
Total	...	...	...	42	

17. We are of opinion that the standard should continue to be based on the gross tonnage of the vessels of the classes under consideration.

* Seeing that 10,000 tons is the highest figure mentioned in the existing Tonnage Scale, it is worthy of note that in the case of 320 or 74.6 per cent. of the vessels of less than 10,000 tons the existing scale provided boat accommodation under davits sufficient for all persons for whom the vessel is certified, while in the case of 63 or 14.7 per cent. of these vessels sufficient accommodation was provided by the scale together with the compulsory additional boats or rafts. In the case, therefore, of about 90 per cent. of the vessels for which it was designed the existing Tonnage Scale, provides, compulsorily, boat or raft accommodation for all persons certified for in the passenger certificate.

We have considered the alternatives of (1) the length of the vessel, and (2) the number of persons carried. In our opinion the gross tonnage of the vessel has generally a much closer relation than its length to the numbers carried, and moreover it is on the whole a better measure than length of the number of boats which the vessel can carry immediately available for launching.

We are of opinion that it is not practicable to adopt the numbers on board as the standard for the number of boats to be carried under davits. For example, there are vessels of from 2,000 to 3,000 tons gross, which have been built, and are certified to carry from 775 to 1,024 persons. Allowing 50 persons to a boat these vessels under a standard based on the numbers carried would require from 15 to 20 boats under davits, a number which a vessel of the size under consideration could not possibly carry. There are the same difficulties, but in a less degree in vessels of a larger size, e.g., a vessel of 10,000 tons, which has been built, and is certified to carry 2,000 to 2,200 persons. Even allowing for a larger type of boat capable of accommodating 60 persons, which vessels of this size could carry, a standard based on the numbers on board would require such a vessel to carry under davits about 35 boats, which would be impracticable.

If during the last 20 years the standard in force had been based on the numbers carried, that is, if the passenger carrying capacity of the vessel had been limited by the numbers for which boat accommodation could be provided under davits, we do not think that the existing types of emigrant ship would ever have been produced, and the records of the 20 years show that it is upon this type of vessel that life has been the safest.

18. We have reconsidered our recommendation of the 4th July, 1911, in regard to the extension of the tonnage scale so as to provide for vessels of tonnage up to 50,000 tons gross, and in particular the memorandum and tables prepared by the Professional Adviser to the Marine Department, dated the 28th March, 1912, and the evidence given in the Wreck Commissioner's Court in regard to the loss of "Titanic."

For the purposes of comparison we summarise our recommendations of the 4th July, 1911, with the table submitted to the Board of Trade by its Professional Adviser on the 28th March, 1912, as under :—

Gross Tonnage.		Committee's Report 4th July, 1911.			Recommendations of Professional Adviser to Board of Trade, 28th March, 1912.	
		Boats under davits.	Additional boats readily available for attachment to davits.	Minimum cubic contents.	Boats.	Minimum cubic contents.
10,000 and under 12,000	...	16	—	cubic feet. 5,500	16	cubic feet. 5,500
12,000 " " 15,000	...	16	2	6,200	18	5,800
15,000 " " 20,000	...				20	6,100
20,000 " " 25,000	...				22	6,400
25,000 " " 30,000	...	16	4	6,900	24	6,700
30,000 " " 35,000	...				24	7,000
35,000 " " 40,000	...				24	7,300
40,000 " " 45,000	...	16	6	7,600	24	7,600
45,000 " " 50,000	...				26	7,900
50,000 " upwards	...	16	8	8,300	26	8,200

NOTE.—Both the above scales are subject to the provisions of Division (A) Class 1 (d) in regard to the addition of three-fourths more than the minimum cubic contents as above stated.

It will be noted that the substantial differences between the two recommendations are—

- (1) The size of individual boat is slightly reduced by the Board's Professional Adviser, who works on 300 cubic feet as the minimum of the individual boats to be carried whilst the Committee worked on 340 cubic feet. On vessels of over 10,000 tons the three-fourths additional accommodation is almost invariably provided in the boats under the davits so that the 300 minimum equals in practice, 525 cubic feet, and the 340 minimum equals, in practice, 600 cubic feet.
- (2) As the Board's Professional Adviser suggests smaller boats he proposes to increase their number by two.
- (3) The total minimum cubic capacity recommended by the Board's Professional Adviser is 7,900 cubic feet for a 45,000 ton vessel as against the

Committee's recommendation of a minimum of 8,300 cubic feet. In each case the figure is subject to the increase of three-fourths so that the comparative figures are the 13,825 recommended by the Professional Adviser against 14,525 cubic feet recommended by the Committee.

After most careful consideration with the help of the members we have co-opted for the purposes of the present enquiry we are of opinion that the Scale set forth in our recommendation of the 4th July, 1911, should be adopted as the standard, but that special provision should be made in regard to vessels of upwards of 640 feet in length. In vessels not exceeding that length we adhere to the opinion that any increase in the number of life-boats to be carried can be best effected by providing for the launching of further boats from the existing davits, but in vessels exceeding that length we are of opinion that additional davits can be provided in the midships portion of the vessel. We consider that the maximum limit in the scale should be for vessels of 50,000 tons and under 60,000 tons, and that, in the event of vessels of more than 60,000 tons being built, the question of an extension of the scale should be considered.

We further wish to make it clear that it was not contemplated in our recommendations of the 4th July, 1911, that the Rule of the 19th April, 1910, with regard to the stowage of boats inboard, should continue to apply to vessels of 10,000 tons gross tonnage and upwards. The boats required by the scale recommended by us in the column headed "Boats under davits" should, in our opinion, for vessels of 10,000 tons and upwards, be directly under davits and attached to the davit tackles, but the additional boats required to be readily available for attachment to davits should be allowed to be carried inboard or under the boats attached to the davits, provided they do not interfere with the efficiency of the boats under davits.

19. Although we are of opinion that the standard for the boats to be carried under davits should continue to be based on the gross tonnage, we are also of opinion that the standard for additional boat and life raft accommodation should be based on the numbers on board, and not upon a percentage calculated on the tonnage scale, so that accommodation may be provided for the total number carried.

20. Having regard to these considerations we recommend in regard to passenger and emigrant ships that the existing regulations be modified upon the following lines:—

FIRST.—The stability and seaworthy qualities of the vessel itself be regarded as of primary importance, and every provision made against possible disaster be subordinated to this primary consideration.

SECONDLY.—The existing scale based on the gross tonnage of the vessel as extended in accordance with our recommendation (as varied by this Report) of the 4th July, 1911, be maintained in regard to the number of boats to be carried under davits or in-board alongside a boat directly under davits. Various mechanical arrangements for the launching and lowering of boats have been brought to the attention of the Committee, but we are not prepared to make any detailed recommendations with regard to them. Such recommendations could only be arrived at after exhaustive inquiry which would delay this report, but we are of opinion that any contrivance for the launching of boats should be dealt with on its merits and not by hard and fast rules. Any contrivance for the launching of boats otherwise than from davits should, if approved, be accepted in whole or in part in substitution for the davits so long as—

- (1) The boats can thereby be launched at least as quickly and as safely as from davits.
- (2) The concentration of the boats around the launching appliances will not either expose them to additional risk or interfere with the prompt embarkation of the passengers.

THIRDLY.—The existing scale for additional boat and life raft accommodation be varied by substituting for a percentage calculated on the tonnage scale, the principle that the carrying capacity of the boats provided under the tonnage scale, and of the additional wood, metal, collapsible, or other boats of approved description (whether placed under davits or otherwise) and of the approved life rafts be sufficient to accommodate all persons on board.

FOURTHLY.—In the provision of the additional boat and life raft accommodation regard be had to the following points:—

- A. So far as practicable and with due regard to the safety of the vessel for the voyage, the additional accommodation be provided in the boats under davits or readily available for the davits, but so that the length of each individual boat, carried under ships' davits of the existing standard types.

do not exceed 30 feet. We recommend that, in all vessels of a registered length of more than 640 feet, an additional set of davits should be required on each side of the vessel for each length of 80 feet or portion of 80 feet by which the total registered length exceeds 640 feet. Such davits should be erected within the midships portion represented by two-thirds of the length of the vessel.

- B. Provided suitable arrangements be made for prompt launching, it is not necessary for all boats carried under davits to be actually attached to the tackles; *e.g.*, decked life boats of the type recommended by us on the 1st May, 1911, can be safely carried under open life boats, or under other decked life boats, actually attached to the tackles.
- C. It is essential that any increase in the number of boats above the number to be carried under the Tonnage Scale be made so as not to interfere in any way with the prompt handling of the boats to be carried under that Scale.
- D. The additional accommodation in so far as it is not provided under A be provided by additional boats or life rafts of approved description to be placed as conveniently for being available as the vessel's arrangements admit of, having regard to the avoidance of undue encumbrance of the ship's decks, and to the safety of the ship for the voyage.
- E. The boat accommodation to be provided under the Tonnage Scale and under A should, in our opinion be sufficient for all but extraordinary and exceptional disasters, and in providing the additional accommodation under D, it must be recognised that in the event of such disasters considerable time must elapse before the sinking of the vessel if such accommodation is to be of any use. We are, therefore, of opinion that such additional accommodation need not be carried so as to be immediately available for launching so long as it is carried so as to be readily available in sufficient time when required.
- F. It is not desirable, in regard to character, size, and stowage of the additional accommodation to be provided under D, to lay down hard and fast rules. All such accommodation should be judged on its own merits, so as to afford the greatest opportunity to the shipowners and their naval architects and shipbuilders to devise the character and size of the additional boats and life rafts and to provide for their stowage as may be best calculated to attain the object in view.
- G. The use of a motor life boat should remain optional.

Subject to these recommendations, we approve of the Rules relating to vessels of Division (A) Classes 1 and 2.

Division (A), Class 3.—Passenger Steamships authorised to ply anywhere within Home Trade limits.

Division (D), Class 1.—Steamships carrying passengers on short specified voyages along the Coast of the United Kingdom or between Great Britain and Ireland or between Great Britain or Ireland and the Isle of Man.

Class 2.—Steamships carrying passengers in estuaries or mouths of rivers or on short excursions to sea.

Division (E), Class 1.—Steamships carrying passengers on rivers, lakes, or land-locked inland waters.

21. The vessels of these Classes are dealt with in detail in the Report of our Subcommittee on Home Trade Passenger Ships, which report forms part of this Report.

Division (B), Classes 1 and 2 and 4.—Sailing Ships carrying Emigrant Passengers, Foreign-going Passenger Sailing Ships, and Sailing Ships authorised to carry passengers anywhere within Home Trade limits.

22. As there are now no vessels certificated under these classes, we consider that the Classes might be omitted. In the event of there being hereafter any such vessels they should, in our opinion, be dealt with under Division (B), Class 3, and Division (C), Class 2.

Division (A), Class 4.—Foreign-going Cargo Steamships.**Division (C), Class 1.—Home Trade Cargo Steamships.**

23. The existing Rules require vessels of these classes to carry, at least so many boats, of the types specified, under davits, as shall be sufficient on each side of the ship to accommodate all persons on board. In addition there must be one approved life belt for each person on board and a specified number of approved life buoys.

We approve of these Rules as they stand, subject to the recommendation contained in paragraph 18 of the Report of the Type of Open Lifeboat Sub-Committee.

Division (D), Class 3.—Coasting Cargo Steamships.

24. The existing Rule requires vessels of this class to carry a boat of the type specified, so fitted that it can be readily put out on either side of the ship, and amply sufficient to carry all persons on board. In addition there must be one approved life belt for each person on board, and two approved life buoys.

We approve of this Rule as it stands.

Division (B), Class 3.—Foreign-going Cargo Sailing Ships.**Division (C), Class 2.—Home Trade Cargo Sailing Ships.****Division (D), Class 4.—Coasting Cargo Sailing Ships.**

25. The existing Rules require vessels of these classes to carry boats, of the type specified, sufficient for all persons on board, with, in the case of foreign going vessels, one additional boat. In addition there must be one approved life belt for each person on board, and one lifebuoy for each boat, or in the case of the Home and Coasting Trades two lifebuoys.

We approve of these Rules as they stand.

Division (D), Class 5.—Steam Fish Carriers, Tug Boats and Steam Lighters which proceed to sea.

26. The existing Rule requires vessels of this class to carry one boat so fitted that it can be readily put out on either side of the ship, and amply sufficient to carry all the persons on board. In addition there must be one approved life belt for each person on board and two approved life-buoys.

We approve of the Rule as it stands.

Division (D), Class 6.—Steam Launches proceeding for short distances to sea.

27. The existing Rule does not require vessels of this class, which are themselves little more than boats, to carry boats, but it requires one approved life belt for each person on board, and two approved life-buoys to be carried.

We approve of this Rule as it stands.

Division (E), Class 2.—Tug Boats and Steam Lighters which do not proceed to sea.

28. The existing Rule requires vessels of this class to carry one boat sufficient to carry all the persons on board, and in addition one approved life belt for each person on board and two approved life buoys.

We approve of this Rule as it stands.

Division (E), Class 3.—Hulks, Dredgers, Steam Hoppers, &c.

29. The existing Rule requires vessels of this class to carry one boat sufficient to carry all the persons on board, and if they proceed to sea from one port to another one additional boat of the type specified. In addition there must be one approved life belt for each person on board and two approved life-buoys.

We approve of this Rule as it stands.

General Rules.

30. *Open Life Boats.*—Important questions relating to the type and construction of Open Life Boats are dealt with in detail in the Report of the Sub-Committee we appointed to consider those subjects, and their Report forms part of this Report. (Page 26.)

Decked Life Boats.—We adhere to the opinion expressed in our Report of the 4th July, 1911, that the Rules should be amended so as to admit of decked life boats of an approved type being stowed on top of one another or under an open life boat, subject to suitable arrangements being made for launching promptly the boats so stowed. We have examined the plan placed before us by the Board of Trade illustrating the manner in which a decked life boat could be so stowed under an open life boat and we are of opinion that the arrangements shown on that plan are satisfactory.

We do not recommend any alteration in the Rules of the 19th August, 1910, and the 14th June, 1911, but attach great importance to the use of decked life boats of the type recommended in our Report of the 1st May, 1911, as additional boats. The fact that such boats can, in case of extremity, be launched from the deck of the vessel and without the use of davits is a material consideration and we think that every facility should be given for the carriage of such boats. Further, it is, we think, important that boats of this type should not be classed as collapsible boats.

Equipment of boats.—We have considered the recommendation of the Court of Inquiry into the loss of the s.s. "Oceana," that all lifeboats should be required to be provided with the additional equipments set out in General Rule 6, and we are of opinion that these additional equipments should be carried in all open lifeboats directly under davits.

General Rule 12.—We have given very careful consideration to this Rule, under which vessels divided into efficient watertight compartments to the satisfaction of the Board of Trade are granted certain exemptions in regard to the carrying of additional accommodation. It is, in our opinion, of the utmost importance that encouragement should be given to developments of shipbuilding which have as their object the maintenance of the buoyancy of the vessel after a casualty, and we do not think it possible to arrive at a final decision as to the advisability of retaining or amending Rule 12 until after the Bulkheads Committee have made their report. We recommend, however, that, pending the receipt of that report, Rule 12 should not be put into operation.

Lifebuoys.—We are of opinion that the provisions of section 435 of the Merchant Shipping Act, 1894, with reference to the supply of lights inextinguishable in water and fitted for attachment to lifebuoys should be extended so as to apply to cargo vessels as well as to passenger and emigrant ships.

Subject to the above observations, we approve of the General Rules as they now stand.

31. *Lifebelts.*—We have also had under consideration the requirements as to the construction of lifebelts. A specification for lifebelts was referred to the Committee by the Board of Trade in 1907, and was approved by the Committee in a report dated 6th December, 1907. We adhere to the opinion then expressed.

We concur with the Court of Inquiry into the loss of the "Oceana" in thinking that the substitution of the term "life-jacket" for the term "lifebelt" would remove a possible source of danger.

We further approve of the Court's recommendation that an illustration of the method of adjusting the life-jacket should, in passenger ships, be placed in the cabins and that, if possible, passengers should be instructed, by actual practice, how properly to wear the appliance.

Application of Amended Rules to existing Vessels.

32. We are of opinion that the existing Rules as amended in accordance with the foregoing recommendations, should be enforced upon all existing ships as well as upon ships to be hereafter built, save and except that on existing ships the owners should not be compelled to provide any part of the *additional accommodation* in boats under davits, if such provision entails structural alterations in the existing davits. In such cases it will, in our opinion, be sufficient if the whole of the additional accommodation is provided otherwise than in the boats under davits.

GENERAL RECOMMENDATIONS.

33. Having dealt in detail with the existing rules, we proceed to report upon the suggestions which have come to our knowledge, calculated to diminish the risk or to mitigate the effects of accidents to vessels at sea; but we have purposely refrained from dealing with such of these suggestions as relate to matters at present before the Bulkheads Committee.

Manning of Ships' Boats and Boat Drill.

34. The question of the manning of boats has been very carefully considered, and the following alternative resolutions were proposed :—

1. That no passenger vessel trading outside of home trade limits should be considered efficiently manned unless it carries at least three efficient boat hands (of whom two shall be able seamen) for each boat carried.
2. That the effective manning of all the boats carried on passenger and emigrant vessels can be only secured by the training and organising of the crew as a whole. If the crew as a whole be so trained and organised, the boats can be effectively manned if there are two efficient boat hands carried for each of the boats carried under the davits or immediately available for attachment to the davits. Facilities should be given to enable all hands to prove their competency as efficient boat hands.

On a division the second resolution was approved by a majority, a minority of the members of the Committee being in favour of the first resolution.

Special consideration has been given to the case of vessels employing lascars, and, in connection with this question we have had before us the recommendations as to manning of boats made by the Court of Inquiry into the loss of the "Oceana." The following alternative resolutions were proposed :—

- (1) That lascars, if efficient boat hands, may be accepted as equal to white boat hands, but it is necessary that there be provided for each boat, in addition to two efficient lascar boat hands, one officer or one petty officer, able to communicate orders to the lascars.
- (2) No passenger vessel carrying lascars shall be deemed efficiently manned unless it carries two efficient white boat hands for each boat.

The first resolution was adopted by a majority of the Committee, a minority being in favour of the second resolution.

Boat drill.—It will be seen from the foregoing paragraphs that we consider that the owners of emigrant and passenger vessels should be required to arrange for the training and organisation of the crews of their vessels, so that every member of the crew will be acquainted with the duties he will have to perform in the event of an emergency arising in which it is necessary to take to the boats. We consider that a similar requirement should be made in the case of the crews of cargo vessels.

We have further considered suggestions that the passengers should be required to take part in boat drill, and that each passenger should be allotted to a particular boat. In our opinion any efficient training of passengers is impossible, and the allotment of passengers to particular boats is sure to break down in time of disaster. The safety of the passengers will be more effectively secured by the training and organisation of the members of the crew in their several duties, so that they will take charge of the passengers and direct them to the boats in a prompt and orderly manner.

Qualifications of Masters and Officers in Home Trade Cargo Vessels.

35. We have considered the correspondence which has passed between the Advisory Committee and the Board of Trade on the subject of requiring certain qualifications from Masters and Officers in Home Trade cargo vessels, and we adhere to the recommendations in our letter of the 5th July, 1911, not only with regard to the certification of masters and mates in vessels of 200 tons register and of engineers in vessels of 66 nominal horse power, but also with regard to the licensing of masters and mates in smaller vessels of at least 50 tons register and of engineers in vessels of at least 50 nominal horse power, such licences to be given after examination appropriate to the trade in which they are engaged.

Use of Binoculars by Look-out Men.

36. The suggestion has been brought before us that look-out men should be provided with binoculars. We are, however, of opinion that, although binoculars are useful in ascertaining the precise nature of an object to which attention has already been called, they restrict the field of vision, and that consequently there is a danger that look-out men, if provided with binoculars, might fail to notice an object which would have been picked out with the naked eye. We accordingly consider the adoption of this suggestion inadvisable.

Wireless Telegraphy.

37. The question of the installation of wireless telegraphic apparatus in merchant vessels has been considered by the Sub-Committee we appointed to deal with this question. Their report is appended and forms part of this report. (Page 29.)

The extent to which wireless telegraphy should be compulsorily fitted in home trade passenger vessels is dealt with by the Home Trade Passenger Vessels Sub-Committee, and the recommendations made by the majority of that Sub-Committee on this question have been adopted by the General Committee. (Page 41.)

Steamship Routes.

38. The question of the establishment and working of steamship routes generally, and in particular of the routes across the North Atlantic to the United States and to Canada, has been inquired into by another Sub-Committee. Their report is appended and forms part of this report. (Page 34.)

We desire to call attention to the statistical information available as to the casualties in the North Atlantic which affords strong evidence of the advantages derived from the use of the established routes.

During the period of 20 years ended 30th June, 1910, only 13 vessels registered in the United Kingdom have been reported as totally lost through striking ice whilst on voyages between European ports and the East Coast of North America and Newfoundland. Of these vessels, three were Dundee whalers, and of the remainder only one was lost south of latitude 45° north. No casualty involving loss of life was recorded as having occurred in the North Atlantic owing to contact with ice. (Report of Statistical Sub-Committee, page 59.)

During the same period, 48 vessels registered in the United Kingdom were reported as missing whilst on similar voyages, but almost all these losses occurred in the months during which the ordinary trade routes in the North Atlantic are free of ice.

The manner in which the establishment of separate eastward and westward routes has guarded against the risks of collisions is shown by the fact that, during the course of 24,000 voyages made by British passenger vessels between the United Kingdom and North America in the same period of 20 years, only one life and no vessel has been lost in collision.

Speed of Steamships.

39. The statistical information to which attention has just been called has a direct bearing on the question whether in the interests of safety measures are necessary to place any limits on speed either generally or in particular localities.

We find on investigation that the generally held opinion that there has during recent years been a great increase in the speed of vessels is unfounded. The total gross tonnage of the vessels of the Passenger Lines running between the United Kingdom and the East Coast of North America, comparing the year 1895 with the year 1911, increased from 376,019 to 1,008,159 tons and the average gross tonnage per vessel from 5,784 to 11,722 tons, but the average speed of these vessels has only increased from 13.81 to 15.16 knots. Further, a comparison of the same two years shows that the number of such vessels with a speed of 20 knots or upwards has only increased from six in 1895 to nine in 1911. (Report of Statistical Sub-Committee, page 58.)

The present regulations against undue speed are contained in Articles 16 and 29 of the Regulations for Preventing Collisions at Sea which are as follows :—

16. Every vessel shall, in a fog, mist, falling snow, or heavy rain storms, go at a moderate speed, having careful regard to the existing circumstances and conditions.

29. Nothing in these Rules shall exonerate any vessel or the owner, or master, or crew thereof, from the consequences of any neglect . . . to keep a proper look-out, or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

We recommend that the words "or at night in the known vicinity of ice" should be inserted after the words "heavy rain storms" in Article 16. With this modification these Articles are, in our opinion, adequate, but it is of the utmost importance that they be strictly observed.

Search Lights.

40. We have considered the question of the provision and use of searchlights in large passenger vessels, and, in arriving at our conclusions, we have had the assistance of information supplied to us by the Admiralty.

It is possible that a searchlight would be of value in certain circumstances—for instance, in picking up an unlighted buoy, rock, land, iceberg or icefield, in passing through a canal, or for salvage purposes.

On the other hand the use of searchlights would be attended by many disadvantages, such as the following :—

- (1) Dazzling the observers on board the ship making use of the lights, especially if the lights are badly placed :
- (2) General danger to navigation owing to the blinding effect on those on board other vessels and to the possibility of the navigation lights of the vessel exhibiting the searchlight being obscured :
- (3) Temptation to make land, buoys, &c. by placing too much reliance on picking up the marks by means of the searchlight :
- (4) False security when in the vicinity of ice or other dangers :
- (5) The danger of searchlights being mistaken for powerful electric lights from lighthouses, especially in thick or hazy weather, and of searchlights having the effect of screening shore lights from passing vessels.

The disadvantages of searchlights seem to us so greatly to outweigh their advantages that their adoption in the mercantile marine would, in our opinion, be most inadvisable.

Line Throwing Appliances.

41. We desire to call attention to the report forwarded by the Advisory Committee on the 19th December, 1908, on the subject of Line Throwing Appliances for communicating between the ship and the shore and between ship and ship in cases of shipwreck or distress at sea. So far as we are aware, no action has yet been taken to secure the provision of such appliances in merchant vessels, and we are of opinion that effect should be given to the recommendations contained in the report.

Access to the Bulkhead Deck from each Compartment.

42. We are of opinion that there should on every passenger and emigrant ship be provided means of access on to the bulkhead deck from each compartment below that deck ; and that such access should be sufficient to enable the passengers and crew carried in such compartment to proceed with rapidity on to that deck. If ample access is provided in such manner we do not think that separate access from each compartment to the deck from which the boats are filled need be provided.

Board of Trade Surveying Staff.

43. The recommendations contained in this report will, if adopted, impose additional duties of a responsible character upon the Board of Trade's surveyors, and it is absolutely essential that there should be an adequate number of surveyors fully qualified for the particular duties entrusted to them. We accordingly recommend that careful inquiry should be made with regard to the number and qualifications of the surveying staff at the various ports, and that, wherever found necessary, that staff be increased.

Inspection of Ships' Boats.

44. Recommendations relating to the inspection of ships' boats during process of construction are contained in the Report of the Type of Open Lifeboat Sub-Committee.

We have given consideration to the recommendation of the Court of Inquiry into the loss of the "Oceana" that there should be a more searching inspection of ships' boats which are more than 15 years old. The condition of a boat does not, however, depend so much upon its age as upon the care taken of it and the usage which it receives, and we are of opinion that the inspection of all ships' boats should be equally efficient, irrespective of their age. We accordingly recommend that there should in all cases, in cargo vessels as well as in passenger vessels, be a periodical inspection of ships' boats.

INTERNATIONAL AGREEMENT.

45. In conclusion we desire to emphasise the great importance of securing, as far as possible, international uniformity in any new regulations or requirements which may be imposed upon the shipping industry. In arriving at the recommendations contained in

this report we have had regard solely to the question of safety of life at sea, but we cannot but feel that lack of uniformity on important points would not only cause considerable inconvenience and expense but might be a positive source of danger if a vessel were compelled to comply with conflicting requirements. We accordingly urge that His Majesty's Government should use their best endeavours to secure that any new requirements of importance should be enforced on the basis of an international Agreement.

46. We desire to express our thanks for the great assistance that has been given to us throughout our inquiry by the Departments of the Board of Trade in furnishing all statistical and other information for which we have asked, and to record our great indebtedness to our Secretary, Mr. R. W. Matthew, for the very efficient assistance he has rendered throughout our inquiry.

We have the honour to be,
Sir,
Your obedient Servants,

NORMAN HILL.
CHAS. BARRIE.
RAYMOND BECK.
E. CATHERY.*
TREVISA CLARKE.*
WM. CORKHILL.*
S. CROSS.
WM. THEODORE DOXFORD.
GEO. N. HAMPSON.*
J. HENSON.*
JOHN INGLIS.
M. JOYCE.*
J. FOSTER KING.
CUTHBERT LAWS.
W. J. LUKE.
ROBERT A. OGILVIE.
HENRY RADCLIFFE.
WILLIAM H. RAEBURN.
T. ROME.*
J. A. ROXBURGH.
T. ROYDEN.
WALTER RUNCIMAN.
GEO. SHEARER.*
THOMAS SPENCER.*
S. THEARLE.
JAMES B. WATT.
F. S. WATTS.
PETER WRIGHT.*

R. W. MATTHEW, Secretary,
24th July, 1912.

* Subject to reservation or reservations printed below.

RESERVATION BY MR. CATHERY, MR. HENSON, MR. JOYCE,
MR. WRIGHT AND MR. SHEARER.

We, the undersigned members of the Merchant Shipping Advisory Committee, desire to place on record our entire disagreement with the two resolutions adopted by the Majority quoted in paragraph 34 of the report, regarding the manning of passenger ships.

Our reasons for not agreeing to the resolutions referred to are:—

1. No provision is made in resolution "2" adopted by the Majority for any standard of efficiency by means of which an "efficient boat hand" can be defined, neither is any provision made for the training and organising of the crew as a whole. No opportunity for this purpose presents itself for the crew during the progress of the voyage, as the crew have their regular duties to perform, such as stokers in the stokehold, stewards in their department, and the deck hands generally have other work to do which leaves them no opportunity for boat drill or training during the course of the voyage. For the resolution to be effective, provisions should be made for boat drill in ports, and the issue of certificates to men who prove themselves capable of being rated as effective boatmen. At the time of signing on such men should produce their certificates to prove their efficiency as boatmen, and in no case should vessels be allowed to leave port unless there are sufficient seamen on board so as to provide at least three certificated boatmen for each lifeboat, of whom at least two should be qualified able seamen, any officer or petty officer counting as an able seaman. Such certificates should be granted by the Board of Trade after their officer has examined and passed such seamen only as have proved their capacity in the various operations required to properly launch a boat and to row such boat.
2. With regard to lascars, we are of opinion that lascars should not be accepted as being equal to a white boat hand except in latitude 30 degrees north of the equator and 30 degrees south of the equator. Vessels trading in higher latitudes should have not less than two qualified white able seamen, holding the certificates referred to in paragraph 1, for each boat carried.

EDMUND CATHERY.
J. HENSON.
MICHAEL JOYCE.
PETER WRIGHT.
GEO. SHEARER.

RESERVATION BY CAPTAIN CORKHILL, CAPTAIN HAMPSON,
MR. SPENCER, AND MR. WRIGHT.

We have signed this Report as we are in agreement with the majority of the conclusions, but cannot agree with the following sections:—

Section 18.—We think that the scale will be somewhat misleading, because vessels of 10,000 tons and upwards do not carry lifeboats of the cubic capacity shown, besides which a boat 28' x 8' 6" x 3' 6" would be a safer boat and more suitable for steamers of this tonnage.

Section 20.—Our experience is that davits with the usual tackle is not a suitable arrangement for putting boats into the water from the boat deck of a large steamer during rough weather, because there is a great risk of them being smashed to pieces by coming in contact with the ship's side when rolling, and if the boat happens to reach the water in a seaworthy condition, it is practically impossible with the present arrangement to put another boat out with the same pair of tackles, because, owing to the nature of the rope, it could not be rounded up within a reasonable time, and it would become cable-laid and entangled, and to clear this on a dark, dirty night would be almost an impossible task.

Lifeboat Carrying Capacity.—Our experience is that a divisor of 10 for measuring the number of persons a lifeboat can carry is only a suitable divisor for fair weather; 11 would be a safer one.

Lifeboat Equipment.—We are also of the opinion that every lifeboat should have added to her equipment one dozen (self-igniting) red lights in a water-tight tin, and also a box of matches in a lever lid, water-tight tin.

WM. CORKHILL.
THOMAS SPENCER.
PETER WRIGHT.
GEO. N. HAMPSON.

RESERVATION BY MR. TREVISA CLARKE.

I have signed this Report as I am in agreement with the conclusions it contains, with one exception, and in consequence I think it desirable to disassociate myself from those paragraphs of the Report, more particularly Clause 20, which appear to confirm the use of the ordinary davits and boat falls as being satisfactory.

If the ordinary practice with regard to boat-launching appliances is continued, there will be an increasing number of cases where ordinary davits and boat falls are both useless and dangerous.

These cases may be best defined as those of large vessels, particularly passenger steamers, where:—

- (a) The boat deck is relatively of great height above the water line.
- (b) The number of lives involved, and, in consequence the number of boats, &c. to be handled and lowered, are relatively large.

The objections to ordinary davits and boat falls may be summarised thus:—

- (1) A boat can only be safely lowered from davits in calm weather; also the time required to bring the boat into position and to lower it is considerable.
- (2) If there is any sea running there is always a marked danger, when davits are employed, of the descending boat being stove in or smashed before it reaches the water. The difficulty of safely releasing the boat after lowering is often serious.
- (3) If the ship has a considerable list, as is often occasioned by casualty, half the davits may be rendered useless.
- (4) Where the casualty is due to collision, there is always a risk of some of the davits being put out of commission. In the case of the collision between the "Oceana" and the "Pisagua," this appears to have occurred on the port side.
- (5) Where more than one boat (in all large passenger steamers probably two or three boats) must be lowered from the same set of davits, an undue and indefinite amount of valuable time must inevitably be consumed before the falls can be rounded up ready to lower the second or third boat; there is a tendency for the lower block to capsize and for the falls to become cable-laid, and, on a dark and stormy night, it would in many cases be impossible to bring the falls up at all, after the first boat had been launched.

Improved means for lifting and lowering a full complement of boats (the majority being in protected positions) by means of electric cranes placed inboard and by a single wire fall and bridle, the cranes being actuated by a special electric generating plant with independent internal combustion engines, situated at the highest available point above the water line (this plant would also be available for lighting and wireless telegraphy), are fully illustrated in plans and explanatory statements which I sent to the Secretary on the 11th instant.

I understand it is the intention of this Committee to forward the plans, etc., illustrating this proposal to the Special Committee, the appointment of which by the President of the Board of Trade, is referred to in his letter addressed to the Chairman and read at the meeting held on the 19th instant.

TREVISA CLARKE.

RESERVATION BY MR. ROME.

I have signed the report subject to the reservation that, in my opinion, the words "and to the necessary facilities for coaling and handling cargo" should be inserted after the word "decks" in paragraph 20 D. of the report.

T. ROME.

RESERVATIONS OF CAPTAIN G. N. HAMPSON.

The Right Hon. Sydney C. Buxton, M.P.,
President of the Board of Trade.

SIR,

I HAVE signed the Report subject to the reservation that I do not by any means approve of the whole of its contents, and I am of opinion that it is sadly lacking in practical value as regards safety of life at sea. I do not think that the Report in any way covers the ground, and I am strongly of opinion, after attending the whole of the proceedings of the Committee and its Sub-Committees, that the time has arrived when all these matters should form the subject of a searching Inquiry before a Commission or Committee composed of members independent in every way of the shipping interest, but at which the various representatives of the different sections of shipping should be invited to submit their respective views.

In the House of Commons on the 22nd April last the President of the Board of Trade stated as follows:—

"When I have received Reports both of the Court of Inquiry and of the Merchant Shipping Advisory Committee, I shall be in a position to advise the House whether further investigation is required by a Committee or Commission of Inquiry either of a national or international character."

Whilst I most heartily approve of international negotiations which, I understand, are now proceeding, I trust that the President of the Board of Trade will now advise that a Committee or Commission of Inquiry of a national character be at once formed for adequate consideration, not only of the Reports of the Court of Inquiry and of the Merchant Shipping Advisory Committee, but of other matters which are not contained in these Reports but which, nevertheless, may have a direct bearing on the subject.

From the manner in which the Report is drawn I fear that it will be very difficult to act upon it in taking any really effective steps in bringing about those reforms in connection with safety of life at sea, which are urgently demanded.

In the first place it is obvious that, however efficient life-saving apparatus in the way of boats, &c., may be, efficiency on the part of ships' crews is the first essential. This bears immediately upon the manning question which, in my opinion, has not in any way been adequately discussed. To ensure safety the boats should be in charge of men knowing exactly how to launch and handle them. There is no expression of opinion as to what an "efficient deck hand" really is, and no practical suggestion as regards ships' crews in future being possessed of a thorough knowledge of boat drill and the management of boats. Such instruction should, I think, best be imparted by the Board of Trade creating establishments or schools at the different large seaports and placed in charge of instructors appointed by the Board who have had long experience at sea in connection with boats and other life-saving appliances, at which seamen and firemen and others on board ship should be encouraged to attend and to obtain certificates for proficiency in this way. Boat drill or instruction of the kind could not possibly be conducted whilst ships are lying in port loading or discharging, simply because in most cases crews do not join a ship until the last moment, and, further, captains and officers of British merchant ships have quite sufficient business to attend to in connection with their own duties without being saddled with the duties of instructors of boat drill for which they would receive no additional remuneration whatever.

In ordinary cases it is my opinion that there should be for each boat at least two efficient members of a ship's crew, but in the case of large ships where such a restriction would involve the carrying of much larger crews than necessary for the ordinary work of the ship, some reasonable limitations could be arranged without unduly diminishing efficiency in a case of emergency.

It has been urged as against carrying sufficient boat capacity for the whole of those on board a ship, both crew and passengers, that it would be impossible to provide this in the case of vessels carrying a great number of passengers. But I do not think that the

difficulties are so great as could not be surmounted. In connection with this point it is an essential feature that the danger of fire has only been casually mentioned and not considered. It is not referred to in any way in the Report. There is not a shadow of doubt that the present regulations and appliances for extinguishing fires on merchant ships are miserably inadequate and inefficient. In large passenger-carrying ships having bunkers fitted to carry thousands of tons of coal, it is clear that if a fire broke out in such bunkers, they might become a fiery furnace within a very short space of time and a holocaust would be the result. It is in a case of fire that boating capacity for every soul on board would be necessary, and this is a matter which requires urgent consideration.

Having urged the necessity of efficiency and sufficiency in the way of manning and of life-saving apparatus on board ship, it is even more imperative that there should be efficient and periodical inspection and supervision by officials of the Board of Trade who have had long practical experience at sea and thereby possess that knowledge of such matters without which any form of inspection or supervision of the kind would be valueless. At the present time, in most cases, merchant ships proceed to sea without any inspection of the kind whatever, and it has been proved before the Committee that where the life-saving appliances of passenger vessels have been inspected, the inspection has been carried on by officials who have had no practical experience in these matters. According to the decision of the Court of Inquiry in the case of the "Oceana" the boats were inspected before she sailed by two Board of Trade surveyors, one of whom was an engineer surveyor, and the other a ship and engineer surveyor. The Report states that neither of them by profession was acquainted with the practical handling of boats and they do not consider the inspection was adequate. According to this decision the boats' equipments prior to the sailing of the "Oceana" were neither inspected nor mustered and the inspecting officer did not check off the officers and crews of their respective boats. This Inquiry was presided over by Mr. John Dickinson, assisted by Rear-Admiral Ernest J. Fleet, R.N., Captain C. B. Graves, F.R.G.S., and Captain Batt, Assessors, expert in seafaring matters and appointed as such by the Home Office. Further, this Court stated that in their opinion they felt strongly that all life-boats and not merely four of them should have all the outfit set out in Rules 5 and 6 of the Life Saving Appliances Rules. They were of opinion that in the case of the "Oceana" there should be two white men skilled in boat handling when lowered. I wish to lay the greatest emphasis on these opinions with which I am in most cordial agreement.

Further, it is obvious that, in all cases, in addition to her various life-saving appliances, the navigational equipment of a ship in the way of charts, compasses, ship's logs, lead-line and the like should be carefully inspected by a Board of Trade surveyor whose seafaring experience has been such as to give him expert knowledge of these essentials to the safety of a ship and her passengers and crew. At present no such inspections are carried on and naturally passengers and crews are constantly exposed to the gravest dangers. There is no reason whatever why such inspections cannot be carried out except on the ground that the nautical staff of the Board of Trade is hopelessly inadequate. This is a serious and dangerous omission which could most easily and effectually be remedied. It is urged by the Board of Trade that responsibility for safety of life at sea does not rest so much upon them as upon shipowners and shipmasters; but the time has arrived when they should most certainly take over the first responsibility in this direction, and the provision of a proper supply of nautical surveyors would then be a great protection to merchant shipmasters, who, in so many cases, are helpless simply because every item of the expense which they may suggest is brought under the close and, oftentimes, unreasonable criticism of their employers.

Undue importance has been given to the case of passenger-carrying vessels. The safety of ordinary cargo ships and the lives of their crews is just as important, and the time has arrived when, as I cannot too strongly assert, all ships should be properly surveyed and inspected by the Board of Trade for the protection of life as far as possible. Passenger and cargo vessels alike should be subjected to compulsory surveys periodically, not at the hands of classification or other societies, but by Board of Trade officials, who should be given the fullest powers in this way. Surveys carried out by classification societies are in no sense adequate, for usually they mean that life-saving appliances and such like are never surveyed at all.

As to the statistics which are adduced in the Report showing remarkable immunity from loss of life in the mercantile marine, I attach but little importance to them. We are faced by the appalling fact that the finest ship in the British mercantile marine is now lying at the bottom of the Atlantic Ocean, carrying with her 1,490 lives. No statistics can disprove or minimise this terrible lesson, showing, as it does, that any other vessel may share a similar fate. If only one life at sea is lost through a preventable cause, then

it is quite sufficient to justify legislation, which would most certainly ensue if similar loss of life arose ashore. Further, we have to bear in mind the recent catastrophes in the cases of the "Delhi" and "Oceana," and the fact that not long ago in the House of Commons the President of the Board of Trade stated that there were no fewer than fifteen vessels on the "missing ship list" at one and the same time.

The existing Regulations and the Amendments recommended.

Under this heading the Report is to the effect that the existing scale in regard to the stability and sea-going qualities of the ship itself and to the carriage of the boats required which has been in vogue for the last twenty years are "adequate for all ordinary emergencies." Therefore from this we are left exactly as we were before the "Titanic" disaster. Such an opinion is indicative of the worthlessness of the trouble, time, and labour expended in the deliberations of the Committee.

Qualifications of Masters and Officers in Home Trade Cargo Vessels.

I do not understand why this matter was brought forward for the consideration of the Committee at the last moment, for it was only dealt with at the two final meetings of the Committee. A Bill had already been framed by the Board of Trade and presented to Parliament and consequently the matter had passed out of the range of the Committee.

I disagree entirely with the Report on this matter. It is not correct in substance and in fact.

In our letter of the 5th July, 1911, to the Board of Trade, the tonnage therein recommended—but which I strongly opposed—was "200 tons," which certainly I myself understood meant 200 tons *gross tonnage*. Our letter of the 5th July, 1911, did not recommend "200 tons register," as is stated in the Report. I am of opinion that a coasting cargo vessel should, in every case, have a duly certificated master. When over 50 tons *gross tonnage*, she should have one certificated officer in addition to the master, and when over 500 tons *gross tonnage*, two certificated officers acting under a duly certificated master. I am not in agreement with the "licensing" of masters and mates in vessels of less than 200 tons register as recommended in the Report. After all, it is merely a distinction in name, though the object evidently is that such "licences" shall be far more easily obtainable than what are now known as "certificates." It is my desire to quote the following extract from a letter which the Merchant Shipping Advisory Committee addressed to the Board of Trade on the 1st May, 1911:—

"We have to state that, while the object of the Bill is one which, as the Board of Trade are aware, meets with the Committee's cordial support, the Committee fear that this object will not be adequately attained if all vessels of less than 200 tons are exempted from the requirement to carry a duly certificated master and mate.

"Vessels of less than this tonnage are frequently engaged in trading operations requiring just as great skill in navigation as is required from the master and officers of larger vessels, and it is in the case of the smaller vessels that the greatest danger of the employment of unqualified persons exists. We have also to point out that all trawlers of 25 tons and all line fishing vessels and drifters of 50 tons are required to carry a duly certificated skipper and second hand.

"In view of these considerations the Committee desire us respectfully to recommend that the Bill should be framed so as to provide for the employment of a certificated master and mate on all home-trade cargo ships of 50 tons burden and upwards."

Again, no recommendation whatever is made as to the radical alterations necessary in the law as to carrying an adequate number of certificated officers on foreign-going ships. Under the law as it stands, it is open for a similar ship to the "Titanic" to proceed to sea with a certificated master and one certificated officer only. In the interests of safety and efficient manning it is high time that a proper and adequate scale was framed and laid down by the Legislature. No matter how big the tonnage of a merchant ship may be, there is nothing incumbent upon her as regards her carrying a proper supply of certificated and responsible officers. According to Recommendation 30 of the Report of the Manning of Merchant Ships Committee (1896) "a ship is in an unseaworthy state when she leaves port without certificated officers or with her responsible officers unfitted for their duty by reason of prolonged overwork." The Manning of Merchant Ships Committee therefore recommend that vessels of 500 tons gross and over should have two mates, and of 2,000 tons and over three mates. No steps whatever, have been taken by the Board

of Trade in enforcing these Recommendations, although the Manning of Merchant Ships Committee stated that they "urgently demanded legislation." The present Report as it stands is, in my opinion, hopelessly inadequate in this respect.

I have little further to add, except that I am of opinion that the Board of Trade is in need of far more nautical assistance at headquarters in order that the Marine Department may be possessed of the fullest facilities for obtaining and acting upon the opinions of those who are personally familiar with the technicalities of seafaring in all its many branches, and with the multifarious difficulties which have to be contended with at sea and in connection with so many matters of importance concerning merchant ships. It is my experience as a practical seaman, and also that of the members of the Imperial Merchant Service Guild, that many of the troubles which now exist in the service are due to the fact that it is dealt with in a theoretical instead of a thoroughly practical way. I am of opinion that whatever steps may be taken in securing international uniformity in any new regulations or requirements which may be imposed upon the shipping industry, it is essential that those familiar with active seafaring in all its branches, whether on the quarter-deck, in the engine-room, or in the fore-castle, should be invited to serve and should figure far stronger, numerically speaking, than is usually permitted by the Board of Trade.

I have the honour to be,
Sir,

Your obedient Servant,
GEORGE N. HAMPSON.

NOTE BY THE CHAIRMAN.

I have read the Reservation signed by Captain Hampson, and, inasmuch as the general views therein expressed were never placed by him before the Committee, I would submit the following observations thereon:—

1. Captain Hampson neither at the meetings of the Committee nor at the Sub-Committees questioned the practical value of the recommendations made in the Report. Further he never suggested to the Committee that there were matters which are neither contained in the Report of the Committee nor in the Report of the "Titanic" Court of Inquiry which might have a direct bearing on the questions referred to the Committee.

I am at a loss to understand Captain Hampson's reference to the Report of the "Titanic" Enquiry, as neither he nor any other member of the Committee has yet seen that Report.

2. The general question of the manning of the Mercantile Marine, both as regards officers and crews, has during the last four years been repeatedly considered by the Committee. At its recent meetings the Committee, as it was sitting as the Statutory Life-Saving Appliances Committee, dealt only with the manning of the boats and other life-saving appliances, and it has postponed for further consideration the general manning question.

Captain Hampson states that the Report contains "no practical suggestion as regards 'ships' crews in future being possessed of a thorough knowledge of boat drill and the 'management of boats,' because, as he implies, the Committee's recommendation requires only the carrying of 'efficient deck hands.'" The recommendations (paragraph 34) of both the majority and minority on the Committee require the carrying of "efficient boat hands," and Captain Hampson in his Reservation himself uses the word *efficient*, no doubt because neither he nor any other members of the Committee could think of a better.

3. Neither Captain Hampson nor any other member of the Committee suggested that it would be possible on the large passenger ships to carry boats immediately attached to davits sufficient to accommodate all on board. The Committee's recommendations for meeting this position are contained in paragraph 20 of the Report, and those recommendations were accepted by Captain Hampson without protest or suggestion.

4. The risk of fire was considered by the Committee in settling their recommendations in regard to boat accommodation. Captain Hampson did not bring before the Committee any proposals to remedy the now alleged inadequacy and inefficiency of the present regulations and appliances for extinguishing fire on merchant ships.

5. There was a marked difference of opinion between the representatives of the Officers and Engineers on the Committee in regard to the qualifications of the Board of Trade Surveyors. The Committee, as a whole, purposely refrained from taking either

side in this controversy and has recommended that the surveyors should be "fully qualified for the particular duties entrusted to them" (paragraph 43).

6. The Committee throughout its inquiry paid the same regard to the safety of the lives of the crews of the ordinary cargo ships as to the safety of the lives of the passengers and crews on the passenger ships. Captain Hampson never suggested at any of the meetings that any distinction was being made, and to now make the suggestion is to entirely misrepresent the motives of the Committee.

Neither Captain Hampson nor any other member of the Committee suggested to the Committee that cargo vessels should be subjected to compulsory survey periodically by the State.

7. The conclusions drawn by the Committee from the experience of the last 20 years were arrived at unanimously and were unquestioned by Captain Hampson.

8. The report in regard to the qualifications of masters and officers in the Home trade ships is true in substance and fact. The Committee has adhered to the opinion it has already held as to the necessity for certificating the Masters, Officers, and Engineers in this trade, but of also making the examinations appropriate to the trade in which the smaller classes of vessels, for which the certificates are granted, are actually employed.

27th July, 1912.

NORMAN HILL.

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APPENDIX 1.

REPORT of SUB-COMMITTEE on the question of the TYPE and CONSTRUCTION of OPEN LIFEBOATS.

1. In accordance with the decision of the Merchant Shipping Advisory Committee at their meeting on the 26th April last, we have given careful consideration to the question of the type and construction of open lifeboats and to the draft new rules dealing with this question which were enclosed in the letter of the 16th April from the Board of Trade.

2. Captain Young, Professional Adviser to the Marine Department of the Board of Trade, attended two of our meetings in order to explain in detail the nature of the information which has led the Board to propose a revision of the rules, and we have also taken evidence from the following representatives of boat-builders:—

Mr. W. B. Kyffin, representing Messrs. Grayson, of Liverpool.
Mr. Frank Winram, senior partner, Messrs. P. Winram and Son, of Liverpool.
Mr. Smaridge (Messrs. B. Smaridge, of Liverpool).
Mr. Barnes (Messrs. C. Howson, of Liverpool).
Mr. J. H. Pounder, West Hartlepool.
Mr. Lambie (Messrs. Lambie Brothers, Wallsend-on-Tyne).
Mr. Hamblin (Messrs. N. Hamblin and Company, of Blackwall, London); and
Mr. T. D. Sanders, representing Messrs. King and Company, of Limehouse, London.

3. We have also, through the courtesy of the White Star Line, had an opportunity of inspecting the lifeboats and other life-saving appliances on board the s.s. "Laurentic," and of practically testing one of the vessel's 30-foot lifeboats which was lowered and filled with its full complement of 65 persons.

4. We now have the honour to make the following report:—

The question of the construction of open lifeboats was first brought to the notice of the Advisory Committee in a letter from the Board of Trade, dated the 17th May, 1911. In that letter the Board called attention to a tendency on the part of some boat-builders to increase the depth of boats beyond a proper proportion, and asked the Committee for their opinion as to whether it would be advisable to prescribe a maximum depth for boats, compared with their breadth, and, if so, what that proportion should be.

5. After inquiring into this matter the Committee replied on the 4th July, 1911, recommending that, in future, the depth of lifeboats supplied to a British merchant vessel should not exceed 44 per cent. of the breadth.

6. Since the receipt of this recommendation the Board of Trade have given consideration to the whole question of the construction of open lifeboats, and their officers at several ports have made practical tests of lifeboats actually in use in the merchant service, and, as a result of these inquiries, the Committee have been asked to advise on the draft new rules accompanying the Board's letter of the 16th April last. The draft rules are not only designed to place a limit on the depth of lifeboats, but also contain general provisions as to the form and construction of boats, the main object being to prolong the form or fullness of dimension of the midship body under-water well towards both ends of the boat.

7. The principal points to which we have directed our inquiry are:—

- (1) Whether, and, if so, to what extent the existing rules have proved inadequate in securing the provision of an efficient type of lifeboat to merchant vessels; and
- (2) Whether the suggested new rules provide for a satisfactory type of boat.

8. We have unanimously arrived at the conclusion that an amendment of the existing rules as to the type and construction of open lifeboats is necessary.

9. The present rules provide that the cubic capacity of a boat shall be ascertained by Stirling's rule, but "that, as the application of that rule entails much labour, the following simple plan, which is approximately accurate, may be adopted for general purposes, and when no question requiring absolute correct adjustment is raised:—

"Measure the length and breadth outside, and the depth inside, multiply them together and by '6'; the product is the capacity of the boat in cubic feet."

10. The number of persons which a boat is deemed fit under the rules to carry is ascertained, in the case of a Section (A) open lifeboat, by dividing the cubic capacity by 10, and in the case of open boats of Sections (B), (C), (D), and (E), by dividing the cubic capacity by 8.

11. This method of arriving at the number of persons which a boat can accommodate is no longer satisfactory. The rule accurately ascertains the cubic capacity in the case of boats of full form. There is, however, no doubt that, in the case of a number of boats supplied to merchant vessels, there has been a tendency which has apparently developed by gradual stages, to build the boats on finer lines, and to increase the depth of the boats disproportionately to the breadth, with the result that in boats of this type—

- (1) the efficient handling of the oars has been unduly interfered with; and
- (2) as measured by the Board of Trade rule, they are incapable of carrying, without overcrowding, the full number of persons for whom they are certified.

12. The advisability of prescribing a maximum depth for lifeboats of the types at present in use is strongly emphasised by all the information before us, and by the unanimous evidence of the boat-builders whom we examined, and we think that the necessity for an amendment of the rules so as to deal with this point is clearly shown. The proposal in the draft rules attached to the Board of Trade letter is that the depth used in calculating the cubic capacity of a boat shall not, in any case, exceed 3'60 feet, and that, if the actual depth measured is equal to or less than 3'60 feet, the depth used in calculating the cubic capacity shall not exceed 45 per cent. of the breadth. We consider that an amendment on these lines will be satisfactory.

13. The provisions contained in Rule 3 (B) of the draft new rules are intended to guard against the tendency unduly to fine away the ends of a boat. Their effect is to prescribe a standard model; the full form of boat which would result from their adoption is one which is favoured by expert opinion generally; and the risk of undesirable types of boats coming into use, which attaches to the practice of using a midship mould only and building the boat "to the eye," would largely be obviated.

14. We accordingly concur in the proposals embodied in the draft new rules for improving the form of lifeboats.

15. An important question arises in connection with the boats at present in use in the merchant service or under construction, for it is inevitable that a number of these boats will not conform with the proposed new requirements.

16. If it were the case that any of the boats which have passed into use under the existing rules were unsafe, we should have no hesitation in recommending that they should be condemned and replaced by boats built according to the proposed new rules. The information before us, however, which is shown by our inquiries to be in accord with the views of the Board's technical advisers, is that the boats now in use are not in themselves unseaworthy, but that a certain proportion of them, owing to the lines on which they have been built, could not with safety accommodate the maximum number of persons for whom they are certified.

17. We have consequently had to consider what measures of a retrospective character should be adopted, and we have come to the conclusion that, in the case of boats which have been supplied to merchant vessels before the new rules come into force, and which on remeasurement do not in all respects comply with the new requirements, the present rules for arriving at the cubic capacity should continue to apply, but that the figure by which the cubic capacity is divided in order to ascertain

the number of persons which the boat is deemed fit to carry should be increased from 10 to 12 in the case of open boats of Section (A), and from 8 to 10 in the case of open boats of Sections (B), (C), (D), and (E).

18. In making this recommendation, we desire to suggest a modification so far as regards steamships not certified to carry passengers, and engaged in the foreign trade (Division A, Class 4) or plying anywhere within the Home Trade limits (Division C, Class 1). Such vessels, under the existing rules, must carry sufficient boats *on each side of the ship* to accommodate all persons on board, and we think that it will be sufficient for the owners either to show that the boats comply with the rules, or to make good any deficient accommodation by the addition of a boat to bring up the total capacity to double that required for all persons on board. Provided such additional boat be carried so as to be readily available for launching we do not think that it need be carried under davits.

19. We have two other suggestions to put forward with regard to the construction of boats.

Under the present rules, and also under the proposed new rules, internal buoyancy apparatus may be constructed of wood or of copper or yellow metal of not less than 18 ounces to the superficial foot, or of other durable material. We have received evidence to the effect that wooden buoyancy tanks are rarely used, and that they are apt to leak, and are less durable than tanks constructed of metal. We recommend that buoyancy apparatus constructed of wood should be prohibited in all boats supplied in future.

20. We further consider that the Board of Trade should issue regulations to secure uniformity in the scantlings of lifeboats.

21. Subject to the modifications suggested above, we consider that the proposed new rules will, if carefully applied, be successful in securing the provision of a satisfactory type of boat. We cannot, however, insist too strongly on the necessity for a constant supervision of boat-building in order to guard against any departure from the spirit of the new requirements such as has admittedly taken place under the existing rules.

22. From the evidence given to us it appears that many boats are at present not inspected by the Board of Trade Surveyors until they are actually completed. We understand that fresh instructions with the object of meeting this point have been issued during the last two or three years, but we recommend that more systematic steps should be taken to inspect the boats frequently during process of building. We further recommend that every boat supplied to a merchant vessel should be accompanied by a certificate from the Board of Trade. The extra work consequently involved will possibly necessitate an increase in the staff of the Board of Trade Surveyors and, in that event, we suggest that the Board might well consider the advisability of appointing a number of Surveyors with practical boat-building experience.

S. CROSS (Chairman).
CHAS. BARRIE.
WM. CORKHILL.
J. HENSON.
NORMAN HILL.
MICHAEL JOYCE.
WALTER RUNCIMAN.*
T. SPENCER.

* Sir Walter Runciman's signature is subject to the fact that he disagrees with the last sentence in paragraph 22.

APPENDIX 2.

REPORT of the SUB-COMMITTEE on WIRELESS TELEGRAPHY.

1. In accordance with the request of the Merchant Shipping Advisory Committee we have given careful consideration to the position of wireless telegraphy in regard to the preservation of life at sea, and, in particular, to the question whether steps should be taken to make the installation of wireless telegraphy compulsory in British merchant ships and, if so, to what extent and under what conditions.

2. We have had the advantage throughout our Inquiry of the assistance of Commander F. G. Loring and Mr. J. I. de Wardt of the Post Office, and of Lieutenant J. A. Slee of the Admiralty, and we are indebted to these gentlemen and to their Departments for the information which has been placed at our disposal, but we should add that we are alone responsible for this Report.

3. Wireless telegraphy has proved of the greatest service in the preservation of life at sea both by providing means by which every vessel fitted with wireless apparatus can, if in distress, summon to its assistance all other vessels similarly fitted within its range, or, if within reach of a land wireless station, can get help despatched from the nearest available point, and also by providing means by which warnings of dangers such as ice, derelicts, &c., can be communicated in favourable weather conditions with the greatest rapidity and certainty and between vessels on their voyages.

4. Having regard to its proved value, we are of opinion, that the time has now come when the State may reasonably prescribe the class or classes of vessels on which a wireless installation shall be compulsory, and the conditions which are to govern its use.

5. Before proceeding to set out our recommendations we think it desirable to review, briefly, the present position from the standpoint of the British shipowner who is prepared, without compulsion, to provide his vessels with radio-telegraphic installations. After passing under consideration the various types of installation which are at present in the market, we have been brought face to face with the fact that practically all British merchant vessels at present fitted with wireless telegraphy use installations under the control of Marconi's Wireless Telegraph Company. A few, but, so far as we can learn, not more than 20, British vessels have been supplied with installations by the Helsby Wireless Telegraph Company or by Messrs. Siemens Brothers, who are the agents for the Telefunken system in this country. On foreign vessels other systems—in particular the Telefunken system—appear to be largely used.

In order to arrive at an opinion as to the present commercial position we have taken evidence from Mr. Godfrey Isaacs, the Managing Director of the Marconi Company, Mr. F. Hird, representing Messrs. Siemens Brothers, Lieutenant-Colonel J. Bernard, Chairman of the Helsby Wireless Telegraph Company, and Mr. F. J. Chambers, Chief Engineer of the same Company.

The evidence makes it clear that the Marconi Company, relying mainly on their Patent No. 7777 of 1900, and on the extended Lodge Patent No. 11575 of 1897 (the rights of which they have acquired), claim what amounts to a monopoly in this country.

This claim is disputed by Messrs. Siemens Brothers and by the Helsby Company, but both of those Companies are desirous of obtaining from the Marconi Company a licence to use the Lodge Patent. The Marconi Company are bound, under the extension of the Lodge Patent, "to grant licences to all who desire to make use of the protected invention on such terms as a duly qualified arbitrator to be nominated by the Board of Trade shall think fair and reasonable"; and on the application

of the Helsby Company the terms upon which such a licence is to be granted are at present the subject of arbitration. But whatever may be the result of these proceedings the Marconi Company contend that the Lodge Patent cannot be worked effectively without an infringement of their Patent No. 7777.

The Marconi Company, who have been successful in such patent actions as have been concluded in this country, have, we understand, instituted legal proceedings to prevent the use of the Telefunken system, and in at least one of the actions they have joined as defendants the shipowners who have installed that system. On the other hand we understand that Messrs. Siemens Brothers have instituted legal proceedings against the Marconi Company in which they challenge the validity of the Patent No. 7777. We can express no opinion on the matters in dispute but we have arrived at the conclusion that any British shipowner dealing with the Marconi Company's competitors will do so at the risk of costly litigation, and, further, that, as matters stand at present, any effective competition with the Marconi Company in the supply of installations may be impracticable.

In considering the present commercial position it must be further borne in mind that so long as the rival patents are held in only a few hands, there is risk of the competitors amalgamating or of pooling their commercial interests so as to obtain, on joint account, the best possible price for all their installations. This risk is emphasized by the fact that whilst the Telefunken system is at war with the Marconi system in this country they are apparently working as an amalgamated company in Germany.

6. It would, in our opinion, be impossible to require, by law, merchant vessels to be fitted with wireless telegraphic apparatus if thereby shipowners were delivered into the hands of a monopoly which could impose such terms as it pleased without stay or hindrance.

Before Parliament can apply compulsion to any class of ship it must therefore, in our opinion, first establish the conditions of a free market in the installations, or otherwise ensure their supply to merchant vessels at a reasonable commercial cost and under reasonable commercial conditions. This is a point to which we attach great importance and the recommendations we are about to make are subject to such an arrangement being arrived at.

7. We would, in relation to the questions we have been discussing, again emphasise the point that we have looked at the question of the installation of wireless telegraphy on merchant ships solely from the point of view of saving life.

This is the only point of view which is relevant to our inquiry and, in our opinion, it is the only consideration which should govern legislative enactments on this subject. Shipowners themselves should be left to deal with the question of the installation of wireless telegraphy for commercial purposes or for the convenience of passengers; and we fully recognise that in regard to installations for such purposes the wireless telegraphic companies are entitled to obtain from the shipowner the best terms their command of the market will secure to them.

8. For the purpose of considering what compulsory requirements should be imposed, we have divided the merchant vessels into three classes:—

- (1) Foreign-going vessels carrying passengers.
- (2) Home trade vessels carrying passengers.
- (3) Vessels not carrying passengers.

9. In vessels of the first class, with many people on board, the installation of wireless telegraphy is, in our opinion, a necessity, and we therefore recommend that all foreign-going vessels, British and foreign, carrying passengers from or to the United Kingdom and having on board 50 persons or more, including both passengers and crew, shall be required to be equipped with radio-telegraphic apparatus.

10. With regard to vessels of the second class, another Sub-Committee is considering what requirements may properly be imposed on home trade vessels carrying passengers, and we feel that the Merchant Shipping Advisory Committee will wish to take into account the Report of that Sub-Committee before deciding on the advice to be tendered to the Board of Trade as to the installation of wireless telegraphy on such vessels. We accordingly make no recommendation as to these vessels, subject to what is said below as regards the range of the apparatus and the number of operators to be carried on such of these vessels as shall be required to carry the installations.

11. The position of the vessels in the third class which do not carry passengers requires careful consideration. We recognise the desirability of an adequate number of vessels, using the established trade routes of the world, being equipped with wireless installations, so that a distress call at sea may have the greatest chance of receiving attention; but from the life-saving point of view we think that little would be gained by requiring the cargo-carrying vessels which trade otherwise than on regular trade routes where the passenger vessels are limited in number and consequently not in constant touch with one another to be fitted with the installations, whilst it must be borne in mind that the more ships there are fitted with wireless telegraphy the more complicated becomes the control. It must be recognised, however, that if the class of vessels under consideration were brought under the compulsory rules they would, in the great majority of cases, be carrying the installations for the benefit of others, and not for their own benefit. These vessels are required by the existing Life-Saving Appliances Rule to provide, on each side of the ship, sufficient boat accommodation for everyone on board. These vessels are, in many instances, carrying their cargoes in keen competition with the cargoes carried on the passenger ships, and whilst the passenger ships may hope to place the cost to which they are put in providing the additional safeguards, in whole or in part, upon the passenger fares, the cargo vessels can expect no return in increased freights for equipping themselves to be in readiness to render assistance to passenger vessels in distress.

Having regard to these considerations, we are of opinion that if Parliament, in the interests of the community, compels any of the cargo vessels to carry wireless installations, the owners of such vessels should be reimbursed out of public funds for any expenditure imposed on them by complying with such compulsory requirements.

If the community are not prepared to bear this expense, then in our opinion compulsion cannot be justly applied to this third class of vessel.

12. As regards the range of the installations to be provided, we are of opinion that in the foreign trade an installation capable of a normal range by day of 100 miles overseas will be effective for life-saving purposes.

13. The minimum range necessary for the home trade passenger vessels depends very largely upon the locality in which the vessel is trading. We understand that the Post Office have arranged, or are arranging, their stations round the coast of the United Kingdom on the principle that any ship off the coast will be in touch with one of the coast stations if she is fitted with wireless apparatus having a range of 100 miles. In the case of many home trade passenger vessels, which are always by the nature of their trade within easy reach of a coast station, a range of considerably less than 100 miles will be sufficient, and after careful consideration we recommend that home trade passenger vessels, to which wireless telegraphy may be compulsorily applied, should be required to be fitted with an apparatus having a range which is deemed by the Board of Trade to be sufficient having regard to the coast stations available, and the nature of the trade in which the vessel is engaged.

14. In our opinion, the space occupied by the installations should not be added, in calculating the tonnage for any purpose.

15. We are further of opinion that in the case of all vessels compulsorily fitted with wireless telegraphy, the regular installation should be supplemented by some form of energy-transmitting apparatus employing accumulators or dry cells, or some other effective supplementary motive power, and capable of working for not less than four hours after the current supplied by the ship's engines has failed.

16. Any compulsory provisions for the installation of wireless apparatus should, in our opinion, be preceded by a comprehensive review by the Post Office of their present system of receiving stations with a view of establishing such stations at every point, whether on the coast or on light ships or in lighthouses, at which they can be most effectively used for the preservation of life at sea. We have been informed that it is the intention of the War Office to abandon the military wireless stations in the Channel Islands and that the Post Office do not see their way to open a wireless station in the Islands for ship and shore work unless they are guaranteed by the lines whose vessels trade in those waters a certain income. If the carrying of the installations on the passenger ships is to be made compulsory, the policy upon which such a demand was based must be entirely

abandoned. The necessary receiving stations must be maintained as a national duty, and without regard to questions of commercial returns.

17. At the present time the land stations are instructed, in the event of receiving messages of distress, to communicate at once with the coastguard and life-boat stations nearest to the place of disaster and with Lloyd's and the Underwriters' Associations at Liverpool and Glasgow, and further to use every other possible method of securing that prompt assistance is rendered to the distressed vessel.

In order that the time expended in communicating the distress messages received may be reduced to a minimum, we recommend that every possible effort be made to establish, so far as is consistent with efficiency, the land stations at points in immediate touch with the ports from which the most effective assistance can be sent.

18. We further hope that all possible steps will be taken to improve the system of land wireless stations in other parts of the world with special reference to the desirability of providing means for a vessel in distress to communicate with the shore.

19. It is in our opinion absolutely essential, in the interests of safety, that there shall be unimpeded inter-communication between ship and ship without regard to the particular system of radio-telegraphy adopted by the two vessels. We understand that, as a matter of fact, a distress message is always accepted, whatever may be the system by which it is transmitted, but the right of free inter-communication in regard to ice, derelicts, and other dangers is so important that we think that it should be placed beyond all doubt, and we hope that the Government will now see their way to adhere to the additional undertaking appended to the International Radio-telegraphic Convention of November, 1906.

20. There remains the question of the efficient working of the installations.

The period during which the installation should be in operation is a matter to which we have given very careful consideration, and we are of opinion that to make wireless telegraphy of the greatest possible use for saving life at sea arrangements must be made to ensure that no signal of distress or danger within the range of the instrument will be missed.

We have made enquiry whether it would be possible to dispense with constant attendance at the installation by means of some system of call by signal or bell. Although automatic devices of this kind have been invented, none of them have up to the present time been found reliable in practice, and, pending the introduction of a satisfactory device, we consider it essential that a permanent watch on the installation should be kept.

We recommend that all foreign-going vessels compelled to be equipped with wireless apparatus should be required to carry one fully qualified operator, and in addition such assistants as will enable a constant watch to be maintained during the absence of the operator. Such assistants must possess sufficient experience to be able to recognise at once a distress or danger signal, but they need not be qualified either to receive or to send messages.

From the life-saving point of view it is clearly not necessary for any vessel to keep open, throughout the 24 hours, a telegraph office for the receipt of either commercial or private messages, and, therefore, whilst the skilled operator is off duty it would be quite reasonable for the assistant on watch to ignore all but distress or danger calls.

The qualifications required from a skilled operator are already definitely laid down by the International Regulations.

In the case of the assistants we are informed that no great amount of skill is necessary. Their sole duty will be to listen for a distress or danger signal and, in the event of such a signal being received, to summon the operator to the installation. We are advised that the training required in order to secure the efficient performance of this duty is not considerable, and that it would not be beyond the capacity of any reasonably intelligent member of the ship's company. In this connection it has been suggested, and we think the suggestion a good one, that training ships and schools for the Mercantile Marine should be encouraged to give a preliminary training in wireless telegraphy to the boys under their charge so as to fit them to discharge the duties of an assistant to the skilled operator.

In the case of home trade passenger vessels, we do not think that assistants will be necessary.

21. Finally, it should, in our opinion, be impressed upon all concerned that the operator should be under the captain's control, and that every message transmitted and received by the operator (other than private messages to or from passengers sent whilst the installation is being worked under the captain's orders for the sending of such messages) should be transmitted and received under the control of the captain.

NORMAN HILL (Chairman).
RAYMOND BECK.
GEO. N. HAMPSON.
JOHN INGLIS.
ROBERT A. OGILVIE.
HENRY RADCLIFFE.
J. A. ROXBURGH.
T. SPENCER.
F. S. WATTS.

Man. man, installed in the station
1913
1913

APPENDIX 3.

REPORT of the Sub-Committee on Atlantic Steamship Routes.

In pursuance of the powers given to us on our appointment we co-opted on the Sub-Committee Mr. Thomas Royden, the President of the Chamber of Shipping and the Deputy-Chairman of the Cunard Steamship Company, and Captain James Birnie Watt who, prior to his retirement in 1908, had been in command for upwards of 15 years of mail steamships of the Cunard Line running between Liverpool and New York.

We have had evidence placed before us on behalf of the British Lines by which the existing routes were established and are maintained; and in the consideration of the questions referred to us we have had the benefit of the advice of Commander M. W. Campbell Hepworth, C.B., R.D., R.N.R., the Marine Superintendent of the Meteorological Office and of Captain J. F. Parry, R.N., Assistant Hydrographer of the Navy.

Before submitting to the Committee the conclusions at which we have arrived, it is, we think, advisable that we should state shortly the manner in which, and the reasons for which, the existing routes across the North Atlantic were established, and that we should summarise the evidence we have obtained, showing how those routes have been worked.

UNITED STATES ROUTES.

The Origin of the Routes.

For many years, certainly for upwards of 20 years prior to 1896, some of the British North Atlantic passenger lines had advocated the adoption of definite and distinct routes in the North Atlantic for vessels west and east bound. In 1876 the late Mr. Thomas Henry Ismay, the then Chairman of the White Star Line, submitted definite proposals to the British and foreign passenger lines engaged in the New York trade for the adoption of the "Steam Lanes" across the North Atlantic advocated by Lieutenant Maury on the ground that by their general adoption the risks of collision between outward and homeward bound vessels, and with ice, would be materially lessened. General agreement could not at that time be secured, but many of the Lines laid down lane routes of their own which, though differing somewhat, were on the whole well adhered to.

In 1891 most of the principal passenger lines, after careful consideration, agreed on definite Northern and Southern Routes, the former being operative from the middle of July to the middle of January, and the latter during the remainder of the year. The Southern Route was specially designed to keep the vessels as clear as practicable of the ice and fog which experience had taught were liable to be encountered on any more northerly route at that season.

The Establishment of the Existing Routes.

In 1898 the routes established in 1891 were reconsidered, more especially in regard to the necessity of placing the Southern Route still further to the south, and to the postponement of the date of the return to the Northern Route; and a general agreement was, for the first time, arrived at between all the principal British, American, and Continental passenger lines and some of the principal British cargo lines trading to the United States. This general Agreement was arrived at in November, 1898, at a meeting, summoned by Mr. Ismay, and held in London. A copy of the Agreement, which is dated the 15th November, 1898, and of the Track Chart therein referred to is annexed to this Report.

The purposes for which the Routes were established.

The Northern and Southern Routes, and the seasons for their use, adopted under this Agreement were fixed so as to minimise, as far as practicable, the risks of encountering ice and fog; and independent eastbound and westbound courses, which at their greatest distance are some 50 miles apart, were adopted on both routes to obviate the risk of collision between outward and homeward bound vessels. In establishing these definite routes the Lines had also in view the advantages to be gained by keeping, throughout the voyage, as many vessels as possible, all going one way, in touch with one another, so that help might be forthcoming in the event of any one vessel becoming disabled.

The routes so fixed have since their adoption in 1898 remained the standards; but the Southern Route has been varied, by agreement between Lines, during four ice seasons.

The Lines using the Routes.

The Lines now parties to the Agreement are the following:—

American,
Atlantic Transport,
Cunard,
Furness,
Hamburg-American,
Holland Amerika,
William Johnston & Co., Ltd.,
National Steamship Co.,
North German Lloyd,
Red Star,
Wilson,
White Star,
Leyland,

and the Compagnie Generale Transatlantique, subject to a slight reservation as to the dates on which the Northern and Southern Tracks are to come into operation.

The Reporting of Dangers on the Routes.

For the protection of the vessels using the routes a very complete system for the collection and interchange of information as to ice, derelicts, floating wreckage, &c., has been organised by the Lines. Reports of all such dangers observed on the voyage are now made by wireless telegraphy from each ship to its owners, and are communicated by the owners immediately as received, by telephone, telegram or cable, to all the other Lines. Further, the Lines communicate and receive all information available in regard to such matters to and from Lloyds, the Meteorological Office and the Press. Further, all possible steps are taken on both sides of the Atlantic, and by wireless communication between the ships at sea, to make the warnings received known immediately to all vessels using the routes.

The Meteorological Office publish weekly a North Atlantic Chart, upon which is shown the position of ice reported up to the actual date of printing, but, although these charts are of the greatest use as records, they do not, and cannot be made to, take the place of the system which has been built up by the Lines for the immediate communication of warnings as received. The charts are in fact prepared from the information supplied to the Meteorological Office by the Lines, and by the time the weekly chart is published every vessel on the routes carrying wireless telegraphy will have been already warned.

The general use of the Routes.

The routes have been shown for many years on the Admiralty Charts of the North Atlantic, and they are followed by many vessels of all nationalities whose owners are not parties to the Agreement. The total number of vessels using the routes cannot be stated, but the passenger lines sailing between the United Kingdom and the Continent and the United States and Canada have since 1898 made on the average upwards of 1,600 voyages per annum each way. The routes have, in fact, become so well established, and their value has been so generally recognised, that in claims brought before the Admiralty Court for remuneration for salvage services rendered to disabled vessels in the North Atlantic, the value of such services is very commonly emphasised or minimised on the ground that the disabled vessel when taken in tow has been drifting off or on to the route.

The Observance of the Routes.

The Lines parties to the Agreement insist on a strict observance of the routes under normal conditions by every vessel under their control, but they allow to every master full discretion to deviate in the interests of safety or precaution. They allow no cutting of corners for the purpose of record breaking, and upon this point not only does each Line exercise a careful supervision over the tracks followed by its own vessels but also over the tracks followed by the vessels of its competitors. From the evidence before us we are satisfied that, with rare exceptions, the routes are generally adhered to by the Lines parties to the Agreement.

How far the Routes are Safe and Prudent Standard Tracks.

We are further satisfied, and in this opinion we are confirmed by Commander Hepworth, the Marine Superintendent of the Meteorological Office, that the routes are safe and prudent standard tracks. They were fixed by the Lines in 1898 after

at least 20 years of careful observation, and after other routes had been tried and abandoned, and prior to the loss of the "Titanic" they had been used for over 13 years, as the standard routes with marked freedom from casualties.

But although they are under normal conditions safe and prudent Routes, it must be clearly recognised that to meet abnormal Ice Seasons they must be subject to variation. That this fact has been recognised by the Lines is shown by their having carried the Southern Route further to the Southward in four Ice Seasons since 1898, namely, on the 28th April, 1903, the 7th May, 1904, the 14th April, 1905, and the 25th May, 1906, as soon as it was discovered that the ice was coming to the south of its normal limits. In the present year the Lines have adopted an Extra Southern Route, but it was not adopted until after the loss of the "Titanic." In one year, 1906, the Lines returned to the Northerly Route in July.

It has been maintained that the Standard Routes should be fixed so as to keep clear of ice even in abnormal seasons, but we are of opinion that such a course is impracticable.

The routes should be so placed as to minimise the chances of meeting ice, but it must be recognised that the voyage to New York, and still more the voyage to the St. Lawrence cannot be made in the Spring and Summer so as to avoid all risk of encountering detached icebergs, which are occasionally met with even as far south as 30° latitude. Therefore, whatever routes are adopted, every vessel crossing the North Atlantic must be navigated with regard to this danger. But to secure freedom from ice risks is only one of the benefits derived from the organisation of the main streams of westbound and eastbound traffic on definite courses. The minimisation of the risks of collision, and the security to be obtained in the event of disaster from the presence on these ocean highways of the maximum number of vessels, all travelling in one direction, are of as great, if indeed not greater, importance; and these benefits can only be fully maintained so long as the routes are in themselves, from all points of view, reasonable routes between the ports served.

It must be remembered that the Southern Route has to be followed in the hot months of the year, and the adoption of any route to the southward of the existing standard route is, on account of the heat, not welcomed by the passengers themselves. In the face of the competition existing between the Lines it would be difficult, if not impossible, for them in normal Ice Seasons to abandon routes which years of experience have proved to be absolutely safe in favour of more Southerly Routes which would expose their passengers to a good deal of inconvenience.

The cargo liner and the general trading vessel, whose use of the routes is a matter of such great importance in minimising the risks of collision and as providing additional means of succour in the event of disaster, could clearly never be induced to abandon in normal years safe routes for others which would add substantially to the cost of the voyage without any corresponding increase in freight.

For these reasons we are of opinion that the Standard Routes must be fixed with regard to normal and not abnormal Ice Seasons.

Abnormal Ice Seasons.

We fully realise that the principle we think should be adhered to entails a heavy responsibility on those who have to distinguish the abnormal from the normal Ice Seasons, but we are of opinion that in the interests of safety this responsibility should rest, as it now rests, on the Lines. The change in the routes may in any Ice Season have to be made at short notice, and when made it is of the utmost importance that it should be adopted immediately by vessels of all nationalities using the routes. We doubt if any National, and still more if any International, State Organisation could act as promptly as the Lines themselves. Further, we think it of importance that the Lines themselves should realise that the seasons must be closely watched so that necessary changes may be made immediately occasion arises, and that the navigating officers should realise that the observance of the routes does not relieve them from the exercise of all seamanlike precautions. We are of opinion that there would be a weakening of the sense of responsibility in both the Managers of the Lines and in the navigating officers if the routes were prescribed by the authority of the State. On the facts now known it is clear that the present Ice Season is an abnormal one, and we have but little doubt that the Lines would, without the loss of the "Titanic," have, as in the years 1903 to 1906, altered the Southern Route to the southward, but unhappily the first ice of the season was not reported unusually far south until the 11th April, the day upon which the "Titanic" left Queenstown.

National or International State Aid.

In our opinion the safe working of the Route System can be best promoted by the collection of the data necessary to form, early in each year and before the ice begins to come south, as accurate a judgment as possible of the probable movement of the ice in the coming season. Much is already done, but we think that more might be done. The ice is carried south towards the routes by the Labrador current until its course is checked by the Gulf Stream, usually about 42° latitude. We are of opinion that if the breaking up of the ice and the start of its movement to the south and to the west were observed and followed each year from the beginning of March by observation vessels, equipped with wireless installations having a long range, stationed well to the north of the routes, great help could be given to the Lines in distinguishing in ample time the abnormal Ice Seasons.

Looking still further ahead, it must be borne in mind that the strength of both the Labrador current and of the Gulf Stream varies from year to year, and we think that it is possible that their probable variations, and, therefore, the probable distribution of the ice, in a coming ice season, may be foretold by very close observation of the temperature of the water over a wide range in the North Atlantic. Further, it is possible that a close observation of the weather in the Arctic and of the movement of ice in Davis Straits might afford most useful data in regard to the probable movement of the ice towards the routes in the next ice season. For example, Commander Hepworth is inclined to the view that the ice at present across the routes is ice which was broken up in the Arctic last year, where there was an open summer with very stormy weather; that it wintered on the coast of Labrador or to the north of Newfoundland; and that its early appearance on the routes and the unusual distance to which it has been carried south are to be attributed to these causes.

Upon all such subjects the Meteorological Office has now to depend mainly, if not entirely, upon information communicated to it voluntarily by the masters of trading vessels, including whalers. It has no observation vessels under its control, and it has no constant information from possible land stations at points of observation such as Cape Race.

It has been suggested that the routes themselves might be made more safe by the establishment of national patrol vessels; but we are of opinion that the vessels of the Lines which make upwards of 1,600 voyages in the year each way themselves constitute the most effective patrol of the routes possible for the detection of existing dangers, and that the State can more usefully help in collecting, from as wide a field as possible, and, in particular, from the sea immediately to the north of the routes, the data necessary for the formation of an accurate judgment as to the probable movement of the ice before and when it starts on its way south.

CANADIAN ROUTES.

The establishment of the existing Routes.

In the Canadian trade, some of the Lines have for many years followed regular routes at different seasons of the year, but there was no general agreement prior to 1911. In that year the agreement, a copy of which is attached to this report, was entered into. The routes are shown on the track chart we have annexed to that agreement.

The Lines now parties to this agreement are the following:—

Allan.
Canadian Pacific.
Cunard.
Dominion.
Donaldson.
Hamburg, American.
Holland Amerika.
New Zealand Shipping Company.
North German Lloyd.
Red Star.
Royal.
Shaw-Savill.
Thomson.
White Star.

The routes adopted under this agreement were based on the experience of the Lines gained over many years, and they are worked upon the same principles as the routes to the United States. They are of necessity to the north of the routes with which we have dealt in detail, and in the spring and summer months the vessels using them must be navigated with due regard to the possibility of meeting with detached icebergs.

THE ROUTE SYSTEM GENERALLY.

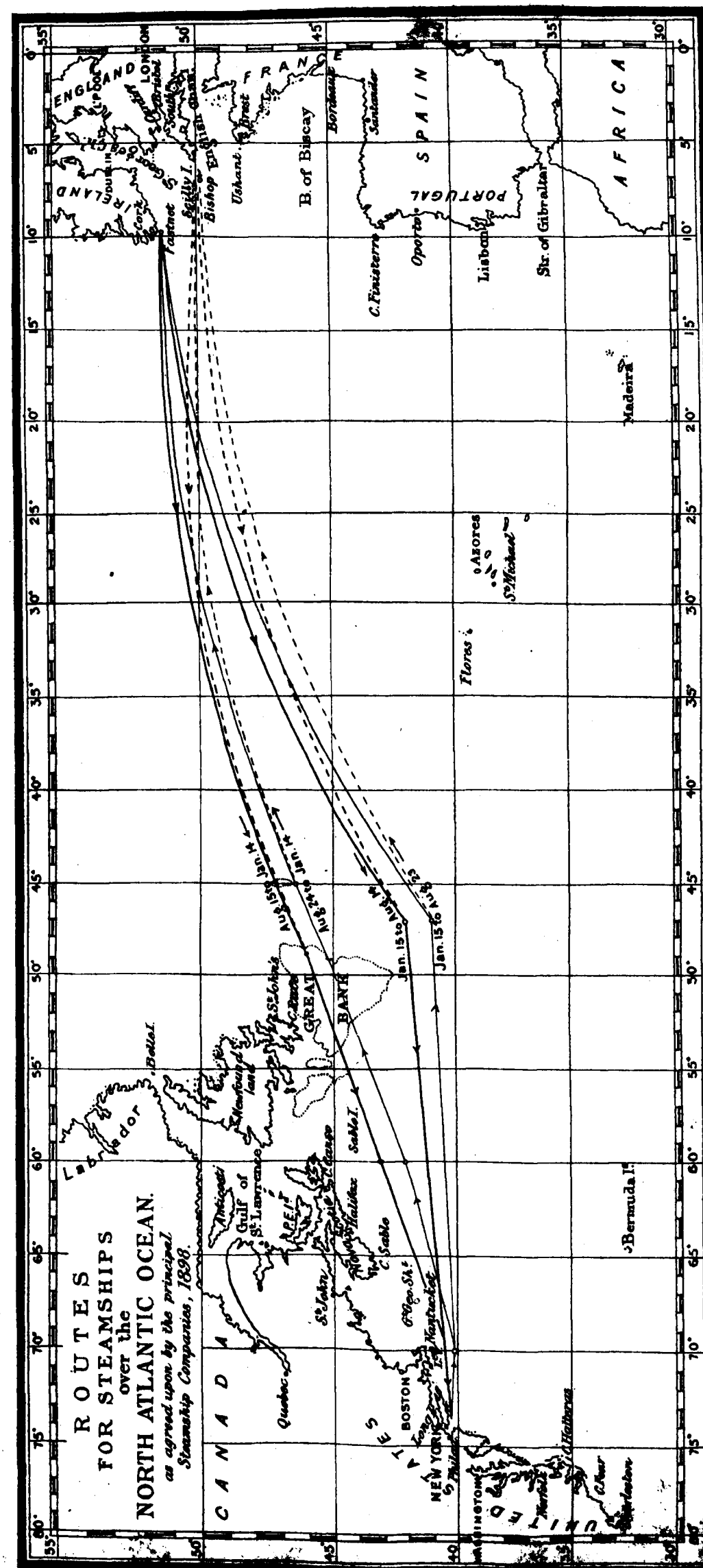
The route system is, in our opinion, one of the greatest protections that can be provided to secure the safety of the passengers and crews carried in the vessels crossing the North Atlantic; but, after careful consideration, we are of opinion that it is not a system which could be extended generally to other voyages in other seas upon which vessels are encountered on many divergent courses.

CONCLUSIONS.

We are of opinion:—

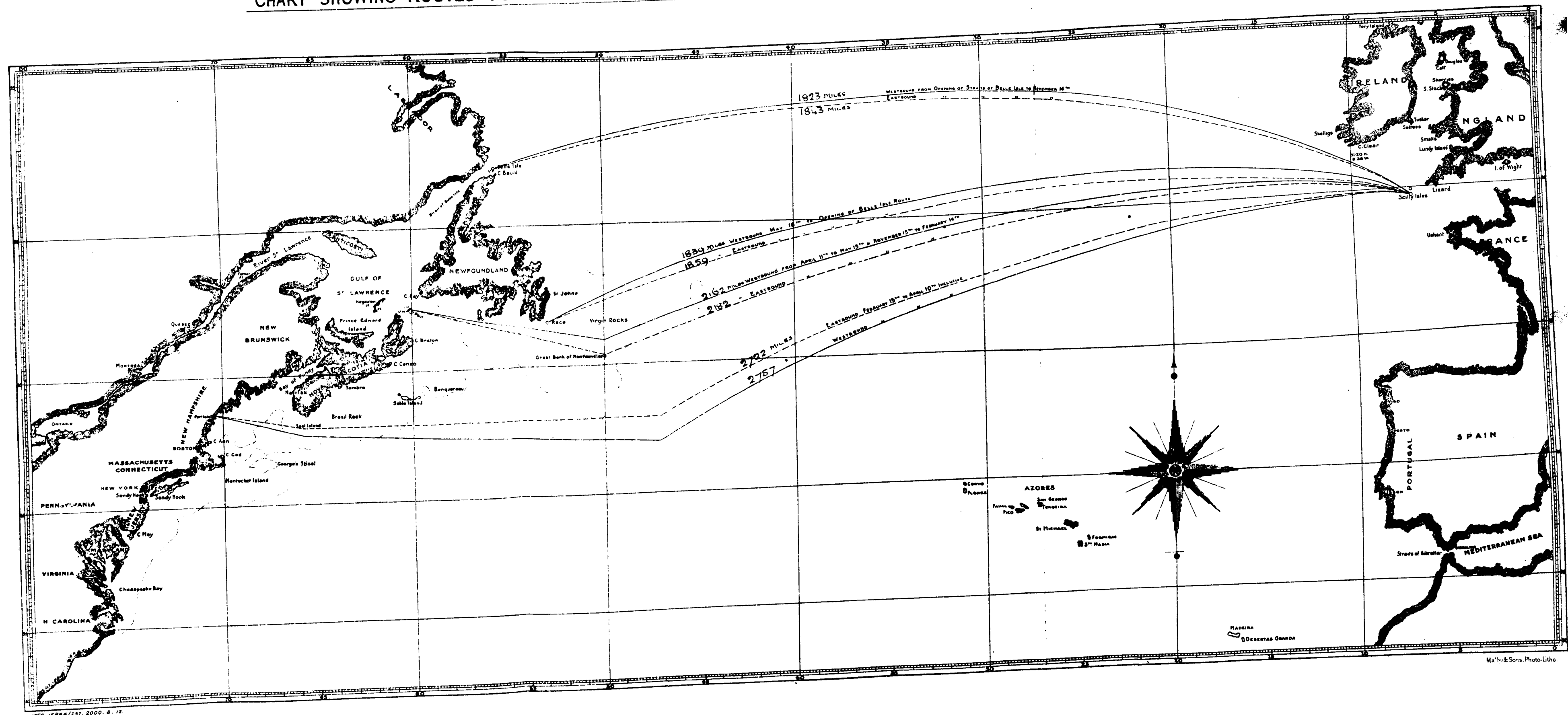
1. That if full benefit is to be derived from the steamship route system, it is essential that the standard routes across the North Atlantic be fixed with regard to normal and not abnormal ice seasons.
2. That the existing standard routes are safe and prudent in all but abnormal ice seasons.
3. That it is not possible to lay down beforehand the routes to be adopted in abnormal ice seasons, as the changes advisable must depend on varying circumstances.
4. That the fixing of the routes and their variation in exceptional seasons is a responsibility that should be left to the Lines.
5. That the system established by the Lines for the collection and distribution of information in regard to dangers on the routes themselves is an admirable one, and at least as effective as any system that could be established under State control.
6. That the establishment of national patrol vessels on the routes themselves would be of small value, but that the State could render most important service by stationing, early in March in each year, properly equipped observation vessels to the north of the routes and in collecting all further data available to enable a judgment to be formed, early in each year and before the ice begins to approach the routes, as to the probable movement of the ice in the coming season.
7. That it is not practical to extend the route system generally.

NORMAN HILL (Chairman).
CHAS. BARRIE.
E. CATHERY.
WM. CORKHILL.
S. CROSS.
GEO. N. HAMPSON.
T. ROME.
T. ROYDEN.
T. SPENCER.
JAS. BIRNIE WATT.



The change of Routes commences January 15th 1899, and it is hoped they will become the recognised Routes for all Steam Vessels trading with the N. American Ports. Sailing Vessels should keep clear of the Steam Lines having interests of safety for all concerned.

CHART SHOWING ROUTES FOLLOWED IN DIFFERENT SEASONS IN THE YEAR BY LINES IN THE CANADIAN TRADE.



NORTH ATLANTIC LANE ROUTES. CANADA.

TRACK "A."

From 15th February to 10th April, both days inclusive.

WESTBOUND.

Steer from the Fastnet, Innistrahull, or 10 miles south of the Bishop Rock on Great Circle course, to cross the meridian of 47° west in longitude 42° north, thence to Halifax or other port, passing not less than 30 miles south of Sable Island.

EASTBOUND.

Steer from Halifax to pass 20 miles south of Sable Island to longitude 47° west, in latitude 43° north, thence on the Great Circle course to the Fastnet, Innistrahull, or 10 miles south of the Bishop Rock.

TRACK "B."

From 11th April to 15th May, or until the Cape Race route clear of ice, and
November 15th to February 14th.

WESTBOUND.

Steer from the Fastnet, Innistrahull, or 10 miles south of the Bishop Rock on the Great Circle course, to the meridian of 50° west in $45^{\circ} 55'$ north, thence to Halifax or the Gulf of St. Lawrence.

EASTBOUND.

Steer from Halifax or the Gulf of St. Lawrence to cross the meridian of 50° west in latitude $45^{\circ} 25'$ north, thence on the Great Circle course to the Fastnet, Innistrahull, or 10 miles south of the Bishop Rock.

TRACK "C."

From 16th May to the opening of Belle Isle route.

WESTBOUND.

Steer from Fastnet, Innistrahull, or 10 miles south of the Bishop Rock, on a course 10 miles north of the Great Circle track until approaching Cape Race, and in thick weather steer a course to pass 20 miles south-east of Cape Race, thence to the St. Lawrence.

EASTBOUND.

Steer from Cape Race on a course 10 miles south of the Great Circle track until approaching Fastnet, Innistrahull, or 10 miles south of Bishop Rock. In thick weather steer a course to pass 30 miles south-east of Cape Race.

TRACK "D."

Belle Isle route.—From the opening of the Straits of Belle Isle to November 14th.

WESTBOUND.

Steer from Fastnet, Innistrahull, or 10 miles south of Bishop Rock, on a course 10 miles north of the Great Circle track until approaching Belle Isle.

EASTBOUND.

Steer from Belle Isle on a course 10 miles south of the Great Circle track until approaching Fastnet, Innistrahull, or 10 miles south of the Bishop Rock.

GENERAL INSTRUCTIONS.

Commanders, on encountering ice, have permission to deviate from these tracks, and, after the end of October, to leave the Belle Isle for the more southerly route at their discretion, according to weather conditions.

When courses are changed at the intersections of meridians any time before or after noon, you will note in your logs both distances to and from the meridians that the ship has sailed from noon to noon, and not the distance from the position at noon the day before to the position at noon the day after the meridian is crossed.

The tracks stated above have been agreed to by the following Lines to take effect from April 10th, 1911, . . . and until further notice :—

(Signed) ALLAN LINE.
CANADIAN PACIFIC RAILWAY.
DOMINION LINE.
DONALDSON LINE.
NEW ZEALAND SHIPPING COMPANY.
HOLLAND AMERICA LINE.
ROYAL LINE.
THOMSON LINE.
WHITE STAR LINE.
RED STAR LINE.

London.

APPENDIX 4.

REPORT of SUB-COMMITTEE on LIFE-SAVING APPLIANCES
on HOME TRADE PASSENGER SHIPS.

Home trade passenger ships, as regards the Life-Saving Appliances Rules made under Section 427 of the Merchant Shipping Act of 1894, are classed under the following headings :—

Division (A), Class 3.—Steamships authorised to carry passengers anywhere within the home trade limits, that is to say, between places in the United Kingdom, or between the United Kingdom and ports in Europe between the Elbe and Brest.

Division (D), Class 1.—Steamships authorised to carry passengers on short specified voyages along the coasts of the United Kingdom, or between Great Britain and Ireland, or between Great Britain or Ireland and the Isle of Man.

Division (D), Class 2.—Steamships plying in estuaries or mouths of rivers, or making short excursions or pleasure trips to sea.

Division (E), Class 1.—Steamships carrying passengers on rivers, lakes, or land-locked inland waters, but not going to sea or into rough waters.

In addition to the above, there is *Division (B), Class 4.* This refers to sailing ships, but as the Board of Trade have intimated that there are now no sailing ships having passenger certificates for the home trade limits, this class does not need to be considered.

To the above classes of vessels the Board of Trade issue passenger certificates, as follows :—

Form St. 2.—For steamers plying at sea within the limits of the home trade.

Form St. 3.—For steamers plying along the coast within defined limits during daylight and fine weather, between 1st April and 31st October.

Form St. 4.—For steamers plying in partially smooth water.

Form St. 5.—For steamers plying in smooth water.

The same vessel may hold two or more certificates. A list of smooth water limits, partially smooth water limits, and excursion limits round the coasts of the United Kingdom is annexed to the "Instructions as to the Survey of Passenger Accommodation" issued by the Board of Trade to their Surveyors.

As having an intimate bearing on the questions involved in the enquiry, the Sub-Committee requested the Board of Trade to furnish them with a return of the number of casualties involving loss of life in the classes of vessels coming under their remit since the present Life-Saving Appliances Rules came into force. The Board have accordingly prepared the accompanying list of 35 steamers registered in the United Kingdom which met with casualties attended with loss of life during the 20 years ended 30th June, 1911, while holding home trade or excursion passenger certificates. The total number of lives lost during the period is stated in the return to be 492, but the total losses of the "Stella" on the Casquets in March, 1899, of the "Hilda" near St. Malo in November, 1905, and of the "Berlin" at the Hook of Holland in February, 1907, account for 364 of this number, leaving for all the other casualties during the period a loss of 128 lives. It is, moreover, interesting to note that, as brought out at the formal investigations into the three casualties mentioned above, the boat accommodation in each case was in excess of the total number of passengers and crew on board at the time of the accident, and that the loss of life was caused by the stranding—and thereafter breaking up, or slipping into deep water—of the vessel before there was time to make full use of the life-saving appliances on board. It should further be noted that in the case of the "Berlin" all the boats were smashed and carried away by the sea within a few minutes of the disaster, while in the case of the "Hilda" some of the boats could not be lowered owing to the close proximity of the rocks and one was smashed while being lowered.

Particulars are given in the case of 34 out of the 35 vessels included in the return with respect to the life-saving appliances on board according to the passenger certificate in force at the time of the casualty. These show that in 30 cases the boats and deck seats were sufficient to accommodate all persons on board. In the remaining four cases it does not appear that the provision of further life-saving appliances would have saved any lives.

Turning to the purely excursion steamers included in the return, the total loss of life for the period amounts to only six persons (five crew and one passenger), and included in this figure are three casualties, involving in each case the death of one member of the crew, caused by accident connected with the machinery or equipment of the vessel.

It appears to the Sub-Committee that the above figures show a remarkable immunity from accident in the vessels with which they are dealing, and form no ground for drastic change in present practice as regards life-saving appliances.

In pursuing its investigations in various parts of the country, the Sub-Committee has had the advantage of personal interviews with representative owners of the various classes of vessels with which it is dealing, as well as of the large amount of statistical information as to existing life-saving appliances on various types of vessels which has been collected by the Board of Trade.

The Sub-Committee has directed its attention to the following points, and has endeavoured to gather information regarding them:—

1. Boats.

It has not gone into the question of the form of boat nor its equipment, leaving these matters to the special Sub-Committee appointed to deal with them. It has, moreover, not touched the question of whether gross tonnage is the proper factor to govern the number of boats a particular vessel should carry under davits. This point will, no doubt, be discussed fully by the Advisory Committee itself. Gross tonnage is at present used as a factor in determining the number of passengers a vessel should carry under No. 2 Certificate, and thus has some relation to the boat accommodation necessary. The Sub-Committee finds that very few vessels carry boats in excess of Board of Trade requirements, but that in almost every case the owners consider they are at present carrying as many boats as are consistent with safety and the efficient working of their ships, questions of deck space and stability having to be carefully considered in connection with these small vessels. In a few cases the cross channel steamers have found they can carry more boats than required by the rules, and they have made or are making additions, but in no case did the Sub-Committee hear of more than two boats being added. There seems a consensus of opinion that in these smaller vessels any considerable increase in the number of boats is not practicable and would be a source of danger rather than an element of safety. In the event of a serious casualty to a crowded steamer and the almost inevitable panic among the passengers, it would be, by general consent, impossible to get away more than a few boats without great delay and confusion, and any unmanageable number of boats would impede the efforts to get them away. The Sub-Committee find that, almost universally, boat drill on these ships takes place at intervals of not more than one month when the steamers are in commission (sometimes even once a week) and that every care seems to be taken to keep the appliances for lowering the boats in an efficient state. The men these ships have as seamen are of a good class. They are not discharged at the end of each trip, but remain for long periods, and even in the excursion steamers, the same men frequently join them year after year. In this way the crews, including the stewards, and in some cases even the firemen, become expert in the handling of boats.

2. Collapsible boats, life-rafts and buoyant apparatus.

The extent to which these are carried at present varies in different ships navigating even under the same certificate and employed in similar service, and there is still a considerable number of the smaller class of vessels navigating in smooth water where nothing but life-buoys and life-belts are provided for the passengers for whom accommodation in boats is not provided. Rafts or collapsible boats are not carried to any great extent. The collapsible boat is not generally in favour owing to the care and time required when opening it out and the liability of the canvas to decay. One or two of the cross channel steamers are considering putting rafts on board, but the difficulty is to find space for them without unduly inconveniencing

the passengers. The general opinion appears to be that the adoption of buoyant apparatus in the form of floating seats or refuges is the only practicable way of increasing to any extent life-saving appliances. Buoyant apparatus, not being permanently fixed to the structure of the ship can, in the event of her sinking, immediately float off and give a means of support instantly available. Several owners stated they could largely increase the number of buoyant seats; others again declared that to do so would risk the stability of some of their steamers, and that to find room for such seats on deck would involve putting below life-belts which at present are stowed there. They also complain that some Surveyors insist on a reduction in the number of passengers carried if space now counted for passengers is taken up by buoyant seats.

3. Life-belts.

The Sub-Committee find that in many ships these are carried far in excess of the Board of Trade requirements and that every precaution seems to be taken to keep them in serviceable condition. The difficulty in many ships is to find space where they can be stowed so as to be readily available.

4. Wireless Telegraphy and Submarine Signalling.

Among those most competent to judge and who have had actual experience of its working, there is a strong belief in the usefulness of wireless telegraphy as a means of life-saving. Several owners engaged in the cross-channel trade have already adopted wireless telegraphy and its use is gradually being extended to other companies. Its general adoption, however, is hindered by the present want of suitable shore stations and by the cost of the apparatus. There is practically no revenue from passengers' messages to set against the outlay, and the installation must be regarded as exclusively for life-saving purposes. Another matter which militates against the extension of the system is that, under present regulations, the wireless cabin is added to the net measurement of the ship, on which port dues have to be paid. As these vessels when on service incur dues in two ports, at least, every twenty-four hours, this means a considerable extra tax for carrying a wireless installation. Submarine signalling apparatus seems, so far as the Sub-Committee can discover, to be used only by one or two fleets. It is well spoken of by those using it, but is still largely in the experimental stage.

5. Water-Tight Compartments.

No case has been brought to the notice of the Sub-Committee in which, since the year 1905, a vessel has availed itself of Life-Saving Appliances General Rule 12 of 1902, whereby vessels divided into water-tight compartments to the satisfaction of the Board of Trade are only required to carry additional boats, rafts and buoyant apparatus of one-half the capacity required otherwise by the Rules. The conditions appear to be too onerous to make it generally worth while to take advantage of the rule. All those with whom the Sub-Committee have conferred agree that the proper sub-division of the vessel by bulkheads must always remain the first element of safety, and the Sub-Committee is glad to find that in larger and more recent vessels sub-division has been carried to a much greater extent than formerly. The Sub-Committee is also glad to know that the terms of reference to the Bulkheads Committee now sitting include these smaller vessels as well as the larger ships.

6. Board of Trade Inspection.

So far as the Sub-Committee is able to judge, the periodical inspections by the Board of Trade Surveyors for passenger certificates are thorough and conscientious. The survey staff, however, is not large enough to allow of their doing much in the way of inspection while the certificates are current.

7. Conclusions.

The Sub-Committee has most carefully considered the questions raised by the evidence that has been put before it in the light of the special knowledge it possesses of the conditions under which the various trades are carried on. The vessels involved

Particulars are given in the case of 34 out of the 35 vessels included in the return with respect to the life-saving appliances on board according to the passenger certificate in force at the time of the casualty. These show that in 30 cases the boats and deck seats were sufficient to accommodate all persons on board. In the remaining four cases it does not appear that the provision of further life-saving appliances would have saved any lives.

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7. Conclusions.

The Sub-Committee has most carefully considered the questions raised by the evidence that has been put before it in the light of the special knowledge it possesses of the conditions under which the various trades are carried on. The vessels involved

include ships of many types and engaged in varying service, but one or two points emerge as applicable to all:

- (A) The prime consideration must always be to make the ship herself as nearly unsinkable as possible. It is futile with vessels licensed for such large numbers of passengers as most of these ships are, to expect to be able to provide boats, or even rafts, which will certainly save all on board. Of necessity the capacity of the boat and buoyant apparatus must be limited by the size of the ship herself.
- (B) While as many boats should be carried as is consistent with the stability and efficient working of the vessel, the passengers' best chance of safety if the ship herself sinks is in having buoyant apparatus immediately available and the total capacity of this buoyant apparatus, together with that of the boats and rafts, should bear some relation to the number of passengers and crew for which the ship is certified.
- (C) Wireless telegraphy has introduced a new element in the conditions of safety, and if it were generally adopted and suitable shore stations were available, would, in the much frequented waters of the Channel, ensure assistance reaching any disabled vessel within a comparatively short time.

Applying these considerations to the various classes of vessels with which the Sub-Committee is asked to deal, they put on record their opinion as follows:—

Division (A), Class 3, and Division (D), Class 1.—These ships conduct services between the United Kingdom and Continent, United Kingdom and Ireland, United Kingdom and Isle of Man, as well as along the coasts of the United Kingdom. Some of them, owing to the nature of their trades, are able to provide sufficient boat accommodation for all the passengers they ever carry. Others, again, have sufficient boat and raft accommodation for the usual number of passengers they carry, but at certain times and especially at holiday seasons, the number of passengers largely exceeds the boat and raft accommodation on board.

Under the existing Life-Saving Appliances Rules these ships are required to carry boats under davits in accordance with the table appended to the Rules, and, if the boats under davits do not furnish sufficient accommodation for all persons on board, then additional boats, life-rafts, or buoyant apparatus must be carried aggregating with the boats under davits one-half more than the minimum cubic contents provided by column 3 of the table. Six life-buoys and life-belts for all on board must also be carried.

As regards these divisions the Sub-Committee recommends that in addition to the provision made by the present Rules for life-belts, life-rafts, buoyant apparatus, life-buoys, and boats under davits, there should be a stipulation that the boats and life-rafts and buoyant apparatus on board, taken together, should aggregate sufficient cubic contents to support not less than 50 per cent. of the passengers and crew for which the steamer is certified under Number 2 Certificate.

The Sub-Committee further, by a majority, recommend that whenever vessels of these classes carry passengers and crew in excess of the boat accommodation on board, except when engaged in daylight service during the summer (15th May to 30th September, inclusive), they should be required to be fitted with wireless telegraphy—always provided there are first established shore stations suitable and convenient to the trade in which the vessel is engaged. The Sub-Committee also recommend that, if wireless telegraphy should be made compulsory on any of these classes of ships, the cabin required on deck by the operator and his instrument should not be added to the net tonnage of the vessel.

Division (D), Class 2.—The passenger certificates appropriate to this division are Certificates St. 3 and St. 4. It is only during the summer months that these ships carry anything like the number of passengers for which they are certified under either certificate. It is in this class that the greatest discrepancy is found between the outfit of different vessels. Under the present regulations these ships are bound to have boats (at least 2 under davits) buoyant apparatus and/or life-belts sufficient in the aggregate to keep afloat all on board. They also carry 4 life-buoys.

The Sub-Committee recommend that in ships of this class the boats (at least 2 of which must be under davits), together with the buoyant apparatus should be of sufficient capacity to keep afloat at least 50 per cent. of the total number of

passengers and crew under No. 3 Certificate and 40 per cent. of the total number under No. 4 Certificate. In addition there should be a life-belt for every person on board and four life-buoys.

The Sub-Committee make their recommendations in regard to the vessels in Division (A), Class 3, and Division (D), Classes 1 and 2, being of opinion that any greater capacity of boat and buoyant apparatus could only be provided generally at the risk of imperilling the seaworthy qualities of the classes of vessel dealt with.

Division (E), Class 1.—Vessels of this class navigate under Certificate St. 5. They ply in smooth water only, and it is only during summer months that they carry anything like the number of passengers for which they are certificated. They are always within a comparatively short distance of the shore, and it would be a very exceptional accident when a ship of this kind could not be got alongside a wharf or be run ashore. The waters in which they ply, moreover, are during the summer season much frequented by shipping and assistance would be forthcoming in the event of an accident on very short notice. The past record, moreover, of this class of vessel, according to the figures already quoted, has shown a remarkable immunity from accident, especially when the enormous number of people who travel by them is taken into account. One witness well able to judge, informed the Sub-Committee that he estimated the number of passengers carried by the Clyde River steamers in the course of a single year at 1,000,000. By the present Rules, these ships are compelled to carry one boat and also buoyant apparatus or life-belts and life-buoys (of which there are to be at least four) sufficient to keep afloat all persons carried on board. The only variation the Sub-Committee would suggest in this arrangement is that it should be compulsory to provide buoyant apparatus, including the boat, for at least 25 per cent. of the number which the vessel is certified to carry under St. 5 Certificate, the remainder only of the required flotation being provided by life-belts or life-buoys.

The Sub-Committee see no necessity for imposing further regulations on these excursion ships, which are the only means by which large numbers in our centres of population can obtain a breath of sea air, and the hampering of which by any unnecessary regulations would render the present basis on which the service is conducted commercially impossible. If in any special district it is considered that something more than the Committee recommend is desirable, increased safety should be looked for rather in contracting the geographical limits of No. 4 or No. 5 Certificate, than in making any further general regulations which would hamper trade where the present limits are quite satisfactory.

J. A. ROXBURGH (Chairman).
GEO. N. HAMPSON.
J. HENSON.
NORMAN HILL.
JOHN INGLIS.
MICHAEL JOYCE.
CUTHBERT LAWS.
WILLIAM H. RAEBURN.
GEO. SHEARER.

The undersigned members of the Sub-Committee have signed the report, but they do not approve of the recommendations it contains as to making wireless telegraphy compulsory on certain classes of home trade ships.

J. A. ROXBURGH.
JOHN INGLIS.
CUTHBERT LAWS.
WILLIAM H. RAEBURN.

APPENDIX 5.

STATISTICAL REPORT.

The statistical returns upon which this report has been compiled are printed in the appendix. All such returns other than those numbered 10 and 11 were furnished by the Board of Trade. The returns numbered 10 and 11 were furnished by the steamship companies.

LIFE-SAVING APPLIANCES RULES PRIOR TO 1890.

It seems advisable to preface this report with a short statement of the legal requirements in regard to life-saving appliances in force prior to the adoption of the existing rules.

The Merchant Shipping Act, 1854, and the Passengers Act, 1855, contained requirements as to the boats and lifebuoys of sea-going merchant vessels and passenger ships, and these requirements remained unchanged until the rules, made under the Life-Saving Appliances Act, 1888, came into force on the 31st March, 1890.

According to the evidence given by Sir Thomas Gray before a Select Committee on saving life at sea in 1887 there were at that date three sets of Regulations in force dealing respectively with :—

- (1) Vessels, as defined by Section 27 of the Passengers Act, 1855, carrying emigrants;
- (2) Other vessels carrying passengers;
- (3) Sea-going vessels not carrying passengers.

Dealing with these classes of vessels separately :—

(1) *Vessels as defined by Section 27 of the Passengers Act, 1855.*—The boat scale was regulated solely by the tonnage of the vessel, but it was provided that no greater number of boats need be taken than were sufficient, in the judgment of the Emigration Officer, to carry all the persons (crew as well as passengers) on board the vessel. One of the boats had to be a long boat and another a lifeboat. The lifeboat had to be fitted with life lines along the outside, and six lifebelts had to be provided for its crew.

The boat scale for steamships under Section 27 of the Passengers Act, 1855, was as follows :—

Registered tonnage of Steamship.	Minimum cubic contents of lifeboats.	Minimum cubic contents of all boats.
Less than 200	138	368·4
200-400	181·2	657
400-600	198	877·2
600-800	198	1,038
800-1,000	198	1,227
1,000-1,250	540	1,527
1,250-1,500	540	1,800
1,500 and upwards	556·8	2,160

(2) *Other passenger steamships* had to comply with the following boat scale laid down in the Schedule to the Merchant Shipping Act, 1854.

Registered tonnage of Steamship.	Either		Or	
	No. of Boats.	Cubic contents in feet.	No. of Boats.	Cubic contents in feet.
Under 60	1 lifeboat	91	—	—
60-120	1 lifeboat and 1 boat	236	3 boats	368
120-240	1 lifeboat and 1 boat	307	3 boats	454
240-360	1 lifeboat and 2 boats	573	4 boats	657
360-500	1 lifeboat and 3 boats	882	5 boats	877

Registered tonnage of steamship.	Either		Or	
	No. of boats.	Cubic contents in feet.	No. of boats.	Cubic contents in feet.
500-800 ...	1 lifeboat and 3 boats	987	5 boats	892
800-1,000 ...	1 lifeboat and 3 boats	1,132	5 boats	1,037
1,000 and upwards ...	2 lifeboats and 4 boats	2,034	2 lifeboats and 5 boats	1,892

In all such ships one of the boats had to be rendered buoyant after the manner of a lifeboat. Two, and only two, life-buoys had to be carried irrespective of the number of passengers on board.

As in the case of emigrant vessels under the Passengers Act, the boat scale was regulated solely by the tonnage of the vessel, but the Board of Trade was in the habit of requiring, before granting the passenger certificate, additional life-buoys, and buoyant deck seats, &c., to be carried on home trade passenger ships carrying large numbers.

(3) *Other sea-going ships*.—The boat scale appears to have been practically identical with the scale for passenger vessels not carrying emigrants under the Passengers Act, but Sir Thomas Gray stated before the Select Committee in 1887 that the scale was a dead letter as the Board of Trade had no power to enforce its observance on vessels not carrying passengers.

As a result of the recommendations of the Select Committee of 1887 the Merchant Shipping (Life-Saving Appliances) Act was passed in 1888 giving the Board of Trade power to make rules as to boats and other life-saving appliances, and providing for the appointment of a Committee to frame and advise on the rules.

EXISTING LIFE-SAVING APPLIANCES RULES.

The Life-Saving Appliances Committee reported in June, 1889, and the new rules came into force on the 31st March, 1890. The boat scale adopted was that contained in the present table, except that the maximum tonnage provided for was 9,000 tons and upwards. The table was extended on the 1st June, 1894, to provide for vessels of 10,000 tons and upwards, and no further alteration in the table has since been made.

CHANGES IN THE BRITISH MERCANTILE MARINE IN THE LAST 30 YEARS.

In considering the results attained under the existing rules, and in comparing the results with those attained under the rules which were considered by the Select Committee of 1887 it is essential to bear in mind the changes that have taken place in the British Mercantile Marine. These changes are shown by the following summary of the average number and tonnage of vessels registered in the United Kingdom which were employed in the home and foreign trades, and the number of hands employed therein in the nine years preceding the enquiry of the Select Committee of 1887 and in the nine years ended the 31st December, 1910 :—

Period.	Sailing.			Steam.			Total.		
	Vessels.	Tonnage.	Crew, exclusive of Lascars.	Vessels.	Tonnage.	Crew, exclusive of Lascars.	Vessels.	Tonnage.	Crew, exclusive of Lascars.
1877-1885	14,992	3,607,596	117,835	4,117	2,960,631	95,403	19,109	6,568,227	213,238
1902-1910	5,843	1,339,982	34,887	8,630	9,396,554	189,348	14,473	10,736,536	224,235

The figures for the crew are exclusive of Lascars, as prior to 1886 Lascars were not included in the recorded number of persons employed.

As percentages these figures show that:

	Per cent.
Sailing ships decreased in number ...	61
„ „ in tonnage ...	63
„ „ in crew ...	70
Steamships increased in number ...	110
„ „ in tonnage ...	217
„ „ in crew ...	98

BRITISH MERCANTILE MARINE IN 1910.

During the year 1910 there were 14,388 vessels registered in the United Kingdom employed in the home and foreign trade, divided between sail and steam tonnage as under :

	Number.	Tonnage net register.
Sailing ships ...	4,967	890,172
Steamships ...	9,421	10,409,196
	14,388	11,299,368

These vessels may be divided into the following classes:—

Fishing vessels*:	Sail.	Steam.
Under 50 tons ...	1,117	1,535
Between 50 and 100 tons ...	193	1,151
Between 100 and 150 tons ...	—	195
	1,310	2,881
Total ...		4,191
Vessels, other than fishing vessels, under 50 tons:		
Sailing vessels ...		1,498
Steam vessels ...		662
		2,160
Steamships holding passenger certificates ...		1,587
Cargo vessels in home and foreign trade above 50 tons:		
Sailing vessels ...		2,159
Steam vessels ...		4,291
Total ...		6,450
		14,388

The 1,587 steamships holding passenger certificates were divided into the following classes:—

<i>Class 1.</i> —Foreign-going steamships ...	581
<i>Class 2.</i> —Steamships plying at sea within the limits of the home trade ...	404
<i>Class 3.</i> —Steamships plying along the coast within defined limits, during daylight, and in fine weather, between 1st April and 31st October ...	185
<i>Class 4.</i> —Steamships plying in partially smooth water ...	256
<i>Class 5.</i> —Steamships plying in smooth water ...	161
	1,587

CASUALTY RETURNS SUBMITTED TO THE SELECT COMMITTEE OF 1887.

The Board of Trade furnished the Select Committee of 1887 with a number of returns summarising the statistics relating to casualties at sea during the nine years 1877 to 1885. These returns showed :—

* The number of fishing vessels is only approximate, as a few vessels included under this heading were engaged in trading during 1910.

Table 1. 1. That the average number and tonnage of vessels registered in the United Kingdom which had been employed in the Home and Foreign Trades, and the number of hands employed therein during the years 1877-1885 was as follows :—

Sailing.			Steam.			Total.		
Vessels.	Tonnage.	Crew, exclusive of Lascars.	Vessels.	Tonnage.	Crew, exclusive of Lascars.	Vessels.	Tonnage.	Crew, exclusive of Lascars.
14,992	3,607,596	117,835	4,117	2,960,631	95,403	19,109	6,568,227	213,238

Table 2. 2. That the average number of lives lost in vessels belonging to the United Kingdom by sea casualties which occurred to such vessels on or near the coasts of the United Kingdom during the nine years ended 30th June, 1885, or were reported during the same period as having occurred abroad, was as follows :—*

—	Sailing.				Steam.				Number of Cases.	Lives Lost.		Total.
	Number of Cases.	Lives Lost.		Total.	Number of Cases.	Crew.	Lives Lost. Passen- gers.	Total.		Crew.	Passengers.	
		Crew.	Passengers.									
Yearly average.	253	1,318	52	1,370	68	578	102	680	321	1,896	154	2,050

Table 3. 3. That the yearly average of lives saved from shipwreck of British vessels everywhere and of foreign vessels on or near the coasts of the United Kingdom and the coasts of British possessions abroad was as follows :—

—	By rocket apparatus and assistance with ropes, &c., from shore.	By lifeboats.	By luggers and small craft.	By ships and steamboats.	By ship's own boats.	By lifebuoys and appliances kept on board.	By individual exertion.	By other means.	Total.
Yearly average.	686	621	912	2,430	6,692	24	6	822	12,193

CASUALTY RETURNS, 1891-1911.

The returns now prepared by the Board of Trade show :—

Table 4. 1. That the average number and tonnage of vessels registered in the United Kingdom which had been employed in the Home and Foreign trades, and the number of hands employed therein during the years 1891 to 1910 was as follows. The average of the nine years ended 1910 is also stated separately for the purposes of comparison with the averages placed before the Select Committee of 1887.

—	Sailing.			Steam.			Total.		
	Vessels.	Tonnage.	Crew inclusive of Lascars.	Vessels.	Tonnage.	Crew inclusive of Lascars.	Vessels.	Tonnage.	Crew inclusive of Lascars.
Average 20 years.	7,544	1,976,052	51,733	7,623	7,739,235	201,542	15,167	9,715,287	253,275
Average last 9 years.	5,843	1,339,982	34,904	8,630	9,396,554	232,373	14,473	10,736,536	267,277

Table 6. 2. That the average number of lives lost in vessels belonging to the United Kingdom by sea casualties which occurred to such vessels on or near the coasts of the United Kingdom during the periods of twenty-one and nine years, respectively,

* The return presented to the Select Committee included a number of foreign and Colonial vessels, but these have been excluded for the purposes of the present report.

ended 30th June, 1911, or were reported during the same periods as having occurred abroad was as follows :—

—		Sailing Ships.				Steam Ships.				Total Number of Lives Lost.			
		Number of Cases.	Crew.	Passengers.	Total.	Number of Cases.	Crew.	Passengers.	Total.	Number of Cases.	Crew.	Passengers.	Total.
Average 21 years.	21	128	505	22	527	69	415	182	597	197	920	204	1,124
Average last 9 years.	9	85	294	12	306	60	332	66	398	145	626	78	704

Table 7. 3. That the yearly average of lives saved, during the 21 years and nine years, respectively, ended 30th June, 1911, from shipwreck of British vessels everywhere and of foreign vessels on or near the coasts of the United Kingdom and the coasts of British Possessions abroad was as follows :—

—	By rocket apparatus and assistance with ropes, &c., from shore.	By lifeboats.	By luggers and small craft.	By ships and steamships.	By ships and boats.	By life buoys and appliances kept on board.	By individual exertion.	By other means.	Total.
Average 21 years	397	516	611	1,930	3,791	70	13	245	7,573
Average last 9 years.	327	469	488	1,937	3,501	113	24	167	7,026

There are no returns available showing the total number of passengers carried during the period under review. The total number of passengers carried in the North Atlantic trade is dealt with in a subsequent part of this report.

It is not possible to give, for the purposes of comparison with the number of voyages upon which casualties involving loss of life occurred, the total number of voyages made by British ships. The Casualty Returns include lives lost on all voyages, whether foreign, home or coasting, but the number of voyages made by British vessels is only recorded at ports in the United Kingdom in regard to voyages from and to foreign countries and British possessions. There are no records available of the number of voyages made by such vessels between ports both of which are outside the United Kingdom, and there are no records of the number of voyages made in the Home and Coasting trade.

Table 5. The following Summary shows the number of voyages made by British vessels in the foreign trade of the United Kingdom at the beginning and at the end of the last 21 years :—

—		Sailing Ships.		Steam Ships.		Total.	
		Entrances.	Clearances.	Entrances.	Clearances.	Entrances.	Clearances.
1891 ...	...	5,489	5,155	31,874	32,458	37,363	37,613
1911 ...	...	1,781	1,480	35,746	34,467	37,527	35,947
Increase ...	...	—	—	3,872	2,009	164	—
Decrease ...	...	3,708	3,675	—	—	—	1,666

The foreign voyages of steamships, therefore, in the period under review increased from 64,332 to 70,213, equalling an increase of 9·1 per cent., whilst the foreign voyages of sailing ships decreased from 10,644 to 3,261, equalling a decrease of 69·4 per cent.

From the records of entrances and clearances of British ships in the ports of foreign countries and British possessions, it is probable that about 50 per cent. of British tonnage finds employment on voyages between ports both of which are outside of the United Kingdom, and if this is so the above figures should be doubled to arrive at the total number of foreign voyages made by British ships.

In addition to the foreign voyages the Home and Coasting voyages remain to be taken into account, but of these there are no records.

Reviewing the figures in which the entrances and clearances are recorded as a whole it is probable that there are from 250,000 to 350,000 voyages made by British shipping during the year. On the average of the last 21 years on 197 voyages sea casualties involving loss of life occurred each year.

COMPARISON OF THE RETURNS RELATING TO THE NINE YEARS ENDING 30TH JUNE, 1885, WITH THE NINE YEARS ENDING 30TH JUNE, 1911.

1. The following statement shows the average number of lives lost during each of the nine years under review :—

Period.	Sailing.			Steam.			Sailing or Steam.		
	No. of cases.	Lives lost.			No. of cases.	Lives lost.			No. of cases.
		Crew.	Passen- gers.	Total.		Crew.	Passen- gers.	Total.	
Nine years ended 30th June, 1885.	253	1,318	52	1,370	68	578	102	680	321
Nine years ended 30th June, 1911.	85	294	12	306	60	332	66	398	145

As percentages the comparison between the same periods is as under :—

Year.	Sailing Ships.		Steam Ships.	
	Number of vessels suffering sea casualties in which life was lost as a percentage on total number of vessels.	Number of crew lost, as a percentage on total number of crews.	Number of vessels suffering sea casualties in which life was lost, as a percentage on total number of vessels.	Number of crew lost, as a percentage on total number of crews.
Nine years ended 30th June, 1885.	1.68	1.12	1.65	0.61
Nine years ended 30th June, 1911.	1.45	0.84	0.70	0.14

The figures are not strictly comparative, as the returns of the total number of vessels are for years ended 31st December, while the returns of vessels suffering casualties involving loss of life are for years ended 30th June. They sufficiently indicate, however, the general tendency.

2. The total average number of lives lost in sea casualties and of lives saved from shipwreck during each of the nine years under review has been as under :—

	Lost.	Lives saved.	Total.
Nine years ended 30th June, 1885	2,050	12,194	14,244
Nine years ended 30th June, 1911	704	7,025	7,729

Therefore during the periods under review, the yearly average number of lives in immediate peril decreased from 14,244 to 7,729, a decrease of 45 per cent.; and, whilst during the first period the number saved represented 85 per cent. of the number in peril, during the latter period that percentage had increased to 90 per cent.

3. A detailed examination into the means by which the above-mentioned lives were saved from shipwreck shows the following average numbers as saved in the ships' own boats or by other ships, and therefore probably with the assistance of boats :—

	Saved by other ships.	Saved by the ships' own boats.	Total saved with the assistance of boats.
Nine years ended 30th June, 1885	2,430	6,692	9,122
Nine years ended 30th June, 1911	1,937	3,501	5,438

As percentages the comparison between the above figures is as under :—

	Percentages on the total number of lives saved.		
	Saved by other ships.	Saved by ships' own boats.	Total saved with the assistance of boats.
Nine years ended 30th June, 1885	19.93	54.87	74.80
Nine years ended 30th June, 1911	27.57	49.83	77.40

HOW FAR THE EXISTING RULES PROVIDE BOAT ACCOMMODATION FOR ALL PERSONS ON BOARD.

The great majority, if not all, the 2,160 vessels under 50 tons and all the 6,450 cargo vessels engaged in the home and foreign trades carry boat accommodation sufficient for all on board, and, in the case of steamships, such boat accommodation must be carried on each side of the vessel. The 4,191 fishing vessels, so far as they are capable of carrying boats, also provide for all on board.

The question of the sufficiency of the boat accommodation therefore arises principally, if not entirely, in relation to the 1,587 steamships holding passenger certificates. Of these vessels, 417 are employed in smooth or partially smooth water only.

With the view of ascertaining how far, under the existing Life-Saving Appliances Rules, foreign-going passenger steamers do, in fact, carry a sufficient number of boats under davits to provide for all persons certified for in the passenger certificate, a return has been obtained giving particulars as to boats carried under davits on all foreign-going passenger steamers holding certificates on 25th April, 1912.

This return shows that the boat scale contained in the table appended to the Life-Saving Appliances Rules was sufficient to provide for all persons in the case of 343 out of the 521 vessels in the list.

An examination of the figures relating to the remaining 178 vessels upon which the existing boat scale does not provide sufficient accommodation for all persons on board, shows that that number is made up of vessels of the under-mentioned sizes :—

Vessels between	Size.	Numbers.
1,000 and 1,500 tons		7
1,500 " 2,000 "		11
2,000 " 2,500 "		1
2,500 " 3,000 "		3
3,000 " 4,000 "		5
4,000 " 5,000 "		6
5,000 " 6,000 "		19
6,000 " 7,000 "		18
7,000 " 8,000 "		15
8,000 " 9,000 "		11
9,000 " 10,000 "		14
10,000 " 11,000 "		19
11,000 " 12,000 "		9
12,000 " 13,000 "		17
13,000 " 14,000 "		4
14,000 " 15,000 "		7
15,000 " 16,000 "		1
16,000 " 17,000 "		1
17,000 " 18,000 "		2
18,000 " 19,000 "		2
19,000 " 20,000 "		1
20,000 " 21,000 "		2
21,000 " 25,000 "		1
25,000 " 35,000 "		1
45,000		1

178

Forty-nine out of the above-mentioned 178 vessels actually carried boats under davits with cubic contents sufficient to provide for all persons.

This number of 49 is made up of vessels of the undermentioned sizes :—

Size.		Number.
Between 1,000 and 1,500 tons	...	6
1,500 " 2,000 "	...	3
" 2,500 " 3,000 "	...	1
" 3,000 " 4,000 "	...	2
" 4,000 " 5,000 "	...	—
" 5,000 " 6,000 "	...	8
" 6,000 " 7,000 "	...	5
" 7,000 " 8,000 "	...	4
" 8,000 " 9,000 "	...	4
" 9,000 " 10,000 "	...	5
" 10,000 " 11,000 "	...	5
" 11,000 " 12,000 "	...	1
" 12,000 " 13,000 "	...	4
" 14,000 " 15,000 "	...	1
		49

There are, therefore, 129 foreign-going passenger vessels not carrying sufficient boats under davits to accommodate all persons certified for in the passenger certificate.

It is not possible to summarise the boat accommodation and buoyant apparatus carried by the other passenger steamships which are engaged in the home passenger trade.

SUFFICIENCY OF THE BOAT ACCOMMODATION PROVIDED UNDER THE EXISTING RULES.

Table 8.

To test the sufficiency of the boat accommodation the reports of all Courts of Enquiry into shipping casualties held in the United Kingdom and abroad during the last 10 years have been scrutinised by the Board of Trade and a return has been prepared containing every case in which the Court has made remarks as to the use of ships' boats.

The vessels included in the return may be summarised as follows :—

<i>Inquiries held in the United Kingdom.</i>		
Foreign-going passenger steamships	...	18
Home trade passenger steamships	...	16
Foreign-going cargo vessels :—		
Steam	...	104
Sail	...	29
		133
Home trade cargo vessels :—		
Steam	...	54
Sail	...	5
		59
Fishing vessels :—		
Steam	...	59
Sail	...	8
		67
Yachts	...	3
Tugs, &c.	...	4
		300

<i>Inquiries held abroad.</i>		
Foreign-going passenger steamships	...	16
Coasting passenger vessels	...	17
Foreign-going cargo vessels :—		
Steam	...	31
Sail	...	36
		67
Carried forward	...	100

	Brought forward	...	...	100
Coasting cargo vessels :—				
Steam	...	...	...	3
Sail	...	...	...	2
				5
Fishing vessels :—				
Steam	...	...	...	2
Sail	...	...	...	2
				4
Tugs, &c.	...	...	...	1
				110

The following return is a summary of the particulars available with reference to the casualties in which foreign-going passenger vessels were involved :—

In 16 cases all on board were landed or transferred to another vessel by the ship's own boats.

In 2 cases all but one person were landed or transferred to another vessel by the ship's own boats.

In 3 cases all were landed or transferred to another vessel by the ship's own boats and other boats.

In 3 cases some lives were saved by the ship's own boats.

In 1 case some lives were saved by the ship's own boats and other boats.

In 1 case some lives were saved by other boats.

In 1 case all persons reached the shore by means of ropes, and in another case all survived by wading ashore.

In 3 cases lives were lost through the capsizing of boats.

In 1 case lives were lost because boats could not be launched or were damaged in launching.

In 3 cases lives were lost through panic.

The following are similar particulars with regard to the casualties in which home trade or coasting passenger vessels were involved :—

In 15 cases all on board were landed or transferred to another vessel by the ship's own boats.

In 1 case all were landed or transferred by the ship's own boats and other boats.

In 1 case the boats were got out, but all lives were eventually saved by remaining on board.

In 5 cases some lives were saved by ship's own boats.

In 3 cases some lives were saved by other boats.

In 1 case some lives were saved by swimming, and in another case by means of ropes.

In 2 cases lives were lost through the capsizing of boats.

In 2 cases lives were lost because boats could not be launched or were damaged in launching.

In 1 case lives were lost through panic.

In 1 case lives were lost by inability to secure one of the boats which were washed overboard.

It should be mentioned that in the particulars above some vessels are referred to under more than one heading.

In two cases the Court reported that the boat accommodation was insufficient. In the case of the "Sardinia," a foreign-going passenger steamer which stranded outside Valetta Harbour, Malta, the four boats carried were destroyed by fire, and the Court stated that four boats were insufficient for all on board. The other vessel, the "Hoangho," which foundered off the coast of China, was a coasting passenger vessel stationed abroad, and owing to panic such boats as she had on board could not be launched.

In the case of two foreign-going passenger ships (Return Section B., No. 21 and No. 90), and of two foreign-going cargo vessels (Section A., No. 127, and Section B., No. 10), attention was called to the fact that there was no boat drill, and in the case of a foreign-going cargo ship (Section B., No. 24), and of a home trade cargo vessel (Section A., No. 293), the boats were not in readiness for use.

In the case of a foreign-going cargo vessel (Section B., No. 4), which stranded off Mauritius in 1902, the Court raised the question whether lifeboats could not be built in an improved form, and expressed the opinion that, generally speaking, the boats in use at present seem unable to stand heavy seas.

Several cases show that the requirement that cargo vessels should carry sufficient boat accommodation for everybody on each side of the ship has resulted in lives being saved (*e.g.*, Section A., Nos. 95, 111, 179, 203, 238 and 252, and Section B., No. 24).

Table 15.

A further return has been obtained giving a complete list of vessels registered in the United Kingdom which were totally lost at sea or met with sea casualties attended with loss of life during the 20 years ended 30th June, 1911, while on voyages between European ports and ports on the east coast of the United States, Canada and Newfoundland.

A summary of this return gives the following particulars :—

						Number of Casualties.	Number of lives lost.		
							Crew.	Passengers.	Total.
Sailing Vessels	...	...	...	...	...	100	221	7	228
Steam Vessels	...	...	...	...	...	332	1,349	78	1,427
Total	...	...	...	...	...	432	1,570	85	1,655

The casualties are sub-divided into :—

Foundering	...	...	...	...	51
Strandings	...	...	...	...	115
Collisions	...	...	...	...	17
Other causes	...	...	...	...	201
Missing vessels	...	...	...	...	48
Total	...	...	...	...	432

Of the casualties due to "other causes" there do not appear to have been more than about 29 in which boats could conceivably have been of any assistance in saving life, the remainder being for the most part cases in which loss of life was due to the decks being swept by a heavy sea or to accidents on board the vessel. The total number of casualties in which the boats could have conceivably played a part is thus reduced to about 260.

Out of the total of 432 vessels included in the return only 26 carried more than 12 passengers, and consequently come within the category of *passenger vessels*.

Of the 85 passengers' lives lost, 17 were lost on vessels not requiring passenger certificates, and the remaining 68 lives were lost on the following five vessels :—

- (1) The "Pomeranian," which lost five passengers by having her decks swept by a sea in February, 1893.
- (2) The "Mohegan," which lost 44 passengers by stranding on the Manacles Rock in Cornwall in October, 1898.
- (3) The "Scotsman," which lost 11 passengers by stranding on Belle Isle, Canada, in September, 1899.
- (4) The "Campania," which lost five passengers by having her decks swept by a sea in October, 1905.
- (5) The "Republic," which lost three passengers through a collision in January, 1909, two being crushed in the collision and one dying after leaving the vessel.

The loss of life on the "Pomeranian," "Campania," and "Republic" could not have been prevented by any provisions as to life-saving appliances.

In the following ten cases passenger steamships* were totally lost, but there was no loss of life :—

- (6) "Abyssinia." Burnt. Passengers and crew landed by ship's own boats and boats of another steamship. December, 1891.
- (7) "City of Chicago." Stranding. Passengers and crew landed by cliff ladders and ship's own boats. July, 1892.
- (8) "Mariposa." Stranding. Passengers and crew landed by hawser from shore. September, 1895.
- (9) "Labrador." Stranding. Passengers and crew landed or transferred to another vessel by ship's own boats. March, 1899.
- (10) "Castilian." Stranding. Passengers and crew landed by tug boat. March, 1899.
- (11) "Lusitania." Stranding. Passengers and crew landed by ship's own boats. June, 1901.
- (12) "Topaze." Stranding. Passengers and crew landed by ship's own boats. September, 1903.
- (13) "Slavonia." Stranding. Passengers and crew landed by ship's own boats, shore boats, and a line from the ship ashore. June, 1909.
- (14) "Laurentian." Stranding. Passengers and crew landed by ship's own boats. September, 1909.

During the same period 82 members of the crews of passenger vessels lost their lives through casualties. Sixty-two of this number are accounted for by the casualty to the "Mohegan." Of the remaining 20, seven were lost in the "Pomeranian," nine of the remainder lost their lives by accidents on board their vessels, three were swept overboard and one died from exposure and exhaustion; in these casualties the loss of life, except possibly in the case of one person, could not have been prevented by any provision as to life-saving appliances.

The total loss of life in the casualties in which the boats could have conceivably played a part in the different classes of vessels has been :—

	Number of Casualties.	Number of Lives Lost.
Sailing vessels	82	202
Steamships other than passenger ships	164	1,117
Passenger ships	14	121
Total	260	1,440

Of these casualties, the following occurred on voyages between United Kingdom ports and the East Coast of North America :—

	Number of Casualties.	Number of Lives Lost.
Sailing ships	43	131
Steamships other than passenger ships	115	848
Passenger ships	13	118
Total	171	1,097

It will be seen from the next paragraph of this report that the total number of voyages by British passenger vessels between United Kingdom ports and the East Coast of North America is estimated at 24,000. The number of voyages by other British vessels during the same period and in the same trade was approximately 71,061, of which 65,361 were voyages by steamships and 5,700 were voyages by sailing vessels.

* In addition to these vessels there was one sailing ship, the ketch "Snowdrop," totally lost by stranding in September, 1908, on a voyage from Greenland to Dundee. This vessel had no passenger certificate but was carrying 28 passengers. All on board were saved by getting ashore on ground ice.

Table 14.

PASSENGER TRAFFIC IN THE NORTH ATLANTIC.

Table 12.

During the 20 years 1892-1911 the total number of direct voyages made by vessels carrying more than 12 passengers from the United Kingdom to the East Coast of the United States and British North America was 16,122. Similar statistics for years prior to 1907 in respect of eastward voyages are not available, but those available for the years 1907-1911 show that there is no appreciable variation between the number of westward and eastward voyages. Of this number it is estimated that three-fourths, 24,000, were voyages made by British vessels. In addition, there were a number of voyages across the North Atlantic from and to Mediterranean ports, and it is estimated that the fourteen casualties just referred to occurred during the course of about 27,000 voyages by British passenger vessels.

Table 13.

The recorded number of passengers carried almost entirely in British vessels between the United Kingdom and ports in the United States and British North America during the years 1892-1911 was 9,390,094. As already stated, the total number of passengers who lost their lives from all casualties to British vessels in the North Atlantic was 85.

Tables 10 and 11.

Particulars as to the size and speed of the principal steamships employed in the passenger trade of the United Kingdom with the east coast of North America during the years 1895-1911 have been obtained from the steamship lines. These particulars are summarised in the following tables:—

I.—Number of Vessels classified according to their gross tonnage:—

Year.	2,500 to 5,000.	5,000 to 7,500.	7,500 to 10,000.	10,000 to 12,000.	12,000 to 15,000.	15,000 to 20,000.	20,000 to 25,000.	25,000 to 30,000.	30,000 to 35,000.	35,000 to 40,000.	40,000 to 45,000.	45,000 to 50,000.	Total.
1895 ...	34	16	8	5	2	—	—	—	—	—	—	—	65
1896 ...	38	15	7	5	2	—	—	—	—	—	—	—	67
1897 ...	35	16	7	5	2	—	—	—	—	—	—	—	65
1898 ...	36	21	9	6	3	—	—	—	—	—	—	—	75
1899 ...	32	18	9	8	3	1	—	—	—	—	—	—	71
1900 ...	24	14	10	9	7	1	—	—	—	—	—	—	65
1901 ...	23	17	13	12	8	1	1	—	—	—	—	—	75
1902 ...	19	17	16	14	9	1	1	—	—	—	—	—	77
1903 ...	18	21	22	17	12	4	2	—	—	—	—	—	96
1904 ...	14	19	19	14	13	3	3	—	—	—	—	—	85
1905 ...	11	17	21	15	11	5	3	—	—	—	—	—	83
1906 ...	11	17	24	15	10	5	3	—	—	—	—	—	85
1907 ...	10	16	26	14	11	5	4	—	2	—	—	—	88
1908 ...	8	15	23	16	13	5	4	—	2	—	—	—	86
1909 ...	7	12	22	16	16	4	4	—	2	—	—	—	83
1910 ...	6	9	25	19	14	4	4	—	2	—	—	—	83
1911 ...	2	13	24	21	14	5	4	—	2	—	—	1	86

II.—Vessels classified according to their speed.

Knots.

Year.	10-11.	11-12.	12-13.	13-14.	14-15.	15-16.	16-17.	17-18.	18-19.	20.	21.	22.	23.	Total.
1895 ...	—	2	34	6	6	2	4	1	4	4	2	—	—	65
1896 ...	—	2	37	5	6	2	4	1	4	4	2	—	—	67
1897 ...	—	1	36	5	6	2	4	1	4	4	2	—	—	65
1898 ...	—	1	41	6	11	1	4	1	4	4	2	—	—	75
1899 ...	—	—	31	10	12	1	5	1	4	5	2	—	—	71
1900 ...	—	—	22	12	10	3	7	1	4	4	2	—	—	65
1901 ...	—	—	26	13	11	3	10	1	4	5	2	—	—	75
1902 ...	—	—	27	11	14	3	12	—	4	4	2	—	—	77
1903 ...	2	4	28	13	16	5	17	—	4	5	2	—	—	96
1904 ...	2	4	22	12	13	6	14	1	4	5	2	—	—	85
1905 ...	2	4	20	12	12	6	11	1	8	5	2	—	—	83
1906 ...	2	4	22	14	9	6	10	1	10	5	2	—	—	85
1907 ...	2	4	19	13	10	7	12	2	10	5	2	—	—	88
1908 ...	2	4	17	12	10	7	13	2	10	5	2	—	—	86
1909 ...	2	4	15	13	8	7	14	3	8	5	2	—	—	83
1910 ...	2	4	15	12	7	7	14	3	11	5	1	—	—	83
1911 ...	2	4	13	13	7	9	16	3	10	5	1	1	2	86

III.—Total number and gross tonnage of vessels and average size and speed.

Year.	Total number of vessels.	Total gross tonnage.	Average size gross tonnage.	Average speed knots.
1895	65	376,019	5,784	13·81
1896	67	376,348	5,617	13·74
1897	65	370,667	5,702	13·78
1898	75	447,809	5,970	13·68
1899	71	460,180	6,481	14·03
1900	65	481,527	7,408	14·28
1901	75	587,947	7,839	14·29
1902	77	632,714	8,217	14·24
1903	96	846,526	8,817	14·15
1904	85	780,527	9,182	14·29
1905	83	798,034	9,614	14·47
1906	85	817,025	9,612	14·46
1907	88	920,275	10,457	14·87
1908	86	918,582	10,681	14·97
1909	83	920,078	11,085	15·01
1910	83	927,930	11,179	15·08
1911	86	1,008,159	11,722	15·16

Therefore, comparing the year 1911 with the year 1895, the total gross tonnage has increased by 168 per cent. and the average gross tonnage per vessel by 103 per cent. The increase in the average speed of vessels crossing the North Atlantic has amounted to 9 per cent.

SHIPPING CASUALTIES THROUGH CONTACT WITH ICE.

During the 20 years ended 30th June, 1911, the sea casualties to vessels registered in the United Kingdom, reported to the Board of Trade as having occurred in any part of the world through contact with ice, have averaged as under:—

	Average number per annum.
Casualties involving the total loss of the vessel ...	1·80
Serious casualties ...	17·50
Minor casualties ...	23·60
Total ...	42·90

Of these casualties 3 only entailed loss of life, the total number of lives lost being 6. Of the casualties in which these lives were lost two occurred in the South Atlantic and one in the Yellow Sea.

Of the vessels totally lost, 13 were lost through striking ice whilst on voyages between European ports and the east coast of the United States, Canada and Newfoundland. Of these vessels 3 were Dundee whalers, and of the remainder only one was lost south of latitude 45° north, namely, the s.s. "Anglo Peruvian," on the 21st April, 1906, on a voyage from Newcastle-on-Tyne to Philadelphia, in latitude 41° 50' N., longitude 52° 30' W. In these 13 casualties there was no loss of life.

In addition to the above casualties there were, during the same 20 years, reported as missing 48 vessels registered in the United Kingdom whilst on voyages between European ports and the east coast of the United States, Canada and Newfoundland. The months during which these vessels were last heard of are as under:—

Month during which vessel last heard of.	Number of vessels last heard of in that month.
January ...	12
February ...	6
March ...	1
April ...	—
May ...	1
June ...	1
July ...	—
August ...	5

Month during which vessel last heard of.	Number of vessels last heard of in that month.
September	3
October	4
November	3
December	12
	48

It is difficult to conjecture which, if any, of these vessels may have been lost through contact with ice, but it will be noted that almost all the losses occurred in the months during which the ordinary trade routes in the North Atlantic are free of ice.

HOME TRADE AND EXCURSION PASSENGER STEAMSHIPS.

Table 20.

A Return is appended of Home Trade or Excursion Passenger Steamships, registered in the United Kingdom, which met with casualties attended with loss of life during the 20 years ended 30th June, 1911.

The list includes 1 foundering, 8 strandings, 13 collisions, and 13 casualties due to other causes.

In 30 out of the 35 cases the boats and buoyant deck seats were sufficient to accommodate all persons on board. In one case no particulars as to the life-saving appliances on board are available. In the remaining four cases the survivors were saved by remaining on board, with the exception of two persons saved, in one case, by the colliding vessel.

The list includes six excursion steamers, and on these vessels one passenger and five members of the crews lost their lives.

NORMAN HILL,
(Chairman.)

R W. MATTHEW,
(Secretary).

APPENDIX TO STATISTICAL REPORT.

Table

STATISTICS RELATING TO THE YEARS 1877-1885 :—

1. Number and tonnage and number of crew of Foreign Trade and Home Trade vessels
2. Number of lives lost
3. Number of lives saved

STATISTICS RELATING TO THE YEARS 1890-1 TO 1910-11 :—

4. Number and tonnage and number of crew of Foreign Trade and Home Trade vessels...
5. Entrances and clearances of Foreign Trade vessels
6. Number of lives lost
7. Number of lives saved
8. References by Courts of Inquiry to the use of ships' boats in time of casualty
9. List of Foreign-going passenger steamers

STATISTICS WITH REFERENCE TO THE NORTH ATLANTIC TRADE :—

10. Gross tonnage of steamships in North Atlantic passenger trade
11. Speed of steamships in North Atlantic passenger trade
12. Number of voyages made by steamships in North Atlantic passenger trade
13. Number of passengers carried in North Atlantic
14. Entrances and clearances of vessels in North Atlantic trade
15. Casualties involving total loss of vessel or loss of life in North Atlantic

CASUALTIES DUE TO CONTACT WITH ICE :—

16. Number of casualties to vessels reported as having occurred in any part of the world through contact with ice
17. Loss of life through casualties due to contact with ice
18. Vessels totally lost through striking ice in North Atlantic
19. Missing vessels in North Atlantic
20. List of Home Trade and Excursion Passenger Steamers which met with casualties attended with loss of life

TABLE showing the Number and Tonnage of Vessels Registered in the United Kingdom which were Employed in the Home and Foreign Trades, and the Number of Hands Employed therein, during each of the Nine Years 1877 to 1885.

Year.	Sailing.			Steam.			Total.		
	Vessels.	Tonnage.	Crew.	Vessels.	Tonnage.	Crew.	Vessels.	Tonnage.	Crew.
1877 ...	16,742	4,087,852	137,441	3,214	1,977,377	76,186	19,856	6,065,229	213,627
1878 ...	16,282	4,026,399	133,675	3,386	2,159,916	78,859	19,668	6,186,315	212,534
1879 ...	16,042	3,872,478	128,552	3,577	2,331,056	81,924	19,619	6,203,534	210,476
1880 ...	15,799	3,707,952	121,960	3,786	2,594,034	88,066	19,585	6,301,986	210,026
1881 ...	14,864	2,530,446	115,015	4,085	2,921,684	94,466	19,949	6,452,130	209,481
1882 ...	14,246	3,388,608	109,253	4,378	3,290,774	103,090	18,624	6,679,382	212,343
1883 ...	13,833	3,336,202	107,748	4,749	3,655,950	110,142	18,582	6,992,152	217,890
1884 ...	13,610	3,228,739	103,689	4,864	3,825,459	113,106	18,474	7,054,198	216,795
1885 ...	13,507	3,289,689	103,179	5,011	3,889,432	112,789	18,518	7,179,121	215,968
Average	14,992	3,607,596	117,835	4,117	2,960,631	95,403	19,108	6,568,227	213,238

TABLE showing the NUMBER OF LIVES LOST in Vessels belonging to the UNITED KINGDOM by Sea Casualties which occurred to such Vessels on or near the coasts of the United Kingdom during each of the Nine years ended 30th June, 1885, or were reported during the same period as having occurred Abroad

Year.	Sailing.				Steam.				Total.			
	Number of Cases.	Lives lost.			Number of Cases.	Lives lost.			Number of Cases.	Lives lost.		
		Crew.	Passengers.	Total.		Crew.	Passengers.	Total.		Crew.	Passengers.	Total.
1876-77 ...	270	1,533	75	1,608	48	509	81	590	318	2,042	156	2,198
1877-78 ...	174	859	105	964	53	458	129	587	227	1,317	234	1,551
1878-79 ...	181	943	26	969	55	433	24	457	236	1,376	50	1,426
1879-80 ...	151	902	74	976	64	442	195	637	215	1,344	269	1,613
1880-81 ...	337	1,661	24	1,685	64	490	21	511	401	2,151	45	2,196
1881-82 ...	359	2,098	30	2,128	85	913	233	1,146	444	3,011	263	3,274
1882-83 ...	324	1,629	20	1,649	97	781	71	852	421	2,410	91	2,501
1883-84 ...	286	1,536	83	1,619	66	504	122	626	352	2,040	205	2,245
1884-85 ...	191	699	34	733	81	668	42	710	272	1,367	76	1,443
Total ...	2,273	11,860	471	12,331	613	5,198	918	6,116	2,886	17,058	1,389	18,447
Average ...	253	1,318	52	1,370	68	578	102	680	321	1,895	154	2,050

NOTE.—The columns headed "Passengers" include, in addition to emigrants and passengers carried in certificated steamers, all persons carried on board other ships who were not on articles of agreement.

No. 3.

TABLE showing the Number of Lives Saved from Shipwreck of British Vessels everywhere and of Foreign Vessels on or near the Coasts of the United Kingdom and the Coasts of British Possessions Abroad, during the Nine Years ended the 30th of June 1885, distinguishing the Means by which they were Saved.

Year.	By Rocket Apparatus and Assistance with Ropes, &c., from Shore.*	By Lifeboats.	By Luggers and small Craft.	By Ships and Steamboats.	By Ships' own Boats.	By Life-buoys and Appliances kept on Board.	By individual exertion.	By other means.	Total.
1876-77 ...	1,176	700	969	2,061	8,193	39	1	646	13,785
1877-78 ...	515	667	748	2,156	6,385	4	8	1,708	12,191
1878-79 ...	593	525	1,023	3,062	6,751	—	6	1,192	13,152
1879-80 ...	375	430	862	2,876	6,209	50	10	393	11,205
1880-81 ...	1,043	717	1,124	2,485	5,782	19	3	530	11,703
1881-82 ...	746	671	948	3,508	6,709	8	10	539	13,139
1882-83 ...	940	756	1,271	1,785	7,963	28	2	379	13,124
1883-84 ...	629	869	830	2,203	5,430	4	10	939	10,914
1884-85 ...	157	257	429	1,738	6,809	65	4	1,073	10,532
Total ...	6,174	5,592	8,204	21,874	60,231	217	54	7,399	109,745
Average...	686	621	912	2,430	6,692	24	6	822	12,194

* These figures include all lives saved by rocket apparatus, ropes, and similar assistance from shore, whether rendered by the life-saving parties or others.

NOTE.—The above figures include lives saved from foreign vessels on or near British territory, but not at sea or on the coasts of foreign countries.

TABLE showing the NUMBER and TONNAGE of Vessels Registered in the United Kingdom which were employed in the Home and Foreign Trades, and the number of Hands Employed therein, during each of the Twenty years 1891-1910.

Year.	Sailing.			Steam.			Total.		
	Vessels.	Tonnage.	Crew.	Vessels.	Tonnage.	Crew.	Vessels.	Tonnage.	Crew.
			Exclusive of Lascars.*			Exclusive of Lascars.*		Exclusive of Lascars.*	Total.
1891	10,918	2,827,822	79,954	6,122	5,316,808	135,365	17,040	8,144,630	215,319
1892	10,608	2,947,005	79,666	6,220	5,483,958	135,601	16,828	8,430,963	215,267
1893	10,290	2,882,093	77,270	6,353	5,641,949	137,910	16,643	8,524,042	215,180
1894	9,845	2,805,847	73,884	6,528	5,893,804	139,448	16,373	8,699,651	213,332
1895	9,322	2,721,347	70,691	6,615	6,124,804	140,814	15,937	8,846,151	211,505
1896	8,839	2,603,361	67,359	6,710	6,315,009	143,836	15,579	8,918,370	211,195
1897	8,445	2,459,069	63,124	6,830	6,452,496	145,525	15,275	8,911,565	208,649
1898	7,977	2,300,093	58,442	7,093	6,767,776	151,130	15,070	9,067,869	209,572
1899	7,773	2,106,070	53,639	7,293	7,128,540	156,033	15,066	9,234,610	209,672
1900	7,364	1,979,139	49,687	7,450	7,405,348	161,136	14,814	9,384,487	210,823
1901	6,919	1,829,318	45,932	7,544	7,685,215	164,063	14,463	9,514,563	209,995
1902	6,602	1,736,669	43,659	7,722	8,059,841	170,186	14,321	9,796,510	213,845
1903	6,379	1,661,910	41,774	7,939	8,398,001	174,674	14,318	10,039,911	216,448
1904	6,259	1,561,986	39,438	8,125	8,708,736	176,906	14,384	10,270,722	216,344
1905	6,065	1,462,110	37,169	8,370	9,123,192	182,632	14,435	10,591,302	219,801
1906	5,936	1,359,322	35,258	8,705	9,670,176	190,800	14,641	11,029,498	226,058
1907	5,673	1,240,065	32,732	9,000	10,042,717	199,457	14,673	11,282,782	232,189
1908	5,449	1,135,113	30,239	9,175	10,027,865	201,008	14,624	11,162,978	231,247
1909	5,255	1,012,492	28,084	9,215	10,123,266	201,978	14,470	11,135,758	230,062
1910	4,967	890,172	25,628	9,421	10,409,196	206,494	14,388	11,299,368	232,122
Average ...	7,544	1,976,052	51,681	7,623	7,739,235	165,750	15,167	9,715,287	217,431
Average for last nine years.	5,843	1,339,982	34,887	8,630	9,396,554	189,348	14,473	10,736,537	224,235
			17			43,025			43,042
						232,373			267,277

* The figures in these columns are comparable with those shown under the head of "Crew" in Table 1 of the Appendix. Prior to the year 1886 Lascars were not included in the total number of persons employed.

No. 6.

TABLE showing the NUMBER OF LIVES LOST in Vessels belonging to the UNITED KINGDOM by Sea Casualties which occurred to such Vessels on or near the Coasts of the United Kingdom during each of the 21 Years ended 30th June, 1911, or were reported during the same period as having occurred Abroad.

Year	Sailing.			Steam.			Total.					
	Number of Vessels.	Lives lost.		Number of Vessels.	Lives lost.		Number of Vessels.	Lives lost.				
		Crew.	Passengers.		Total.	Crew.		Passengers.	Total.			
1890-91 ...	197	937	29	966	70	381	561*	942	267	1,318	590*	1,908
1891-92 ...	214	975	39	1,014	67	345	13	358	281	1,320	52	1,372
1892-93 ...	144	645	20	665	47	441	90	531	191	1,086	110	1,196
1893-94 ...	217	874	91	965	97	646	38	684	314	1,520	129	1,649
1894-95 ...	251	898	38	936	87	450	1,158†	1,608	338	1,348	1,196†	2,544
1895-96 ...	175	850	48	898	65	484	426	910	240	1,334	474	1,808
1896-97 ...	117	506	7	513	80	485	39	524	197	991	46	1,037
1897-98 ...	127	378	14	392	57	251	289	524	184	629	52	681
1898-99 ...	130	535	24	559	96	666	135	801	226	1,201	159	1,360
1899-1900 ...	122	410	15	425	94	616	14	630	216	1,026	29	1,055
1900-01 ...	130	574	12	586	74	383	42	425	204	957	54	1,011
1901-02 ...	100	380	22	402	69	579	676†	1,255	169	959	698†	1,657
1902-03 ...	78	265	6	271	69	334	19	353	147	599	25	624
1903-04 ...	99	360	16	376	48	184	5	189	147	544	21	565
1904-05 ...	79	381	14	395	69	369	8	377	148	750	22	772
1905-06 ...	96	353	4	357	66	306	116	422	162	659	120	779
1906-07 ...	96	260	16	276	59	388	98	486	155	648	114	762
1907-08 ...	77	281	16	297	52	219	4	223	129	500	20	520
1908-09 ...	73	295	15	310	45	286	91	377	118	581	106	687
1909-10 ...	82	214	14	228	65	476	246	722	147	690	260	950
1910-11 ...	83	241	7	248	70	421	11	432	153	662	18	680
Total ...	2,687	10,612	467	11,079	1,446	8,710	3,828	12,538	4,133	19,322	4,295	23,617
Average for 21 years ...	128	505	22	527	69	415	182	597	197	920	204	1,124
Total of last 9 years ...	763	2,650	108	2,758	543	2,983	598	3,581	1,306	5,633	706	6,339
Average for last 9 years	85	294	12	306	60	332	66	398	145	626	78	704

NOTE.—The columns headed "Passengers" include, in addition to emigrants and passengers carried in certificated steamers, all persons carried on board other ships who were not on the articles of agreement.

* Includes 558 passengers lost in the s.s. "Utopia" through her collision with a warship at Gibraltar.

†	"	1,150 Chinese soldiers lost in the s.s. "Kow Shing," which was sunk through being fired on by a Japanese warship.
†	"	655 native passengers lost in the missing steamer "Camorta" on a voyage from Calingapatam to Rangoon.

No. 7.

Number of Lives Saved during the 21 years ended 30th June, 1911, from shipwreck of British vessels everywhere and of Foreign vessels on or near the coasts of the United Kingdom and the coasts of British Possessions abroad, distinguishing the means by which they were saved.

Years.	By rocket apparatus and assistance with ropes, &c., from shore.	By life-boats.	By luggers and small craft.	By ships and steam-boats.	By ships' own boats.	By life-buoys and appliances kept on board.	By individual exertion.	By other means.	Total.
1890-91 ...	465	482	696	2,023	4,038	—	8	143	7,855
1891-92 ...	570	967	839	1,950	5,175	29	11	436	9,977
1892-93 ...	658	290	281	2,011	4,907	133	—	132	8,412
1893-94 ...	522	709	1,728	2,268	3,367	31	7	265	8,897
1894-95 ...	411	496	457	2,093	3,747	42	2	808	8,056
1895-96 ...	510	560	1,345	2,533	4,387	—	8	620	9,963
1896-97 ...	371	722	577	1,733	3,851	20	5	180	7,459
1897-98 ...	401	502	281	1,721	3,355	55	3	131	6,449
1898-99 ...	343	611	355	1,966	3,497	16	3	242	7,033
1899-1900 ...	441	464	776	2,435	4,430	20	—	188	8,754
1900-01 ...	364	461	716	1,198	4,253	52	9	341	7,394
1901-02 ...	332	350	380	1,159	3,086	47	4	170	5,528
1902-03 ...	423	614	348	1,413	2,723	1	43	95	5,660
1903-04 ...	314	451	257	1,600	3,297	27	2	138	6,086
1904-05 ...	289	444	408	2,053	3,528	32	—	288	7,042
1905-06 ...	333	417	418	2,987	2,741	19	62	93	7,070
1906-07 ...	454	790	526	1,693	3,782	576	9	337	8,167
1907-08 ...	227	486	565	2,055	3,257	120	4	79	6,793
1908-09 ...	355	387	714	2,197	3,897	111	41	118	7,820
1909-10 ...	253	312	817	1,651	4,570	34	29	270	7,936
1910-11 ...	291	316	341	1,783	3,714	96	25	81	6,647
Average ...	397	516	611	1,930	3,791	70	13	245	7,571
Average of last 9 years.	327	469	488	1,937	3,501	113	24	167	7,025

No. 8.

RETURN containing remarks as to the use of Ships' Boats, in time of Casualty, made by Courts of Inquiry into Shipping Casualties held in the United Kingdom and Abroad during the last Ten Years.

(A.) INQUIRIES HELD IN THE UNITED KINGDOM.

(B.) INQUIRIES HELD AT PLACES ABROAD.

(A.)

INQUIRIES HELD IN THE UNITED KINGDOM.

Inquiries ordered in 1902.

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
1	"Acara" (S.S.). Foreign going—Cargo.	4,193	1 March, 1902. Stranding. Long Island, New York.	"The Master considered it desirable to abandon the vessel, which they did in their own boats, and after great difficulty succeeded in landing in safety."
2	"Africa" (S.S.). Fishing.	79 N.	14 April, 1902. Stranding. Iceland.	"The fires were drowned out, and all on board left for the shore in the boat."
3	"Greenock" (S.S.). Dredger.	461	18 November, 1902. Collision. Firth of Clyde.	"A boat was lowered from the 'Ape' and manned by the dredger's men, who had scrambled on board. They picked up the Chief Engineer, but after searching about for half an hour without seeing anything they returned on board."
4	"Ape" (S.S.). Home Trade—Cargo.	193		
4	"Athena" (S.S.). Foreign-going—Cargo.	3,427	22 March, 1902. Striking unknown rock. Patagonia.	"The lifeboats, partly provisioned, were immediately got out and lowered, and all hands placed in them with safety." "The starboard lifeboat, in charge of the Chief Officer, was seriously damaged by striking the ship's side in lowering. When the boats left the ship it was found that the crew were unequally divided, so that the two boats closed and the numbers were equalized. About two hours after separation the port lifeboat was seen from the starboard lifeboat (which was leading) bottom upwards with a number of the crew holding on to the keel. The Chief Officer at once lowered the sail and mast, turned his boat round with much difficulty and endeavoured to reach the overturned boat under oars, but owing to the heavy sea and wind he was unable to do so or render any help. As the boat was turned for this purpose the Chief Officer was washed overboard by a heavy sea, but he was fortunately rescued." "Sixteen were lost by the capsizing of the port boat, and four died from exposure in the starboard boat" "The lifeboats appear to have been properly equipped and provisioned as well as circumstances permitted."
5	"Ben Corlic" (S.S.). Home-Trade—Cargo.	2,060	30 May, 1902. Stranding. Near Whitby.	"The vessel being full of water, the boats were lowered, and the crew got into them, the Master and nine others going in the starboard lifeboat, while the Second Mate with a few hands left in the other boat on the starboard side, which was not a lifeboat. The Mate succeeded with the remainder of the crew in lowering the port lifeboat, which was on the side of the vessel exposed to the sea. The Master's boat was capsized in the surf and all those on board washed out of her. The Mate's boat went to their assistance and rescued some of the men. The Master and three others scrambled on to the bottom of their boat, while one man succeeded with the help of two oars in getting to the Second Officer's boat, which was then half full of water."
6	"Bewick" (S.S.). Foreign-going—Cargo.	1,401	13 September, 1902. Foundering. Lat. 56° 16' N.; long. 1° 27' E. North Sea.	"The Master ordered the port lifeboat to be got out. This was a very difficult thing to accomplish without staving her, as she had to be lifted over the main stay and engine-room skylight, but after great difficulty this was done. The boat then launched herself over the starboard side, five of the hands jumping into her as she went clear of the skids, the Chief Officer afterwards jumping into the sea and swimming to her. The lifeboat was kept afloat all that day and the following night by keeping her end on to the wind and sea, but about 10 a.m. the following day a heavy sea caught her stern, swung her round, and capsized her, and the crew had to swim for their lives. They clung to the boat's keel and bottom for some time, and eventually succeeded in turning her over and righting her again, one of the men having been imprisoned beneath her all the time she was capsized." The Master and ten of the crew went down with the ship.
7	"Bothal" (S.S.). Foreign-going—Cargo.	1,88	26 January, 1902. Abandonment. Bay of Biscay.	"The 'Patagonia' came to their assistance and succeeded in getting a boat safely into the water and got into communication with the 'Bothal' by means of a line; the crew of the sinking vessel put on lifebelts, and were hauled through the sea into the boat, the Master being the last to leave the vessel."
8	"Buckhound" (S.S.). Fishing.	58 N.	27 July, 1902. Stranding. Jutland.	"The ship's boat which was carried on the deck aft, had previously been swept away."
9	"Cloughmore" (S.S.). Home Trade—Cargo.	547	14 June, 1902. Foundering. Off Tory Island.	The Master, his sister and two members of the crew left in the port lifeboat, and the Chief Mate and six men in the starboard boat. The port boat reached shore in safety, but two days later the starboard boat was washed ashore containing the body of the Chief Mate. There was nothing to show what had become of the other six men.
10	"Empire" (S.S.). Fishing.	54 N.	10 July, 1902. Foundering. North Sea, 50 miles from Spurn.	The Master and all the crew left the vessel in the ship's boat. They remained in the boat all night, and on the following day were picked up by a Danish schooner.
11	"Fernbank." Foreign-going—Cargo.	1,429	21 October, 1902. Stranding. Juan de Nova.	All hands were safely landed in the ship's boats.
12	"Jamesia" (S.S.). Fishing.	93 N.	25 March, 1902. Stranding. Iceland.	The crew left the vessel in the ship's boat, and after 4½ hours were picked up by another fishing vessel."
13	"Kynoch" (S.S.). Home Trade—Cargo.	264	11 May, 1902. Stranding. Barrels Rocks, St. George's Channel.	All hands then took to the boats and remained in them at some little distance from the vessel until she foundered. The boats then made for Milford Haven where they arrived safely.
14	"Lagos" (S.S.). Foreign Trade—Passenger.	1,731	17 January, 1902. Stranding. Madeira.	"All hands now came running on deck, the boats were swung out and lowered, and the passengers put into them and pulled off to a safe distance clear of the surf. At about 11 a.m. the passengers and crew left for Funchal where they safely landed during the afternoon."
15	"Liverpool." Foreign-going—Cargo.	3,396	25 February, 1902. Stranding. Alderney.	"The boats were then got out and the crew and their effects put into them and taken ashore."
16	"Loch Leven" (S.S.). Home Trade—Cargo.	851	15 April, 1902. Stranding. Near Longstone Lighthouse.	"When the Master and crew concluded that nothing more could be done to save the ship, they abandoned her, leaving in one of the ship's lifeboats, and taking refuge in the Longstone Lighthouse."
17	"Marlay." Home Trade—Cargo.	798	16 December, 1902. Foundering. Irish Sea	"After bringing the vessel to the wind again, the Master and Mate being on the bridge, the crew standing by the boats, which the Master had ordered to be got ready, when suddenly a heavy sea struck the vessel on the port side, heeling her to starboard and floating the starboard lifeboat from the tackles. Michael Mcglue was standing close to the boat, which had been placed on chocks on the fiddley hatch, and seeing the boat floating, he got hold of the gunwale, and with difficulty hauled himself into her and drifted away from the ship." He was the only person saved.

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
18	"Vesta" (Norwegian); "Pearl" (S.S.). Foreign-going—Cargo.	— 1,548	5 October, 1902. Collision. Off Isle of Wight.	"As soon as the master (of the 'Pearl') had got on the bridge, he ordered the jolly boat to be swung out and lowered down level with the main rail, which was done, and four hands stood by to go in her, but in consequence of the excessive darkness of the night, and hearing and seeing nothing, he did not think it prudent to lower the boat into the water, but kept her in readiness The second officer of the 'Vesta' states that when the ship went down, he went down with her, and on coming to the surface he swam about for some time, and then succeeded in getting into the small boat of his vessel, which was then full of water."
19	"Quillota." Foreign-going—Cargo.	1,111	12 November, 1901. Stranding. County Durham.	"When the vessel struck the rocks an enormous wave carried away the lifeboats and everything else off the deck."
20	"St. Giles." Home Trade—Passenger.	464	28 September, 1902. Stranding. Rattray Head, Aberdeenshire.	"The passengers were all safely put on shore by the crew in the ship's boats, nothing in the nature of a panic occurred, nor was there any loss of life."
21	"Saint Kilda" (S.S.). Home Trade—Cargo.	479	29 December, 1901. Striking rock. St. Brieuc, France.	"As the vessel took a heavy list to port the starboard lifeboat could not be got out, but the port lifeboat was safely put into the water, and the crew with the exception of the master and mate all got into her. The master and mate then joined the rest of the crew in the boat and pushed off from the side about 7.30 p.m., seeing that there was no hope of saving the vessel. After pulling the boat, which required to be constantly baled out, in the direction of St. Brieuc for about four hours, they were picked up by a French fishing boat."
22	"Sophron" (S.S.). Fishing.	61	29-30 September, 1902. Stranding. Sule Skerry, Crkneys.	"The boat was then launched and all the crew got into her, saving what they could of their effects."
23	"Turret Bell" (S.S.). Foreign-going—Cargo.	2,211	27 June, 1902. Stranding. Ushant, France.	"Boats were lowered and the crew's effects and stores placed in them The vessel proceeded at half speed to Lampoul Bay where she arrived at 6.30 p.m. Whilst on the way with ship's boats and fishermen's boats in tow, the starboard lifeboat took a wide sheer and capsized, throwing occupants and effects into the water the shore lifeboat went to their assistance and picked up the boat's crew and part of the ship's papers."
24	"Viatka" (S.S.). Foreign-going—Cargo; "Waago" (S.S.). Fishing.	883 154	29 October, 1902. Collision. 46 miles N.W. of Ymuiden, North Sea.	"A lifeboat was lowered (from the 'Viatka') and all hands with the passengers got into her, and they were all taken on board the other steamer."

Inquiries ordered in 1903.

25	Morecambe Bay Lightship; "Abbot" (S.S.). Home Trade—Cargo.	— 283	16 July, 1903. Collision.	"The master of the lightship then had the boats put out, and went round to see that all the sluices were closed, but finding water in the engine room and hold they got into the boats and were picked up by the 'Abbot.'"
26	"Adeline" (S.S.). Fishing.	111 N.	17 April, 1903. Stranding. Iceland.	"All the crew, save the cook, were found and got on board the trawler 'Brough' by their own boat."

27	"Anglesey" (S.S.). Fishing.	158	24 September, 1903. Stranding. Yokane Point, Ireland.	"After the boat was launched the crew got safely into her and the engineer, who was below, was told to stop the engines, which he did, and he, with the skipper, got into the boat . . . all landed safely."
28	"Arthur" (S.S.). Home Trade—Cargo. "Watchful" (S.S.). Home Trade—Cargo.	511 353	10 February, 1903. Collision. Bristol Channel.	"The 'Arthur' foundered carrying with her five hands who had attempted to launch a boat over the vessel's port quarter, but were unable to do so, owing to 'Arthur' listing over so much to starboard. They accordingly got into the boat expecting it to float clear as the vessel went down, but unfortunately the boat got entangled in some way and went down with the ship. The five hands . . . were picked up by a pilot boat."
29	"Baron Glamis" (S.S.). Foreign-going—Cargo.	2,290	21 January, 1903. Stranding. Wigtownshire.	"The vessel being full of water, all hope of saving her was abandoned, and the master and crew left her in the boats, part of them in the lifeboat, which after the stranding came to their assistance . . . they landed safely."
30	"Benwick" (S.S.). Home Trade—Cargo.	2782	4 February, 1903. Stranding. Cornwall.	"The crew ran aft to get out the starboard lifeboat, but the master stated he gave no orders on the subject, though he acquiesced in its being done. On the other hand the chief officer said the master gave him express orders to get the lifeboat out, and that he did so. However this may be, the master took no steps to prevent the crew lowering the boat and leaving the vessel. The boat was accordingly lowered, and 20 of the crew at once jumped into her. The chief engineer, who had slid down the after rope, was holding it, when a swell lifted the boat and took him overboard. He held on to the rope, and was pulled on board the vessel, and the lifeboat drifted away with 19 of the crew, leaving the master, two officers, chief engineer and one fireman behind. No attempt seems to have been made by those in the lifeboat either to return or keep near the steamer, although the weather was fine and there was no wind or sea. By the time the lifeboat had got well away, the steamer herself floated off the rock By 8 o'clock those on board lowered the other lifeboat and left the ship."
31	"Buckingham" (S.S.). Home Trade—Cargo.	2879	25 December, 1902. Stranding. Ross-shire.	"A boat was lowered for the purpose of laying a kedge anchor. In passing round the bow the boat was capsized by the sea. The boatswain and one A.B. held on to the boat, and with it were washed ashore, while a second A.B. swam back towards the ship. The latter sank before the port lifeboat could reach him."
32	"Cam" (S.S.). Foreign-going—Cargo.	3021	5 January, 1903. Stranding. Suakin Islands, Red Sea.	"As she was filling rapidly, the boats were got out and provisioned, and she was abandoned. The boats made for the main Red Sea track, where, two days later, they were picked up."
33	"Cambrian Prince" Foreign-going—Cargo.	1,392	27 February, 1903. Foundering. Off Whitby.	"The 'Cambrian Prince' appears to have foundered almost immediately, for on Hellsten coming to the surface he saw two of the crew and lifeboat floating close to, but the vessel had disappeared. All three got into the boat, but after doing so the boat capsized, and one of the three men was washed away. The other two managed again to get into the boat and ultimately the other man became so exhausted that he was washed out leaving Hellsten alone. Hellsten was eventually picked up."
34	"Chelsea" (S.S.). Home Trade—Cargo. "Kirkcaldy" (S.S.). Home Trade—Cargo.	1,170 525	10 May, 1903. Collision. Near Dudgeon Light Vessel.	"The master of the 'Chelsea' sent the second officer to call the engineers and ordered the boat out, but before a boat could be lowered she went down stern first taking seven of the crew. The master and eight members of the crew were rescued by a boat from the 'Kirkcaldy.'"
35	"Choice" (S.S.). Fishing.	149	20 August, 1903. Foundering. 34 miles E.S.E. of May Island, North Sea.	"All hands got into the boat . . . and were picked up."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
36	"Crosby" (S.S.). Home Trade--Cargo.	305	9 January, 1903. Stranding. Flamborough Head.	"The master ordered the boats out; before, however, anything could be done the vessel fell over to port, submerging the port lifeboat. The crew got on to the starboard rails and while endeavouring to get the remaining boat out a sea broke over and washed her out of the tackles. She was drifting away when the master, having failed to induce any of the crew to do so, himself swam to the boat and brought it back to the ship. "The crew at once commenced to get into her. She soon filled up to the thwarts, and all, with the exception of the master, mate, one seaman and one fireman, climbed back on to the wreck . . . "Those in the boat, two of whom were constantly bailing, pulled for the shore." "The skipper then ordered the boat to be put out, which was done, and she was brought alongside, and a compass, five oars, a lifebelt, a chart tin, two tin buckets and a kettle containing soup were subsequently put in her. The vessel was abandoned and after pulling about all night the crew were picked up the following morning." "The skipper then decided to leave the vessel and the chief engineer shut the steam off the boiler, from the deck, to allow all hands to get safely into the boat, which they were able to do . . . They then pulled for the shore and landed safely." "The boats of the 'Wintonia' were immediately got ready, and the dinghy, with two ladies and four men, left, and pulled on board another yacht in the vicinity. This boat left without the master's knowledge."
37	"Doris" (S.S.). Fishing	165	5 January, 1903. Abandonment. Irish Channel.	"The crew subsequently landed with their own boats the master and one man remaining on board."
38	"Dreadnought" (S.S.). Fishing.	116	6 November, 1903. Foundering. 10 miles S.E. of Gourdoun, North Sea.	"The master, seeing it was hopeless trying to get the ship off, subsequently left her, with the crew in the boats and went to Larne."
39	"Wintonia" (Steam Yacht). "Duchess of Albany." Home Trade--Passenger.	168 256	15 August, 1903. Collision. Solent.	"The skipper accordingly got all hands into the boat, and they rowed about to see if they could effect a landing. Finding this impossible, they pulled seawards, and four or five hours after the casualty they were taken on board the steam trawler 'Industria.'"
40	"Duncrag" (S.S.). Home Trade--Cargo.	563	10 July, 1903. Stranding. Near Holyhead.	"A boat was lowered from the 'F. E. Webb,' which succeeded in saving two lives. Boats were also sent from the Lowestoft trawler 'Intrepid' and the drifter 'Boy's Friend' to the scene of the casualty. These boats were successful in rescuing five other passengers, but the three boatmen were drowned."
41	"The Empress" (S.S.). Home Trade--Cargo.	582	9 January, 1903. Stranding. County Antrim.	"The crew got into the boats which remained by the vessel until she foundered. The boats were picked up by a steamer, but the members of the crew subsequently left this vessel, and in their own boats made for port, where they arrived safely."
42	"Etruria" (S.S.). Fishing.	62 N.	15 December, 1903. Stranding. Six miles North of Scarborough.	"At five o'clock 20 of the crew left the ship in the boats for the Cani lighthouse. "At 7 o'clock the ship having broken in two amidships, and consequently become a total wreck; the master, boatswain and an A.B., the remaining members of the crew, also left the ship for the lighthouse."
43	"New Skylark" (open pleasure boat). "F. E. Webb" (S.S.). Home Trade--Cargo.	— 569	1 September, 1903. Collision. Yarmouth Roads.	
44	"Firth of Forth" (S.S.). Foreign-going--Cargo.	2232	24 July, 1903. Abandonment. Lat. 37° 18' N., Long. 3° 48' E. Mediterranean.	
45	"Glantivy" (S.S.). Foreign-going--Cargo.	2949	27 May, 1903. Stranding. Coast of Tunis.	

46	"Graffoe" (S.S.). Foreign-going--Cargo.	2996	25 January, 1903. Stranding. Ramsey Island, St. George's Channel.	"Fourteen men got into the starboard lifeboat and were ordered to go under the lee of the land and stand by. They were unable to do this, and were taken out to sea, where late in the afternoon of the following day they were picked up. The seas rendered the launching of the port lifeboat impossible."
47	"Helga." Foreign-going--Cargo.	1773	22 January, 1903. Stranding. Ballycreeen Bay.	"The crew with the master and his wife, who was the only passenger, got safe into the starboard lifeboat and rowed to windward of the ship until taken in tow by a tug."
48	"Kelvinside" (S.S.). Foreign-going--Cargo.	3531	17 February, 1903. Stranding. Para River, Brazil.	"One boat under the charge of the chief officer was despatched for assistance. It was unable to return to the vessel, and the other lifeboats with five men in each, instead of having been made fast under the lee of the 'Kelvinside' lay on their oars, and being unable to keep alongside drifted to leeward. The vessel finally capsized, throwing into the water all who had remained on her, and of these seven were drowned."
49	"Keroula" (S.S.). Foreign-going--Cargo.	1547	14 September, 1903. Stranding. Oland Island, Baltic Sea.	The crew left the vessel in their own boats and landed safely.
50	"Loch Maree" (S.S.). Foreign-going--Passenger.	2629	31 October, 1903. Foundering. Off coast of Tunis.	"Fourteen or fifteen succeeded in getting into the lifeboat, but the vessel turning over immediately afterwards, a portion of her mast struck the boat, causing it to fill and capsize. Some of the crew reached the upturned boat and were eventually picked up. Nine lives were lost."
51	"Manorbier Castle" (S.S.). Fishing.	53	10 December, 1903. Capsizing. Off Barquero, Spain.	The crew of the "Manorbier Castle" were engaged in fishing in the Bay of Biscay. Owing to unfavourable weather, they had to put into Barquero Harbour. One evening five of the "Manorbier Castle's" crew and five belonging to another vessel went ashore in the former ship's boat. They all seem to have indulged in drink pretty freely, and on the return journey a dispute arose and the altercations led to blows and finally to the capsizing of the boat, whereby six lives were lost.
52	"Margaret Mitchell." Foreign-going--Cargo.	673	23 November, 1902. Foundering. Lat. 50° 2' N., Long. 9° 28' W.	The pinnace was first lowered with two seamen, but owing to the boat being in danger of getting sunk under the vessel's counter, the men had to let go the painter and the boat thus drifted away to leeward, the men being unable to pull up to the vessel. The next boat to be lowered was the lifeboat which was safely put into the water, and the remainder of the crew, 11 in number, got into her and shoved off from the vessel . . . The master decided to return to the vessel, as he found he was unable to manage the boat, three only of the crew being able to handle an oar. In going alongside the eagerness of the men to get back on board caused the boat to capsize, and all were thrown into the water, with one exception, all were unable to climb on board and they were subsequently picked up by a steamer.
53	"Otter" (S.S.). Fishing.	46 N.	19 September, 1903. Stranding. Ravenscar Rocks, Yorkshire.	"The skipper ordered the boat out, and the crew got into her, and pulled about half a mile to sea where they anchored until daylight."
54	"Puritan" (S.S.). Fishing.	66 N.	4 May, 1903. Stranding. 7 miles north of Scarborough.	"The boat was put out, and all hands got into her with the exception of the skipper, who remained on board for a short time longer. But on a heavy sea being shipped which nearly washed him overboard, the skipper also abandoned the vessel." The crew was later on picked up by another vessel.
55	"Rhondda." Home Trade--Cargo.	170	20 August, 1903. Foundering. Bristol Channel.	Two men left the master and got into the boat astern, without orders. This boat was later swamped, and the men drowned.
56	"Spennymoor" (S.S.). Foreign-going--Cargo.	2,748	7 December, 1903. Foundering. 25 miles north of Cape Fenez, Mediterranean.	"As the starboard lifeboat (the only boat available) had been damaged during the bad weather, it was considered unsafe to carry more than eight men at a time in her. This rendered three trips necessary."
57	"Spring Flower" (S.S.). Fishing.	73 N.	4 January, 1903. Stranding. Iceland.	"The second hand thereupon took all the crew except the skipper on board the "Pointer." In about half an hour the boat returned to the "Spring Flower" to take off the skipper."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks
58	"St. George" (S.S.). Fishing.	69 N.	2 September, 1903. Stranding. Iceland.	"The skipper, finding that the ship was filling fast, decided to abandon her, and putting his crew into the boat he pulled out into the offing in order to obtain help from some passing steamer."
59	"Tiger" (S.S.). Tug ...	44	26 December, 1902. Foundering. River Clyde.	"An attempt was made to clear away the lifeboat, but the vessel heeled over and sank before this could be done, drowning seven of those on board, the remaining six being saved by boats which were in the vicinity."
60	"Topaze" (S.S.). Foreign-going—Cargo.	1,901	18 September, 1903. Stranding. Newfoundland.	"At 7.30 p.m. the boats were lowered, and about 11 p.m. the crew got into them, and all hands landed safely about midnight."
61	"Twizell" (S.S.). Home Trade—Cargo.	1,717	20 November, 1903. Stranding. Entrance to River Elbe.	"The lifeboat and jolly boat on the lee side were lowered into the water, four of the crew going into the latter, and the master and remainder of the crew getting into the lifeboat."
62	"Warrington" (S.S.). Home Trade—Passenger.	406 N.	7 December, 1903. Stranding. Haisborough Sand.	"The passengers and crew left the ship in two lifeboats and pulled towards another vessel apparently at anchor. The second vessel, however, had stranded too, but got off with the flood tide soon after the crew and passengers had been taken on board."

Inquiries ordered in 1904.

63	"Algoma" (S.S.). Foreign-going—Cargo.	2,932	6 July, 1904. Stranding. Tongiri Point, China.	"All hands were in the boats The boats stood by until about 9 a.m., when, the vessel being a total loss, they finally abandoned her. The boats were picked up."
64	"Birkdale" (S.S.). Foreign-going—Cargo.	2,828	30 November, 1903. Stranding. Sicily.	"At 7.30 the crew were ordered ashore in the boats, and between midnight and 1 a.m. the master landed. All got safely ashore."
65	"Brator" (S.S.). Foreign-going—Cargo.	2,900	9 January, 1904. Stranding. Lanrock, Norway.	"The master at 4.30 a.m. put his lifeboats out, keeping them alongside till daylight. During the day of the 9th the master landed part of his crew under charge of the chief officer and finally abandoned ship with the remainder of the crew during the 10th of January."
66	"Commercial" (S.S.). Home Trade—Cargo.	498	16 January, 1904. Foundering. 7 miles north of Whitby.	"The second mate seeing a boat floating bottom up a short distance off, swam to it, and found one man clinging on to the keel, viz., the first mate. The two men clung on to the ship's bottom for some time after vainly trying to right her, and eventually the first mate, becoming exhausted, let go."
67	"Countess" Home Trade—Cargo.	45	5 November, 1904. Collision, River Thames.	"The 'Countess' sank immediately, the mate just having time to get into the boat. He picked up the boy and rowed about in search of the skipper, but failed to find him."
68	"Sherwood" (S.S.). Home Trade—Cargo.	1,353		
68	"Craiglee" (S.S.). Foreign-going—Cargo.	1,920	25 September, 1904. Foundering. Lat. 36° 37' N., Long. 17° 55' E.	"About 8 a.m. the crew was ordered into the boats. The men took most of their effects with them and pulled to the 'Caucasian.'"

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69	"Cygnet" (S.S.). Home Trade—Cargo.	2,011	29 December, 1903. Foundering 95 miles south of Cape Finisterre.	"The five passengers with four of the crew and the chief officer then got into the port lifeboat which was then cast adrift Shortly after the boat left the vessel a heavy sea broke into it and an able seaman was unfortunately washed overboard and drowned, it being quite impossible for those in the boat to render any assistance. "The remaining nine drifted in the boat for five and a half days when they were picked up. "At 9.15 p.m. a steamer was sighted from aloft (on the 'Cygnet') whereupon several of the crew were ordered into the starboard lifeboat and sent off to the steamer. They were taken on board the boat returned, and the remaining crew of the 'Cygnet' were taken on board the rescuing steamer."
70	"Duncrag" (S.S.). Home Trade—Cargo.	563	11 April, 1904. Foundering 25 miles south of St. Catherine's Lighthouse.	"The starboard boat was first lowered and sent away by the master's orders in charge of the chief officer and five of the crew. The helm was then starboarded and a lee made in order to lower the port lifeboat, which was successfully accomplished, and it left the vessel with the master and remaining five of the crew."
71	"Elfin" (steam yacht)...	11 N.	29 October, 1903. Foundering. Sound of Sleat.	"The boat was hauled up and he (the engineer) and the master got into it, the boat was then pulled to Mallaig where the two men safely landed."
72	"Freya" (Steam Yacht)	56	16 April, 1904. Foundering. Belfast Lough.	"The boat (containing all the members of the crew) shoved off from the vessel, and shortly afterwards the latter sank. The boat eventually got into White Head where all the crew landed safely."
73	"Hermann" (S.S.). Foreign-going—Cargo.	992	3 December, 1904. Stranding. Eigg Island, Scotland.	"The crew all landed safely in the ship's boats."
74	"Hexham" (S.S.). Foreign-going—Cargo.	1,689	7 July, 1904. Stranding. Ailand Island, Baltic Sea.	"All hands were then ordered into the boats, and at 7 p.m. a salvage steamer arrived the crew were subsequently landed by the salvage steamer."
75	"Hypatia" (S.S.). Fishing.	55 N.	24 July, 1904. Foundering. Off Lambay Island.	"All hands entered the boat and pulled for the steam trawler 'Curlew.'"
76	"Kate B. Jones" (S.S.). Foreign-going—Passenger.	1,981	6 June, 1904. Collision. Lat. 40° 32' N., Long. 9° 46' W.	"The first and second officers and an A.B. (of the 'Kate B. Jones') got on board the 'Inveric,' leaving their master entirely alone at a very critical time to superintend the lowering of the boats, the saving of life and the navigation of the vessel. The master first got out the starboard gig, and placed in it the two passengers and the cook, the steward and a fireman. This boat was lowered over the side and remained suspended half way between the lower bridge and the water. The port lifeboat was then lowered, and the greater part of the crew got into it The crew in the port boat were ordered to return, and did return to the vessel It was then discovered that the starboard boat was in the water towing by the stem tackle only, and that the occupants were missing. It appears that the sea had struck the bottom of the ship's boat thereby unhooking the forward tackle and causing the boat to swing round which resulted in the occupants being thrown into the water. The two passengers, the cook, and the steward were never seen again, but the fireman was found clinging to some wreckage about half an hour afterwards, and was picked up by the 'Inveric' crew."
	"Inveric" (S.S.). Foreign-going—Cargo.	4,789		
77	"Kelvin" (S.S.). Foreign-going—Cargo.	3,662	7 October, 1904. Abandonment. Lat. 34° 53' N., Long. 70° 39' W.	"The first boat left the vessel about 11.45 p.m. The last boat, with the master, chief engineer, and the remaining members of the crew, left about 2 o'clock next morning and stood by the vessel." The whole crew was subsequently taken on board a schooner.
78	"Kenmore" (S.S.). Foreign-going—Cargo.	3,762	11 January, 1904. Stranding. Near Cape Villano.	"The rest of the crew remained on the fore part of the wreck until the 14th when the sea moderating they safely landed in the port lifeboat, which fortunately was not damaged by the sea, the others being stove in and useless."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
79	"Lady Cairns." Home Trade—Cargo. "Mona." Foreign-going—Cargo.	1,186 N. 1,028 N.	20 March, 1904. Collision. Irish Sea.	"The crew of the 'Mona' then proceeded to get their own boats out, thinking their vessel was about to sink Whilst the port boat was being swung out cries were heard at intervals from the scene of the casualty Whilst the boats were being got ready the second mate jumped on the gunwale and called to the crew, 'Come along, lads, let's try and save those fellows in the water.' The captain and pilot then consulted, when the captain determined not to let the port boat leave the ship until the starboard boat was got ready for use. When both boats were ready the weather had got thicker, and the captain thought it would be unsafe and of no use to send a boat away "The Court finds, on the evidence submitted, that the sea was not unsafe for the boat." "There appears to have been some difficulty in getting the lifeboat out, and some hands were ordered to get the jolly boat out. On the lifeboat being lowered into the water, the tackles got unhooked, and in consequence of having no painter in her, she got adrift, when an apprentice followed by a German sailor very courageously jumped into the sea. The boat was then brought alongside when 12 hands got into her. The boatswain threw three row-locks into the boat, and on getting a short distance from the vessel, the men in the boat picked up the mess room steward. They then found they had only three oars in the boat, one having been broken when they were trying to push the boat off from the side of the vessel After being about 20 hours in the boat, they were picked up by a French steamer "The vessel having broken up so quickly, within half an hour of her striking, the ten unfortunate men left on board, not being able to get another boat out, must have gone down with the vessel." "The boat was lowered and the crew got into her, but the master remained on board." The master subsequently left the vessel. "The whole of the crew got into the boats and landed."
80	"Laurelwood" (S.S.). Foreign-going—Cargo.	2,485	11 January, 1904. Stranding. Ile de Sein, France.	"The circumstances under which the two lives were lost were that after the small boat had returned from Staithes, where she had gone for assistance, it was capsized by the surf in endeavouring to get alongside the vessel, and three men were thrown into the sea. One managed to swim ashore." "All the crew left in the two lifeboats and were ultimately picked up by the French tug boat."
81	"Lena." Foreign-going—Cargo	82	19 January, 1904. Fire. Bay of Almeria, Spain.	
82	"Loyalist" (S.S.). Foreign-going—Cargo.	2,294	27 September, 1904. Stranding. Newfoundland.	
83	"Maggie Ross" (S.S.). Fishing.	182	27 March, 1904. Stranding. Near Staithes, Yorkshire.	
84	"Norham" (S.S.). Foreign-going—Cargo.	1,791	9 January, 1904. Stranding. Goodwin Sands.	
85	"Onyx"	63 N.	11 January, 1904. Capsizing. 230 miles N.E. by E. of Spurn.	"During boarding operations in the North Sea a boat was lowered from the 'Onyx' to convey fish to the carrier. Shortly afterwards the boat was observed bottom upwards, the two men who had gone in her hanging on. Efforts to save these men were unsuccessful. The Court found that the boat had been dropped too far from the carrier and unnecessarily exposed thereby to a rough sea."
86	"Paradox" (S.S.). Fishing.	62	31 December, 1903. Stranding. Goodwin Sands.	"The two men then got the boat out, and the skipper went down to the cabin to take his sea boots off and put on a pair of shoes. Having done this he jumped into the boat also, and in jumping in broke the only oar they had. As there was only one broken oar in the boat the bottom board was pulled up, and the boat paddled across to the Gull Stream, where they were eventually picked up."
87	"Pearlmoor" (S.S.). Foreign-going—Cargo.	3,480	17 November, 1904. Stranding. Kabliya Island, Arabian Sea.	"At 6.30 p.m. all hands left in the four boats, and pulling off some little distance, stayed by until about 8 p.m., when she turned over to port and foundered head first. The boats then pulled out to sea for some distance, and waited for daylight, when they were picked up."
88	"Rossini" (S.S.). Home Trade—Cargo.	1,321	13 July, 1904. Foundering. 18 miles East of Spurn Point.	"The master ordered all hands into the boats, which, by his instructions, had previously been got ready. "The crew lay by, and in about 20 minutes the 'Rossini' sank." "The crew were shortly afterwards taken on board the 'Agami.'"
89	"Scaw Fell" (S.S.). Foreign-going—Cargo.	2,163	27 April, 1904. Stranding. Coast of Tunis.	"The port lifeboat was lowered and a kedge anchor ran out upon the port quarter with a wire hawser attached. The wire hawser was taken to the winch and hove on until the anchor began to come home. This for some time kept the vessel from swinging broadside on to the sea. The lifeboat was then brought round to the starboard side under the lee. The lifebelts were taken from their place of keeping and the crew were told to take one apiece. The starboard lifeboat and jolly boat were swung out and lowered to the level of the deck to be ready for any emergency, and the men's effects were put into the jolly boat. The master had given orders that the boats in the starboard davits were not to be lowered below the level of the deck. In the absence of the second officer, however, who was in charge of her, the starboard lifeboat was struck by a sea and unhooked. The boats collided with each other, and the master ordered that the starboard lifeboat should be hauled up again. The tackles were hooked on, but, owing to the weight of water which had got into the boat, the after-bolt drew through the keel. She swung round and knocked into the other lifeboat. A tackle was rigged from the fore mast and the boat slung. It was intended by these means to haul her up by steam. Finding that there was no steam, all hands were put on to the tackle. This carried away and the boat drifted from the ship and went ashore. The port lifeboat, which had been brought round to the starboard side, filled, capsized, and broke up. The third lifeboat was leaking and unfit to launch, and, after the loss of the other two lifeboats, the men's effects were taken out of the jolly boat and volunteers were asked for to go in her and take a line to the shore. The boatswain and three hands volunteered to go, and rope varying from 2½ ins. to ordinary ratline was attached to her and paid out. When near the shore the men in the boat cast off the rope, landed on the beach, and with the aid of some Arabs pulled the boat up. It was the master's intention to use the line as a means of pulling the jolly boat back and fore between the ship and the shore, and in that way to save the crew. The officers of the ship say confidently that there was no necessity for casting off the rope. The men in the boat, on the other hand, say that she was water-logged and that there was no alternative but to let go the rope and save their lives. Attempts were then made to float a rope ashore by means of casks and also by means of a hencoop, but without success. The master then set to work to construct a raft out of the awning spars and empty engine oil casks."
90	"Yeoman" (S.S.). Foreign-going—Passenger.	7,379	10 February, 1904. Stranding. Camelle, N.W. Coast of Spain.	"After the stranding one of the starboard lifeboats was lowered into the water, and an attempt was made, by means of her painter, to pass her under the stem of the vessel to the lee side. While this was being done, the boat got adrift, either by the painter breaking, or by its being cut by those on board of the lifeboat, and the boat eventually capsized in a heavy sea. Four of the lascars who were in her were drowned; the other four got safely to land."
Inquiries ordered in 1905.				
91	"Aberporth" (S.S.). Foreign-going—Cargo.	1,969	19 June, 1905. Foundering. Kilia Lighthouse, Black Sea.	"The engineers then went on deck and into the lifeboats, together with the other members of the crew. About 3 a.m. the boats left the ship, and remained close to her. The boats remained near the ship until about 5.45 a.m., when she sank bows first. The crew landed about 10 a.m."
92	"Alabama" (S.S.). Fishing.	136	24 September, 1905. Stranding. Cape Wrath.	"She made water so rapidly that all hands had barely time to put out the boat and get into it before she sank by the head. The boat remained in the vicinity of the wreck until daylight, when the skipper returned to her to endeavour to save some effects, but was unable to do so as she rolled so much and threatened to slip off the rock on which she was hanging. The crew thereupon pulled to the shore."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
93	"Banffshire" (S.S.). Fishing.	213	16 January, 1905. Stranding. Zandvoorg, Holland.	"A heavy sea broke on board and took away the boat and everything on deck. . . . She (the vessel) was allowed to be driven further up the beach to enable the crew to save their lives, as they had neither boat, lifebuoys nor lifebelts."
94	"Beacon Light" (S.S.). Foreign-going—Cargo.	2,763	11 January, 1905. Stranding. Hirtshalls Light, Denmark.	"At 4 p.m. the lifeboat was lowered and sent to the S.S. "Adolf," manned by the chief officer, boatswain and four men, but they failed to pass the hawser to her. At 6.30 p.m. the lifeboat, manned with the same crew, again left the vessel and went to the S.S. "Adolf," requesting her to stand by the "Beacon Light" all night, but, after carrying this message, the lifeboat was unable to return and her crew were taken on board the S.S. "Adolf."
95	"Bavaria" (S.S.). Foreign-going—Cargo.	1,740	13 November, 1905. Foundering. Belle Isle, Bay of Biscay.	"The starboard lifeboat was the only one available as the condition of the sea and the ship rendered it impossible to launch the port lifeboat. When the starboard lifeboat was lowered eleven of the crew got into her. She was almost immediately filled with water, and in the fear that she would be smashed against the vessel's side, the painter was cut before any other members of the crew could get into her. The lifeboat quickly drifted away from the vessel's side, and the remainder of the crew left on board had only the jolly boat to rely upon. They launched her and pulled towards the lifeboat, but she was apparently quickly swamped and nothing more was seen of her or of her occupants. The men in the lifeboat experienced great hardships and were unable to find a landing. They remained at sea throughout the succeeding night, and five of them perished in consequence of the exposure. The remaining six men got safely ashore next day at Noirmontier."
96	"Birtley" (S.S.). Home Trade—Cargo.	1,029	10 November, 1905. Stranding. Flamborough Head.	"The boats were put out and all hands got into them—a fishing coble came to render assistance, and finally took off the crew, stating that it would not be safe to attempt to land in the ship's boats."
97	"Brough" (S.S.). Fishing.	205	12 February, 1905. Stranding. Iceland.	"The second hand, boatswain and five other members of the crew then set to work to cast adrift the boats from the chocks to clear it and to get it out. The plugs could not be found, and the skipper got the spare ones from his berth, and standing outside the boat in which were the seven men at work, he gave them to the men. But before they could be fixed in position, or he could get into the boat, a heavy sea broke over the vessel . . . and lifted the boat over the quarter before the painter could be got out and made fast. The skipper hung on to the boat and was washed overboard with it, but managed to keep hold of the gunwale and climb in Before the men in the boat could get the oars out or the rowlocks shipped, a sea struck them broadside on, washing the second hand and boatswain overboard, half filling it with water, carrying two oars away and breaking the third. The six men left had thus only one oar with which to handle the boat, and it was consequently impossible to get back to the ship They tried to utilise the boat's cover as a sail to keep off the shore They drifted onwards until they were picked up."
98	"Cambrian Hills." Foreign-going—Cargo.	1,760	9 March, 1905. Foundering. Scilly Islands.	"The lifeboat on the forward skids was smashed by the sea and rendered useless while being put out but the gig and lifeboat on the after skids were got safely in the water the mate and three others of the crew got into the gig, while the Master and the remainder of the crew got into the lifeboat. They remained near the ship till she sank. The same day the crew were taken on board the s.s. "Orocabessa."
99	"Cecil Rhodes" (S.S.). Fishing.	244	3 April, 1905. Stranding. Onundar Fiord, Iceland.	"They then got into the boat and landed."

100	"Courser" (S.S.). Fishing.	216	10 April, 1905. Stranding. Hoy, Orkney.	"The skipper ordered the boat out and the crew into it. The boat then dropped astern and anchored until the evening, when it proceeded to Rackwick, where the crew landed."
101	"Cyrano" (S.S.). Fishing.	179	3 March, 1905. Collision. North Sea.	"The Skipper of the "Cyrano" gave orders to get the boat out. In the hasty endeavours to get it out, it was stove in by catching the iron sheave on the port rail aft. It was capsized as it reached the water, and the Chief Engineer, who was in it, was caught underneath. He was subsequently extricated, and got on board the vessel, but the boat filled at once with water, and was useless."
	"Devonshire" (S.S.). Fishing.	148		"The crew of the "Cyrano" were taken off by a boat from the "Devonshire."
102	"Drumcruil" (S.S.). Foreign-going—Cargo.	3,788	7 May, 1905. Stranding. Bonavista Island, Cape Verde Islands.	"The crew took to the boats, although they continued to stand by the "Drumcruil," and after daybreak on the following morning returned on board."
103	"Glanhafren" (S.S.). Foreign-going—Cargo.	2,233	13 February, 1905. Stranding. La Castella Bank, Italy.	"The crew left in the two lifeboats, and the vessel was abandoned. The starboard reached the shore without mishap, but the port lifeboat was blown away and picked up by a schooner."
104	"Glendale" (S.S.). Home Trade—Passenger.	511	20 July, 1905. Stranding. Deas Point, Mull of Kintyre.	"Boats were got out and the passengers were landed."
105	"Goidelian" (S.S.). Foreign-going—Cargo.	1,220	24 June, 1905. Stranding. Sagres, Portugal.	"The boats were swung out and about 3 a.m. the crew got into them. The boats were picked up about 10.30 a.m."
106	"Harbury" (S.S.). Home Trade—Cargo.	1,838	22 November, 1905. Collision. Thames.	"The chief officer of the "Harbury" heard one of the men on board the "Thomas" call to the other to haul up the boat, which was towing astern; but after the casualty this boat floated empty past the starboard side of the vessel."
	"Thomas." Home Trade—Cargo.	68		
107	"Harcalo" (S.S.). Home Trade—Passenger.	2,822	19 January, 1905. Stranding. Goldstone Rock, Northumberland.	"The boats were got out, the passengers placed in them, and about 11 p.m. all hands left the ship."
108	"Hilda" (S.S.). Home Trade—Passenger.	848	18 November, 1905. Stranding. Pierres des Portes, France.	"The master ordered the boats to be got ready and the starboard lifeboat was lifted out of the chocks, but it was then discovered that it could not be lowered into the water on account of the nearness of the rocks. For the same reason the port lifeboat and the port cutter were not available. The master gave orders for the starboard cutter to be lowered, but when it was half way down a heavy sea smashed the boat against the ship's side rendering it useless and turning it bottom up. An attempt was made to get out the port quarter boat, but while this was being done the after part of the ship sank in the water and everybody was washed off the deck."
109	"Magwen." Foreign-going—Cargo.	1,541	13 December, 1905. Stranding. Lagoa Shoal, Delagoa Bay.	"The boats had previously been lowered into the water, and the master now decided to abandon the vessel The boats then proceeded under sail for the North Channel and early next morning they were safely beached."
110	"Olna" (S.S.). Foreign-going—Cargo.	902	10 January, 1905. Stranding. Great Belt, Denmark.	"A lifeboat and the jolly boat were put in the water, and at 6.45 p.m., the decks being nearly awash, the master left her with all hands."
111	"Port Darwin" (S.S.). Foreign-going—Cargo.	2,425	14 November, 1905. Striking submerged object. Atlantic, lat. 41°44'N., long. 8°58'W.	"The boats were ordered out in the davits ready for lowering. In doing this the port lifeboat was smashed in contact with the rail through the heavy rolling of the ship The remaining boats and the starboard lifeboat and jolly boat were lowered into the water, but the jolly boat capsized. All the crew, however, were safely landed from the starboard lifeboat."
112	"Rosalie" (S.S.). Foreign-going—Cargo.	4,303	7 October, 1905. Stranding. Corcubion Bay, Spain.	"At 4 a.m. all hands were obliged to leave the vessel. At 5 a.m. the master and first officer returned on board The crew refused to return and at 5 p.m. the master and first officer got back into the boats."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
113	"Saint Bernard" (S.S.). Foreign-going—Cargo.	1,412	14 November, 1905. Abandonment. Ushant, Bay of Biscay.	"At 3 a.m. the starboard lifeboat was carried away, and at 5 a.m. the port lifeboat was thrown over against the engine-room skylight by a heavy sea, smashing it."
114	"Sunbeam" (S.S.). Fishing.	166	31 October, 1905. Stranding. Orkney.	The crew were subsequently rescued by a boat from another vessel. "The boat was put over the side into the water, but immediately filled, and in trying to recover it the stem was pulled out, rendering it useless."
115	"Umzumbi" (S.S.). Foreign-going—Passenger.	3,379	3 September, 1905. Stranding.	The crew were subsequently rescued by means of a ladder. "The boats were promptly lowered and the passengers and about £9,000 worth of specie placed in them. The crew then rowed to shore, in obedience to the master's orders, and safely landed everyone."
116	"Workfield" (S.S.). Foreign-going—Cargo.	4,257	24–25 December, 1904. Stranding and subsequent foundering. Island Banner, near Ushant.	"At 4 a.m. the crew were ordered to take to the boats. The master was much the worse for liquor, and unwilling to leave the vessel. To save his life he was taken by several members of the crew and put into the starboard lifeboat, which was manned and lowered. The port lifeboat was then manned, and also lowered. Three men remained on board for that purpose, but before they could get into her the painter parted and they were left on board. They however lowered a small boat themselves and got away from the ship. The boats stood by until daybreak, when the three men above referred to were transferred from the small boat into the starboard lifeboat The boats reached Hope Bay and were beached there."

Inquiries ordered in 1906.

117	"Gem" (S.S.). Home Trade—Cargo.	180	27 May, 1906. Collision. Northumberland.	"Some of the crew (of the 'Gem') did manage to get on to the 'Altyre's' bow, and the remainder were saved by the 'Gem's' working boat, which they managed to launch."
118	"Altyre" (S.S.). Home Trade—Cargo.	1041		
118	"Baron Huntly" (S.S.). Foreign-going—Cargo.	866 N.	28 October, 1906. Foundering. Cape Roca, Portugal.	"The starboard lifeboat and the gig were put into the water, 12 of the crew getting into the former and nine (including the captain and chief engineer) into the cutter—all this taking place in from 14 to 15 minutes after the captain received the report from the third engineer. The boats stood by until 2.30 p.m., at which time they left the ship, when two men were transferred from the gig to the lifeboat, making a total of 14 men in the lifeboat and seven in the gig." The boats were subsequently picked up.
119	"Cairnross" (S.S.). Foreign-going—Cargo.	1509	25 October, 1905. Stranding. South Quarken Channel, Gulf of Bothnia.	"The boats were lowered and all hands got in and stood by."
120	"Carlisle" (S.S.). Foreign going—Cargo.	2157	4 January, 1906. Fire and explosion. Saigon River, French Cochinchina.	"There was a lighter moored at the stern of the ship. When the explosion took place the coolies in the lighter commenced to cast her off. The mate at once jumped into her to prevent them doing so, in order that other members of the crew might get into her. He was, however, unable to prevent the coolies cutting her adrift, and the lighter drifted away with him in her. The two engineers and the second mate, who were left on the poop, rushed through the flames, which had then reached the main rigging, and got away with other members of the crew in the port lifeboat. Some of the crew got into the jollyboat, and three others, who had jumped into the water, were picked up by her. After calling to know if anyone was left on board, the boats left the vessel."

121	"Carrick" (S.S.). Home Trade—Passenger.	575	26 May, 1906. Collision. Ailsa Craig, Irish Sea.	"On reporting this to the master (of the 'Carrick'), he was ordered to get the boats out. He only got out the one and cut the lashings of the other two. Nine men got into the one and they called out to the others to come with them as the vessel was filling very rapidly and they thought she would sink and drag the boat down. He made an attempt to get out one of the other boats, but failed to do so. He then went into the boat with the other men and called to the master, who was on the bridge deck, to come with them, but he went to the port side of the vessel and was not seen again. As the vessel was sinking the boat pulled away, and in barely five minutes he saw her sink. They then pulled in towards where the vessel sank and picked up a cabin passenger and afterwards the chief engineer, who was supported in the water by a cork fender." The boat was subsequently picked up and the occupants taken on board the S.S. "Mastiff."
122	"Duke of Gordon" (S.S.). Home Trade—Passenger.	891		
122	"City of Gloucester" (S.S.). Foreign-going—Cargo.	2,432	2 March, 1906. Abandonment. Lat. 38° 13' N.; long. 68° 36' W.	"The steamer's starboard lifeboat was lowered, and the barque sending hers, all hands with provisions and most of their clothes were safely transferred to the barque."
123	"Colne" (S.S.). Home Trade—Cargo.	875	12 March, 1906. Foundering. Maas Lightship, North Sea.	"The master gave orders to get the port lifeboat out. The boat was successfully launched, and G. W. Smith, an A.B., got into it, and for about 15 minutes he managed unaided to keep it away from the ship's side. Finding it impossible to do so any longer he called for help, and another A.B. came to his assistance. Shortly afterwards R. Bell, cook and A.B., got on board and W. Owen, steward, fell or jumped into the water and succeeded in making his way to the boat Some of the crew then attempted to get the jollyboat out, but it was washed overboard and lost. It was impossible, owing to the heavy list which the vessel had, to launch the starboard lifeboat. . . . "At about 5 a.m. the master realising that the only chance of safety was to make for the boat, ordered all hands on deck and hailed the lifeboat to come alongside. . . . Two men jumped overboard and swam to the boat in which there were already four men. The master then told the mate and engineers to come to the lee side and he would try to assist to get them into the boat, when a heavy sea struck him and washed him overboard. He was wearing a thick great coat and when under water he found that one of the boat's falls had entangled his left foot. To gain the surface he had to take off his boot, which he succeeded in doing, and being a strong swimmer he ultimately gained the boat and hung on to it. When he was in this position the vessel was driving down on the boat, and the men in her succeeded with great difficulty, by means of the oars, in keeping it clear "Twelve men including the mate and two engineers remained on board the vessel, which was settling down fast. If they could have got near her, those on board the boat would no doubt have taken them off. The boat remained about 20 yards from the vessel but apparently none of them took to the water. . . . When the vessel foundered the boat was in great danger of going down with her, and it needed all the exertions of the men in it to keep it afloat by baling." The men in the boat were subsequently taken on board a fishing smack.
124	"Comorin" (S.S.). Foreign-going—Cargo.	563	25 December, 1905. Stranding. Fourches Rocks, France.	"The starboard lifeboat was put out and the second officer and several men got into her and left for the shore The port lifeboat was afterwards put out, but got smashed, and the small boat was of no use as the seas were breaking all over the vessel At 7.20 the Guilvenec lifeboat came alongside and took off the remainder of the crew and picked up the starboard lifeboat and towed her into Guilvenec, where the crew were safely landed."
125	"County of Roxburgh." Foreign-going—Cargo.	2209	8 February, 1906. Stranding. Takarva Island, Panmotu Group, South Pacific.	"The port lifeboat was swung out and eight men got into her; in lowering, the man at the fore tackle let go the fall, and the bow of the boat went down into the water, while the stern hung suspended by the after tackle, the result being that the eight men in the boat were thrown into the water and only two managed to reach the beach alive. The master and the remainder of the crew were rescued by line."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
126	"Crown" (S.S.). Fishing.	266	6 November, 1906. Stranding. Manghold Head, Isle of Man.	"The boat was launched and all hands made the best of their way ashore where they safely landed."
127	"Cymbeline" (S.S.) Foreign going—cargo.	3,359	29 December, 1905. Stranding. Rio Grande do Sul Brazil.	"It is to be noticed that John Le Feuvre, A.B., and Edward Smart, A.B., both stated that the two lifeboats and some of the lifebelts were in bad order, but from more reliable evidence, and the Assessors having examined these lifeboats and lifebelts and their repairs on board of the vessel, the Court is of opinion that they were in good order. "The Master stated that he ordered the lifeboats to be put out and lowered to the rail. . . . At daylight on lowering the starboard lifeboat to carry out a kedge anchor from the starboard quarter, she was practically swamped, her rudder broken, and some of the oars carried away, which rendered her helpless and she drifted onward with the current and on to the beach. The port lifeboat was then lowered to render assistance to the starboard one, but on leaving the vessel she got swamped and drove on to the beach, and the crews of both boats landed safely. . . . "The Court have had their attention directed by the evidence to the fact that boat drill on board cargo vessels appears to be an unknown exercise and that the boats had not been in the water for an indefinite time. Under these circumstances the value of boats in case of emergency appears to be minimised."
128	"Desdemona" (S.S.) Fishing.	242	14 March, 1906. Stranding. Stokhseyri, Iceland.	"The crew got into the boat and made for the shore. The boat, however, had not been mended, and, but for the help of some Icelanders, who had heard the vessel's whistle, who came to render assistance with a rowing and a motor boat, they would have been unable to land. "There was some evidence of general slackness in the management of the vessel. No attempt had been made to repair the damage which the boat had sustained."
129	"Dinnington" (S.S.) Home Trade—Cargo.	366	6 February, 1906. Stranding. Switha Island, Orkneys.	"Just as the lifeboat was being hoisted out of the chocks, an exceptionally heavy sea broke over the ship, striking the lifeboat and swinging her out board. . . . The remainder of the crew then got into the lifeboat. . . . The lifeboat remained alongside for about five minutes. . . . The boat then left for the shore, but almost immediately struck a rock, capsized, and the crew were thrown into the water, but all managed to scramble ashore."
130	"Dunbritton" Foreign going—Cargo.	1,536	3 February, 1906. Abandonment. North Sea.	"The lifeboat (by pouring oil on the water) was launched, and all hands got into her and were safely transferred to the 'Loch Stenness'."
131	"Dunmore" (S.S.) Foreign going—Passenger.	3,653	19 January, 1906. Abandonment. North Atlantic. Lat. 38° N. Long. 60° W.	"The Master and most of the crew left the 'Dunmore' taking most of their effects with them, in the 'Dunmore's' two lifeboats and got on board the 'Breslau.'"
132	"Forth" (S.S.) Home Trade—Cargo.	513	6 August, 1906. Stranding. Longue Pierre Rock north east of Herm, Channel Islands.	"All hands took to the boats and remained alongside. . . . A tug boat picked up the boats, and towed them to Sampson's Harbour, where they were safely landed."
133	"Loire Inferieure" (S.S.) Foreign going—Cargo. "Glanhowny" Foreign going—Cargo.	724 1,925	31 May, 1906. Collision. Lat. 36° 5' N. Long. 6° 20' W.	"There was just time to clear away one of the lifeboats which was promptly done. The men were all ordered to get into it which eleven including the Master did, the absence of the other three not being at the moment noticed. . . . His life would have been saved had he obeyed his Master's orders to enter the lifeboat, and would probably have been saved even later had he jumped as directed."

134	"Golden Eagle" (S.S.) Fishing.	224	17 February, 1906. Stranding. Iceland.	He and Roberts, A.B. had without orders gone to launch the working boat of the ship the shipwrecked men were taken to the 'Glanhowny.'" "The boat was got out, and the crew proceeded in it towards the land, when within about 150 yards of the shore the boat grounded on level rocks in about 2½ feet of water and became fast. . . . All except the boatswain reached the land safely."
135	"Harlingen" (S.S.) Foreign-going—Cargo.	3,471	3 November, 1906. Stranding. Cape Frio, Brazil.	"The Master gave orders for the boats to be lowered, and sent the crew ashore in them. The Master, Chief Officer, and Chief Engineer remained on board till about noon, when they also left her."
136	"Harlyn" (S.S.) Foreign-going—Cargo.	1,453	8 July, 1906. Stranding. Shelburn, Nova Scotia.	"The crew were landed in one of the lifeboats by making two trips."
137	"Haversham Grange" (S.S.) Foreign-going—Passenger.	7,557	23 October, 1906. Fire and abandonment. Lat. 24°15'S. Long. 9°30'E.	"All left (in a boat) except the Master, Chief Officer, Chief Engineer and five of the crew." The latter left the vessel the following morning, all being taken on board another vessel.
138	"King Cadwallon" (S.S.) Foreign-going—Cargo.	3,275	22 July, 1906. Stranding. Lewis Rock, Scilly Isles.	"The boats were lowered and all hands got into them and stood by . . . all hands pulled on shore."
139	"Lebanon" (S.S.) Foreign-going—Cargo.	905	20 October, 1906. Foundering. Bay of Biscay.	"The lifeboats were then launched, and the crew were picked up after remaining in the boats for about half an hour."
140	"Leven" (S.S.) Foreign-going—Cargo.	2,328	28 December, 1905. Stranding. Baleal Isle, Portugal.	"The boats were at once swung out and lowered, and in about five or ten minutes after the casualty the crew were in the boats and standing by The boats remained in the vicinity and close to the vessel until daylight, when they then managed to land safely."
141	"Lismore" Foreign-going—Cargo.	1,676	27 May, 1906. Stranding. Santa Maria Island, Chili.	"The lifeboats were at once swung out, but the sea shortly afterwards smashed up the starboard lifeboat the Captain and Officers and all hands left in the port lifeboat. After pulling for some time the boat struck on the reefs and immediately capsized. The crew righted her, but five of them who got under the boat were drowned. The boat again capsized from the same cause, and three other men, including the Master, were drowned. After the boat had capsized the second time five others failed to hold on to her, and were drowned. The Mate and 12 men surviving succeeded in again righting the boat when in deep water, but she again bumped on the reef and capsized. She drifted about helplessly at times, bottom up, during which time nine others dropped off . . . leaving only the Second Mate and three seamen. Eventually the boat stranded on the mainland."
142	"Morven" Foreign-going—Cargo.	2,150	2 December, 1906. Stranding. Dunmore Head, County Clare.	"The starboard lifeboat was lowered in which the Master's wife and ten of the crew got safely ashore. Before the port lifeboat was got out the vessel filled. The remainder of the crew were rescued by line."
143	"Nelson" (S.S.) Foreign-going—Cargo.	1,842	10 March, 1906. Stranding. Pierres Vertes, France.	"The two lifeboats (were) got out and part of the crew sent into them The two lifeboats were taken in tow by the French lifeboat."
144	"Nemea" (S.S.) Foreign-going—Cargo.	3,461	31 October, 1906. Abandonment. Lat. 51°11½'N. Long. 15°16¼'W.	"The Master deemed it prudent to leave his ship and go with his crew on board the 'Vedamore.' This was accomplished by about 6 a.m. some of the crew leaving in a boat belonging to the 'Nemea' and the remainder in boats from the 'Vedamore.'"
145	"Ocean Queen" (S.S.) Home Trade—Cargo.	421	2 March, 1906. Stranding. Tielles Bay, Guernsey.	"One of the lifeboats and the working boat were immediately got out and the vessel was abandoned."
146	"Ordovician" (S.S.) Foreign-going—Cargo.	701	6 January, 1906. Stranding. Santa Cruz, Portugal.	"All hands (were) called on deck and the port lifeboat lowered . . . Within half an hour all hands left the vessel and landed."
147	"Pera" (S.S.) Home Trade—Cargo.	1,150	10 October, 1906. Stranding. Coolernose Point, Northumberland.	"When the first lifeboat was launched the painter broke and she drove away to the eastward off the land." Other boats were got ready, but the crew were rescued by the rocket apparatus.

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
148	"Ross" (S.S.). Home Trade—Cargo.	1,284	14 November, 1906. Stranding. North Bishop, Fembrookeshire.	"The boats ordered to be got out . . . He (the Master) got into the boat and left the ship."
149	"Rowtor" (S.S.). Foreign-going—Cargo.	2,351	3 January, 1906. Stranding. Fratelli Rocks. Tunis.	"The lifeboats were lowered into the water and the crew were ordered into them . . . the boats pulled away from her."
150	"Royal Alfred." Home Trade—Cargo.	191	7 January, 1906. Foundering. Kingroad.	"After the 'Rowtor' had foundered the boats were directed to Bizerta, where the crew landed."
151	"Royallieu" (S.S.). Fishing.	205	6 April, 1906. Stranding. Bampton Cliffs, Yorkshire.	"The master and two hands went ashore in their own boat . . . After this it seems that the master and crew had returned to their vessel, as the boat was subsequently found attached to that vessel's stern."
152	"Saint Mungo." Foreign-going—Cargo.	1,955	10/11 October, 1906. Fire and abandonment. Atlantic. Lat. 22°44'S., Long. 30°57'W.	"The boat was launched and all hands ordered into her. They then pulled for the shore and had not proceeded far when she came across a cable, which piloted them to Flamborough, where the crew landed."
153	"Southcoates" (S. S.). Fishing.	232	14 February, 1906. Stranding. Iceland.	"The crew were ordered into the boats . . . the master also left the ship." All hands were taken on board a Danish vessel.
154	"Swansea Castle." Foreign-going—Cargo.	582	3 February, 1906. Foundering. South Atlantic. Lat., 28°33'S., Long., 24°18'W.	"It was impossible to launch the lifeboat. The crew were rescued by line."
155	"Vigilant" (S.S.). Home Trade—Cargo.	397	25 July, 1906. Foundering. Plateau de Barnouie, France.	"All the hands left (in the vessel's boats) and went on board the French ship."
156	"Yorkshire" (S.S.). Foreign-going—Cargo.	1,306	5 June, 1906. Stranding. Norfolk.	"The starboard lifeboat was at once launched, and all hands got into her and left the vessel . . . A French fishing vessel took them in tow and landed them."
				"The master ordered the two boats (with all the crew) to leave her. Some short time after the boats were picked up by a Belgian fishing smack, and the crew were finally landed at Yarmouth."

Inquiries ordered in 1907.

157	"Andalusia" (S.S.). Foreign-going—Cargo.	1,921	13 April, 1907. Foundering. Lat. 41°45'N., long. 9°50'W.	"Attempts were made to get the starboard boats out . . . the Master left the bridge to assist in getting the boats out . . . the boat lashings were cut adrift and the boats were soon in the water. The Master tried to reach the steward's room, but soon found himself in the water and the ship gone. The Master swam to the lifeboat, picked up some lifebelts and threw them to those of the crew who were near. . . . In the result, only the Master, Chief Officer and an A.B. were saved."
158	"Bahia Blanca" (S.S.). Foreign-going—Cargo.	397	11 March, 1907. Stranding. St. Antonio Island, Cape Verde.	"Soon after the stranding the boats were put out." (The crew apparently left the vessel in them, but this is not shown in the report.)
159	"Beaver" (S.S.). Home Trade—Cargo.	88	21 October, 1907. Foundering. Bull Point, Bristol Channel.	"The crew got into the boat and abandoned her. . . . The crew pulled towards the shore, which they reached in about four hours."

160	"Berlin" (S.S.). Home Trade—Passenger.	1,775	21 February, 1907. Stranding. Hook of Holland.	"She carried eight boats, six of which were lifeboats classed in Section A. In a few minutes the sea tore away the bridge and smashed up the boat shelter and deck and the boats carrying them overboard."
161	"Fairy." Fishing . . . "Boy Vic." Home Trade—Cargo.	49 50	22 June, 1907. Collision off Caldy Island.	"The 'Boy Vic' threw out her boat, and the Skipper with the second hand proceeded to the assistance of the 'Fairy,' which was then rapidly filling. Remaining on board as long as he considered prudent he returned to his own vessel, taking a portion of the 'Fairy's' crew with him. . . . The boat of the 'Fairy,' which had been previously put out, remained alongside some seven minutes when the Skipper abandoned the vessel."
162	"Sea Spray" (S.S.). Home Trade—Cargo.	221N.	9 January, 1907. Collision. Thames.	"The master, the mate, and the man who was at the wheel of the 'Sea Spray' climbed on board the 'Cæsar' by ropes thrown from that vessel, while seven others of the crew lowered the dinghy, pulled alongside the 'Cæsar,' and were afterwards landed."
163	"Cæsar." (Norwegian.) "Charles and Thomas." Fishing.	448N. 48	14 April, 1907. Stranding. Long Sand, North Sea.	"The boat was got out, the crew abandoned their craft . . . those in the boat were picked up by the S.S. 'Vauxhall.'"
164	"Coralie" (S.S.). Foreign-going—Cargo.	2,920	22 February, 1907. Abandonment. Heligoland.	"The master succeeded in getting his ship's company on board the 'Alborga' in his own boat."
165	"Denewell" (S.S.). Foreign-going—Cargo.	3,091	6 July, 1907. Foundering. Carraca Ledge, Cape Finis-terre.	"The crew had previously got into the boats, standing by until the vessel disappeared. They were soon after picked up by a Norwegian steamer."
166	"Emblem" (S.S.). Fishing. "Envoy" (S.S.). Fishing.	157 156	27 June, 1907. Collision. 220 miles E.N.E. of Spurn.	During boarding operations in the North Sea, the boat of the "Envoy," having finished boarding, was proceeding to the mission ship, when she was struck by the steam trawler "Emblem" and sunk, one life being lost. The second hand of the "Emblem" was found in default for attempting to pass too near the boat.
167	"Faraday" (S.S.). Fishing.	168	14 October, 1907. Stranding. Coll Island, Scotland.	"The crew were ordered into the boat, and remained in it for about an hour-and-a-half . . . They succeeded in gaining the beach."
168	"Glencairn." Foreign-going—Cargo.	1,620	23 July, 1907. Stranding. Tierra del Fuego.	"The sea on the weather or starboard side was too rough for the boat to lie alongside, and it was therefore necessary to have her transferred to the port or lee side for shelter. To do this a line was passed from the port bow to the starboard side, and was made fast to the boat, which was then lying with her stern to the vessel's stern. Three men were sent into the starboard boat—Gustafson, Schmidt, and Morley—which seems to have swung round broadside on to the wind and sea, and capsized after striking the starboard bow. One of the men (Morley) appears to have been thrown into the water and not seen again. The man Schmidt seems to have got underneath the boat, and, becoming entangled with the gear, was unable to extricate himself, though the man Gustafson, who was clinging to the boat's keel, heard him signalling and hailing for about an hour; he was not seen again. The boat drifted away from the vessel, and the Master, seeing the man clinging to the keel, signalled to the port lifeboat to come alongside. The Mate and some of the crew appear to have objected to the only useful boat being sent away from the vessel. The Master, however, with creditable promptitude, sent the boat away with a volunteer crew in charge of the Second Mate (Daniel Bagot Neilson), with the result that the man Gustafson was rescued from the upturned boat. Before the port lifeboat came back after rescuing the man Gustafson, the rising tide had floated the vessel off the rocks, this being at about 3 p.m. On the morning of the 25th, finding that the vessel continued to make water, and was practically in a sinking condition, he was compelled to abandon her, which he did at about 10 a.m. The gig was sent away with the mate in charge, and conveyed some of the crew on shore, including the Master's wife and child. The Master and the remainder of the crew got on shore in the port lifeboat, the whole of the crew being landed safely, but with great difficulty."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
169	"Godild." Fishing ...	48	12 January, 1907. Stranding. Goeree Flats, Holland.	"The boat was then put out, and all hands got into her, and hung on by some of the running gear forward at the bow. Finally the sea beginning to break into the boat and fearing she would founder they let go and pulled to the eastward. In a little while the boat herself grounded Before morning the tide fell and the boat was dry." The crew eventually got on board a pilot vessel.
170	"Heraclides" (S.S.). Foreign-going—Passenger.	2,977	26 October, 1907. Stranding. Hottentot Point, S.W. Coast of Africa.	"The passengers were landed in the lifeboats and the Chief Officer was sent . . . for assistance. The vessel was eventually abandoned.
171	"Highland Fling" (S.S.). Foreign-going—Passenger.	3,822	7 January, 1907. Stranding. Between Black Head and Lizard Point.	"The boats were got out, and all the crew were safely landed."
172	"Imperialist" (S.S.). Fishing.	264	19 January, 1907. Stranding. Vestrobdi Reefs, Iceland.	"The skipper found it advisable to order all hands into the boat, and about half an hour after the casualty the boat left her. The ship's company pulled about until midnight when they landed."
173	"Indore." Foreign-going—Cargo.	2,146	23 July, 1907. Stranding. New Year Harbour, Staten Island, South America.	The two lifeboats were got out and the crew landed safely.
174	"Ivanhoe." Fishing ...	61	14 January, 1907. Collision. Southwold, North Sea.	"Before the boat could be got out, or anything done, the 'Ivanhoe' sank, and the third hand who had jumped into the boat and cut the lashings was washed out of her, as the vessel went down, but clung to the oars and was eventually picked up."
175	"Tanfield" (S.S.). Home Trade—Cargo.	734		"She had two boats, one of which was fitted as a lifeboat but there were no sails, nor thole pins with lanyards nor tackles in place to lift the lifeboat into the water. . . . The jollyboat was launched into which all the crew, excepting the purser, got on board. . . . Subsequently he was called to come over the stern and the boat lay as near as possible to receive him, but he declined to leave. . . . The crew remained near the 'Kitty' until she foundered and then finally left her."
175	"Kitty." Foreign-going—Cargo.	—	8 December, 1906. Stranding. Tvesteen Reef, Norway.	
176	"Lily May." Fishing.	60	10 April, 1907. Stranding. Hasborough Sands, North Sea.	"The boat was put out, and the crew abandoned the vessel. They remained in the boat till about 3 a.m. of the 11th, when they got on board North Hasbro' lightship."
177	"Lord Elgin." Foreign-going—Cargo.	2,557	27 April, 1907. Stranding. Inyack Lighthouse, Portuguese, E. Africa.	"The starboard lifeboat was lowered in the water, and about 5 o'clock the master sent most of the crew ashore with their effects."
178	"Lucifer" (S.S.). Foreign-going—Cargo.	3,823	16 April, 1907. Abandonment. Atlantic. Lat., 40°19'N., Long., 59°59'W.	"All hands from the 'Lucifer' were transhipped to her, the 'Sagamis' boats making two trips and the 'Lucifer's' one to effect the transference, which was completed without accident."
179	"Mervinian" (S.S.). Foreign-going—Cargo.	1,969	4 October, 1907. Foundering. Bay of Biscay.	"It being found impossible to get the starboard lifeboat out on her own side owing to the tremendous list, attention was directed to the port lifeboat, and she was successfully launched, six men getting into her, but, unfortunately, by some means, she drifted a short distance away from the side. A determined effort was now made to transport the starboard lifeboat across the deck, but while this was being done the 'Mervinian' suddenly capsized, throwing all those on board into the sea. The port lifeboat saved the greater number of them, but was unsuccessful in rescuing the remainder."
180	"Nether Holme" (S.S.). Home Trade—Cargo.	1969	2 November, 1907. Stranding. Linney Head, Pembroke-shire.	"The Master ordered the port lifeboat to be launched, and the crew, with the exception of the Master, the chief officer, and the chief and second engineers went ashore, and they left the vessel when the boat returned."
181	"Portland" (S.S.) Home Trade—Cargo.	1139	6 February, 1907. Collision. Firth of Clyde.	"The boats were lowered from the 'Portland' and the crew got into them. The first boat that got clear of the 'Portland' put half of those in it on board the 'Welshman,' and returned to the 'Portland' for others."
181	"Welshman" (S.S.). Home Trade—Cargo.	360		
182	"Powis" (S.S.). Foreign-going—Cargo.	2111	20 June, 1907. Foundering. Seriphos Island, Grecian Archipelago.	"The Master and crew in the lifeboats towing the jollyboat containing the bags, immediately started for Scriptos, where they arrived about 6 a.m. on 21st June."
183	"Premier" (S.S.). Fishing.	181	9 November, 1907. Stranding. Ingolfs Höfde, Iceland.	"The boat was launched and secured to the vessel on the port side by a painter and a line aft. The apprentice, Archer, and four other members of the crew were in the boat, and Archer was holding a duck light to assist them in provisioning the boat. Whilst this was being done a sea struck the boat, broke it adrift and capsized it." The crew were subsequently taken off by lines.
184	"Resolute" (S.S.). Fishing.	204	13 September, 1907. Foundering. 140 miles W. by S. of St. Ann's Head, Milford Haven.	"Provisions, water and signal lights were hastily put into the boat and all hands left the vessel. They stayed by the vessel in the boat until she went down and at 10 p.m. were picked up by a trawler."
185	"Scorpio" (S.S.). Fishing.	145	27 September, 1907. Stranding. Wick.	"The skipper ordered all hands into the boat The skipper was the last to leave his ship, and the boat was then slacked away astern by means of a buoy line attached to the vessel and held on at a distance of 120 fathoms for about 20 minutes when the 'Scorpio' sank. The crew pulled and dodged about in the fog, and after being in the boat about 8½ hours they landed at Wick."
186	"Silverlip" (S.S.). Foreign-going—Cargo.	7,493	1 May, 1907. Fire. Bay of Biscay.	"The lifeboats were launched under the directions of the captain and were then rowed to the forward end of the ship where those of the crew who were on the fore-castle were taken off, some of them swimming to the boats. Shortly afterwards the whole crew were picked up."
187	"Strathbeg" (S.S.). Fishing.	202	11 September, 1907. Stranding. Fless, Fair Isle.	"The boat was cleared away and launched into the sea from the starboard quarter. A considerable amount of water got into the boat in launching, which was baled out after the boat had been shifted round to the port bow. . . . The boat pulled directly out to sea and remained in the offing till the fog somewhat lifted A lifeboat came to their assistance and they all landed safely."
188	"Suevic" (S.S.). Foreign-going—Passenger.	12,500	17 March, 1907. Stranding. Maenheere Rocks, Cornwall.	"All hands being employed clearing away and getting out the boats. This work went on till midnight and by 11 a.m. all the passengers (382) had been safely landed in the shore and ship's lifeboats assisted by tugs."
189	"Tampico" (S.S.). Foreign-going—Cargo.	2,968	19 October, 1907. Abandonment. W. Atlantic. Lat. 46° 49' N., long. 32° 5' W.	"The vessel shipped a heavy sea smashing the two lifeboats to splinters Only one small boat that could be lowered on board the 'Tampico.' This boat with the one from the 'Indiana' then safely transferred the crew on board that vessel."
190	"Tenax." Fishing ...	57	10 April, 1907. Stranding. Hasboro' Sands, North Sea.	"The boat was lowered, and at about 8.30 p.m. all the crew got into it. They pulled about for some time in the fog and eventually got on board the steamer 'Baltimore.'"
191	"Truro" (S.S.). Fishing.	165	2 June, 1907. Stranding. Speeton Cliffs, Flamborough Head.	"The crew finally abandoned the vessel, left in their own boat and landed at Flamborough."

Inquiries ordered in 1908.

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
192	"Albion" (S.S.). Foreign-going.—Cargo.	3,650	2 May, 1908. Stranding. Corcubion Bay, Spain.	"At 7.10 p.m. the crew were ordered to the boats . . . they reached the port of Corcubion about 9 p.m. the same evening."
193	"Blythville" (S.S.). Home Trade.—Cargo.	1,325	3 June, 1908. Stranding. Oversay Light, Rhynns of Islay.	"In about 15 minutes the two lifeboats were launched, and the crew got in . . . they pulled away and in about 40 minutes landed safely."
194	"Camelia." Home Trade.—Cargo.	103	29 December, 1907. Collision. Angle Point, Milford Haven.	"There was not time to get the boat out, so the Mate called to the crew to take to the rigging, whence they were subsequently picked up by the boat's crew of the 'Essex.'"
	"Essex" (S.S.).—Fishing.	220		
195	"Ceylon" (Yacht) . . .	206	10 September, 1908. Fire. Isle of Wight.	"The gig was lowered from her davits, and the dinghy was launched over the port quarter. Captain Webster then told the crew to get into the boats. . . . The gig had only three oars and the dinghy two, and they were without balers. After a time the gig, which had a sail, took the dinghy in tow. About 3 a.m. of the 11th the boats were picked up."
196	"Clitus" (S.S.).—Fishing.	240	15 April, 1908. Foundering. East Pier Head, Blyth.	"Hayward got into the boat, and immediately afterwards, another sea swept over the vessel washing Blakeney overboard and washing the boat over the quarter . . . Hayward pulled one of the apprentices into the boat, and the other climbed in. They were unable to find any rowlocks in the boat, but threw the oars to other members of the crew who were in the water. . . . Tugs rescued Hayward and the two apprentices from the boat."
197	"Rhen" (S.S.). Fishing.	120	20 October, 1908. Collision. 17 miles E. by S. of Spurn.	"The Second hand proceeded to get the boat's cover off and the gripes cut. The boat's keel was lifted on to the rail as the vessel was going down and she floated over the side with the rush of water aft. The Second hand, the First Engineer, and the Steward succeeded in getting into the boat. The Master, the Third hand, and the Second Engineer hung on to the gunwale as she was swept over the rail . . . The three men in the boat had only time to get one of those hanging on to her gunwale on board, when the 'Crux' was found to be coming ahead and did in fact strike the boat . . . The boat succeeded in reaching the 'Crux' and all were taken on board."
	"Crux" (S.S.). Fishing.	132		"They got into the boats and abandoned the vessel . . . They then rowed for the land, and landed in safety."
198	"Cyprian Prince" (S.S.). Foreign-going—Passenger.	1,888	31 July, 1908. Stranding. Farilhoes Islands, Portugal.	"The boat was got out and all hands got into her." They were taken on board another steamer.
199	"Evening Star" (S.S.). Fishing.	145	12 August, 1908. Foundering. 59 miles E.S.E. of Hartlepool.	"As he (the Master) went along he saw the men getting the boats out. He asked the men who gave them authority to get them out. No one made any reply. He then told the men to leave the boats alone."
200	"Garron Tower" (S.S.). Home Trade—Cargo.	650	10 December, 1908. Stranding. Filey Brigg.	"He (the Skipper) and the Deck hand then got into the boat, which stood by the vessel for half an hour and then rowed ashore."
201	"Girl Annie." Fishing.	53	4 May, 1908. Stranding. Land's End.	"The Master having made arrangements for one of the Brazilians to remain on board and for two others of them to pilot his boats, with all his crew left the wreck and landed."
202	"Gunford." Foreign-going—Cargo.	2,261	10 December, 1907. Stranding. Cape St. Roque, Brazil.	
	"Housatonic" (S.S.). Foreign-going—Cargo.	4,041	4 January, 1908. Stranding. Allen Rock, Maidens, North Channel.	"Owing to the angle of inclination, it was impossible to do anything with the starboard boats, but the two port lifeboats were duly lowered. However, unfortunately, the forward boat of the two was stove in while getting her out of the chocks."
204	"Huddersfield" (S.S.). Foreign-going—Cargo.	2,055	27 January, 1908. Stranding. Between Clovelly and Hartland, Devon.	"The Master with 21 hands pushed off from the ship in the after lifeboat, but observing that the Second Mate had been left standing on the after port of the vessel, he returned and took him off. In the meantime the Chief Officer and eight men had got into the damaged lifeboat"
	"Idlewild" (S.S.). Home Trade—Cargo.	785	30th June, 1908. Foundering. Bill of Portland.	"The boats made for the Maiden's Lighthouse."
206	"Irada" (S.S.). Foreign-going—Cargo.	8,124	22 December, 1908. Stranding. Mizen Head.	"He ordered the boats to be got ready, and the port lifeboat was swung out. About nine of the crew, consisting chiefly of foreigners, got into it. The Chief Officer directed them to assist in lowering the starboard lifeboat, but they did not do so. They lowered the port lifeboat into the water, and it then drifted, was cut, or was pushed, away. The Master states that he afterwards discovered that the after falls of the port lifeboat had been cut. The starboard lifeboat was afterwards swung out, but owing to the heavy seas it was swept away Two of the men, who were in the port lifeboat, state that they tried to row back to the vessel, but they could not do so owing to the heavy sea. They afterwards pulled for some distance and the boat struck on the rocks. They swam ashore and gave information about the wreck."
207	"Japan" (S.S.). Fishing.	249	4 November, 1908. Stranding. Veida Os River, Iceland.	"They got into the boats, the water at the time being over the after deck, on the port side, the vessel having a list in that direction . . . the crew stood by, and at about 9.45 the 'Idlewild' foundered They pulled for the land, and at about 11 p.m. fell in with a torpedo flotilla and were towed to Portland Harbour."
208	"Kyleron" (S.S.). Foreign-going—Cargo.	1,772	9 August, 1908. Stranding. Vardö Island, Norway.	"The boats were got out and lowered to the rail, but it was found impracticable to put them in the water owing to the heavy sea."
209	"Manaos" (S.S.). Fishing.	82 N.	29 September, 1908. Stranding. Mizen Head, Cork.	"He got the boat out, and landed the crew on the beach which was close to."
210	"Mount Lebanon" (S.S.). Foreign-going—Cargo.	2,420	29 August, 1908. Foundering. Atlantic. Lat. 49° 48' N., long. 7° 53' W.	"The boats were ordered to be put out, and the crew, with the exception of the Master, Officers and Chief Engineer, were landed at the lighthouse."
211	"Oxus" (S.S.). Foreign-going—Cargo.	916	5 August, 1908. Foundering. Cape Finisterre.	"The crew rushed to the boat as soon as the vessel grounded, and while they were in the act of launching it, the ship heeled over to port, and the boat was smashed."
212	"Pernambuco" (S.S.). Foreign-going—Cargo.	997	17 January, 1908. Stranding. Lodbierg Light, Denmark.	"Orders were now given to lower the port lifeboat, and one-half of the crew got into her and pulled for the trawler. The starboard lifeboat was now put over the side, but on lowering it got smashed; consequently the port lifeboat had to return with two of the crew of the 'Stella' and take off the remainder of the crew."
213	"Princess Ena" (S.S.). Home Trade—Passenger.	1,198	20 May, 1908. Stranding. Paternoster Rocks, Jersey.	"The boats were accordingly lowered into the water and lay off with the crew in them All were taken on board the 'Euphorbia.'"
214	"Rhos Neigr" (S.S.). Home Trade—Passenger.	162	20 July, 1908. Stranding. Between Little Orme's Head and Rhos Point.	"The sea breaking heavily over her prevented any attempt from being made by means of the ship's boats to lay out anchors."
				"The boats were got out in about six minutes." Passengers and crew remained on board, and the vessel eventually reached St. Heliers safely.
				"He then ordered the lifeboats to be got out, and the passengers and crew were landed safely."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
215	"Rosella" (S.S.). Home Trade—Cargo.	1,305	16 September, 1908. Stranding. Roches Douvres Lighthouse, English Channel.	"The boats were swung out and lowered to the rails The Master then left her as he considered it was dangerous to remain. He and some of the crew remained in the vicinity The Master and some of the crew were safely landed at St. Heliers, and the remainder on the French coast."
216	"Stanley" (River Barge)	728	11 December, 1908. Capsizing. River Mersey.	Two A.B.'s "jumped overboard and swam to the boat towing astern which they had previously cut adrift. They were afterwards picked up."
217	"Summersgill" (S.S.). Home Trade—Cargo.	256	10 December, 1908. Foundering. Owers Lightship, English Channel.	"The Master ordered the lifeboat to be put out, and the crew, with the exception of one hand and the Master, got into her. At first they were to haul astern and stand by, but the Master fearing for the safety of the lifeboat told them to cast off. The s.s. 'Stamfordham' bore down and picked up the men in the boat."
218	"Verajeau." Foreign-going—Cargo.	1,946	1 September, 1908. Stranding. Rhooose Point, Bristol Channel.	"The lifeboats were got out and manned all the crew got ashore, and one of the lifeboats was smashed on the beach."

Inquiries ordered in 1909.

219	"Arctic" (S.S.). Fishing.	154	20 January, 1909. Collision.	"All the hands, except Smith, went to get the boat out; the vessel sank beneath them as they got the stern of the boat on the rail. Three men got into her, and as she floated off eight others clung to the gunwale, and with great difficulty were got into her by those who were already in the boat They pulled to the 'Haverstoe.'"
	"Haverstoe" (S.S.). Home Trade—Passenger.	2,467	Off Flamborough Head.	
220	"Cadoxton" (S.S.). Foreign-going—Cargo.	1,668	22 November, 1909, Foundering. Latitude 48° N., longitude 10° 30' W.	"The boats were ordered to be got out. Owing to the seas the port lifeboat could not be launched on the port side, and in attempting to take it over the engine-room skylight to the starboard side, it was so damaged that it could not be used. Eleven of the crew got into the starboard lifeboat, and the remainder into the small boat. The officers and crew were afterwards safely landed at Plymouth."
221	"Carn Marth" (S.S.). Home Trade—Passenger.	1,687	17 May, 1909. Stranding. Near Cape de la Hague, France.	"The crew and passengers were got safely into the boats and the Master left the vessel The boats remained by her until daylight, when she was submerged, and a French lifeboat then came to their assistance and the crew and passengers were afterwards safely landed."
222	"Henrietta." Home Trade—Cargo.	92	21 November, 1909. Collision. River Mersey.	"The 'Henrietta's' crew at once attempted to launch their boat over the port side, but the schooner getting a big list to starboard, they were unable to do so and soon gave it up."
	"Clan Macdonald" (S.S.). Foreign-going—Passenger.	4,839		
223	"Dagenham" (S.S.). Home Trade—Cargo.	885	8 April, 1909. Stranding. Guernsey.	"The Master then ordered all hands into the boats as the position of the ship appeared hopeless. The boats were kept in close proximity to the ship All the crew were eventually safely landed."
224	"Defender" (S.S.). Fishing.	206	14 November, 1909. Stranding. Near Skerryvore Light.	"The whole of the crew proceeded to get out the boat the boat was cast off and it was then found that the fore plug was missing and a stick with a piece of rag upon it had to be used in place. . . . The boat was then rowed towards the Skerryvore Lighthouse, where the crew safely landed."

225	"Edenmore." Foreign-going—Cargo.	1,726	7 October, 1909. Stranding. Orkney Islands.	"All the crew then landed in their own boat, being towed and piloted by the boat from Stronsay."
226	"Forest Castle" (S.S.). Foreign-going—Cargo.	2,788	12 February, 1909. Stranding. Off Brest.	"The Master gave orders for all hands to get into the two lifeboats; and had this order been promptly carried out there is no reason why all should not have been saved; but some of them not realising the immediate danger endeavoured to save their effects and, on the ship suddenly slipping off the rock, were, no doubt, overwhelmed by the water. "The three engineers who were among the drowned, were seen assisting to clear away the boats, and the boatswain stated that the last he saw of them was when they were endeavouring to clear away the jollyboat, which was afterwards seen floating bottom up. "It is possible that the engineers may have endeavoured to escape in this boat and so have lost their lives, but there is not sufficient evidence on this point to enable the Court to express any decided opinion. "The Master, after having seen the lifeboats in the water, was in the act of returning to the bridge when the vessel sank, and he was overwhelmed by the water. He became unconscious and was subsequently picked up by the port lifeboat, he being still in an unconscious condition. Both boats remained close to the scene of the accident for some time and rescued several other members of the crew who were observed swimming in the water. "At about 5 p.m. a French pilot cutter came to their assistance and took all the survivors to Brest, where they were landed about 11 p.m." "The crew got into the boat with the ship then sinking. The master, still on the bridge, was now seen to jump overboard, and the boat at this time was within 20 feet of him, but he was not seen again. The boat floated clear and was shortly afterwards taken in tow."
227	"G.B. Crow" (S.S.). Dredger.	1,523	13 February, 1909. Collision. Liverpool Bay.	
	"William Rowland" (S.S.). Home Trade—Cargo.	75		
228	"Grange" (S.S.). Home Trade—Passenger.	1,519	31 December, 1908. Foundering. 30 to 40 miles east of Hartlepool.	"About 8 a.m. the first boat, a lifeboat, was lowered in charge of the second mate, to which the sixteen passengers and the stewardess were transferred. This boat was kept lying alongside until the crew also left the crew and passengers were taken on board the trawler."
229	"Laurentian" (S.S.). Foreign-going—Passenger.	4,522	6 September, 1909. Stranding. Newfoundland.	"The boats were lowered and the passengers and some of the crew were placed in them. A fishing boat arrived shortly after the vessel stranded and piloted the ship's boats to a safe landing place."
230	"Leverbank" Foreign-going—Cargo.	2,400	November, 1909. Abandonment. North Atlantic.	"The mizzen topmast fell across No. 3 hatch, carrying away the athwartship beam and hatches and smashing the port lifeboat. Half an hour later, the mizzen lowermast carried away about eight feet above the deck falling over the starboard lifeboat. . . . The falling wreckage also wrecked the two boats on the forward skids."
231	"Lord Londonderry" (S.S.). Foreign-going—Cargo.	2,523	25 June, 1909. Fire and abandonment. 70 miles west of Sines, Portugal.	"The boats were now ordered out and the crew got into them and left the ship. . . . One boat landed at Sines in Portugal, and the other with the master at Milfontes early next morning."
232	"Marcus." Fishing . . .	57	19 December, 1908. Stranding. Haisborough Sand.	"The skipper decided to take to the boat and pull on board the 'Haisborough' Light Vessel."
233	"Melrose Abbey" (S.S.). Foreign-going—Cargo.	1,211	31 July, 1909. Stranding. West Coast of France.	"All the crew left the vessel in the boats about 20 minutes after the stranding, and then remained near her."
234	"Plympton" (S.S.). Foreign-going—Passenger.	2,869	14 August, 1909. Stranding. Scilly Isles.	"The lifeboats were got out and lowered to the water and most of the crew got into them. The deck crew, consisting of about 12, including the boatswain, got into the port lifeboat." (The crew reached the shore safely in the vessel's boats.)

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
235	"Sir Francis Drake" (S.S.). Fishing.	256	18 March, 1909. Stranding. Iceland.	"The boat was launched, and the crew were taken safely to shore."
236	"Skipjack" (S.S.). Home Trade—Cargo.	1,120	13 November, 1909. Stranding. Staithes, Yorkshire.	"All hands got into the boats and remained by the vessel. They then pulled to the north until they were picked up."
237	"Slavonia" (S.S.). Foreign-going—Passenger.	10,606	10 June, 1909. Stranding. Azores.	"At 7.30 a.m. the task of landing the passengers (373) was begun, ten of the ship's boats being employed. At 11 a.m. some boats came off from the Island and they also were employed conveying passengers and baggage. "During the night of the 10th/11th the wind freshened from seawards, and the four boats remaining alongside were smashed. The crew began to leave the wreck by means of a line, and this was accomplished in safety by 1 p.m., the master and chief officer being the last to leave."
238	"Stockton" (S.S.). Home Trade—Cargo.	407	14 December, 1909. Foundering. 8 miles N.N.E. of Skegness.	"The master then gave orders for the lifeboats to be got ready for abandoning the ship. It should be remarked that the jollyboat, which was stowed in chocks on the main hatch, had previously been struck by a sea, shifted on one side and stove in. . . . When the port lifeboat was swung out, she was struck by a wave and smashed in the davits. . . . The starboard lifeboat was now swung out and successfully lowered, and in her all hands went on board the trawler."
239	"Thistle-mor" (S.S.). Foreign-going—Cargo.	2,579	3 December, 1909. Foundering. Barnstaple Bay.	"A part of the 'Thistle-mor's' crew then proceeded to lower the port lifeboat into the water. In shoving off from the ship the boat capsized, and the 15 men in her were thrown into the water, some of whom succeeded in returning to the 'Thistle-mor' whilst others remained clinging to the bottom of the boat. (Nine of these men were picked up). . . . When the 'Thistle-mor' was last seen, the remainder of her crew were observed clearing away the jollyboat."
240	"Trent" (S.S.). Foreign-going—Passenger.	5,525	6 January, 1909. Stranding. Coast of Columbia.	"The passengers proceeded to Cartagena in the ship's lifeboats."
241	"Washington" (S.S.). Fishing.	264	22 December, 1908. Stranding. Iceland.	"The skipper ordered everybody to put on lifebelts and to get the boat out. Owing to the heavy list of the vessel the boat could only be got out to seaward. It was no sooner in the water, than it was lifted by the sea on to the rail of the vessel, and from it was again washed into the sea and capsized. The painter was parted and the boat washed away."

Inquiries ordered in 1910.

242	"Annesley." Foreign-going—Cargo.	1,690	19 December, 1910. Stranding. South Rock, St. George's Channel.	"All hands got in the lifeboat and pulled clear of her. . . . Shortly afterwards the lifeboat was taken in tow by a tug boat and towed into Wexford Harbour."
243	"British Standard" (S.S.). Foreign-going—Cargo.	3,458	25 May, 1910. Foundering off Coast of Brazil.	"The Master, the three Engineers, and some other members of the crew got into the starboard boat, and the Chief Officer and Second Officer were in charge of the port lifeboat and jollyboat respectively, and they left the vessel"
244	"Claymore" (S.S.). Home Trade—Passenger.	760	22 January, 1910. Stranding. Paba Island, West Coast of Scotland.	"The passengers were then landed on Paba Island, and later on taken to Broadford Pier in one of the ship's boats."

245	"Dalriada" (S.S.). Home Trade—Cargo.	324	26 April, 1910. Stranding. Coast of Antrim.	"The crew cleared away and lowered their boat at once and abandoned the vessel, the Master, on reaching deck, joining them."
246	"Deccan." Foreign-going—Cargo.	1,985	6 December, 1909. Stranding. South Coast of Chili.	"The Master had taken the precaution of provisioning the two lifeboats and putting them into the water. The crew got into them over the taffrail just before the masts went by the board. They pulled clear of the reef, and some three or four hours afterwards they landed in an adjacent bay."
247	"Deanmount." Foreign-going—Cargo.	1,935	3 October, 1910. Stranding. North Coast of Spain.	"All hands left the ship about 10 a.m., some in the pilot boat, and the remainder in one of the lifeboats belonging to the ship."
248	"Egremont." Home Trade—Cargo.	104	31 October, 1910. Collision. 6 miles east of Lowestoft.	"All 12 hands—the 'Speedwell's' nine and the three survivors from the 'Egremont' then got into the boat The sea had moderated very considerably, but the boat was so overloaded that those on board could do nothing but keep its head to wind Just at this time the steam drifter 'Emulator' having seen the flare bore down upon them, took them on board and returned with them to Lowestoft."
249	"Excelsior." Pilot Cutter.	—	20 January, 1910. Collision. Bristol Channel.	"The Master gave orders to get out the dinghy, or jollyboat, which was stowed on the after well-deck, near to, but not on, its davits. This operation, apparently, was attended by considerable difficulty owing to the heavy rolling of the ship, which was lying broadside on to the sea. After working at her from 20 minutes to half an hour she was stove in when partially hoisted in the davits, and prior to her being swung outboard. Neither before nor after the abortive attempt to launch the dinghy was any effort made to swing out and lower either of the lifeboats, which were stowed in chocks under davits."
250	"Gertrude" (S.S.). Fishing.	58	15 September, 1910. Foundering. North Sea.	"Four of the younger and inexperienced members of the crew of the 'Gertrude' were transferred in their own boat to the 'Good Hope,' the boat returning to the 'Gertrude.' The other members were so transferred later."
251	"Heathfield" (S.S.). Foreign-going—Cargo.	1,371 N.	13 October, 1910. Stranding. Sheringham Shoal, North Sea.	"He at once ordered the starboard lifeboat to be swung out and lowered. This was done, and whilst it was being lowered, the Master ordered the Second Mate and the Boatswain to get into it. They did so and the boat was put into the water and lay alongside, made fast by its painter. "According to the story of those two men they had great difficulty in keeping the boat clear of the ship and also in keeping it free of water. They said they were actually washed out of the boat twice, and at about 10.30 a.m. they received an order from the Master to cast off and to try and reach the shore for help. "The Court could not quite understand the meaning of this, as it would have been possible to have got others of the crew into the boat, and they were little use on the ship However, the men both said that they received the order, therefore the painter was cut and the boat drifted away to leeward They kept the boat dead before the wind and finally they struck the beach. The boat overturned, but they managed to scramble ashore."
252	"Indian" (S.S.). Foreign-going—Cargo.	9,121	6 August, 1910. Stranding. Near Duncansby Head.	"The Master ordered the two lifeboats on the port side to be swung out. The boats on the starboard side could not safely be launched owing to the proximity of the rocks, the list of the ship, and the heavy surf. Some five minutes later he ordered the forward port boat to be lowered, so as to have a boat ready in case the vessel came off the rocks and sank in deep water. In lowering this boat the forward tackle was unhooked before the after one, with the result that, in the strong current then running, the boat instantly filled and disappeared. The boatswain, Peter Sutherland, and Heinrich Lammers were in this boat, and when she capsized the boatswain climbed up the foremost falls, and Lammers up the after falls. Lammers only got partly up when the hands on deck swung the davit of the after boat forward, and Lammers got into the bows of the after lifeboat. . . . Augst. Wehlan being aft. This boat was now lowered and detached successfully, towing by her painter, Wehlan steering the boat for some time in the strong current. After a time Wehlan found he had great difficulty in

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253	"Janus" (S.S.). Fishing.	240	7 August, 1910. Stranding. Orkney Islands.	steering the boat owing to the strong current running from forward, and the surging swell coming from aft, and he left the boat, climbing up after fall. Lammers then went aft, apparently to steer the boat. The evidence here is conflicting as to whether he ever got aft at all, some saying he did so and steered the boat for a time, but it is quite evident that the boat yawed off from the ship, very considerably listed over, filled and capsized, Lammers being under the boat, which broke adrift and was swept astern. Lammers was never seen again. The chief steward passed a lifebuoy to the boatswain, who ran aft and threw it over towards the boat, which was soon lost sight of in the dense fog then prevailing. In the circumstances it is evident no further steps could have been taken to save this man's life. In the opinion of the Court, the lowering of the boats in the first place was a proper and prudent measure to take." "The boat which had in the meantime been prepared for use was lowered into the water and all hands got into her . . . had the weather been otherwise the boat, with its load of 13 persons, would have been in great jeopardy and loss of life might have ensued."
254	"John" (S.S.). Home Trade—Cargo.	342	22 December, 1909. Stranding. Coast of Yorkshire.	"An attempt was made to launch the ship's lifeboat, but she was stove in and carried away by the sea."
255	"Kingswell" (S.S.). Foreign-going—Cargo.	2,355	21 January, 1910. Foundering. 120 miles West of Cape Matapan.	"The lifeboats were lowered and the crew divided between them, the chief officer being in command of one and the master the other. The chief officer's boat got alongside the 'Jessie' all right, but that in charge of the master was damaged and made a good deal of water, so much so that a boat was sent from the 'Jessie' and the men were transhipped to her."
256	"Kurdistan" (S.S.). Foreign-going—Passenger.	2,813	20 October, 1910. Foundering. Near Scilly Islands.	"The captain ordered the lifeboats, which had been previously provisioned, to be launched and manned. It was impossible, owing to the list of the vessel, to launch the starboard lifeboat, although attempts were made to do so, but the port lifeboat was launched with five A.B.'s in her (including the two surviving witnesses) and a Chinese steward; this boat was so badly damaged, and some of the air chambers injured, that it filled with water and required constant baling, the consequence was that those in the boat directed all their efforts to the management of the boat, and appear to have made no effort to save those remaining on board the vessel (which shortly after turned completely over on the port side and sank) except that, the survivors state, shortly after the boat was clear of the vessel, five Arabs and one ordinary seaman swam out to the boat, and were taken on board her. If this were so, it would seem that the Arabs might have been employed in baling out the boat, and that the A.B.'s might have made some attempt to save the lives of some of those left on the vessel. The surviving witnesses state, that after the boat was injured, their own attention was fully occupied in baling out the boat, and they saw no more of any of the persons left on the vessel except the said five Arabs and ordinary seaman, and, except that they saw two officers and one lady passenger making their way on the starboard side of the vessel's bottom towards the keel, who were shortly after washed off by the sea."
257	"Minneapolis" (S.S.). Foreign-going—Passenger.	13,443	18 April, 1910. Stranding. Scilly Isles.	Boats were lowered and passengers ordered into them. . . . In response to the distress signals boats came from the shore and piloted the ship's boats to land. . . . All the passengers and their effects were safely conveyed ashore.
258	"Norse Prince" (S.S.). Foreign-going—Cargo.	5,611	4 January, 1910. Fire and abandonment off Ascension Island.	"After remaining by for some time the S.S. 'Guelph' steamed up and took all hands with their boats on board."
259	"North Wind" (S.S.). Fishing.	123	27 December, 1909. Stranding. Cairnbulg Briggs.	"Immediately the boat was put over the side it was swamped with the surf and was then hoisted on board again."
260	"Oakmoor" (S.S.). Foreign-going—Cargo.	2,838	26 November, 1910. Stranding. South Coast of Spain.	"The boats were swung out and lowered and at 9.40 p.m. the crew got into them." "The boats were kept alongside for some time and at 2 a.m. the chief officer was despatched with 12 men in the port lifeboat to Gibraltar to obtain salvage assistance."
261	"Portmarnock" (S.S.). Foreign going—Cargo.	3,080	14 October, 1910. Stranding. Cape Frio, Brazil.	"A huge sea broke over the vessel's starboard side carrying away and rendering useless both the boats on that side, and injuring several of the crew, who were endeavouring to get them clear of the chocks and swung out. One poor fellow was washed on to the main deck and broke his leg, and was afterwards put into the port lifeboat which capsized between the vessel and the shore. The same sea washed the captain off the upper bridge on to the lower bridge deck and somewhat injured him. The chief officer is supposed to have been washed overboard by the same sea, for he was never afterwards seen by any member of the crew. The lowering of the port lifeboat appears to have been effected under circumstances of great difficulty and confusion, but she was eventually got safely into the water by cutting both tackle falls when she was a few feet from the water, as they had fouled and would not run out. The boat's painter had not been carried forward and made fast on the steamer. Owing to the heavy sea and the discharge from the engine room playing into the boat, those in it had to pull away from the ship's side for safety. The current then took the boat forward against the efforts of her crew to obey the captain's order, viz.: 'Not to go away.' Upon drifting towards the bow of the steamer, a heavy sea broke over the boat, partly filling her, and washing away all the oars. She then became unmanageable, the current took her aft again, and a heavy sea rolling along capsized her, throwing all her crew into the water. The boatswain, George Calumenos, succeeded in getting on to the bottom of the boat, and was eventually washed on shore without injury, but the remainder of her crew were all lost." "Meanwhile the captain and the other members of the crew who were left on board the steamer were using every effort to launch safely the port cutter, the only boat left then, but they were unsuccessful, for she was swamped alongside on reaching the water by the heavy seas continually breaking over her and the steamer."
262	"Resolution" (S.S.). Foreign-going—Cargo.	1,979	20 May, 1910. Stranding. Ile de Sein, Bay of Biscay.	"The boats were lowered and some of the crew left the vessel in them. The master and three of the officers remained on the vessel until 10.10 p.m."
263	"Rowa" (S.S.). Foreign-going—Cargo.	2,840	28 July, 1910. Stranding. Cape St. Vincent.	"The master . . . put the lifeboats into the water. Most of the crew got into them at once." The master abandoned his ship later, and the crew all were taken on another vessel.
264	"Selworthy" (S.S.). Foreign-going—Cargo.	—	17 March, 1910. Explosion and foundering. 80 miles North of Canary Islands.	"The vessel now had a considerable list to port and the starboard boats could not be lowered. The port lifeboat and small boat were, however, launched and provisioned, and all hands had taken to the boats about half an hour after the explosion. After cruising in company for 43 hours, the occupants of the two boats were picked up."
265	"Swanhilda." Foreign-going—Cargo.	2,150	16 May, 1910. Stranding. Staten Island, Tierra del Fuego.	"The master gave orders to clear away the boats, and all hands went to the starboard lifeboat, which was on the weather side, and swung her out. Whilst they were doing so, the vessel struck on the rocks under Cape St. Anthony and bumped heavily. It was then getting dark and a scene of confusion and panic ensued; provisions were passed into the starboard lifeboat, and some of the crew jumped into her. One of them (the steward) was pulled out by the boatswain, who said, "Women first," but the master, who was standing close by with his wife, said, "Let him alone, she will not go unless I go," and then he asked the men who were in the boat if they objected to his getting in. They

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty	Court's Remarks.
				replied 'No.' He then put his wife in the boat, and followed. On seeing this, a rush was made by the remainder of the starboard watch to get into her, and several voices called out 'Lower away.' One of the port watch, who was standing by the after fall, commenced doing so, but soon let it go altogether, which resulted in the boat being suspended by the forward tackle, whilst her stern fell into the water, precipitating most of the occupants overboard, including the master and his wife, and everything movable, such as oars, mast, &c. Just as this occurred, the mate, who had previously left the starboard boat to attend to the port lifeboat, hearing the commotion, returned to the starboard side, and saw the lifeboat hanging by one tackle as already described; but before he could do anything, apprentice Young, who had retained his hold in the boat, cut the fall, and, thus released, the boat fell into the water on an even keel. Then seaman Snyder, who had also retained his seat in the starboard lifeboat, cut the painter, and the boat thus being without oars or other means of guidance, drifted helplessly into the breakers, with some men in her, and was dashed to pieces on the rocks. Of the occupants of the starboard lifeboat four only were saved—the remaining 12 being drowned—and one after reaching land appears to have lost his reason, and wandered away into the island, never again being seen. "Just before the accident to the starboard lifeboat which has been detailed, the port lifeboat had been swung out and lowered into the water, but in doing so, she was by some mismanagement allowed to break adrift with three men in her, and it was some few minutes before she returned. When she did so, owing to the shortness of the line which was thrown to her, she again failed to get alongside, and this time drifted some distance away. Whilst it was doing so, the starboard lifeboat was seen some 70 yards away with some people in her, who, as soon as they were seen, cried out, 'We've no oars—give us some oars,' and, 'Remember the woman,' but the men in the port lifeboat were then in a perilous position themselves, and only with the greatest difficulty managed to pull back to the side of the wreck. Immediately they arrived alongside, the remainder of the crew jumped into her and shoved off from the wreck."
266	"Terra" (S.S.). Foreign-going—Cargo.	2,801	11 June, 1910. Stranding. Grois Rocks, Alderney.	"All on board were safely landed on Alderney in the ship's boats and pilot cutter."
267	"Welholme" (S.S.). Home Trade—Cargo.	179	2/3 October, 1910. Foundering. 7 miles N.N.E. of Cromer.	"This ship's list was rapidly increasing all the while, and by this time the deck cargo had begun to float up, taking the boat with it, the lashings having been cut. The six men then scrambled into the boat After they had got into the boat it was noticed that the second engineer was missing. The crew shouted to him and attempted to keep the boat near the ship, but were unable to do so owing to the strong wind and rising sea, and also because only two oars remained in the boat, the other two oars and rudder having been lost from the boat when she floated clear of the deck cargo."
268	"West Point" (S.S.). Foreign-going—Cargo.	3,074 N.	27/29 August, 1910. Fire and foundering. North Atlantic.	"The lifeboats then started northward, the chief officer being in charge of the port lifeboat with 15 hands and the captain in the starboard lifeboat with 15 hands." Both boats were eventually picked up.

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Inquiries ordered in 1911.

269	"Alice Dodds" (S.S.). Fishing.	197	27 February, 1911. Stranding. North Ronaldshay, Orkney Islands.	"The crew left the ship in their own boat."
270	"Arden" (S.S.). Foreign-going—Cargo.	1,517	19 January, 1911. Stranding. Finisterre, France.	"The boats were got out and . . . the crew left the vessel."
271	"Buteshire" (S.S.). Foreign-going—Cargo.	1,910	27 March, 1911. Abandonment 100 miles west of Brest.	"The master, after consulting with his officers, decided that they should make preparations to get the boats ready to abandon her. . . . Later on a lifeboat from the 'Buteshire' came alongside (the 'Ardeola') with 14 men in her, 13 of whom got on board, one man remaining in the boat. The master of the 'Ardeola' states in his affidavit that the men in the boat threw the oars away as soon as they got alongside and refused to return to their ship for the remainder of the crew. . . . The boat was then manned by the steamer's crew, and they went to the 'Buteshire' and brought the remainder of the crew."
272	"Cardiff Hall" (S.S.). Foreign-going—Cargo.	2,605	19 March, 1911. Stranding. Novorossisk Bay, Black Sea.	"The two boats on the port side were washed away, but the starboard boats were not damaged and the hatches were not stove in . . . The crew were safely landed in the starboard lifeboat without any difficulty."
273	"Chieftain" (S.S.). Home Trade—Passenger.	1,088	24 August, 1911. Stranding. West Coast of Scotland.	"Some of the crew attempted to swing out the starboard lifeboat, but owing to the list they were unable to do so. In the meantime other members of the crew were getting out the port boats, and the women and children were ordered to be placed into them. This was accomplished, and they were safely landed. The remainder of the passengers were safely landed by means of ropes over the bows."
274	"Commerce" (S.S.). Home Trade—Cargo.	134	29 April, 1911. Stranding. Coast of Aberdeenshire.	"The master decided to abandon her, and he landed (in the boat) with the crew in Aberdeen Bay."
275	"Dategrove" (S.S.). Foreign-going—Cargo.	1,213	25 September, 1911. Stranding. Trek Island, White Sea.	"The boats were got out, but the tide was running so strongly that they were unable to pull against it, and had to hold on to the vessel until it slackened, when they got ashore."
276	"Dunsley" (S.S.). Home Trade—Passenger.	1,987	30 August, 1911. St. George's Channel.	"The whole crew were able to leave the vessel and safely land in its starboard cutter."
277	"Falls of Garry." Foreign-going—Cargo.	2,102	22 April, 1911. Stranding. County Cork.	"The second mate and 13 men left in the starboard lifeboat for Queenstown and had no difficulty in finding their way. The port lifeboat left the vessel in charge of the third mate and five hands to obtain assistance, and shortly after fell in with a pilot boat, which took them into Oyster Haven."
278	"Fashoda" (S.S.). Foreign-going—Cargo.	2,786	30 August, 1911. Stranding. Coast of Portugal.	"The master at once ordered the boats to be put out as the vessel was settling down gradually, and the crew after remaining in the boats by the vessel for about one hour, left for the shore and fortunately landed without accident or loss of life."
279	"George" (S.S.). Fishing.	150	3 January, 1911. Stranding. Coast of Norfolk.	"The crew then got into the boat which had been hauled from aft to the rigging. They pulled away in the direction of the Would Lightship, which they safely reached."
280	"Hasland" (S.S.). Foreign-going—Cargo.	1,689	29 March, 1911. Foundering 50 miles south of Cette, Mediterranean Sea.	"The starboard lifeboat was launched and three of the crew were put in her to keep her clear of the vessel The port lifeboat was afterwards launched and seven of the crew got into her."
281	"Malta II." (S.S.). Fishing.	143	January, 1911. Stranding. Holm Sound, Orkney Islands.	"All hands got into the boat. Another fishing vessel . . . took the crew on board after they had been in the boat about half an hour."

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Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
282	"Mariston" (S.S.). Foreign-going—Cargo.	2,611	30 August, 1911. Stranding. Entrance to White Sea.	"The master ordered the crew at 11.30 p.m. to leave the wreck. They remained close by till 4.30, when they pulled towards the shore and landed."
283	"Ouse" (S.S.). Home Trade—Cargo.	669	3 March, 1911. Foundering. Hartland Point, Devon.	"The starboard lifeboat was ordered to be lowered The men were afterwards got into the lifeboat. While this was being done the boat was being thrown against the side of the vessel, and in danger of being capsized, so it was passed round to the port quarter The master was informed that all the men were in the lifeboat, and about 1 a.m. they pulled away from the vessel. After pulling some distance shouting was heard on the vessel. Upon returning it was found that one of the firemen had been left behind He was then taken into the boat and they pulled away Shortly afterwards, viz., 1.30 a.m., the boat was picked up."
284	"Parisiana" (S.S.). Foreign-going—Cargo.	4,823	13 December, 1910. Abandonment. South Indian Ocean.	"The two lifeboats which had been provisioned in the forenoon were swung out about 3 p.m. and about 6 p.m. were lowered into the water. The men then got into them. The gig was also put into the water, but had subsequently to be abandoned, as it kept fouling the lifeboat which had it in tow The master and his officers left the ship remaining all night alongside in the boats "The captain's boat was provided with a thin and light sail, part of her original equipment, which must have escaped the notice of the Board of Trade officials. The sail was quite unsuitable. The master was afraid to use it very much, and continually had to keep his boat riding to her sea anchor. However, by using it during more favourable intervals, and with the crew pulling, this boat managed to reach St. Paul's on the Saturday following. "The chief officer, whose boat was one bought subsequently to the ship's leaving the yard, had a proper sail and made a much better voyage, arriving at the island about 10 a.m. on the Thursday." "The boats were put out, and at 11 p.m. all hands left the vessel and got safely on shore."
285	"Princess Patricia" (S.S.). Home Trade—Cargo.	837	19 October, 1911. Stranding. Island of Arran.	
286	"Roebuck" (S.S.). Home Trade—Passenger.	1,186	19 July, 1911. Stranding. Les Kaines Rocks, Jersey.	"The passengers walked down a gangway ladder into the boats, the women being taken off first. All were safely landed. The crew remained aboard all night."
287	"Sifka" (S.S.). Foreign-going—Cargo.	1,103	22 December, 1910. Stranding. Koppar Stenarne Shoal, Baltic Sea.	"All hands left the ship in the two lifeboats under sail, the master being in charge of one and the chief officer of the other. The master's boat was picked up and the chief officer's safely landed."
288	"Templemore" (S.S.). Home Trade—Cargo.	386	6 December, 1911. Abandonment and subsequent foundering. Ballycastle Bay.	"Other members were getting ready the starboard boat into which all hands got and hurriedly left the ship."
289	"Trevider" (S.S.). Foreign-going—Cargo.	3,082	27 April, 1911. Stranding. Near Cape Villano, Northwest Coast of Spain.	"The master prudently ordered both lifeboats to be lowered, which they very promptly were, the crew getting into them safely. From the time the ship struck until all hands were in the boats an interval of about 10 minutes was said to have elapsed. The master took charge of the port lifeboat, the mate of the starboard lifeboat. . . . At daylight a fisherman's boat was seen and the boats of the 'Trevider' were towed into safety."

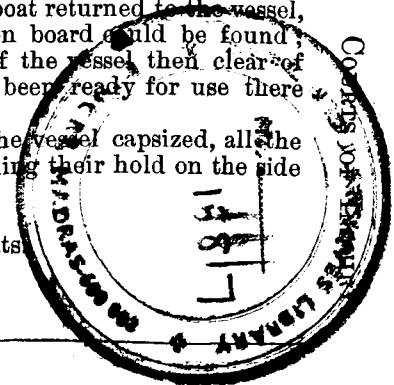
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Inquiries ordered in 1912.

28679	290	"Delhi" (S.S.). Foreign-going—Passenger.	8,090	13 December, 1911. Stranding near Cape Spartel Lighthouse, Morocco.	"The passengers and crew were all taken off by the ship's lifeboats, assisted by a steam cutter from the French cruiser 'Friant' and the large rowing boat of H.M.S. 'Duke of Edinburgh.'"
	291	"Chesapeake" (S.S.). Foreign-going—Cargo.	4,521	6 December, 1911. Fire and abandonment. North Atlantic Ocean.	"The Chinese crew, however, rushed aft and began to lower the boats. . . . The master ordered the men out of the boats; some obeyed, but the rest remained in the starboard boat, which was already in the water. She appears to have been lowered under the superintendence of the second officer. He explained to the master that he had been unable to restrain the crew, and may have thought it better to save the boat by giving proper directions, than to have it clumsily dropped into the water and probably stove in or swamped. "Some of the Chinese cut the falls of the port boat and left the ship in company with the other. These boats were seen for a considerable time, but were lost sight of during the afternoon. "The master gave orders to lower the remaining boats. . . . He ordered the third officer, chief officer and some of the crew into the port boat; the chief engineer with remainder of the crew were in the starboard boat, into which the master got about an hour afterwards by lowering himself down over the stern of the vessel." These two boats were subsequently picked up. "All hands left the 'John Ray,' the master being the last to enter the boat. . . . The crew were picked up the steam trawler, 'Volta.'"
	292	"John Ray" (S.S.). Home Trade—Cargo.	493	11 January, 1912. Stranding. Gristhorpe, Yorkshire.	
	293	"Tyne" (S.S.). Home Trade—Cargo.	647	12 January, 1912. Stranding. Bonit Rock, Alderney.	"The vessel was properly supplied with boats and life-saving appliances. She carried two lifeboats and a jolly boat; the lifeboats being carried in skids on the lower bridge deck abreast the engine room skylight, one on each side of the vessel, and the jolly boat aft on the port quarter in davits. The lifeboats, however, though fit, were not ready for instant use on account of ladders and planks being lashed to the gripes and skids, while the jolly boat had only two oars in her and no rowlocks. "Difficulty being experienced in launching the port lifeboat, a rush was made for the jolly boat, into which the first and second officers and six of the crew got, and the boat was cut adrift for fear, it was said, of being dragged under. The master, who was in the chart room, the chief engineer, second engineer, donkeyman and fireman (of whom the first two were the only persons seen after the casualty) were left on board, and the jolly boat, with but two oars and without rowlocks, drifted away and could not be brought back for the purpose of rescuing them. "Shouts were heard from those left on board and were answered, and the jolly boat was subsequently picked up by the pilot's boat and the occupants landed. When the pilot's boat returned to the vessel, as speedily as possible, within an hour of the casualty, no trace of those on board could be found; the masts, top of chart room, and fore-castle head being the only portions of the vessel then clear of the water. In the opinion of the Court, had any one of the three boats been ready for use there would have been no difficulty in saving the whole of the crew." "Attempts were made to put out the lifeboat, but before this could be done the vessel capsized, all the crew being thrown into the water. They all succeeded, however, in retaining their hold on the side of the vessel till daylight when they were rescued by a fishing boat."
	294	"Elizabeth Llewelyn." Foreign-going—Cargo.	159	7 May, 1912. Stranding. Fraile Point, South Coast of Spain.	
	295	"Vectis" (S.S.). Home Trade—Cargo.	907	5 February, 1912. Stranding. Reny Rocks, Plymouth Sound.	The master and crew were able to reach the harbour safely in the ship's lifeboats

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101



Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
296	"Ardoe" (S.S.). Foreign-going—Cargo.	2,386	27 December, 1911. Stranding. Coast of Syria.	"The chief officer (and three of the crew) were sent in the starboard lifeboat for assistance. He (the master) and the remainder of the crew—16 in all—left in the port lifeboat. She was headed straight for the shore, and when about 400 yards distant she was capsized and seven of the crew were drowned. The remainder succeeded with great difficulty in reaching the shore."
297	"Ben More" (S.S.). Fishing.	151	23 December, 1911. Stranding. Coast of Aberdeen-shire.	"The crew landed in their own boats."
298	"Diamond" (S.S.). Fishing.	149	9 January, 1912. Stranding. Speeton Cliffs, Yorkshire.	"The crew then proceeded to put the boat out on the starboard side and to get into it. They then pulled out to sea to keep clear of the rocks. . . . Shortly after this two fishing cobsles were seen approaching into which the crew were taken."
299	"Doreen" (S.S.). Fishing.	129	14 January, 1912. Stranding. Boulmer, Northumberland.	" . . . promptly brought the lifeboat alongside in which all hands left the vessel, their own boat having prior to this been smashed by the sea after it was launched."
300	"Golden Sceptre" (S.S.). Fishing.	296	25 December, 1911. Stranding. Kettleness, Yorkshire.	"The whole of the crew then left the ship, others in the shore boat and . . . were safely landed."

(B.)
INQUIRIES HELD AT PLACES ABROAD.
Reports received in 1902.

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
1	"Amherst" (S.S.). Coasting—Passenger.	108 N.	17 November, 1901. Stranding. Pahang Bar, Straits Settlements.	"The coolies of the ship without orders had meanwhile gone off in a boat taking with them three of the passengers, and all with the exception of two of the coolies are believed to have been drowned. The rest of the passengers were safely landed and the vessel was abandoned by the officers the next day."
2	"Attic." Coasting—Passenger.	43 N.	30 January, 1902. Stranding. Andros Island, Bahamas.	"The boat was put overboard, but the heavy swell which was breaking over the vessel sank it, and it was then brought round to the lee side to be ready in case the vessel should break up The following morning the eight passengers and the crew went ashore, taking the mails."
3	"Brutus." Foreign-going—Cargo.	1,542 N.	15 August, 1902. Stranding. Mouille Point, South Africa.	"At daylight the port lifeboat took the crew off safely and the ship is now on the beach."
4	"Dalblair." Foreign-going—Cargo.	1,474 N.	5 February, 1902. Stranding. Pointe D'Esny, Mauritius.	"Tremendous seas breaking over the vessel, the crew tried to launch the lifeboat, but unsuccessfully. The sea was sweeping everything off the deck and three of the four boats were smashed. Signals of distress were put up and rockets let off, but no boats came out that day. The crew made no further attempt to reach the shore until about 6 p.m. in the afternoon of the 5th ultimo, when they succeeded in launching a lifeboat. Ten men were in her Shortly after the boat left the ship, she was capsized and only seven men succeeded in getting safely on shore They (the Board) consider attention should be called to the fact that the lifeboat capsized, and that the question should be considered whether a better one could not be constructed It also appears to the Board that the question whether ships' lifeboats could not be built in an improved form is worth considering, for, generally speaking, the boats in use at present seem unable to stand heavy seas. Of course, in very bad weather and near the shore any boat must run the great risk of being capsized, but possibly a new boat might be so constructed as to be able to resist even very heavy seas."
5	"Deepdale" (S.S.). Foreign-going—Cargo.	2,598 N.	6 August, 1902. Stranding. Hooghly River.	"After remaining on the side of the vessel for about 30 or 40 minutes, with the officer and crew, the pilot and some of the crew swam off to a small boat, and the captain and officer and such of the crew as were to be found on the vessel got off in the lifeboat, which then floated up and went ashore."
6	"Deptford" (S.S.). Foreign-going—Cargo.	1,672 N.	2 May, 1902. Stranding. Canary Islands.	"That the crew were sent away in boats prematurely."
7	"Fushun" (S.S.). Foreign-going—Passenger.	1,460 N.	22 November, 1901. Fire and abandonment. Off Canton.	"Efforts were made to lower the boats, but the fire was gaining too rapidly, and the crew had to leave the ship as soon as possible, getting over the side with ropes."
8	"Gabrielle." Foreign-going—Cargo.	78 N.	1 September, 1902. Stranding. Algoa Bay.	"By means of the ship's boat and a line from the shore the crew were safely landed."
9	"Hock Seng" (S.S.). Foreign-going—Passenger.	686	16 February, 1902. Stranding. Straits Settlements.	"The boats were lowered and everything done to save the passengers and crew, who reached Penang in safety."
10	"Kumara" (S.S.). Foreign-going—Cargo.	3,906 N.	18 March, 1902. Man overboard. Lat. 47° 6' S., Long. 112° 10' E.	"It considers the captain deserving of censure in not having boat and fire drill in fine weather or in port."
11	"Maggie Low." Foreign-going—Passenger.	100 N.	1 September, 1902. Stranding. Seychelles.	"Heavy seas gathering with the incoming tide, broke over the ship, crushing the lifeboat." At daybreak rafts were made, and ultimately passengers and crew waded on to Cerf Island.
12	"Pinnore." Foreign-going—Cargo.	2,286 N.	4 December, 1901. Abandonment. Off Coast of Washington.	"The master decided there was too much danger to life to remain on board and ordered the boats to be lowered. Rockets were burned, but seeing no signs of assistance the mate and 13 of the crew got into one boat, and the master and the remaining 15 into the lifeboat The two boats left the ship between 8 and 10 p.m. of the 4th December, the time being somewhat doubtful, and they drifted to the north, sighting Destruction Island light about 4 a.m. on the 5th December. During the forenoon one of the crew died from exposure; and about noon they decided to effect a landing through the surf two miles south of Raft River. The lifeboat, an A. class boat with copper tanks and a cubical capacity of 337 cubic feet, under the command of the master, landed in safety, but the boat was badly damaged. The second boat, a tankless D. class boat, with a cubical capacity of 299 cubic feet, after passing several lines of breakers, capsized and was smashed up, and out of the 14 men in

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
13	"Pomona." Foreign-going—Cargo.	1,200 N.	9 December, 1902. Abandonment. Lat., 39°46'N., long., 16°W.	her eight struggled ashore through the breakers, helped by the crew of the other boat, and six of the crew were drowned the Court does not consider that the boat which was lost was unseaworthy or overloaded, but believes that if it had been furnished with air tanks the crew would, in all probability have passed safely through the surf, and reached the shore in safety The Court suggests to the Board of Trade to render it compulsory that there should be two lifeboats (with air tanks) provided in every case, and that the cubical capacity now required for each person carried should be increased considerably."
14	"Port Patrick." Foreign-going—Cargo.	1,595 N.	14 January, 1902. Abandonment. Bass Straits.	"That there were a sufficient number of boats—two of which were smashed by falling wreckage."
15	"Royal Tar." Foreign-going—Cargo.	597 N.	26 November, 1901. Stranding. Shearer Rock, N.Z.	"The Court is of opinion that the master committed an error of judgment when rescued from the boats by the s.s. 'Abergeldie' in not requesting to be put ashore at the Promontory"
16	"Teutonia" (S.S.). Coasting—Passenger.	244 N.	6 June, 1902. Collision. Straits Settlements.	"A boat was sent in charge of a seaman to land the master's wife and child on Tiri Tiri Island. The rest of the crew got in another boat just before she went down. The master had ordered all hands into the boat, but the mate expressed his intention of going to get some of his property. The vessel sank suddenly, and the mate is supposed to have gone down with the vessel."
17	"Yoshino Maru" (S.S.). Foreign-going—Cargo.	1,291 N.	10 October, 1902. Fire and abandonment. On voyage from Shanghai to Kobe.	"The s.s. 'Chow Phya' rescued all that were saved, except those that got away in the small boat."
Reports received in 1903.				
18	"Arequipa" (S.S.). Foreign-going—Cargo.	1,387 N.	2nd June, 1903. Foundering. Valparaiso Bay.	"The master determined to devote his energies to saving the crew, and for that purpose ordered out the boats, of which only two were available, the after boats having been burnt. At 1.30 p.m. two boats were lowered, and the greater part of the crew left the ship in them, standing by. The first mate and two members of the crew had by this time been driven over the bows and were hanging to the anchor chains, the second mate in one of the boats."
19	"Sui Leok" (S.S.). Foreign-going — Passenger.	27 N.	29 May, 1903. Collision. Straits Settlements.	"At 1.40 p.m. a lifeboat from the United States Army transport 'Crook' took off the first officer and two members of the crew from the bows."
	"Chan Tai" (S.S.). Foreign-going — Passenger.	47 N.		
20	"Conch" (S.S.). Foreign-going—Cargo.	2,313 N.	2nd June, 1903. Stranding. Ceylon.	"The officers got the lifeboats ready, but the native portion of the crew were panic-stricken and could not be got to lift the boats."
				"The Court finds as follows:—That the crew seems to have worked well and bravely until matters were hopeless, when they refused to assist in getting out the lifeboats."
				"The 'Chan Tai' lowered two boats and steamed ahead, again striking the 'Sui Leok' a second time this action saved several lives. The boats appear to have been lowered after the second contact. The 'Chan Tai' stood by for some time, and then, after picking up one of her boats, sailed and beached the vessel. The second boat turned up in the morning with more of the passengers of the 'Sui Leok' who had been picked up."
				"The boats were then got out, and the crew got into them and remained by the ship till daylight. Early next morning native boats came out, and the crew were gradually landed."
21	"Elingamite" (S.S.). Foreign-going — Passenger.	1,675 N.	9 November, 1902. Stranding. Near Three Kings Islands.	This report deals exhaustively with the question of boats. There were 194 persons on board. The boats were capable of accommodating over 200 persons, and in addition there were two rafts. There had, however, been no efficient boat drill, and when the boats were required there was more confusion and less discipline than there ought to have been. A large boat, capable of accommodating 50, was allowed to leave with only 23 persons. Those who were unable to get into the boats got out the two rafts. One of the rafts drifted about for five days before being picked up, and, in the meantime, eight of those on board died. One of the boats, containing 35 persons, was never heard of again.
22	"Foyledale" Foreign going—Cargo.	1,666 N.	1 June, 1903. Stranding. Valparaiso bay.	"All the boats, the chart house, and the weather bulkheads were washed away."
23	"Glencona." Foreign-going—Cargo.	2,489 N.	16 July, 1903. Stranding. Argentine Coast.	"That at about 4 p.m. all hands left the ship in the two lifeboats, and proceeded to Rio Negro for assistance."
24	"Invermore." Foreign-going—Cargo.	1,521 N.	12 October, 1903. Stranding. Cape S. Thome, Brazil.	"That the lifeboats were not in a proper condition of readiness for an emergency. That the port lifeboat was stove in, by a sea, when being launched, and abandoned. That the starboard lifeboat was launched, although damaged in being launched, and served to save the whole of the crew. That this boat left the vessel without a compass, and was improperly provisioned. That the evidence is conflicting as to the time it took to launch the boats. That they remained by the wreck, in the boat, until daylight next morning and after considerable hardships in the boat, during some 44 hours, they landed"
25	"Laurel Branch" (S.S.). Foreign-going—Cargo.	2,140 N.	27 August, 1903. Stranding. Lat. 46°30'S., Long. 75°26'W.	"Whilst engaged in landing the passengers and crew, two of the children passengers were drowned owing to the lifeboat capsizing, and every possible effort was made by the boat's crew to rescue the two children."
26	"Lizzie Pearl." Turtling Expedition.	10 N.	30 December, 1902. Stranding. Bahamas.	"Who had barely time to pitch their small boats into the sea before she went down."
27	"Madiana" (S.S.). Foreign-going — Passenger.	—	10 February, 1903. Stranding. Bermuda.	"The ship fell over to port, that being the windward side, and the port boats were washed away." Passengers and crew left the vessel in the other boats.
28	"Mersey" (S.S.). Coasting—Cargo.	—	12 August, 1903. Foundering. River St. Lawrence.	"That Gagnon, the Master, was guilty of a brutal and inhuman crime in seizing the only boat and deserting his vessel, leaving to drown five landsmen who were helpless to save themselves."
29	"Messenger." Fishing	5 N.	29 December, 1902. Stranding. Bahamas.	The boat supplied to the vessel was sufficient, and if the Master had used the material at his disposal to increase its buoyancy, all might have been saved.
30	"Oakland." Coasting Trade—Cargo.	—	27 May, 1903. Foundering. Cabbage Tree Island, N.S.W.	"All hands then got into the little boat and landed."
31	"Powys Castle." Foreign-going—Cargo.	1,349 N.	9 January, 1903. Stranding. Staten Island.	"Shortly before the vessel foundered all hands got into the starboard lifeboat and the falls were cut, but the boat in descending struck the side of the 'Oakland' and capsized. All the occupants were thrown out, and some were drowned. The boat was subsequently righted and some of the survivors got into her, although she was full of water, while others hung on to the gunwales. Unfortunately 11 in all perished from the time of leaving the vessel until the boat was picked up there is nothing before it to explain to the Court why some of those who were not drowned when the boat capsized, perished, while others survived."
32	"Ventnor" (S.S.). Foreign-going—Cargo.	2,581 N.	27 October, 1902. Foundering. Cape Egmont, New Zealand.	"That the Master ordered a lifeboat to be launched and he and all the crew except the First Mate (who jumped ashore from the boom) and one man, Axel Olsen, got into the boat and got ashore."
				"Proper precautions appear to have been taken as to getting the boats ready, provisioning them and providing for emergencies the ship's company had barely time to escape in the boats, and it is surmised by some that the boat containing the Master and twelve others was drawn down as the vessel sank. There is no satisfactory evidence to show that it was seen again, and all the other boats got to land."

Reports received in 1904.

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
33	"Aramac." Coasting Trade—Passenger.	2,114 N.	13 March, 1904. Stranding. Breaksea Spit, Queensland.	"As the water continued to gain on the pumps, the boats were ordered to be got out and equipped with provisions, &c. . . . The passengers were then placed in the boats and ordered to stand by the vessel, but owing to the heavy seas were unable to do so. The first boat landed at Burnett Heads at 5 p.m. and the second at noon on the following day; the third at Baffle Creek about 7 a.m. on the 14th; the fourth was picked up by the S.S. 'Fitzroy' . . . about 2 a.m. on the 15th; the fifth . . . about 5.30 a.m. on the 15th; and the sixth . . . about 9 a.m. on the 16th. "The vessel was well found in boats and all necessary equipments, in accordance with the Regulations . . . three of these boats were fitted with gear in excess of what is required by law. "I had a conversation about the boats with the late chief officer, before the accident, when he informed me of all that was done to keep the boats up to the mark. "1. Every trip the boats on one side were lowered in the water and rowed away from the ship. "2. Every trip the water was changed in the breakers in these boats. "3. The gear and equipments were overhauled, and the boats cleaned out every trip; so that every eight weeks every boat was seen to be in as perfect order as possible." "He made his way aft to the saloon deck, where he found some men trying to clear away the starboard quarter boat. He pointed out that the boats were smashed and unfit for use, and directed them to get the lashings off the rafts." The passengers and crew of the "Coogee" were taken off in the boats of the "Fortunato Figari."
34	"Coogee" (S.S.). Coasting Trade—Passenger.	286 N.	25 December, 1903. Collision. Bass Strait.	"The starboard accident boat was lowered and got away as soon as the ship's way was stopped, and succeeded in picking up the entire crew of the kotia (native vessel)."
35	"Fortunato Figari." (Italian.)	2,149 N.		
35	"Coromandel" (S.S.). Foreign-going—Passenger.	2,783 N.	8 November, 1903. Collision. Off Venguola Coast, Bombay.	"That during the next two days the weather was too heavy to admit of the launching of the boats to take the crew ashore, or to carry out any measures with a view of getting the ship off."
36	"Fattey Salamati." (Native craft.)	60 N.		
36	"Corunna." Foreign-going—Cargo.	2,267 N.	30 August, 1904. Stranding. Lat. 38°24'S.; long. 57°54'W.	After the collision a lifeboat was lowered from the steamer to save those on the fishing boat. Owing to the sea, however, the lifeboat was stove in before she could be got away. The crew of the fishing boat were subsequently saved by means of lifebuoys thrown from the steamer.
37	"Mahanadi" (S.S.). Coasting Trade—Passenger.	547 N.	23 May, 1904. Collision. Off Kathiawar Coast.	
38	"Dhanprasad." Fishing.			"At about 1.30 p.m. on the 23rd, a boat, in command of the chief officer, with a crew of 11, and five deck passengers left the vessel for Flat Island, then distant about 102 miles off. This boat arrived safely on the 25th in the morning . . . and the remaining crew, including the master, 11 in number, and passengers got into boats, . . ." His idea of using oil freely on the waves was a very good one . . . and this gave time for the weather to moderate, so that the crew and passengers could escape in boats, which probably they could not have done if the vessel had sunk sooner.
38	"Edenbridge" (S.S.). Foreign-going—Cargo.	1,650 N.	20 March, 1904. Foundering. 100 miles from Mauritius.	

39	"Eivion." Foreign-going—Cargo.	1,133 N.	3 October, 1904. Abandonment. Lat. 54°S.; long. 84°W.	"A great sea washed away the lifeboat and gig . . . through the excessive rolling of the ship the only remaining boat was staved in. . . . At about 6.30 a.m. on October 3rd the 'Lonsdale' in a heavy sea launched her lifeboat When this boat got alongside the 'Eivion' a big sea crashed her against the ship, staving in the boat, and filling her with water. She accordingly returned to the 'Lonsdale' with 10 of the shipwrecked crew and returned to fetch the remainder. . . ."
40	"Hoangho." Coasting—Passenger.	388 N.	16 June, 1904. Foundering. Off Coast of China.	"Endeavour was made to launch the boats, of which there were three, but time did not permit of their being placed in the water owing considerably to the obstruction of the Chinese passengers, who were much panic stricken. "The Court desires especially to direct the attention of the Board of Trade to the fact that this small steamer of 388 tons was licensed as an inland steamer to carry 671 passengers on this voyage to Chinchu extending over 50 miles of open sea to the Formosa Channel, whilst unprovided with life-saving appliances for even a quarter of this number." "The ship carried a lifeboat, 16 feet long, which was at once ordered to be put out The coloured part of the crew got into the boat which kept alongside, and most of them refused to come out. The boat, however, capsized, and six of the crew were drowned on the vessel reaching the breakers and finally stranding"
41	"Kathleen Anderson" (S.S.). Fishing.	58 N.	1 November, 1903. Stranding. Near Cape Morgan, South Africa.	"The boats were got ready to lower and efforts were made to attract attention The boats were then lowered and the passengers landed." "The boats were lowered and everything done for the safety of the crew, and the ship sank within an hour after it was abandoned." "There was a boat on the deck which might easily have been launched, but no attempt was made to launch this boat"
42	"Kaveri" (S.S.). Coasting Trade—Passenger.	553 N.	18 June, 1904. Stranding. Gulf of Cambay.	"There were on board the 'Penguin' when she sailed, four boats, and she had in tow a large lifeboat. . . . the schooner or large lifeboat which the vessel was towing overran her tow rope she capsized, and shortly afterwards broke adrift altogether; before this, however, the three men who were on board this boat succeeded in gaining the deck of the 'Penguin.' "The only thing now was to launch the boats. The sea did this for them, one man getting away in an 8 feet dinghy and reaching the shore early next morning in safety. Fifteen of the crew and passengers got into the large lifeboat after she had floated off the 'Penguin's' deck. The men left on board (ten in all) appear to have failed to secure one of the other boats Of the 15 men who got away in the lifeboat 14 effected a landing one being unfortunately drowned when the boat capsized in the surf."
43	"La Porte" (S.S.). Foreign-going—Cargo.	—	9 June, 1904. Foundering. South Atlantic.	
44	"Lion" (S.S.). Fishing.	78 N.	21 July, 1904. Stranding. Near Durban.	"Boats were lowered, all that could be saved was stowed in them, and the crew, the agent, and the master left the ship and hovered about until daylight, as the running sea and wind did not permit of any landing being effected in the dark."
45	"Penguin" (S.S.). Coasting Trade—Passenger.	97 N.	13 August, 1904. Foundering. Zululand Coast.	
46	"Sir Celicourt Antelme" (S.S.). Foreign-going—Cargo.	193 N.	8 July, 1904. Fire and abandonment. Amirantes, Seychelles.	

Reports received in 1905.

47	"Algoa Bay." Foreign-going—Cargo.	1,111 N.	24 January, 1905. Stranding. San-Nicolas Bay.	"The crew cleared the boats of their own accord when the vessel struck, and they were then ordered to be launched. The port lifeboat was stove in by the surf." Four of the "Baralong's" boats were lowered and succeeded in rescuing 43 men, these four being the only boats that could be manned on a sudden emergency.
48	"Baralong" (S.S.). Foreign-going—Cargo.	2,660 N.	22 August, 1905. Collision. Inland Sea, Japan.	
	"Kinjo Maru" (S.S.), Japanese.			

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
49	"Bidston Hill." Foreign-going—Cargo.	—	31 July, 1905. Stranding. Staten Island.	"The whole crew was called to get ready the boats, and the starboard boat was got out of the chocks and swung out on the davits. "That the four younger apprentices and an ordinary seaman were put into the boat along with four sailors and the master, who had been injured by a fall from the deck house. That the boat was lowered and passed astern, the chief officer and steward subsequently getting on board over the stern. "That while the second officer and remainder of the crew were attempting to launch the port boat . . . the topmast yards and rigging came down with a run and it appears that some of this must have fallen on and disabled the men at the port boat. That the captain did what he could to get the second mate and his men on board of the starboard boat, but without success. That they cruised about for a time and then pulled off from the shore." "That the officers and crew were able to leave the ship without accident in the lifeboat and gig."
50	"Duns Law." Foreign-going—Cargo.	1,531	26 December, 1904. Fire. Iquique.	
51	"Mars" (S.S.). Foreign-going—Cargo.	2,497 N.	17 March, 1905. Abandonment (in ice). Kunishiri Island.	"Three boats were sent ashore near the Lighthouse Meanwhile boats were being sent ashore with provisions, the second mate and the second engineer among others, landed, but subsequently returned on board. A boat containing the master, mates, first and second engineers and the steward, took advantage of a clear lead of water to set out for the shore, but owing to an ice floe which unexpectedly intervened at a quarter of a mile from land, and the contrary winds which sprung up and the choppy sea, they failed to make land that evening. To add to their hardships a plank had been stove in when crossing a floe, the boat leaked seriously. At daylight the occupants of the boat found themselves eight miles from the land, but in their exhausted state they were unable to make way against the wind and tide. At 4 p.m. the second officer became delirious and . . . he expired after 31 hours at sea, and at 3.05 a.m. the second engineer also died. The survivors then made a vain attempt to reach the shore by crossing the ice, but that failing them they took to the boat again at 11.30 a.m. and managed to reach the shore at 3.45 on the afternoon of March 21st." "That the first lifeboat which left the vessel at 9.30 a.m. with 17 crew all told, bound for Constitution to seek for assistance has not since been heard of, and the Court recognizes that the boat left well provisioned and thoroughly equipped." "The master took all and every precaution to save the lives of the crew and landed them safely in boats."
52	"Tropic" (S.S.). Foreign-going—Cargo.	2,340 N.	28 June, 1905. Stranding. Lat. 35°9'S.; Long. 72°20'W.	
53	"Windsor Castle." Foreign-going—Cargo.	—	29 April, 1905. Stranding. Coetivy, Mauritius.	

Reports received in 1906.

54	"Chu Kong" (S.S.). Coasting Trade—Cargo.	286 N.	28 April, 1906. Foundering. Off Swatow.	The only boat able to be used was one on the port quarter, and by its means and that of a raft, one of the four carried, 14 of the crew were saved.
55	"Dixon Rice." Foreign-going—Cargo.	—	26 January, 1906. Stranding. Bahamas.	The crew remained on the vessel for some time, and then got out their boat, and taking some of their effects got to Cat Hay.
56	"Elixir" (S.S.). Foreign-going—Cargo.	1,770 N.	29 October, 1906. Stranding. Newfoundland.	He put out two lifeboats and stood by the ship till daylight. The boats, going with the current, were beached at Broad Cove at about 9 a.m. on the 29th.

57	"Bentong" (S.S.). Coasting Trade—Passenger.	240 N.	26 April, 1906. Collision. Straits Settlements.	"The Court desires to highly commend the captain, officers and men of the "Haversham Grange" for the smart and efficient manner in which the boats were got out and rescue work carried on."
	"Haversham Grange" (S.S.). Foreign-going—Passenger.	4,942 N.		
58	"Nivelle." Foreign-going—Cargo.	2,241 N.	26 June, 1906. Stranding. Point Rincon, Chili.	"The master commended for the promptitude in getting boats away."
59	"Oakburn" (S.S.). Foreign-going—Cargo.	2,404 N.	21 May, 1906. Stranding. Cape Colony.	"The Captain and all hands abandoning her in the boats, which were got out in all possible haste." "The Court regrets the loss of two lives in the attempt to reach the land, the evidence shows that but for the panic amongst the stewards and firemen and servants, who were Asiatics, the loss might have been averted, a large number of these crowded into the port lifeboat, when it was being lowered, and caused her to be swamped, and it was this fact that directly led to their loss. The Court, however, desires to mark its appreciation of the gallant act of the Second Officer, Mr. Holland, the ship's carpenter, O'Keefe, and seamen Roland and Fielder, who rescued the party of seven men from the wreck, leaving a comparatively safe boat for a sinking one, and utilising the latter in their successful rescue of these men from the poop of the wreck." ". . . the Captain ordered all to the boats, 13 men being taken in the captain's boat, and eight men in the first mate's boat. After staying in the vicinity of the ship for about one and a half hours, the boats sailed away, and during the night lost sight of each other. "After 14 days' intense privation and hardship the master, through skilful management and seamanship, eventually reached Maullin, where the boat was towed ashore by a whale boat which put out from Maullin. "That on leaving the ship the boats were found to be well equipped and provisioned. "That the Court wishes to place on record its high appreciation of the conduct of the master and his second mate, Mr. Thos. Heron, for the seamanlike and able manner in which the lifeboat was navigated during the 14 days they were in it, and of the kindness the crew received from the people at Maullin." "The boats were got out and the passengers embarked in them, the first boat with the women and children in charge of the second officer, and the second boat with the remaining passengers and most of the crew under the charge of the chief officer, the captain with two or three hands still remaining on board. Before the second boat had gone far the anchor held and brought the ship up, and the second boat was then recalled. "The passengers were landed at Kaba "The captain ordered all hands into the boat and the ship went broadside on to the reef. . . . Both boats landed in safety." "The lifeboat was put over the side and the crew, the pilot, and the captain got ashore with the greatest difficulty."
60	"Pitcairn Island." Foreign-going—Cargo.	1,320 N.	3 May, 1906. Fire. Lat. 52° S.; Long. 90° W.	
61	"Yaralla" (S.S.). Foreign-going—Passenger.	303 N.	31 August, 1906. Stranding. Mallmorlan Islands, Fiji.	
62	"Zeta." Foreign-going—Passenger.	148	7 April, 1906. Stranding. Rodrigues.	

Reports received in 1907.

63	"Colombia" (S.S.). Foreign-going—Passenger.	1,764 N.	9 August, 1907. Stranding. Lobos de Tierra Island.	"That the passengers were summoned to the upper deck, and the boats got in readiness for lowering that when the Master found that the vessel was in a rapidly sinking condition he ordered the entire crew on the upper deck, and he prepared to abandon the vessel, that he gave orders to lower the boats and see that the passengers were embarked in the lifeboats with a sufficient
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Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
64	"Fortunatus." Foreign-going—Cargo.	2,135 N.	31 July, 1907. Fire and Abandonment. Lat.6°26'S.; Long. 90°40' E.	number of the crew in each lifeboat to manage it, that the crew were embarked safely in the other boats that owing to the cool and collected manner in which the Master's orders were given and carried out he was enabled to save the lives of the entire crew and passengers with the exception of one cabin passenger named Mr. Blackwell who is still missing, that the Master himself was the last person to leave the vessel after being satisfied that everybody else was in the boats, that a few minutes after the Master left the vessel she turned on her beam ends and sank in 8 fathoms of water. "The Court, whilst regretting that the passenger Mr. Blackwell is still missing, have no conclusive evidence to show how he became missing, but are satisfied that he was not on board the vessel at the time she sank."
65	"Galena." Foreign-going—Cargo.	2,169 N.	13 November, 1906. Stranding. Clatsop Beach, Oregon.	"The ship was accordingly abandoned, the last boat leaving with the Master at about 8.40 a.m. The boats remained near the ship the whole of the day and night of the 31st and finally left from alongside the ship on the morning of the 1st August, having decided to make for the nearest land, which was Sumatra. On the 3rd August, the first boat was picked up by the sailing ship 'Forth' bound from Calcutta to West Indies, at about 7.30 p.m., the second boat was picked up at 10 p.m. on the same night; the third boat was picked up in the afternoon of the 4th of August, and the fourth and last boat at about 11 p.m. of the same night. On mustering the crew on board the 'Forth,' an Indian coal trimmer was found missing."
66	"Kilbrennan" (S.S.). Foreign-going—Cargo.	2,331 N.	28 March, 1907. Stranding. Port Alfred, Cape Colony.	The lifeboat was ordered and lowered and all hands left her for the shore which they reached in safety.
67	"Octopus" (S.S.). Dredger.	—	14 October, 1906. Abandonment. Near Tongaat River, South Africa.	"The crew took to the boats and all were saved but four, these men went back to the forecastle . . . and were unable to return when the bows sank."
68	"Santiago" (S.S.). Foreign-going—Passenger.	1,366 N.	18 June, 1907. Foundering. 40 miles north of Corral.	The lifeboat and dinghy were lowered without any mishap or damage. Sail was set at once, and both boats were headed for the shore, the dinghy being in tow of the lifeboat. They parted company on nearing the shore, having decided to run for the beach. The crew of the dinghy landed in safety although their boat was upset, but the lifeboat struck a rock some distance from the beach, and the boat capsized with the lamentable result that the captain's wife and two young children were drowned. The master committed an error of judgment in trying to beach the boats where he did.
69	"Bega" (S.S.). Coasting Trade—Passenger.	305 N.	5 April, 1908. Foundering. Off coast of N.S. Wales.	"A portion of the native crew then became panic stricken and attempted to lower the after boats, and in doing so, the boats were smashed to pieces and the occupants drowned. The captain then ordered a lifeboat . . . to be cleared away and lowered as the ship was heeling over and sinking. This boat was also smashed. The captain then ordered the tackle on the two forward lifeboats to be unhooked and the lashing cut off so that when the ship sank the boats would float clear. In these, embarked the passengers and the remainder of the crew." Only one person, however, reached shore safely.
Reports received in 1908.				
70	"Caribbee" (S.S.). Foreign-going—Cargo.	1,247 N.	7 June, 1908. Abandonment. Lat.31°41'N.; Long.78°30'W.	"He then directed the boats to be put out and the engines to be stopped. The starboard lifeboat was first put out, the time then being about fifteen minutes past nine. It was found impossible to get the port lifeboat into the water on account of its position and the list of the vessel. The port quarter boat was lowered, and two rafts were also launched. The boats and rafts took off all the passengers and crew, and also the body of a passenger who had died just previously. The coast was reached safely. There is no doubt that the starboard lifeboat leaked very seriously—it is said that she bumped heavily several times against the steamer when taking off the passengers, and this may have started some of the planking. She has since been examined by a competent shipwright at Bermagui, and all her woodwork found to have been in a sound condition."
71	"Victoria" (S.S.). Foreign-going—Cargo. "Don Matias" (S.S.) (Chilian).	3,742 N.	23 July, 1908. Collision. Near Coronel.	"The boats were provisioned and got ready to swing out. The ship then settled by the stern and the water having risen as high as the orlop deck beams . . . the ship was abandoned. "That all proper steps were taken to save the life of Walter Von Hope, A.B., who was drowned owing to the capsizing of No. 3. lifeboat on the 8th June."
72	"Loch Finlas." Foreign-going—Cargo.	2,062 N.	26 September, 1908. Stranding. A reef off Foster's Island, Tasmania.	"That directly after the occurrence the Master of the 'Victoria' ordered a boat to be lowered and offered assistance—that 20 minutes afterwards the boat returned accompanied by the boats of the sunken steamer containing her full crew."
73	"Newark Castle" (S.S.). Foreign-going—Cargo.	4,047 N.	12 March, 1908. Stranding. Coast of Zululand.	"An endeavour was at once made to launch the lifeboats, but a few minutes after the vessel turned over . . . Some of the boats got adrift, keel uppermost, and on the starboard lifeboat nine of the crew clung, and she drifted away. Another boat also got away with two men on her keel, but has not been heard of. On the starboard lifeboat five of the men fell off through exhaustion and four were providentially washed ashore with the boat."
74	"Norah Bradshaw." Coasting Trade—Cargo.	12 N.	19 October, 1907. Stranding. Waitara River, New Zealand.	"An apprehension was felt that the vessel was in immediate danger of capsizing, and all hands were ordered to take to the boats . . . that the whole work of getting the passengers and crew into the boats was carried out in a manner which reflected credit on the discipline maintained on the vessel. The Master states, that being apprehensive that the vessel was about to capsize, he instructed the boats to keep a safe distance from the vessel to avoid the vortex, his intention being to stand by the vessel, so that if she continued to float, he could board her again. The boat of which the Master was in charge was driven some 6 miles to the N.E. in spite of every effort being made he was not able to make the ship again during the night."
75	"Norwood" (S.S.). Foreign-going—Cargo.	1,465 N.	26 April, 1908. Abandonment. Off Sydney, Cape Breton.	"At 10 p.m. the Third Officer was able to board the vessel from his boat, which was in a more favourable position to effect such a return."
76	"Palgrave." Foreign-going—Cargo.	3,078 N.	10 August, 1908. Stranding. Coast of Chili.	"Eventually all the occupants of the boats, except the boat in charge of the Fourth Officer, were rescued and brought to Durban. The boat in charge of the Fourth Officer endeavoured to effect a landing . . . The boat was capsized in the surf with the result that a passenger and the ship's boy were drowned."
				"That her owner, James Williamson, neglected to supply her with proper and sufficient life-saving appliances in accordance with law, there being no lifebelts, lifebuoys, boats, of any kind upon her at the time of the casualty."
				"About 2 p.m. the boats were cleared and made ready for putting out . . . Still the water was increasing, and at the request of the crew the boats were swung out. After the crew had got the boats swung out they again started the work of jettisoning . . . the Captain decided they should take to the boats at once. The last boat, the Captain's, with 12 all told, left at 9.45. The boats kept together during the night, and at daylight were picked up by a schooner."
				"The crew being saved in the ship's boats."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty	Court's Remarks.
77	"St. Cuthbert" (S.S.). Foreign-going—Cargo.	4,954 N.	2 February, 1908. Fire and abandonment. North Atlantic.	"The master immediately ordered the boats to be swung out and to be provisioned. He then in person supervised the fire while the officers supervised the boats. "The boats were swung out and a portion of the crew, who appeared to be panic stricken, manned the boats against the orders of officers and refused to return on board the ship when ordered to do so. As a result one boat had to be passed astern and was eventually smashed, thereby causing the loss of nine lives. The other boat containing the second mate and others broke adrift but eventually returned to the ship after a long absence. It was smashed against the propeller and three of the crew were drowned. While helping to swing out a boat the third mate fell overboard and perished, and one stowaway fell from the mast, where he had taken refuge, into the burning hold and was burned to death. There was a total loss of fourteen lives. "The 'Cymric' bore down on the 'St. Cuthbert' and after standing by for about five hours, during which time heavy sea prevented any attempts at a rescue, a lifeboat was launched which made three trips to the 'St. Cuthbert' and rescued all the survivors. "That the loss of the nine members of the crew who perished when the port lifeboat was smashed was due to their own wilful act and default in that they manned the boat against the express orders of the chief mate. "That the loss of the three members of the crew who perished when the starboard lifeboat was smashed, on her return to the vessel, was due to their panic stricken condition and lack of seamanlike ability." "The ship's boat was washed away about 4 o'clock the same afternoon by a heavy sea."
78	"Sirocco." Foreign-going—Cargo.	298 N.	2 October, 1908. Stranding. Bahamas.	"The port boats were swung out with great difficulty owing to the list. It took half an hour to get them out. They were then secured. At high water the ship swung round, and the side on which the swung-out boats were became the lower side and the sea washed them away. At daylight No. 3 boat was lowered on the starboard side, and a line was run ashore. The chief officer and a crew of four went ashore in the boat and landed passengers, crew and mails all safely."
79	"Taviuni" (S.S.). Coasting Trade—Passenger.	910 N.	23 April, 1908. Stranding. Buller River, New Zealand.	
80	"Windsor" (S.S.). Foreign-going—Cargo.	1,853 N.	1 February, 1908. Stranding. Abrolhos Islands.	"The boats were got ready, but those on the port side were smashed soon after striking. On Monday morning no attempt was made to land till about 11 o'clock, after two men from the Island were seen on the reef, when the master decided to send a cable to his owners and despatched the third mate with three hands in the smaller boat, who succeeded in landing, and with the assistance of twelve Chinamen who followed in the lifeboat, hauled his boat safely over the reef into smooth water, and proceeded to the Settlement on Pelsart Island. The lifeboat was then hauled back to the ship, and on the third mate returning at about 3 p.m. and semaphoring 'All hands to land four at a time' to allow him to boat them to the Settlement; four others landed, including the second mate, and on arriving at the Settlement the latter took charge of the ship's boat, and the third mate a dinghy belonging to the Island, and both returned to the reef; but as no one had landed, and it was dark, they ceased operations and returned to the Settlement. At daylight next morning (Tuesday) they returned to the reef, and found the lifeboat had broken adrift during the night, and was smashed up on the reef, thus cutting off communication. Vain endeavours were then made through the day to establish communication by means of floats. At 9 a.m. the Chief Engineer, Mr. W. Jenkins, in a

81	"Yik Sang" (S.S.). Foreign-going—Cargo.	1,236 N.	29 January, 1908. Stranding. Coast of China.	brave attempt to land with a lifeline attached to him was drowned in sight of all present, the line having parted they were unable to haul him back to the ship." "After grounding, the ship rapidly filled, and the boats were got into the water; the Chinese crew rushed the boats, and one was swamped alongside. The master was the last to leave the ship, the chief engineer failing to follow him, after refusing to precede him. The Chinese in the boat, in which the master, mate and second mate were, insisted upon shoving off, and the chief engineer had to be left behind. The boatswain, a Chinese, who was in charge of the other boat occupied, in spite of orders to the contrary, insisted upon attempting to land on the rocks, with the result that his boat was swamped. Five Chinese were found to be missing at 10 a.m., but there is no evidence to prove from which boat they were lost, or whether they ever even left the ship. The ship sank shortly after the boats left her."
82	"Ying King" (S.S.). Coasting Trade—Passenger.	459 N.	28 July, 1908. Foundering. Near Hong Kong.	"That the state of the sea rendered any recourse to boats for saving life out of the question. (420 perished, 42 saved by various means.)"

Reports received in 1909.

83	"Clan Ranald" (S.S.). Foreign-going—Cargo.	2,286 N.	31 January, 1909. Foundering. Gulf St. Vincent.	"24 . . . reached the shore by such boats, &c., as were available, or by swimming. Forty were drowned." "The master then ordered all hands on deck, the boats to be manned, and he and his crew entering them abandoned the ship."
84	"Falls of Halladale." Foreign-going—Cargo.	1,977 N.	14 November, 1908. Stranding. Near Port Campbell, Victoria.	
85	"Ilorin" (S.S.). Foreign-going—Cargo.	565 N.	28 March, 1909. Stranding. Forcados Bar.	"A boat was lowered about one o'clock, and in this the captain sent off the mate and half the crew, the other half following later in the 'Ilorin's' second boat. Captain Cockton remained on board all night, and the mate and chief engineer stood by in a surf boat till daybreak."
86	"Matterhorn." Foreign-going—Cargo.	1,754 N.	16 November, 1909. Foundering off Coast of Washington.	"That after the ship sank the 27 persons in the lifeboat suffered great hardships before reaching Umatilla Lightship, and the Court wishes to express its admiration of the gallant conduct of E. Johansen, A.B., in steering and handling the boat for 27 hours under such trying circumstances, and safely landing all hands on the Umatilla Lightship."
87	"Oak Branch" (S.S.). Foreign-going—Cargo.	2,064 N.	1 April, 1909. Foundering. Lat. 52°35'S.; Long. 74°54'W.	"Captain Orford and his boat with 20 men having been picked up by the P. S. N. steamer 'Esmeraldas,' and it is reported that the other boat with 18 men has reached Punta Arenas, Straits of Magellan, safely."
88	"Penguin" (S.S.). Coasting Trade—Passenger.	517 N.	12 February, 1909. Stranding. Cape Terawhiti, N.Z.	"The Court considers that lifeboats of vessels should have some means fitted whereby a steer oar could be used when required, and that when having boat drill and when boats are lowered in the water an opportunity should be given to members of the crew to acquire the knowledge necessary to handle such an oar. "In view of the facts in this case that all the boats were capsized and floated ashore bottom up it would suggest that some simple appliance should be fitted, say a line of similar material to the lifelines already fitted on lifeboats, to the gunwale on one side, taken through a hole in the boat's keel and brought up to the opposite gunwale, at suitable distances apart."
89	"Rhuddlan Castle." Foreign-going—Cargo.	1,993 N.	19 November, 1908. Abandonment. Lat. 41°S.; Long. 51°W.	"The falling spars pierced the deck in several places and also destroyed completely boats, pumps, rails and everything on deck."

Consecutive Number.	Name of Vessel and Nature of her Trade.	Tonnage.	Date, Nature and Place of Casualty.	Court's Remarks.
90	"Sardinia" (S.S.). Foreign-going—Passenger.	1,514 N.	28 November, 1908. Stranding and fire outside Valetta Harbour, Malta.	"The flames . . . within five minutes from the first notice of the fire on board set fire to the four boats, the only boats the ship was carrying."
91	"Umhlali" (S.S.). Foreign-going—Passenger.	2,144 N.	15 September, 1909. Stranding. Lat. 34°17'S., Long. 18°22'E.	"Four boats were insufficient for all . . . No boat or fire drill seems to have been practised at all."
92	"W. J. W. McLauchlan." Foreign-going—Cargo.	517 N.	19 May, 1909. Stranding. Forcados Bar.	"With the above exception all were saved in the boats which were picked up by the steamer 'Galeka' . . ."
				"The captain fearing the vessel might break up, got the lifeboat into the water, but in the afternoon the the lifeboat was smashed by the sea."

Reports received in 1910.

93	"Ahmadi" (S.S.). Foreign-going—Passenger.	1,640 N.	16 November, 1909. Stranding. Island of Mombasa.	"The passengers were landed in boats."
94	"Carnarvon Bay." Foreign-going—Cargo.	1,795 N.	15 September, 1910. Stranding. King Island, Australia.	"The master gave orders immediately to clear the boats."
95	"Carpasian." Foreign-going—Cargo.	270 N.	9 November, 1909. Stranding. Oracabessa.	"The boats were got away from the ship at from 20 minutes to half an hour from the time the vessel struck . . . ; the starboard boat under the command of the master being picked up . . . and the port boat, in charge of the chief mate reaching and landing on King Island in about four hours."
96	"Crusader" (S.S.). Foreign-going—Cargo.	2,759 N.	25 February, 1910. Foundering near Bird Island, Algoa Bay.	"The long boat which was fast astern with two long painters, filled and broke away, and I had only the lifeboat left . . . I then launched the lifeboat out of the skids . . . We slung into the boat by a line from the bowsprit end and drifted ashore by a line made fast to the ship."
97	"Garthorpe" (S.S.). Foreign-going—Cargo.	178 N.	23 March, 1910. Fire. Forcados Bar.	"The officers and crew shortly afterwards took to the boats."
98	"King George." Foreign-going—Cargo.	2,057 N.	24 November, 1909. Stranding. Third Point, Java.	"The 'Garthorpe' carried a lifeboat on the sun deck above the boiler abaft the hold. It could be swung out by davits on either side. The lifeboat caught on fire and was burnt."
99	"Kirkfield" (S.S.). Foreign-going—Cargo.	2,289 N.	7 April, 1910. Stranding. Palawan Passage of the China Sea.	"The chief officer and 4 A.B.'s proceeded to Anjor in the ship's lifeboat . . ."
100	"Moresby" (S.S.). Coasting Trade—Passenger.	1,338 N.	18 February, 1910. Stranding. Barrier Reef.	"The boats were immediately got out and all men not required were ordered to the boats . . . On the 14th the ship appeared likely to founder and all hands were ordered to the boats . . ."
101	"Waikare" (S.S.). Coasting Trade—Passenger.	1,901 N.	4 January, 1910. Stranding. Uncharted Rock between Indian Island and Passage Isles, New Zealand.	"The master and crew proceeded in ship's boats to Balabar . . ."
				"We consider the captain was right in removing his passengers by the ship's boats to land in sight . . ."
				"The Court desires to place on record the splendid achievement of the captain and the discipline and promptness of the officers and crew in lowering the boats and placing the passengers in safety . . ."

102	"Wynnstay." Foreign-going—Cargo.	1,573 N.	30 July, 1910. Stranding. Serrons Island, Iquique.	"That after the vessel struck, orders were given to man the lifeboats, but owing to the vessel's list, and the sea washing on board, it was not possible to launch the boats and they were washed overboard and rendered useless."
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Reports received in 1911.

103	"General Wolfe" (S.S.). Coasting Trade—Passenger.	774 N.	28 June, 1911. Collision. River St. Lawrence.	"The second officer of the 'General Wolfe' . . . ordered the boats to be launched and participated in the work of rescue, assisting the crew who put out from the 'Aranmore.'"
	"Aranmore" (S.S.). Coasting Trade—Passenger.	499 N.		
104	"Asia" (S.S.). Foreign-going—Passenger.	2,936 N.	23 April, 1911. Stranding. Finger Rock, Fai Chan Islands.	"The boats were lowered and all the passengers landed on Finger Rock."
105	"Fifeshire" (S.S.). Foreign-going—Passenger.	3,700 N.	9 August, 1911. Stranding. Near Cape Guardafui.	"Every care was taken by the steward, under the master's orders, to adequately provision and water the boats, and forethought was exercised in providing for the comfort of the women and children."
106	"Inveresk" (S.S.). Foreign-going—Cargo.	3,206 N.	22 March, 1911. Stranding. Near the Island of Juan de Nova.	"The master . . . decided to order the crew to the boats. . . . All hands were eventually landed at noon on the 24th March."
107	"Mersing" (S.S.). Coasting Trade—Passenger.	36 N.	27 July, 1911. Collision. Straits of Malacca.	"Nine men reached the shore in the ship's boat."
	"Kheng Seng" (S.S.). Coasting Trade—Passenger.	40 N.		
108	"Lota." Foreign-going—Cargo.	1,285 N.	6 October, 1911. Stranding. Santos Bay.	"The men were, acting under the master's orders, employed in launching the lifeboats."
109	"Port Elgin." Foreign-going—Cargo.	1,627 N.	30 April, 1911. Stranding. Santa Island.	"The boats were then ordered to be swung out in case of emergency . . . the boats were lowered and the crew ordered to leave."
110	"Speculant." Coasting Trade—Cargo.	363 N.	10 February, 1911. Stranding near Cato Olway, Victoria.	"The master then gave orders to clear away the lifeboat, but a sea struck it and stove it in before it was out of the chocks."

Report received in 1912.

111	"Renwick" (S.S.). Foreign-going—Cargo.	402 N.	27 December, 1911. Collision. County Harbour, Nova Scotia.	"On realising the perilous position of his ship the master (of the 'Renwick') ordered a boat to be lowered, and this being done forthwith, it was manned by the crew, the captain being the last to descend, having received an affirmative answer to his enquiry if all hands were on board . . ."
	"St. Pierre Miquelon" (S.S.). (French.)	400 N.		"A few moments later the rescued crew rowed towards the 'St. Pierre Miquelon' which they eventually boarded. It was then discovered that three of the foundered ship's crew were missing."

No. 9.

LIST

OF ALL

FOREIGN-GOING PASSENGER STEAMERS (ST. 1 CERTIFICATE) HOLDING
CERTIFICATES ON 25TH APRIL, 1912.

ARRANGED IN ORDER OF TONNAGE.

Name of Vessel.	Gross Tonnage.	Number of Passengers and Crew for whom Passenger Certificate is granted.	Number of Persons accommodated in Boats actually carried under Davits.	Maximum Number of Persons for which the Table appended to the Life-Saving Appliances Rules requires accommodation to be provided under Davits (at 10 cubic feet per Person).
1. "Olympic" † ...	45,324	3,447	980	550
2. "Mauretania" † ...	31,938	2,972	976	550
3. "Lusitania" † ...	31,550	2,889	978	550
4. "Adriatic" † ...	24,541	2,225	886	550
5. "Baltic" † ...	23,876	2,411	948	550
6. "Celtic" † ...	20,904	1,546	774	550
7. "Caronia" † ...	19,687	3,483	838	550
8. "Carmania" † ...	19,524	3,520	834	550
9. "Franconia" † ...	18,150	3,115	960	550
10. "Laconia" † ...	18,099	3,109	960	550
11. "Oceanic" † ...	17,274	2,121	750	550
12. "Arabic" † ...	15,801	1,766	744	550
13. "Laurentic" † ...	14,892	2,147	992	550
14. "Megantic" † ...	14,878	2,234	978	550
15. "Minnewaska" * ...	14,316	615	644	550
16. "Saxonia" † ...	14,271	2,634	831	550
17. "Ivernia" † ...	14,210	2,589	816	550
18. "Empress of Ireland" †	14,191	1,910	766	550
19. "Empress of Britain" †	14,189	1,914	764	550
20. "Carpathia" † ...	13,603	2,864	702	550
21. "Minnehaha" ...	13,443	406	480	550
22. "Minnetonka" ...	13,439	397	496	550
23. "Balmoral Castle" † ...	13,361	1,099	764	550
24. "Edinburgh Castle" † ...	13,326	1,088	894	550
25. "Cymric" † ...	13,096	1,636	730	550
26. "Kenilworth Castle" †	12,975	1,114	1,026	550
27. "Armada Castle" † ...	12,973	1,117	900	550
28. "Campania" † ...	12,950	1,948	1,146	550
29. "Orama" † ...	12,927	1,261	868	550
30. "Walmer Castle" † ...	12,546	1,077	1,050	550
31. "Suevic" * ...	12,531	626	676	550
32. "Runic" * ...	12,482	630	660	550
33. "Maloja" † ...	12,431	1,091	1,099	550
34. "Saxon" † ...	12,385	1,161	804	550
35. "Medina" * ...	12,358	700	1,053	550
36. "Athenic" ...	12,234	496	846	550
37. "Ionic" ...	12,232	443	851	550
38. "Corinthic" ...	12,231	495	832	550
39. "Orvieto" † ...	12,130	1,445	921	550
40. "Osterley" † ...	12,128	1,163	756	550
41. "Otranto" † ...	12,124	1,429	946	550
42. "Scandinavian" † ...	12,099	1,551	692	550
43. "Otway" † ...	12,077	1,384	765	550
44. "Orsova" † ...	12,035	1,368	772	550
45. "Asturias" † ...	12,002	1,511	859	550
46. "Medic" ...	11,985	482	528	550

* In the case of these vessels, the boat accommodation required to be under davits plus the additional boat or raft accommodation required to be provided by the Life-Saving Appliances Rules, exceeds the number of passengers and crew for whom a passenger certificate is granted.

† In the case of these vessels the boat accommodation required to be under davits plus the additional boat or raft accommodation required by the Rules is less than the number of passengers and crew for whom a passenger certificate is granted.

In the case of all other vessels in the list the boat accommodation required to be under davits is by itself sufficient to accommodate the passengers and crew.

The vessels, whose names are printed in italics, cleared as emigrant ships on one or more occasions, during the period 1st January, 1911, to 30th April, 1912.

Name of Vessel.	Gross Tonnage.	Number of Passengers and Crew for whom Passenger Certificate is granted.	Number of Persons accommodated in Boats actually carried under Davits.	Maximum Number of Persons for which the Table appended to the Life-Saving Appliances Rules requires accommodation to be provided under Davits (at 10 cubic feet per Person).
47. "Persic" ...	11,974	467	530	550
48. "Afric" ...	11,948	453	529	550
49. "Zeeland" † ...	11,904	2,124	710	550
50. "Merion" † ...	11,621	1,297	717	550
51. "Irishman" † ...	11,585	1,383	766	550
52. "Oreoma" † ...	11,546	1,611	617	550
53. "Corsican" † ...	11,436	2,118	559	550
54. "Remuera" ...	11,276	398	889	550
55. "Themistocles" ...	11,231	502	788	550
56. "Demosthenes" * ...	11,223	564	814	550
57. "Royal George" † ...	11,146	1,376	768	550
58. "Rotorua" ...	11,130	406	548	550
59. "Ballarat" ...	11,120	508	782	550
60. "Royal Edward" † ...	11,117	1,376	768	550
61. "Avon" † ...	11,073	1,332	834	550
62. "Cameronia" * ...	10,963	890	892	550
63. "Hesperian" † ...	10,920	2,058	628	550
64. "Zealandic" † ...	10,898	1,326	830	550
65. "Morea" * ...	10,890	957	1,005	550
66. "Mantua" † ...	10,885	1,006	1,001	550
67. "Malwa" † ...	10,883	1,006	1,011	550
68. "Ruahine" ...	10,757	375	658	550
69. "Virginian" † ...	10,754	1,294	642	550
70. "Norseman" * ...	10,750	559	656	550
71. "Victorian" † ...	10,629	1,264	628	550
72. "Tunisian" † ...	10,576	1,618	595	550
73. "Araguaya" † ...	10,537	1,616	901	550
74. "Macedonia" * ...	10,511	928	767	550
75. "Marmora" * ...	10,508	931	768	550
76. "Pakeha" ...	10,481	109	352	550
77. "Devonian" ...	10,435	308	322	550
78. "Ultonia" † ...	10,402	2,031	620	550
79. "Argyllshire" ...	10,392	242	498	550
80. "Wiltshire" ...	10,390	243	488	550
81. "Waimana" ...	10,389	115	382	550
82. "Shropshire" ...	10,374	243	495	550
83. "Scotian" * ...	10,322	585	748	550
84. "Briton" † ...	10,248	1,351	804	550
85. "Talthybius" * ...	10,224	730	637	550
86. "Belgie" † ...	10,151	1,543	759	550
87. "Rangatira" ...	10,118	109	337	550
88. "Georgic" ...	10,077	150	229	550
89. "Aeneas" ...	10,049	433	464	550
90. "Ascanius" ...	10,048	429	472	550
91. "Anchises" ...	10,046	428	478	550
92. "Amazon" † ...	10,037	1,246	896	550
93. "Tainui" ...	9,956	399	678	550
94. "Protesilaus" ...	9,947	410	528	525
95. "Vandyck" * ...	9,872	598	528	525
96. "Pannonia" † ...	9,851	2,434	617	525
97. "Kildonan Castle" * ...	9,692	827	804	525
98. "Lake Manitoba" * ...	9,674	696	712	525
99. "Kinfauns Castle" * ...	9,664	878	816	525
100. "Mooltan" * ...	9,620	853	959	525
101. "Aragon" † ...	9,588	1,142	775	525
102. "Mongolia" † ...	9,505	831	856	525
103. "Moldavia" * ...	9,499	831	879	525
104. "Canada" † ...	9,415	1,199	644	525
105. "Atlantian" ...	9,399	91	143	525
106. "Arawa" ...	9,371	302	608	525
107. "Canadian" ...	9,309	205	238	525
108. "Orita" † ...	9,290	1,127	657	525
109. "Campanello" ...	9,285	166	563	525
110. "City of Paris" ...	9,232	518	518	525
111. "Caledonia" † ...	9,223	1,603	719	525
112. "Ascania" † ...	9,111	1,673	751	525
113. "Keemun" ...	9,074	318	398	525
114. "Cyclops" ...	9,033	242	242	525
115. "Teucer" ...	9,032	243	286	525

Name of Vessel.	Gross Tonnage.	Number of Passengers and Crew for whom a Passenger Certificate is granted.	Number of Persons accommodated in Boats actually carried under Davits.	Maximum Number of Persons for which the Table appended to the Life-Saving Appliances Rules requires accommodation to be provided under Davits (at 10 cubic feet per Person).
116. "Orontes" † ...	9,023	933	628	525
117. "Ningchow" ...	9,021	305	388	525
118. "Antilochus" ...	9,018	243	243	525
119. "Oanfa" ...	9,016	319	320	525
120. "Titan" ...	8,966	241	284	510
121. "Bellerophon" ...	8,954	243	246	510
122. "Arcadian" * ...	8,939	618	571	510
123. "Cestrian" ...	8,912	161	232	510
124. "City of London" ...	8,911	493	493	510
125. "Hurunui" ...	8,901	74	157	510
126. "Armenian" ...	8,825	157	228	510
127. "Victorian" ...	8,825	157	209	510
128. "Mount Temple" ...	8,790	262	681	510
129. "Kaikoura" ...	8,703	92	199	510
130. "Athenia" ...	8,668	332	571	510
131. "California" † ...	8,662	1,586	724	510
132. "Kaipara" ...	8,656	92	177	510
133. "Montreal" ...	8,644	66	508	510
134. "Saturnia" ...	8,611	369	504	510
135. "Bohemian" ...	8,555	177	272	510
136. "Montezuma" ...	8,360	70	510	500
137. "Turakina" ...	8,349	323	353	500
138. "Columbia" † ...	8,292	1,460	717	500
139. "Ionian" † ...	8,268	1,532	544	500
140. "Dover Castle" * ...	8,260	697	923	500
141. "Cufic" ...	8,249	80	109	500
142. "Tropic" ...	8,230	80	110	500
143. "Durham Castle" * ...	8,217	772	760	500
144. "Lake Michigan" ...	8,199	370	438	500
145. "Cassandra" * ...	8,135	658	658	500
146. "Omrah" † ...	8,129	943	759	500
147. "Gloucestershire" ...	8,124	437	442	500
148. "Dunluce Castle" * ...	8,114	677	914	500
149. "Marmari" ...	8,114	108	361	500
150. "Everton Grange" ...	8,096	296	334	500
151. "Oriana" † ...	8,086	1,324	611	500
152. "Leicestershire" ...	8,059	412	413	500
153. "Dongola" ...	8,056	383	491	500
154. "Gloucester Castle" * ...	8,001	603	658	500
155. "Mount Royal" ...	7,998	230	462	470
156. "Guildford Castle" * ...	7,995	608	583	470
157. "Galway Castle" * ...	7,988	603	568	470
158. "Colonia" ...	7,976	142	199	470
159. "Warwickshire" ...	7,975	346	346	470
160. "Paparua" ...	7,955	260	318	470
161. "Rimutaka" ...	7,952	295	323	470
162. "Geelong" * ...	7,951	596	655	470
163. "India" * ...	7,940	751	699	470
164. "China" * ...	7,931	755	729	470
165. "Ausonia" † ...	7,907	1,200	720	470
166. "Ruapehu" ...	7,885	290	323	470
167. "City of York" ...	7,811	335	345	470
168. "Gothic" * ...	7,759	472	483	470
169. "Ayrshire" ...	7,757	348	365	470
170. "Botanist" ...	7,688	88	182	460
171. "City of Calcutta" ...	7,630	340	354	460
172. "Dorset" ...	7,630	396	440	460
173. "Garth Castle" * ...	7,609	548	652	460
174. "Grantully Castle" * ...	7,606	652	652	460
175. "Carisbrook Castle" † ...	7,594	824	720	460
176. "Tahiti" ...	7,585	456	489	460
177. "Suffolk" ...	7,573	306	330	460
178. "Lake Erie" * ...	7,535	474	467	460
179. "Essex" ...	7,530	296	314	460
180. "Maunganui" * ...	7,527	637	595	460
181. "City of Birmingham" ...	7,498	318	343	450
182. "Highland Loch" ...	7,493	243	277	450
183. "Highland Piper" ...	7,490	240	270	450
184. "Highland Warrior" ...	7,485	240	273	450

Name of Vessel.	Gross Tonnage.	Number of Passengers and Crew for whom a Passenger Certificate is granted.	Number of Persons accommodated in Boats actually carried under Davits.	Maximum Number of Persons for which the Table appended to the Life-Saving Appliances Rules requires accommodation to be provided under Davits (at 10 cubic feet per Person).
185. "City of Poona" ...	7,467	280	289	450
186. "Jason" ...	7,450	204	277	460
187. "Telemachus" ...	7,450	212	306	460
188. "Peleus" ...	7,441	186	297	460
189. "Tydeus" ...	7,441	238	382	460
190. "Rohilla" ...	7,400	382	712	450
191. "Matatua" ...	7,399	67	333	450
192. "Lake Champlain" * ...	7,394	513	462	450
193. "Oswestry Grange" ...	7,381	344	408	450
194. "Highland Brae" ...	7,365	217	278	450
195. "Plassy" ...	7,346	390	582	450
196. "Highland Corrie" ...	7,344	217	273	450
197. "Highland Glen" ...	7,343	217	274	450
198. "Highland Scot" ...	7,343	217	272	450
199. "Rewa" ...	7,299	375	585	450
200. "Highland Rover" ...	7,244	217	268	440
201. "Highland Pride" ...	7,237	241	275	440
202. "Montrose" * ...	7,207	500	462	440
203. "Herefordshire" ...	7,193	384	384	440
204. "Worcestershire" ...	7,170	387	391	440
205. "Highland Laddie" ...	7,116	217	276	440
206. "Veronese" ...	7,063	125	195	440
207. "Marquette" ...	7,056	244	270	440
208. "Achilles" ...	7,043	124	298	440
209. "Ajax" ...	7,040	124	285	440
210. "Dominion" † ...	7,037	1,212	615	440
211. "Deucalion" ...	7,030	124	306	440
212. "Azamemnon" ...	7,011	124	292	440
213. "Hildebrand" † ...	6,991	854	751	430
214. "Durham" * ...	6,981	710	642	430
215. "City of Benares" ...	6,973	218	230	430
216. "Pretorian" † ...	6,948	1,024	693	430
217. "Menominee" ...	6,918	267	267	430
218. "Manitou" ...	6,848	232	282	430
219. "Mesaba" ...	6,833	250	280	430
220. "Ripplingham Grange" ...	6,827	419	419	430
221. "Marathon" ...	6,795	335	558	430
222. "Miltiades" ...	6,793	360	560	430
223. "Stentor" ...	6,773	110	303	430
224. "Derbyshire" ...	6,772	299	299	430
225. "Galeka" * ...	6,767	746	612	430
226. "German" * ...	6,763	727	607	430
227. "Galician" * ...	6,756	742	610	430
228. "Calchas" ...	6,748	124	290	420
229. "Alcinous" ...	6,743	124	289	420
230. "Machaon" ...	6,738	124	297	420
231. "Circassia" ...	6,732	203	204	420
232. "Perseus" ...	6,728	211	374	420
233. "Theseus" ...	6,724	211	295	420
234. "Somali" ...	6,712	336	332	420
235. "Rhesus" ...	6,704	154	409	420
236. "Atreus" ...	6,699	166	293	420
237. "Nore" ...	6,696	244	320	420
238. "Soudan" ...	6,696	334	389	420
239. "Nyanza" ...	6,695	279	338	420
240. "Sicilia" ...	6,695	280	345	420
241. "Namur" ...	6,694	246	316	420
242. "Nile" ...	6,694	245	320	420
243. "Idomeneus" ...	6,692	126	304	420
244. "Neleus" ...	6,685	204	426	420
245. "Torilla" ...	6,679	183	625	420
246. "Drayton Grange" ...	6,663	160	192	420
247. "Syria" ...	6,660	311	342	420
248. "Commonwealth" * ...	6,616	444	505	420
249. "Hyson" ...	6,608	68	368	420
250. "Bovic" ...	6,583	150	230	420
251. "Sardinia" ...	6,573	312	336	420
252. "Kia Ora" ...	6,558	70	199	420
253. "City of Glasgow" ...	6,529	275	285	420

Name of Vessel.	Gross Tonnage.	Number of Passengers and Crew for whom a Passenger Certificate is granted.	Number of Persons accommodated in Boats actually carried under Davits.	Maximum Number of Persons for which the Table appended to the Life Saving Appliances Rules requires accommodation to be provided under Davits (at 10 cubic feet per Person).
254. "Ping Suey" ...	6,458	70	352	410
255. "Yangtze" ...	6,457	62	370	410
256. "Antony" † ...	6,446	796	538	410
257. "Colonian" ...	6,440	108	186	410
258. "Nestorian" ...	6,395	75	136	410
259. "Waipara" ...	6,392	158	430	410
260. "Castalia" ...	6,388	223	223	410
261. "Ninian" ...	6,385	77	138	410
262. "Nubian" ...	6,384	77	136	410
263. "Assyria" ...	6,370	124	259	410
264. "Elysia" ...	6,368	233	234	410
265. "Hilary" † ...	6,325	776	638	410
266. "Median" ...	6,306	77	134	410
267. "Meltonian" ...	6,306	77	129	410
268. "Memphian" ...	6,305	77	134	410
269. "Mercian" ...	6,305	64	132	410
270. "Goorkha" * ...	6,299	594	594	410
271. "Gascon" * ...	6,298	600	600	410
272. "Gaika" * ...	6,287	596	613	410
273. "Chindwin" ...	6,284	207	215	410
274. "Braemar Castle" † ...	6,279	794	566	410
275. "Lanfranc" † ...	6,275	765	538	410
276. "Corinthian" * ...	6,270	465	501	410
277. "Chyebassa" ...	6,249	105	113	400
278. "Waiwera" ...	6,237	145	156	400
279. "Cawdor Castle" ...	6,235	338	338	400
280. "Sicilian" * ...	6,229	440	432	400
281. "Californian" ...	6,223	102	204	400
282. "Chupra" ...	6,172	114	146	400
283. "Chanda" ...	6,168	101	146	400
284. "Armada" * ...	6,153	638	564	400
285. "Culna" ...	6,143	116	147	400
286. "Dunvegan Castle" * ...	6,117	690	614	400
287. "Devon" ...	6,059	232	246	400
288. "Kumara" ...	6,034	65	151	400
289. "Highland Heather" ...	6,027	105	155	400
290. "Highland Harris" ...	6,023	105	154	400
291. "Highland Watch" ...	6,022	108	155	400
292. "Colaba" ...	6,019	102	138	400
293. "Orotava" † ...	5,980	698	397	370
294. "Surrey" ...	5,980	231	248	370
295. "Oruba" * ...	5,971	700	398	370
296. "Nubia" ...	5,907	293	410	370
297. "Galicia" ...	5,896	240	240	370
298. "Aluwick Castle" ...	5,893	250	339	370
299. "Morayshire" ...	5,893	252	293	370
300. "Danube" † ...	5,885	752	641	370
301. "Simla" ...	5,884	306	336	370
302. "Berwick Castle" ...	5,883	240	241	370
303. "Perthshire" * ...	5,877	418	418	370
304. "Golconda" ...	5,874	316	388	370
305. "Henzada" ...	5,821	188	195	370
306. "Crown of Toledo" ...	5,806	64	111	370
307. "Carpentaria" ...	5,765	137	137	370
308. "Nairnshire" ...	5,746	122	141	360
309. "Sussex" ...	5,686	122	173	360
310. "Highland Brigade" ...	5,662	68	156	360
311. "Vectis" * ...	5,627	408	409	360
312. "Thames" † ...	5,621	652	629	360
313. "Clyde" † ...	5,618	700	625	360
314. "Antillian" ...	5,608	102	143	360
315. "City of Athens" ...	5,594	205	214	360
316. "Buteshire" ...	5,582	134	138	360
317. "Glaucus" ...	5,572	92	272	360
318. "Prometheus" ...	5,570	91	384	360
319. "Australind" * ...	5,563	508	463	360
320. "Karama" ...	5,563	115	163	360
321. "City of Karachi" ...	5,557	216	232	360
322. "Tagus" * ...	5,545	411	451	360

Name of Vessel.	Gross Tonnage.	Number of Passengers and Crew for whom a Passenger Certificate is granted.	Number of Persons accommodated in Boats actually carried under Davits.	Maximum Number of Persons for which the Table appended to the Life-Saving Appliances Rules requires accommodation to be provided under Davits (at 10 cubic feet per Person).
323. "Antenor" ...	5,531	89	284	360
324. "Norfolk" ...	5,531	115	144	360
325. "Kent" ...	5,527	116	159	360
326. "Trent" ...	5,525	410	460	360
327. "Patroclus" ...	5,509	123	378	360
328. "City of Corinth" ...	5,443	210	210	350
329. "Anselm" † ...	5,442	642	524	350
330. "City of Sparta" ...	5,415	161	191	350
331. "Parisian" * ...	5,395	513	409	350
332. "Oravia" † ...	5,374	910	359	350
333. "Magdalena" * ...	5,373	585	540	350
334. "Oropesa" † ...	5,364	969	370	350
335. "Atrato" * ...	5,347	423	659	350
336. "Trafford Hall" ...	5,321	208	211	350
337. "Matiana" ...	5,280	187	271	350
338. "Bhamo" ...	5,239	161	186	340
339. "Jelunga" * ...	5,206	395	409	340
340. "Ellora" ...	5,201	193	511	340
341. "Uranium" ...	5,182	221	378	340
342. "Comrie Castle" * ...	5,167	401	407	340
343. "Cluny Castle" * ...	5,147	403	403	340
344. "Irrawaddy" ...	5,144	152	172	340
345. "Erinapura" ...	5,128	201	527	340
346. "Olympia" ...	5,124	160	218	340
347. "Egra" ...	5,108	200	511	340
348. "Ekma" ...	5,108	199	518	340
349. "Martaban" ...	5,106	160	183	340
350. "Scindia" ...	5,106	154	172	340
351. "Monmouthshire" ...	5,096	103	162	340
352. "Massilia" ...	5,091	158	216	340
353. "Tenasserim" ...	5,089	150	183	340
354. "Narrung" ...	5,078	169	218	340
355. "Ava" ...	5,076	150	183	340
356. "Sagamore" ...	5,036	116	151	340
357. "Sixaola" ...	5,017	192	257	340
358. "Tivives" ...	5,017	192	251	340
359. "Carrillo" ...	5,013	188	256	340
360. "Kenuta" ...	5,005	80	392	340
361. "Wakool" ...	5,004	279	347	340
362. "Wilcannia" ...	4,952	290	352	330
363. "Moyune" ...	4,935	100	337	330
364. "Teen kai" ...	4,930	109	277	330
365. "Risaldar" ...	4,919	68	203	330
366. "Guelph" * ...	4,889	430	349	330
367. "Mongolian" ...	4,838	205	371	330
368. "Numidian" * ...	4,836	450	369	330
369. "Intaba" ...	4,832	226	253	330
370. "Falaba" ...	4,806	282	315	330
371. "Elmina" ...	4,792	280	318	330
372. "Goth" † ...	4,790	530	350	330
373. "Carmarthenshire" ...	4,746	157	281	290
374. "Pembrokeshire" ...	4,745	150	369	290
375. "City of Vienna" ...	4,682	196	212	290
376. "Palawan" ...	4,676	209	260	290
377. "Sunda" ...	4,673	214	245	290
378. "Diomed" ...	4,672	84	199	290
379. "Menelaus" ...	4,672	84	204	290
380. "Sarpedon" ...	4,663	45	158	290
381. "Mombassa" ...	4,661	220	220	290
382. "Hector" ...	4,660	54	158	290
383. "Orestes" ...	4,653	50	130	290
384. "Kintuck" ...	4,616	96	327	290
385. "Pak Ling" ...	4,614	107	282	290
386. "Sumatra" ...	4,607	114	238	290
387. "Bogota" ...	4,603	55	168	290
388. "Ambrose" † ...	4,588	640	378	290
389. "Moravian" ...	4,573	260	382	290
390. "Borneo" ...	4,572	211	258	290
391. "Amarapoora" ...	4,550	138	156	290

Name of Vessel.	Gross Tonnage.	Number of Passengers and Crew for whom a Passenger Certificate is granted.	Number of Persons accommodated in Boats actually carried under Davits.	Maximum Number of Persons for which the Table appended to the Life-Saving Appliances Rules requires accommodation to be provided under Davits (at 10 cubic feet per Person).
392. "Aidan" ...	4,545	201	219	290
393. "Priam" ...	4,543	89	234	290
394. "Laertes" ...	4,541	88	187	290
395. "Gorjistan" ...	4,537	49	138	290
396. "Turkistan" ...	4,523	49	138	290
397. "Telamon" ...	4,509	70	190	290
398. "Nigaristan" ...	4,505	49	141	290
399. "Esmeraldas" ...	4,491	55	168	290
400. "The Viking" †	4,464	519	376	290
401. "Carthaginian" ...	4,444	148	303	290
402. "Pancras" ...	4,436	201	213	290
403. "Denis" ...	4,435	200	211	290
404. "Stephen" ...	4,435	200	209	290
405. "Christopher" ...	4,416	205	235	290
406. "Johannesburg" ...	4,413	182	182	290
407. "Pardo" ...	4,410	254	267	290
408. "Buluwayo" ...	4,397	174	184	290
409. "Fort Salisbury" ...	4,383	175	185	290
410. "Potaro" ...	4,378	253	294	290
411. "Berbera" ...	4,352	105	124	290
412. "Salamis" ...	4,318	82	365	290
413. "Beacon Grange" ...	4,237	78	267	280
414. "Mendi" ...	4,230	250	250	280
415. "Karina" ...	4,222	250	250	280
416. "Royston Grange" ...	4,213	70	250	280
417. "Pomeranian" *	4,207	312	306	280
418. "Parana" ...	4,182	248	262	280
419. "Inanda" ...	4,090	214	268	280
420. "Montoro" ...	4,057	215	224	280
421. "City of Oxford" ...	4,019	98	173	280
422. "Dakar" ...	3,987	249	249	270
423. "Mardingo" ...	3,986	247	255	270
424. "Crispin" ...	3,965	161	171	270
425. "Francis" ...	3,960	166	183	270
426. "Onitsha" ...	3,921	96	144	270
427. "Akassa" ...	3,919	98	138	270
428. "Mayaro" ...	3,896	119	151	270
429. "Oopack" ...	3,883	61	209	270
430. "Burutu" ...	3,863	227	227	270
431. "Tarquah" ...	3,859	200	200	270
432. "Sculptor" ...	3,846	42	120	270
433. "City of Cambridge" ...	3,844	112	181	270
434. "Akabo" ...	3,814	210	253	270
435. "Gando" ...	3,809	80	183	270
436. "Justin" ...	3,801	159	163	270
437. "Boniface" ...	3,799	162	167	270
438. "Aro" ...	3,794	251	251	270
439. "Prahsu" ...	3,756	81	176	270
440. "Nigeria" ...	3,755	216	251	270
441. "Umona" ...	3,753	133	278	270
442. "Fulani" ...	3,731	81	176	260
443. "Glenfarg" ...	3,646	92	198	260
444. "Louisianian" ...	3,643	78	122	260
445. "Ulysses" ...	3,621	84	206	260
446. "Voluturno" †	3,581	1,476	326	260
447. "Meroë" ...	3,552	156	279	260
448. "Zaria" ...	3,549	116	149	260
449. "Chenab" ...	3,549	110	343	260
450. "Muraji" ...	3,545	122	150	260
451. "Alexandria" ...	3,501	65	82	260
452. "Augustine" †	3,498	428	323	250
453. "Stephano" *	3,449	294	326	250
454. "Urmston Grange" ...	3,423	69	176	250
455. "Umzumbi" ...	3,387	126	173	250
456. "William Cliff" ...	3,352	74	135	250
457. "Eskimo" †	3,326	659	391	250
458. "Midnight Sun" *	3,178	338	433	240
459. "Olenda" ...	3,174	124	186	240
460. "Baroda" ...	3,172	129	370	240

Name of Vessel.	Gross Tonnage.	Number of Passengers and Crew for whom a Passenger Certificate is granted.	Number of Persons accommodated in Boats actually carried under Davits.	Maximum Number of Persons for which the Table appended to the Life-Saving Appliances Rules requires accommodation to be provided under Davits (at 10 cubic feet per Person).
461. "Barala" ...	3,148	129	382	240
462. "Britannia" ...	3,129	82	157	240
463. "Benue" ...	3,123	68	125	240
464. "Seti" ...	3,090	146	195	240
465. "Umvolosi" ...	2,985	83	83	210
466. "Manco" *	2,984	217	221	210
467. "Ingeli" ...	2,928	138	180	210
468. "Calypso" †	2,876	1,024	327	210
469. "Batanga" ...	2,825	103	192	210
470. "Bakana" ...	2,802	103	192	210
471. "Venetian" ...	2,734	101	177	205
472. "Agadir" ...	2,732	124	124	205
473. "Arzila" ...	2,732	127	127	205
474. "Ungeni" ...	2,661	111	195	205
475. "Umtata" ...	2,655	116	197	205
476. "Umtali" ...	2,640	96	148	205
477. "Umvoti" ...	2,624	100	158	205
478. "Aaro" †	2,603	775	280	205
479. "Andorinha" ...	2,548	176	176	205
480. "Menes" ...	2,493	108	121	200
481. "Umfuli" ...	2,370	106	276	200
482. "Princess Sophia" ...	2,320	168	203	200
483. "Oslo" †	2,296	924	267	200
484. "Don Hugo" ...	2,244	68	87	190
485. "Aguila" ...	2,114	124	124	190
486. "Umkuzi" ...	2,057	90	277	190
487. "Grive" ...	2,037	106	135	190
488. "Huayna" ...	1,988	84	118	180
489. "Gourko" ...	1,975	55	90	180
490. "Borodino" ...	1,970	55	90	180
491. "Atahualpa" ...	1,965	84	122	180
492. "Morialta" *	1,947	199	204	180
493. "Vienna" ...	1,912	136	136	180
494. "Mourino" ...	1,820	42	47	180
495. "Kolpino" ...	1,819	43	47	180
496. "Romeo" †	1,725	260	192	170
497. "Salmo" †	1,722	572	180	170
498. "Ortolan" ...	1,719	93	103	170
499. "Novo" *	1,683	189	210	170
500. "Peregrine" *	1,681	224	211	170
501. "Runo" *	1,679	188	193	170
502. "Woodcock" ...	1,673	113	140	170
503. "Stockport" †	1,637	358	289	170
504. "Bury" †	1,634	357	294	170
505. "Dewsbury" †	1,631	358	284	170
506. "Accrington" †	1,629	358	285	150
507. "Eldorado" †	1,514	431	221	150
508. "Yoro" ...	1,462	58	64	150
509. "Klang" *	1,451	177	177	150
510. "Ardeola" ...	1,414	88	88	150
511. "Wrexham" *	1,414	199	250	150
512. "Breslau" *	1,339	186	186	150
513. "Coblentz" *	1,338	183	183	150
514. "Thoresa" ...	1,319	115	120	150
515. "Rona" ...	1,312	115	136	150
516. "Volo" *	1,289	215	215	150
517. "Acajutla" ...	1,170	55	58	120
518. "Pulganbar" *	1,160	158	163	120
519. "Spero" †	1,132	235	201	120
520. "Argo" ...	1,102	109	119	120
521. "Kuala" ...	954	95	121	100

RETURN showing the GROSS TONNAGE OF STEAMSHIPS employed in the Passenger Trade of the United Kingdom with the East Coast of North America, during each of the years, 1895-1911.

(The gross tonnage of each Vessel is recorded only in the years in which she was actually in the North Atlantic Service.)

Name of Vessel.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
Anchoria ...	4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,167							
Circassia ...	4,272	4,272	4,272														
Furnessia ...	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495
Ethiopia ...	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004				
City of Rome ...	8,450	8,450	8,450	8,450	8,450	8,450	8,450										
State of California	5,000	5,000															
Astoria ...					5,086	5,086	5,086	5,086	5,086	5,086	5,086	5,086	5,086	5,086			
Columbia ...								8,292	8,292	8,292	8,292	8,292	8,292	8,292	8,292	8,292	8,292
Caledonia ...											9,222	9,222	9,222	9,222	9,222	9,222	9,222
California ...													8,662	8,662	8,662	8,662	8,662
Cameronia ...																	10,963
Belgenland ...	3,702	3,702	3,702	3,702	3,702	3,702	3,702	3,702	3,702	3,702							
Waesland ...	4,825	4,825	4,825	4,825	4,825	4,825	4,825	4,825									
Pennland ...	3,802	3,802	3,802	3,802	3,802	3,802	3,802										
Rhynland ...	3,707	3,707	3,707	3,707	3,707	3,707	3,707	3,707	3,707								
Russia ...				3,908	3,908												
Italia ...				3,564	3,564												
Lord Gough ...	3,655																
Ohio ...	3,488																
Southwark ...	8,606			8,606		8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606
Kensington ...	8,671			8,671	8,671	8,671	8,671	8,671	8,671	8,671	8,671	8,671	8,671	8,671			
Scotia ...				2,558													
Adria ...				5,458													
Aragonia ...				5,124													
Noordland ...			5,212					5,129	5,129	5,129	5,129	5,129	5,129	5,129	5,129	5,129	5,129
Westernland ...						5,665	5,665	5,665	5,665	5,665	5,665	5,665	5,665	5,665	5,665	5,665	5,665
Friesland ...						6,409	6,409	6,409	6,409	6,409	6,409	6,409	6,409	6,409	6,409	6,409	6,409
Haverford ...							11,635	11,635	11,635	11,635	11,635	11,635	11,635	11,635	11,635	11,635	11,635
Merion ...									11,621	11,621	11,621	11,621	11,621	11,621	11,621	11,621	11,621
Dominion ...															7,036		7,036
Pavonia ...	5,587	5,587	5,587	5,587	5,587				7,268	7,268							
Aurania ...	7,268	7,268	7,268	7,268	7,268												
Umbria ...	8,127	8,127	8,127	8,127	8,127	8,127	8,127	8,127	8,127	8,127	8,127	8,127	8,127	8,127		8,127	8,127
Cephalonia ...	5,574	5,574	5,574	5,574	5,574												
Lucania ...	12,952	12,952	12,952	12,952	12,952	12,952	12,952	12,952	12,952	12,952	12,952	12,952	12,952	12,952	12,952		
Etruria ...	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119	8,119
Catalonia ...	4,841	4,841	4,841	4,841	4,841												
Campania ...	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950	12,950
Samaria ...	2,574	2,574															
Servia ...	7,391	7,391	7,391	7,391	7,391	7,391	7,391										
Scythia ...	4,557	4,557	4,557	4,557													
Gallia ...	4,809	4,809	4,809		4,809												
Bothnia ...		4,535															
Ultonia ...				10,402	10,402	10,402	10,402	10,402	10,402	10,402	10,402	10,402	10,402	10,402	10,402	10,402	10,402
Ivernia ...						14,210	14,210	14,210	14,210	14,210	14,210	14,210	14,210	14,210	14,210	14,210	14,210
Saxonia ...						14,270	14,270	14,270	14,270	14,270	14,270	14,270	14,270	14,270	14,270	14,270	14,270
Carpathia ...									13,603	13,603	13,603	13,603	13,603	13,603	13,603	13,603	13,603
Caronia ...											19,687	19,687	19,687	19,687	19,687	19,687	19,687
Carmania ...											19,524	19,524	19,524	19,524	19,524	19,524	19,524
Pannonia ...												9,851					
Mauretania ...													31,937	31,937	31,937	31,937	31,937
Lusitania ...													31,550	31,550	31,550	31,550	31,550
Franconia ...																	18,149
Ascania ...																	9,111
Ausonia ...																	7,600
Albania ...																	7,640
Athenia ...											8,668	8,668	8,668	8,668	8,668	8,668	8,668
Cassandra ...												8,135	8,135	8,135	8,135	8,135	8,135
Saturnia ...																	8,611
Royal Edward ...																11,117	11,117
Royal George ...																11,117	11,117
Assyrian ...	3,970	3,970	3,970	3,970	3,970	3,970	3,970										
Austrian ...	2,681	2,681	2,681	2,681				2,681	2,681	2,681							
Buenos Ayrean ...	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004	4,004					
Canadian ...		2,910												4,004			
Carthaginian ...	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214	4,214
Caspian ...		2,727	2,727														
Corean ...	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487			
Grecian ...	3,612	3,612	3,612	3,612	3,612	3,612	3,612										
Hibernian ...	2,996	2,996	2,996	2,996	2,996	2,996											
Manitoban ...	2,974	2,974	2,974	2,974	2,974												
Mongolian ...	4,908	4,908	4,908	4,908	4,908		4,908	4,908	4,908	4,908	4,908	4,908	4,908	4,908	4,908	4,908	4,908
Nestorian ...		2,725	2,725														
Norwegian ...	3,523	3,523	3,523	3,523	3,523	3,523	3,523	3,523	3,523								
Numidian ...	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907	4,907
Parisian ...	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365	5,365
Peruvian ...	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262
Pomeranian ...	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363	4,363
Prussian ...		3,029	3,029	3,029	3,029												
Sardinian ...	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384

GROSS TONNAGE—continued.

Name of Vessel.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
Sarmatian ...	3,920	3,920	3,920	3,920	3,920	3,920	3,920	3,920	3,920	3,920	3,920	3,920	3,920				
Scandinavian ...	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067
Siberian ...	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903	3,903
State of Nebraska ...	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985
State of California ...	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243	4,243
Laurentian ...	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522	4,522
Roumanian ...			4,126	4,126													
Californian ...				4,243	4,243	4,243											
Bavarian ...						10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076
Tunisian ...																	
Tainui ...					5,049												
Corinthian ...						7,379	7,379	7,379	7,379	7,379	7,379	7,379	7,379	7,379	7,379	7,379	7,379
Sicilian ...							7,341	7,341	7,341	7,341	7,341	7,341	7,341	7,341	7,341	7,341	7,341
Ionian ...							8,268	8,268	8,268	8,268	8,268	8,268	8,268	8,268	8,268	8,268	8,268
Pretorian ...							7,640	7,640	7,640	7,640	7,640	7,640	7,640	7,640	7,640	7,640	7,640
Victorian ...											10,629	10,629	10,629	10,629	10,629	10,629	10,629
Virginian ...											10,754	10,754	10,754	10,754	10,754	10,754	10,754
Australasian ...							3,662										
City of Bombay ...									5,186			5,186	5,186				
City of Vienna ...													11,500	11,500	11,500	11,500	11,500
Corsican ...													10,901	10,901	10,901	10,901	10,901
Grampian ...														10,900	10,900	10,900	10,900
Hesperian ...																	10,500
Scotian ...															7,535	7,535	7,535
Lake Erie ...																	10,798
New York ...	10,798	10,798	10,798	10,798	10,798	10,798	10,798		10,798	10,798	10,798	10,798	10,798	10,798	10,798	10,798	10,798
St. Louis ...	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629
St. Paul ...	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629	11,629
Philadelphia ...	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433
Berlin ...	5,526	5,526	5,526	5,526	5,526												
Chester ...				4,566													
Zeeland ...							11,905	11,905	11,905	11,905						11,905	11,905
Vaderland ...							12,017										
Finland ...								12,185	12,185	12,185							
Kroonland ...									12,185								
Vancouver ...					5,231	5,231	5,231	5,231	5,231	5,231	5,231	5,231	5,231	5,231	5,231	5,231	5,231
Labrador ...					5,000	5,000											
Scotsman ...					5,000												
Dominion ...					7,036	7,036	7,036	7,036	7,036	7,036	7,036	7,036	7,036	7,036	7,036	7,036	7,036
Camboman ...					5,516		5,516	5,516	5,516								

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New England ...					11,500	11,500	11,500	11,500	11,500								
Canada ...					9,415	9,415	9,415	9,415	9,415	9,415	9,415	9,415	9,415	9,415	9,415	9,415	9,415
Derbyshire ...					5,618												
Commonwealth ...						9,645	9,645	9,645	9,645								
Irishman ...								8,838									
Colonian ...								5,967									
Californian ...								5,854									
Merion ...								11,621	11,621								
Mayflower ...								10,602									
Columbus ...								15,378									
Ottawa ...																	
Massachusetts ...	5,673	5,673	5,673	5,673							5,070	5,070	5,070	5,070	5,070		
Manitoba ...	5,672	5,672	5,672	5,672													
Mobile ...	5,780	5,780	5,780	5,780													
Mohawk ...	5,658	5,658	5,658	5,658													
Minnewaska ...	5,713	5,713	5,713	5,713													
Manitou ...				6,849	6,849	6,849	6,849	6,849	6,849	6,849	6,849	6,849	6,849	6,849	6,849	6,849	6,849
Marquette ...				7,057	7,057	7,057	7,057	7,057	7,057	7,057							
Menominee ...				6,919	6,919	6,919	6,919	6,919	6,919	6,919	6,919	6,919	6,919	6,919	6,919	6,919	6,919
Mesaba ...				6,833	6,833	6,833	6,833	6,833	6,833	6,833	6,833	6,833	6,833	6,833	6,833	6,833	6,833
Mohegan ...	6,889	6,889	6,889	6,889													
Mohawk ...					4,212	4,212	4,212	4,212	4,212	4,212							
Minneapolis ...						13,448	13,448	13,448	13,448	13,448	13,448	13,448	13,448	13,448	13,448	13,448	13,448
Minnehaha ...						13,443	13,443	13,443	13,443	13,443	13,443	13,443	13,443	13,443	13,443	13,443	13,443
Minnetonka ...								13,440	13,440	13,440	13,440	13,440	13,440	13,440	13,440	13,440	13,440
Minnewaska ...															14,317	14,317	14,317
Adriatic ...	3,887	3,887	3,887														
Teutonic ...	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984	9,984
Britannic ...	5,004	5,004	5,004	5,004	5,004												
Majestic ...	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146	10,146
Germanic ...	5,065	5,065	5,065	5,065	5,065	5,065	5,065	5,065	5,065	5,065	10,146	10,146	10,146	10,146	10,146	10,146	10,146
Cymric ...				13,096	13,096	13,096	13,096	13,096	13,096	13,096	13,096	13,096	13,096	13,096	13,096	13,096	13,096
Oceanic ...				17,273	17,273	17,273	17,273	17,273	17,273	17,273	17,273	17,273	17,273	17,273	17,273	17,273	17,273
Celtic ...								20,904	20,904	20,904	20,904	20,904	20,904	20,904	20,904	20,904	20,904
Cedric ...										21,034	21,034	21,034	21,034	21,034	21,034	21,034	21,034
Canadian ...							9,301	9,301	9,301	9,301	9,301	9,301	9,301	9,301	9,301	9,301	9,301
Victorian ...	8,825	8,825	8,825	8,825	8,825			8,825	8,825	8,825							
Armenian ...	8,825	8,825	8,825	8,825	8,825			8,825	8,825	8,825							
Arabic ...								15,801	15,801	15,801	15,801	15,801	15,801	15,801	15,801	15,801	15,801
Baltic ...									23,875	23,875	23,875	23,875	23,875	23,875	23,875	23,875	23,875
Adriatic ...													24,540	24,540	24,540	24,540	24,540
Olympic ...																	45,323
Romanic ...								11,394	11,394	11,394	11,394	11,394	11,394	11,394	11,394	11,394	11,394
Cretic ...								13,517	13,517	13,517	13,517	13,517	13,517	13,517	13,517	13,517	13,517
Republic ...								15,378	15,378	15,378	15,378	15,378	15,378	15,378	15,378	15,378	15,378
Canopic ...										12,096	12,096	12,096	12,096	12,096	12,096	12,096	12,096

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GROSS TONNAGE—continued.

Name of Vessel.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
Megantic ...												14,189	14,189	14,189	14,877	14,877	14,877
Laurentic ...												14,191	14,191	14,191	14,892	14,892	14,892
Empress of Britain									9,674	9,674	9,674	9,674	9,674	9,674	9,674	9,674	9,674
Empress of Ireland									7,394	7,394	7,394	7,394	7,394	7,394	7,394	7,394	7,394
Lake Manitoba ...									7,535	7,535	7,535	7,535	7,535	7,535	7,535	7,535	7,535
Lake Champlain...									8,200	8,200	8,200	8,200	8,200	8,200	8,200	8,200	8,200
Lake Erie...									8,790	8,790	8,790	8,790	8,790	8,790	8,790	8,790	8,790
Lake Michigan ...									8,360	8,360	8,360	8,360	8,360	8,360	8,360	8,360	8,360
Mount Temple ...									8,644	8,644	8,644	8,644	8,644	8,644	8,644	8,644	8,644
Montezuma ...									7,207	7,207	7,207	7,207	7,207	7,207	7,207	7,207	7,207
Montreal ...									7,998	7,998	7,998	7,998	7,998	7,998	7,998	7,998	7,998
Montrose ...									6,578	6,578	6,578	6,578	6,578	6,578	6,578	6,578	6,578
Mount Royal ...									8,548	8,548	8,548	8,548	8,548	8,548	8,548	8,548	8,548
Montfort...						8,548	8,548	8,548	8,823	8,823	8,823	8,823	8,823	8,823	8,823	8,823	8,823
Bohemian ...		8,823	8,823	8,823	8,823	10,418	10,418	10,418	10,418	10,418	10,418	10,418	10,418	10,418	10,418	10,418	10,418
Cestrian ...								11,959									
Devonian ...						10,405	10,405	10,405	10,405	10,405	10,405	10,405	10,405	10,405	10,405	10,405	10,405
Hanoverian ...																	
Winifredian ...																	
Total ...	376,019	376,348	370,667	447,809	460,180	481,527	587,947	632,714	846,526	780,527	798,034	817,025	920,275	918,582	920,078	927,930	1,008,159
Average ...	5,784	5,617	5,702	5,970	6,481	7,408	7,839	8,217	8,817	9,182	9,614	9,612	10,457	10,681	11,085	11,179	11,722

No. 11.

RETURN showing the SPEED IN KNOTS OF STEAMSHIPS employed in the Passenger Trade of the United Kingdom with the East Coast of North America during each of the years 1895-1911.

(The speed of each Vessel is recorded only in the years in which she was actually in the North Atlantic Service.)

Name of Vessel.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
Anchoria ...	13	13	13	13	13	13	13	13	13	13							
Circassia ...	13	13	13														
Furnessia ...	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Ethiopia ...	13	13	13	13	13	13	13	13	13	13	13	13	13				
City of Rome ...	16½	16½	16½	16½	16½	16½	16½										
State of California	14	14															
Astoria ...					14	14	14	14	14	14	14	14	14	14	14	14	14
Columbia ...								16½	16½	16½	16½	16½	16½	16½	16½	16½	16½
Caledonia...											16½	16½	16½	16½	16½	16½	16½
California ...													15½	15½	15½	15½	15½
Cameronia ...																	16½
Belgenland ...	12	12	12	12	12	12	12	12	12	12							
Waesland ...	12	12	12	12	12	12	12	12									
Pennland ...	12	12	12	12	12	12	12										
Rhynland ...	12	12	12	12	12	12	12	12	12								
Russia ...				12	12												
Italia ...				12	12												
Lord Gough ...	12																
Ohio ...	12																
Southwark ...	13			13		13	13	13	13	13	13	13	13	13	13	13	13
Kensington ...	13			13	13	13	13	13	13	13	13	13	13	13			
Scotia ...				12													
Adria ...				12													
Aragonia ...				12													
Noordland ...			12				12	12	12	12	12	12	12	12			
Westernland ...						12	12	12	12	12	12	12	12	12			
Friesland ...						13	13	13	13	13	13	13	13	13	13	13	13
Haverford ...							12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½
Merion ...									12½	12½	12½	12½	12½	12½	12½	12½	12½
Dominion...															13		13
Pavonia ...	12	12	12	12	12												
Aurania ...	16	16	16	16	16				16	16							
Umbria ...	18	18	18	18	18	18	18	18	18	18	18	18	18	18		18	
Cephalonia ...	12	12	12	12	12												
Lucania ...	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21		

SPEED KNOTS—continued.

Name of Vessel.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
Etruria ...	18	18	18	18	18	18	18	18	18	18	18	18	18	18			
Catalonia ...	12	12	12	12	12												
Campania ...	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Samaria ...	11	11															
Servia ...	17	17	17	17	17	17	17										
Scythia ...	11	11	11	11													
Gallia ...	12	12	12		12												
Bothnia ...		12															
Ultonia ...				12	12	12	12	12	12	12	12	12					
Ivernia ...						15	15	15	15	15	15	15	15	15	15	15	15
Saxonia ...						15	15	15	15	15	15	15	15	15	15	15	15
Carpathia ...									14	14	14	14	14	14	14	14	14
Caronia ...											18	18	18	18	18	18	18
Carmania ...											18	18	18	18	18	18	18
Pannonia ...												13					
Mauretania ...													25	25	25	25	25
Lusitania ...													25	25	25	25	25
Franconia ...																	
Ascania ...																	
Ausonia ...																13	13
Albania ...											13	13	13	13	13	13	13
Athenia ...											13	13	13	13	13	13	13
Cassandra ...																13	13
Saturnia ...																18	18
Royal Edward ...																18	18
Royal George ...																	
Assyrian ...	12	12	12	12	12	12	12		12	12							
Austrian ...	12	12	12	12	12	12	12	12	12	12				12			
Buenos Ayrean ...	12	12	12	12	12	12	12	12	12	12	12	12					
Canadian ...		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Carthaginian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12			
Caspian ...		12	12	12	12	12	12	12	12	12	12	12	12	12			
Corean ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12			
Grecian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12			
Hibernian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Manitoban ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Mongolian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Nestorian ...		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Norwegian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Numidian ...	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13

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Parisian ...	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Peruvian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Pomeranian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Prussian ...		12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Sardinian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Sarmatian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Scandinavian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Siberian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
State of Nebraska ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
State of California ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Laurentian ...	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Roumanian ...			12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Californian ...				12	12	12	12	12	12	12	12	12	12	12	12	12	12
Bavarian ...					12	12	12	12	12	12	12	12	12	12	12	12	12
Tunisian ...						16	16	16	16	16	16	16	16	16	16	16	16
Tainni ...					12	12	12	12	12	12	12	12	12	12	12	12	12
Corinthian ...						12	12	12	12	12	12	12	12	12	12	12	12
Sicilian ...							12	12	12	12	12	12	12	12	12	12	12
Ionian ...							14	14	14	14	14	14	14	14	14	14	14
Pretorian ...							13	13	13	13	13	13	13	13	13	13	13
Victorian ...								13	13	13	13	13	13	13	13	13	13
Virginian ...											18	18	18	18	18	18	18
Australasian ...											18	18	18	18	18	18	18
City of Bombay ...							12						12	12			
City of Vienna ...									12								
Corsican ...												12					
Grampian ...													16	16	16	16	16
Hesperian ...													16	16	16	16	16
Scotian ...														16	16	16	16
Lake Erie ...																15	15
New York ...																12	12
St. Louis ...	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
St. Paul ...	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Philadelphia ...	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Berlin ...	15½	15½	15½	15½	15½												
Chester ...				14													
Zeeland ...								16	16	16	16	16	16	16	16	16	16
Vaderland ...								16	16	16	16	16	16	16	16	16	16
Finland ...										16	16	16	16	16	16	16	16
Kroonland ...																	
Vancouver ...					13	13	13	13	13	13	13	13	13	13	13	13	13
Labrador ...					13	13	13	13	13	13	13	13	13	13	13	13	13
Scotsman ...					13	13	13	13	13	13	13	13	13	13	13	13	13
Dominion ...					13	13	13	13	13	13	13	13	13	13	13	13	13
Cambroman ...					12	12	12	12	12	12	12	12	12	12	12	12	12

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SPEED KNOTS—continued.

Name of Vessel	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
New England ...					16	16	16	16	16								
Canada ...					15	15	15	15	15	15	15	15	15	15	15	15	15
Derbyshire ...					14												
Commonwealth ...						16	16	16	16								
Irishman ...								12									
Colonian ...								12									
Californian ...								12									
Merion ...								12½	12½								
Mayflower ...								14	14								
Columbus ...								16	16								
Ottawa ...											16	16	16	16	16		
Massachusetts ...	12	12	12	12													
Manitoba ...	12	12	12	12													
Mobile ...	12	12	12	12													
Mohawk ...	12	12	12	12													
Minnewaska ...	12	12	12	12													
Manitou ...				14	14	14	14	14	14	14	14						
Marquette ...				14	14	14	14	14	14	14	14						
Menominee ...				14	14	14	14	14	14	14	14						
Mesaba ...				14	14	14	14	14	14	14	14	14	14	14			
Mohegan ...	14	14	14	14													
Mohawk ...					13	13	13	13	13								
Minneapolis ...						16	16	16	16	16	16	16	16	16	16	16	16
Minnehaha ...						16	16	16	16	16	16	16	16	16	16	16	16
Minnetonka ...								16	16	16	16	16	16	16	16	16	16
Minnewaska ...																	
Adriatic ...	15	15	15														
Teutonic ...	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Britannic ...	16	16	16	16	16												
Majestic ...	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Germanic ...	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Cymric ...				14	14	14	14	14	14	14	14	14	14	14	14	14	14
Oceanic ...					20	20	20	20	20	20	20	20	20	20	20	20	20
Celtic ...							16	16	16	16	16	16	16	16	16	16	16
Cedric ...									16	16	16	16	16	16	16	16	16
Canadian ...							13	13	13	13	13	13	13	13	13	13	13
Victorian ...	14	14	14	14	14			14	14								
Armenian ...	14	14	14	14	14			14	14								
Arabic ...									16	16	16	16	16	16	16	16	16
Baltic ...										17	17	17	17	17	17	17	17

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Adriatic ...													17	17	17	17	17
Olympic ...																	22
Romanic ...									15	15	15	15	15	15	15	15	15
Cretic ...									14½	14½	14½	14½	14½	14½	14½	14½	14½
Republic ...									15	15	15	15	15	15	15	15	15
Canopic ...										15	15	15	15	15	15	15	15
Megantic ...															15	15	15
Laurentic ...															17	17	17
Empress of Britain												18	18	18	18	18	18
" " Ireland												18	18	18	18	18	18
Lake Manitoba ...									11½	11½	11½	11½	11½	11½	11½	11½	11½
" Champlain ...									12	12	12	12	12	12	12	12	12
" Erie ...									12	12	12	12	12	12	12	12	12
" Michigan ...									11	11	11	11	11	11	11	11	11
Mount Temple ...									11½	11½	11½	11½	11½	11½	11½	11½	11½
Montezuma ...									10½	10½	10½	10½	10½	10½	10½	10½	10½
Montreal ...									11½	11½	11½	11½	11½	11½	11½	11½	11½
Montrose ...									12	12	12	12	12	12	12	12	12
Mount Royal ...									10	10	10	10	10	10	10	10	10
Montfort ...									12	12	12	12	12	12	12	12	12
Bohemian ...						13	13	13	13	13	13	13	13	13	13	13	13
Cestrian ...		13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Devonian ...						14	14	14	14	14	14	14	14	14	14	14	14
Hanoverian ...								14	14	14	14	14	14	14	14	14	14
Winifredian ...					14	14	14	14	14	14	14	14	14	14	14	14	14
Total ...	898	921	896	1,026	996.5	928.5	1,072	1,096.5	1,358.5	1,215	1,201.5	1,229.5	1,309	1,288	1,246	1,252	1,304.5
Average ...	13.81	13.74	13.78	13.68	14.03	14.28	14.29	14.24	14.15	14.29	14.47	14.46	14.87	14.97	15.01	15.08	15.16

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No. 12.

Number of Direct Voyages made by Vessels with more than 12 Passengers on Board between the United Kingdom and North America.

WESTWARD.				EASTWARD.	
Years.	Number of Voyages.	Years.	Number of Voyages.	Years.	Number of Voyages.
1892	929	1902	792		
1893	870	1903	877		
1894	739	1904	847		
1895	716	1905	888		
1896	762	1906	918		
1897	758	1907	803	1907	835
1898	766	1908	804	1908	805
1899	722	1909	773	1909	771
1900	728	1910	812	1910	829
1901	774	1911	844	1911	851

Figures for eastward voyages prior to 1907 have not been prepared as they would involve a considerable amount of labour having regard to the form in which the returns as to passenger traffic were supplied from the ports previously to 1907. It is, however, reasonable to assume that the number of eastward voyages in each year does not differ materially from the number of westward voyages.

No. 13.

Statement showing, for each of the years 1892 to 1911 inclusive, the number of passengers embarked in the United Kingdom for Ports in the United States or British North America, and the number of passengers landed in the United Kingdom from the United States or British North America.

Year.	Westbound.			Eastbound.		
	Passengers embarked in the United Kingdom.			Passengers landed in the United Kingdom.		
1892	277,087			114,041		
1893	263,593			111,215		
1894	183,064			156,878		
1895	217,989			142,932		
1896	177,086			121,378		
1897	154,717			116,744		
1898	151,190			102,081		
1899	192,812			116,854		
1900	239,398			135,738		
1901	237,839			124,076		
1892-1901	2,094,775			1,241,937		
1902	299,699			128,178		
1903	351,523			150,357		
1904	383,629			185,224		
1905	384,754			154,812		
1906	480,398			171,578		
1907	552,227			225,119		
*1908	293,749			268,312		
1909	373,251			190,788		
1910	499,669			225,549		
1911	464,330			270,236		
1902-1911	4,083,229			1,970,153		

* Before 1908 the returns obtained from vessels not carrying steerage passengers were voluntary, and possibly somewhat defective.

Statement showing the Total Number of British vessels and vessels of all Nationalities, whether with Cargoes or in Ballast, that entered at and cleared from the Ports of the United Kingdom, from and to Ports on the Atlantic Coast of North America* during each of the years 1892-1911, distinguishing steam from sailing vessels.

Atlantic Coast of North America									
Year	ENTERED.				CLEARED.				Year.
	British vessels.		Vessels of <i>all</i> Nationalities.		British vessels.		Vessels of <i>all</i> Nationalities.		
	Steam.	Sail.	Steam.	Sail.	Steam.	Sail.	Steam.	Sail.	
1892† ...	2,802	502	2,988	1,594	2,191	394	2,246	1,220	1892†
1893† ...	2,191	438	2,364	1,283	1,913	367	1,977	963	1893†
1894† ...	2,271	363	2,436	1,193	1,999	345	2,062	1,057	1894†
1895† ...	2,110	289	2,323	1,004	1,725	270	1,815	881	1895†
1896† ...	2,671	257	2,930	1,044	2,170	211	2,313	809	1896†
1897† ...	3,104	272	3,383	1,074	2,655	169	2,829	697	1897†
1898 ...	3,080	183	3,312	997	2,829	182	3,021	773	1898
1899 ...	2,851	124	3,130	753	2,401	130	2,612	663	1899
1900 ...	2,723	134	3,054	869	2,275	126	2,521	682	1900
1901 ...	2,608	86	2,942	638	2,150	108	2,375	509	1901
1902 ...	2,301	74	2,678	480	2,077	69	2,337	337	1902
1903 ...	2,407	78	2,764	377	2,169	56	2,480	223	1903
1904 ...	2,126	50	2,486	323	1,775	47	2,056	272	1904
1905 ...	2,225	45	2,537	304	1,915	44	2,223	270	1905
1906 ...	2,484	37	2,810	254	1,962	35	2,256	206	1906
1907 ...	2,343	16	2,725	146	1,982	18	2,284	134	1907
1908 ...	2,136	24	2,542	133	1,824	30	2,146	118	1908
1909 ...	2,033	19	2,427	103	1,731	25	2,047	104	1909
1910 ...	1,948	24	2,293	86	1,623	22	1,904	75	1910
1911 ...	1,968	15	2,340	76	1,613	22	1,897	76	1911
Total ...	48,382	3,030	54,464	12,631	40,879	2,670	45,401	10,069	Total.
Average ...	2,419	151	2,723	631	2,049	133	2,270	503	Average.

* Including the United States, Canada, Newfoundland, and Labrador.
† The figures for these years include vessels entering from and clearing to the Pacific coast of Canada. The Atlantic coast of Canada was not separately distinguished in the accounts prior to the Year 1898
In 1898 the entrances and clearances at ports of the United Kingdom of steam vessels of all nationalities from and to ports on the Pacific coast of Canada were as follows :—

ENTRANCES.		CLEARANCES.	
Steam.	Sail.	Steam.	Sail.
2	21	3	14

Vessels registered in the United Kingdom which were totally lost at sea or which met with sea casualties attended with loss of life during the 20 years ended 30th June, 1911, while on voyages between European ports and ports on the East Coast of the United States, Canada and Newfoundland.

Summary.

Nature of the Casualties.	Total number of Casualties.	Number of Vessels totally lost.	Number of Casualties (whether involving total or partial loss of Vessel) by which lives were lost.	Lives lost.		
				Crew.	Passengers.	Total.
Sailing Vessels.						
Founderings ...	27	27	6	12	—	12
Strandings ...	26	26	5	20	2	22
Collisions ...	1	1	—	—	—	—
Other Causes ...	26	10	18	41	3	44
Missing Vessels ...	20	20	20	148	2	150
TOTAL ...	100	84	49	221	7	228

Steam Vessels.						
Founderings ...	24	24	7	65	—	65
Strandings ...	89	89	9	116	57	173
Collisions ...	16	11	7	8	4	12
Other Causes ...	175	23	158	233	11	244
Missing Vessels ...	28	28	28	927	6	933
TOTAL ...	332	175	209	1,349	78	1,427

Total.						
Founderings ...	51	51	13	77	—	77
Strandings ...	115	115	14	136	59	195
Collisions ...	17	12	7	8	4	12
Other Causes ...	201	33	176	274	14	288
Missing Vessels ...	48	48	48	1,075	8	1,083
GRAND TOTAL	432	259	258	1,570	85	1,655

SHIPPING CASUALTIES.

List of Vessels registered in the United Kingdom which were totally lost at sea or which met with sea casualties attended with loss of life during the 20 years ended 30th June, 1911, while on voyages between European ports and ports on the East coast of the United States, Canada and Newfoundland.

(1) FOUNDERINGS.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To				Crew.	Passengers.	Crew.	Passengers.	
1891. 3 July	"Octavia," South Shields.	Barque	898	Quebec	...	Newcastle-on-Tyne.	Lat. 50°54'N., Long. 14°40'W., N. Atlantic.	N.E., fresh gale; squally.	Total	17	—	—	17, by ship's own boats and being taken on board steamer "Venetian."
29 Aug.	"Dunmurry," Belfast.	Steamer	1,654	New York	...	Antwerp	Lat. 40°45'N., Long. 62°11'W., N. Atlantic.	S.W., whole gale	Total	23	—	8	20, by life raft and ship's own boat; afterwards picked up by German steamer "Hans and Kurt."
22 Sept.	"Wolviston," West Hartlepool.	Steamer	1,057	Bristol	...	New York	Lat. 47°36'N., Long. 36°40'W., N. Atlantic.	W.S.W., fresh to strong breeze; cloudy.	Total	21	—	12	9, by ship's own boat; afterwards picked up by brigantine "Arctic."
24 Sept.	"Little Wonder," Fowey.	Schooner	98	Domino, Labrador.	...	Fowey	Lat. 50°40'N., Long. 41°9'W., N. Atlantic.	N.W., stormy	Total	5	—	1	4, by steamer "Siberian."
23 Sept.	"Kate Crosby," Belfast.	Barque	696	Belfast	...	Miramichi, N.B.	About 3 miles N.E. of Horn Head, Co. Donegal.	Squally; clear	Total	12	—	—	12, by ship's own boat.
3 Oct.	"Annot Lyle," Liverpool.	Barque	1,246	Quebec	...	Newcastle-on-Tyne.	Lat. 56°50'N., Long. 15°14'W., N. Atlantic.	W. by S., stormy	Total	19	—	—	19, by steamer "Prudence."
9 Oct.	"Devonshire," London.	Steamer	1,513	Barrow	...	New York	Lat. 55°25'N., Long. 20°37'W., N. Atlantic.	N.W., hurricane	Total	30	1 (a stow-away).	—	31, by steamer "Norwegian."
18 Nov.	"Cwm Donkin," Swansea.	Barquentine.	590	Savannah	...	Hamburg	Lat. 42°48'N., Long. 17°13'W., N. Atlantic.	N.N.W., hurricane; thick.	Total	11	—	—	11, by "John," of Sunderland
30 Dec.	"Countess of Dufferin," Londonderry.	Barque	540	St. John, N.B.	...	Londonderry	Lat. 52°30'N., Long. 22°30'W., N. Atlantic.	N., hurricane	Total	11	—	—	11, by "Arlington."
1892. 1 Jan.	"Laura Emma," Padstow.	Schooner	99	Cardiff	...	St. John's, Nfld.	Lat. 48°50'N., Long. 34°W., N. Atlantic.	N.W., fresh gale; thick.	Total	5	—	—	5, by steamer "Astraea."
22 Aug.	"Alum bagh," Liverpool.	Barque	1,063	Mnashash, N.B.	...	Liverpool	Lat. 43°24'N., Long. 56°56'W., N. Atlantic.	N.W., hurricane	Total	16	—	—	16, by steamer "La Champagne."
22 Aug.	"Hope," Aberystwith.	Barque	249	Dalhousie, N.B.	...	Portmadoc	About 60 miles S.E. of Cape Race, N. Atlantic.	S.S.E., hurricane; cloudy.	Total	9	—	6	3, by forming a raft, from which they were picked up, after three days, by the schooner "Amelia C." of Lunenburg, N.S.
24 Aug.	"Nevado," provisionally registered as a British vessel at Savannah.	Barque	674	Savannah	...	Barcelona	Lat. 31°50'N., Long. 77°50'W., N. Atlantic.	W., light breeze; fine and clear.	Total	12	2	—	14, by "Harold C. Beecher."
25 Oct.	"Princess Alexandra," Belfast.	Barque	1,281	Belfast	...	St. John, N.B.	Lat. 44°33'N., Long. 36°1'W., N. Atlantic.	W.N.W., strong gale; rainy.	Total	18	1	—	19, by Swedish barque "Jacob Raders."
11 Nov.	"Maggie W. Smith," Ardrossan.	Schooner	133	Labrador	...	Gibraltar	Lat. 47°N., Long. 37°W., N. Atlantic.	N.N.W., whole gale; rain and hail squalls.	Total	6	—	—	6, by "Euclid."
26 Dec.	"Bear Creek," Liverpool.	Steamer	1,573	Amsterdam	...	Philadelphia	Lat. 45°25'N., Long. 34°22'W., N. Atlantic.	Heavy gale	Total	32	—	—	32, by "Æon."
1893. 27 Feb.	"Chislehurst," Swansea.	Barquentine.	439	Port Royal, S. Ca.	...	Nantes	Lat. 34°11'N., Long. 65°W., N. Atlantic.	N.W., hurricane	Total	9	—	—	9, by boarding steamer "Eglantine" of N. Shields in ship's own boat.
3 May	"Magnificent," Liverpool.	Barque	1,283	Barrow	...	Quebec	Lat. 50°49'N., Long. 33°6'W., N. Atlantic.	S.S.W., fresh breeze; clear.	Total	19	—	—	19, by Norwegian barque, "Inga."
21 Nov.	"Bahama," Glasgow.	Barque	2,080	Greenock	...	Philadelphia	About Lat. 51°N., Long. 40°W., N. Atlantic.	S. by W. strong gale.	Total	33	—	—	33, by boarding steamer "State of Nebraska" in ship's own boats.
1894. 30 Jan.	"Chilian," Glasgow.	Steamer	1,415	Norfolk, Va.	...	Liverpool	Lat. 41°26'N., Long. 51°22'W., N. Atlantic.	S.W., whole gale	Total	23	1	—	24, by ship's own boats, afterwards picked up by steamer "Palmas," of Liverpool.
9 Sept.	"Capenhurst," Liverpool.	Barque	587	Miramichi, N.B.	...	Liverpool	Lat. 47°41'N., Long. 38°12'W., N. Atlantic.	Variable; whole gale.	Total	13	—	1	12, by steamer "Maryland."
27 Dec.	"Amaranth," Belfast.	Barque	1,198	St. John, N.B.	...	Dublin	Lat. 49°25'N., Long. 29°36'W., N. Atlantic.	N.W., strong gale	Total	17	—	—	17, by steamer "Madeline."
1895. 23 Nov.	"Madura," W. Hartlepool.	Steamer	1,470	Hamburg	...	Norfolk, Va.	Lat. 43°N., Long. 35°30'W., N. Atlantic.	N., whole gale	Total	27	—	1	26, by own boats; afterwards picked up by "Grace Carter."
1896. 6 Dec.	"Victoria," Fowey.	Brig	174	St. John's, Nfld.	...	Queenstown	Lat. 48°30'N., Long. 21°32'W., N. Atlantic.	N.N.W., moderate breeze; cloudy, heavy seas.	Total	7	—	2	5, by boat of steamer "Damara."
1897. 29 July	"Furtor," London	Steamer	1,404	West Bay, N.S.	...	Barry	Lat. 50°50'N., Long. 35°31'W., N. Atlantic.	S.W., strong gale	Total	21	1 (Stow-away).	—	22, by ship's own boats; afterwards picked up by steamer "Sagamore" of Liverpool.
9 Nov.	"Rutherglen," Glasgow.	Steamer	1,646	New York	...	Plymouth	Lat. 50°N., Long. 18°30'W., N. Atlantic.	S.W., strong gale	Total	27	—	—	27, by ship's own boat and boat of barque "Hermanos," and taken on board "Hermanos."
24 Nov.	"Elite," Goole	Schooner	118	Cadiz	...	St. John's, Nfld.	Lat. 46°30'N., Long. 46°10'W., N. Atlantic.	N.W., whole gale	Total	6	—	1	5, by steamer "Exeter City" of Bristol.
11 Dec.	"Millfield," Whitby.	Steamer	1,410	Baltimore, U.S.A.	...	Belfast	About 220 miles W. of the Fastnet, N. Atlantic.	W.N.W., strong gale.	Total	23	—	—	23, by lifeboat from steamer "Etruria," of Liverpool.
1898. 27 Jan.	"Dago," Sunderland.	Steamer	1,239	Leith	...	Baltimore, U.S.A.	Lat. 42°N., Long. 61°30'W., N. Atlantic.	S.W., strong gale	Total	23	—	—	23, by lifeboat from German steamer "Aller."
31 Jan.	"Rhosina," Cardiff.	Steamer	1,692	New York	...	Cork	Lat. 50°51'N., Long. 29°11'W., N. Atlantic.	S.W. to N.W., strong gale; clear.	Total	25	—	—	25, by lifeboat from steamer "Tabasco."
29 Nov.	"Londonian," Hull.	Steamer	3,614	Boston, Mass.	...	London	Lat. 45°26'N., Long. 15°45'W., N. Atlantic.	N.W., whole gale; cloudy.	Total	46 and 21 cattle-men.	—	17 (including 2 cattle-men).	8, by German steamer "Marie Rickmers," and 45 by steamer "Vedamore" of Liverpool.

(1) FOUNDERINGS—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To				Crew.	Passengers.	Crew.	Passengers.	
1898. 27 Dec.	"Vindobala," London.	Steamer	1,167	Rouen ...	Philadelphia ...	Lat. 50°30'N., Long. 33°30'W., N. Atlantic.	W.N.W., strong breeze; cloudy, heavy seas.	Total	24	—	1	—	8, by own boat, remainder by boat of steamer "Paris," and taken on board "Paris."
1899. 5 Jan.	"Gallina," West Hartlepool.	Steamer	1,135	Philadelphia ...	Moss and Christiania.	Lat. 49°57'N., Long. 26°59'W., N. Atlantic.	S.S.E. to N.W., whole gale.	Total	22	—	—	—	6 by boat of steamer "Charing Cross," and 16 by boat of steamer "Kanawha."
12 Jan.	"Glendower," Leith.	Steamer	1,607	Philadelphia ...	Sligo ...	Lat. 49°23'N., Long. 31°37'W., N. Atlantic.	W.N.W., whole gale.	Total	23	—	—	—	23, by "Menominee."
5 Feb.	"Silver Spray," Stornoway.	Schooner	97	St. John's, Newfoundland.	Oporto ...	Lat. 44°14'N., Long. 46°42'W., N. Atlantic.	N.E., hurricane...	Total	5	—	—	—	5, by lifeboat of steamer "King David," of London.
8 Feb.	"Rossmore," Liverpool.	Steamer	2,897	Liverpool ...	Baltimore, U.S.A.	Lat. 38°46'N., Long. 46°2'W., N. Atlantic.	W.N.W., whole gale.	Total	43 and 9 cattle-men.	—	1	—	9 by steamer "Trojan" of Liverpool, and 42 by the Dutch steamer "Rotterdam."
15 Nov.	"Manchester Enterprise," Manchester.	Steamer	2,514	Manchester ...	Montreal ...	About Lat. 50°25'N., Long. 42°25'W., N. Atlantic.	N.W., moderate gale; clear.	Total	44	9 (cattle-men.)	—	—	53, by boat of steamer "Lakonia."
1901. 12 Aug.	"Romanoff," Belfast.	Barque	994	Belfast ...	Chaleur Bay, N.B.	Lat. 55°N., Long. 12°W., N. Atlantic.	S.W., strong gale; fine and clear.	Total	16	—	—	—	16, by own boats and being picked up by a steamer on the following day.
30 Sept.	"England's Hero," Hull.	Ketch	83	Batteaux, Labrador.	Gibraltar ...	Lat. 49°30'N., Long. 21°10'W., N. Atlantic.	W.S.W., strong gale; clear.	Total	3	—	—	—	3, by boat of Italian steamer "Ida."
16 Dec.	"Lilian," Liverpool.	Brigantine	146	St. John's, Newfoundland.	Carthage ...	Lat. 41°6'N., Long. 43°15'W., N. Atlantic.	S.E., whole gale	Total	8	—	—	—	8, by steamer "Planet Neptune."
1902. 26 Nov.	"Blenheim," London.	Steamer	1,450	Sydney, C. B. ...	Fécamp ...	Lat. 49°38'N., Long. 19°55'W., N. Atlantic.	N.W., fresh gale	Total	23	—	—	—	23, by German steamer "Acilia."
1903. 15 Oct.	"Dione," Plymouth.	Schooner	85	Fogo, Newfoundland.	Figueira, Portugal.	Lat. 50°12'N., Long. 52°35'W., N. Atlantic.	N.E., whole gale; snowstorm.	Total	4	—	1	—	3, by own lifeboat; afterwards picked up by a steamer.
26 Oct.	"Nesta," Beaumaris.	Schooner	98	Cadiz ...	Twillingate, Newfoundland.	Lat. 49°15'N., Long. 30°W., N. Atlantic.	W.N.W., storm; rainy.	Total	5	—	—	—	5, by boats of steamer "St. Dunstan," of Liverpool.
1904. 31 Jan.	"Retriever," Liverpool.	Barquentine.	199	Bowling ...	St. John's, Newfoundland.	Lat. 48°38'N., Long. 33°57'W., N. Atlantic.	Variable, strong gale; rainy.	Total	9	—	—	—	9, by steamer "Adra," of London.
16 Feb.	"Kentigern," Glasgow.	Steamer	1,585	Portland, Maine.	Limerick ...	N. Atlantic (exact position unknown).	—	Total	22	—	—	—	22, own boat, and boat of German steamer "Albano"; and taken on board "Albano."
1905. 12 Jan.	"Earl of Beaconsfield," Plymouth.	Schooner	91	Oporto ...	St. John's, Newfoundland.	Lat. 35°56'N., Long. 39°43'W., N. Atlantic.	N.W., whole gale; thick with rain.	Total	5	—	—	—	5, by boat of ship "Australian."

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1906. 19 Jan.	"Dunmore," Cardiff.	Steamer	2,383	Cardiff ...	Newport News	Lat. 38°N., Long. 60°W., N. Atlantic.	S.W., moderate gale.	Total	27	1	—	—	28, ship's own lifeboats, and afterwards picked up by German steamer "Breslau."
2 Mar.	"City of Gloucester," Whitby.	Steamer	1,573	Huelva ...	New York ...	Lat. 38°13'N., Long. 68°36'W., N. Atlantic.	N.W., hurricane; clear.	Total	25	—	—	—	25, by ship's own boat, and boat of Norwegian barque "Gerd" and being taken on board the "Gerd."
11 Mar.	"British King," Liverpool.	Steamer	3,042	New York ...	Antwerp ...	Lat. 41°40'N., Long. 60°11'W., N. Atlantic.	W.N.W., strong gale.	Total	55 (including 8 cattle-men).	2 stow-aways.	25	—	12 by lifeboat of German steamer "Mannheim," 13 by lifeboat of steamer "Bostonian," 5 by lines from "Bostonian," and 3 by means not stated. (Master died two days later.)
6 Oct.	"Manningtry," W. Hartlepool.	Steamer	1,828	Huelva ...	Philadelphia ...	Lat. 37°51'N., Long. 30°44'W., N. Atlantic.	S. to W., hurricane; fine.	Total	26	—	—	—	26, by ship's own boats, and being taken on board steamer "Vera," of London.
1907. 19 Oct.	"Tampico," Sunderland.	Steamer	1,916	Baltimore ...	Rotterdam ...	Lat. 46°49'N., Long. 32°5'W., N. Atlantic.	N.W., strong gale; rain squall.	Total	27	—	—	—	27, by ship's own boat and boat of steamer "Indiana," and being taken on board "Indiana."

(2) STRANDINGS.

1891. 18 July	"Circe," Glasgow	Steamer	1,518	Glasgow ...	Montreal ...	East Cape, Anticosti Island, Canada.	Calm; thick fog	Total	46	2	5	—	43, by ship's own boats and schooner "Snow Queen."
15 Sept.	"Mondego," Glasgow.	Steamer	1,666	Montreal ...	Hamburg via Dundee.	Marine Cove, Newfoundland.	N.W., moderate gale; thick, with rain and mist.	Total	31 and 11 cattle-men.	—	—	—	42, by ship's own boats.
19 Sept.	"Maud," Bristol	Schooner	140	Harbour Grace, Newfoundland.	Zante ...	Black Island Harbour, Labrador.	N.W., hurricane...	Total	6 and pilot.	1	—	—	8, by ship's own boat and pilot's boat; hauled through the surf by men on shore.
2 Oct.	"Germania," Peterhead.	Schooner	113	Peterhead ...	Sealing Stations in Cumberland Gulf.	About 20 miles N. of Black Lead Island, Cumberland Gulf, Canada.	N., fresh breeze; cloudy and overcast.	Total	8	—	—	—	8, by walking ashore when tide receded.
1 Nov.	"Ottawa," West Hartlepool.	Steamer	1,107	London ...	St. John, N.B., via Halifax.	Blonde Rock, near Seal Island, Nova Scotia.	S.W., fresh gale; drizzling rain.	Total	28	—	1	—	27, by ship's own boats.
28 Dec.	"Salado," Greenock.	Barque	442	Coosaw River...	Port Talbot ...	Port Talbot Bar, Glamorganshire.	S., light air; thick fog.	Total	12	—	—	—	12, by walking ashore when tide receded.
30 Dec.	"Tuskar," London	Steamer	1,554	Savannah ...	Bremerhaven ...	Razende Bol, off New Dieppe, Holland.	W. to W.S.W., fresh; clear.	Total	22	—	—	—	22, by lifeboat from shore.
1892. 13 Jan.	"Prudence," London.	Steamer	1,515	Rouen ...	Philadelphia ...	Broad Cove, Newfoundland.	Calm; thick fog	Total	26	—	—	—	26, by steamer "Kite."
1 July	"City of Chicago," Liverpool.	Steamer	3,364	New York ...	Liverpool ...	Near the Old Head of Kinsale, Co. Cork.	S.E., light air; very thick fog.	Total	153	360	—	—	385 by cliff ladders, 130 by ships' own boats.
3 July	"Peter Stuart," Liverpool.	Ship	1,447	St. John, N.B.	Liverpool ...	Gannet Rock Ledge, near Yarmouth, Nova Scotia.	S.E., whole gale; thick and heavy weather.	Total	25	2	12	2	13, by ship's own boats.
29 July	"Rose of Torridge," Carnarvon.	Schooner	94	St. Ubes, Portugal.	Windsor Harbour, Labrador.	Entrance to Turnavik Harbour, Labrador.	S.W., light breeze; fine and clear.	Total	5	—	—	—	5, by remaining on board. (Vessel taken to harbour and condemned).

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NORTH ATLANTIC CASUALTIES.

Date of Casualty	Name and Port of Vessel	Sail or Steam	Tons (Net)	Voyage.		Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To				Crew.	Passengers.	Crew.	Passengers.	
1892. 10 Oct.	"Maud," Dundee	Steamer	203	Dundee for whaling		Coutts' Inlet, Davis Strait, Canada.	E., strong gale; thick with snow.	Total	37	—	—	—	37, by whaler "Eagle."
1893. 31 July	"Straits of Gibraltar," Glasgow.	Steamer	1,281	Glasgow	Montreal	N.E. of Belle Isle, Canada.	Calm; very foggy	Total	25	—	—	—	25, by ship's own boats; subsequently picked up by cruiser "Fiona."
16 Aug.	"Inflexible," Sunderland.	Steamer	1,489	New York	Newcastle-on-Tyne.	Hiskier Rocks, N. Uist, Hebrides.	—	Total	25	—	—	—	25, by ship's own boats.
18 Sept.	"Ruby," Belfast	Barque	879	Londonderry	Miramichi, N.B.	About 10 miles N.N.W. of lighthouse, S. point of Anticosti, Canada.	S., strong breeze; thick with rain and haze.	Total	16	—	—	—	16, by ship's own boats.
23 Sept.	"Gatineau," Greenock.	Barque	1,165	Chatham, N.B.	Belfast	Lower end of Fox Island, Miramichi Bay, New Brunswick.	N.E., whole gale; thick and stormy.	Total	18	—	—	—	18, taken off by tug.
18 Oct.	"Island Maid," Fowey.	Schooner	150	Domino, Labrador.	Gibraltar	Entrance to Domino River, Labrador.	N.E., moderate breeze; fine.	Total	6	—	—	—	6, by ship's own boat.
20 Dec.	"Guildford," Newcastle-on-Tyne.	Steamer	1,482	Charleston	Reval	Nekman Grund, Gulf of Finland, Russia.	S., moderate; hazy.	Total	23	—	—	—	23, by ship's own boats.
1894. 4 Apr.	"King Alfred," Glasgow.	Steamer	717	Fernandina, Florida.	Bo'ness	Near Stuley Island, Outer Hebrides, Scotland.	S., light breeze; calm and dull	Total	19	—	—	—	19, by salvage steamer "Ranger."
21 Apr.	"Bamboro," Newcastle-on-Tyne.	Steamer	1,279	Palermo	Boston, Mass.	Salvage Rocks, Nova Scotia.	S.W., fresh breeze; thick fog.	Total	22	1	—	—	23, by ship's own boats.
18 May	"Calitro," Sunderland.	Steamer	1,920	Sunderland	Baltimore, U.S.A.	Near Fire Horse Cove, Grates Point, Newfoundland.	S.E., light breeze; dense fog.	Total	27	1	—	—	28, by ship's own boats.
4 June	"Texas," Liverpool.	Steamer	1,834	Montreal	Bristol	Near St. Shott's, Newfoundland.	Calm; thick	Total	35	—	—	—	35, by ship's own boats.
11 Sept.	"Nerito," Sunderland.	Steamer	1,873	Sunderland	Hampton Roads, U.S.A.	Eastern Bar of Sable Island, Nova Scotia.	S.W., light breeze; dense fog.	Total	27	—	—	—	27, by ship's own boats.
10 Oct.	"Chicago," Sunderland.	Steamer	1,538	Rotterdam via Sunderland.	Baltimore, U.S.A.	Near Slains Castle, Aberdeenshire.	S., moderate breeze; thick fog with rain.	Total	25	—	—	—	21 by rocket apparatus; 4 remained on board and subsequently got ashore.
2 Dec.	"The Oakeleys," Carnarvon.	Schooner	147	Harbour Grace, Newfoundland.	Patras, Greece	Near Point Skala, Cephalonia, Greece.	Squally; stormy	Total	6	—	—	—	6, by ship's own boat.
1895. 2 Mar.	"Oakdene," Sunderland.	Steamer	996	Hamburg	Baltimore, U.S.A.	Asateague Island, Virginia, U.S.A.	S.S.E., fresh breeze; dense fog.	Total	20	—	—	—	3, by ship's own boat; 1 by shore lifeboat; 16, by salvage steamer
2 Mar.	"Venetian," Liverpool.	Steamer	2,672	Boston, U.S.A.	London	Near Boston, U.S.A.	S.W., gentle breeze; heavy snowstorm.	Total	about 50	—	—	—	All, by tugs.
23 Mar.	"Belfast," Belfast.	Steamer	1,293	Sapelo, U.S.A.	Moville, Londonderry.	Off Oronsay, Hebrides	S.W., fresh gale; rainy and thick.	Total	22	—	—	—	22, by ship's own boats; 18, in one boat, being afterwards picked up by steamer "Durham City."
22 June	"Ringdove," Greenock.	Barque	399	Youghal	Bersimis, Canada.	Between Metis and St. Flavie, River St. Lawrence, Canada.	E.N.E., strong breeze; very foggy.	Total	10	—	—	—	10, by ship's own boat.
7 July	"Mexico," London.	Steamer	2,055	Montreal	Avonmouth	2½ miles N.W. of Belle Isle Lighthouse, Newfoundland.	W. moderate gale; foggy.	Total	33 and 12 cattle-men.	1	—	—	1, by swimming; 39, by lines; 6, by ship's own boat.
29 July	"Masonic," Whitby.	Steamer	1,560	Swansea	Miramichi	Diamant Point, St. Pierre, Miquelon.	S., light air; thick fog.	Total	23	—	—	—	23, by rocket apparatus constructed and worked by the crew.
14 Aug.	"Dracona," Dundee.	Steamer	1,198	Middlesbrough	Montreal	Jaune Point, Quebec, Canada.	N.W., light breeze; dense fog.	Total	24	8 cattle-men.	—	—	32, by tugboat.
24 Sept.	"Mariposa," Liverpool.	Steamer	3,458	Montreal	Liverpool	St. Clair, Labrador.	Calm; dense fog.	Total	87	32	—	—	119, by hawser from shore.
27 Sept.	"Dalton," Liverpool.	Steamer	1,255	New York	Glasgow	Kilchiaran, W. Coast of Islay, Argyllshire.	N.N.E., light breeze; fog.	Total	29	—	—	—	29, by ship's own boats.
20 Nov.	"Nessmore," Barrow.	Steamer	2,216	Montreal	Liverpool	West Crossapool Bay, Island of Coll, Argyllshire.	S.S.E., heavy gale; thick.	Total	56	—	—	—	56, by ship's own boats.
11 Dec.	"Little Puzzle," Fowey.	Schooner	80	St. John's, Newfoundland.	Vigo	Entrance to Vigo Harbour, Spain.	N., gentle breeze; cloudy.	Total	5	—	—	—	5, by ship's own boat.
1896. 4 Jan.	"Dominion," Liverpool.	Steamer	2,032	Portland, U.S.A.	Avonmouth	West entrance to Castle-town, Co. Cork.	S.E., fresh breeze; hazy.	Total	34 and 10 cattle-men.	—	—	—	34, by remaining on board. (Vessel taken to port and condemned.)
6 Jan.	"Monomoy," Bristol.	Steamer	1,793	New York	Leith	Marwick Bay, Pomona, Orkney.	S.E., light breeze; hazy.	Total	28	—	—	—	5, by ship's own boat; 23, by steamer "Pole Star."
4 Feb.	"Lamington," Glasgow.	Steamer	1,224	Patras	New York	2 miles E. of Blue Point, Long Island, U.S.A.	N.E., fresh breeze; hazy and overcast.	Total	22	2	—	—	24, by U.S.A. life-saving apparatus.
22 May	"Belgravia," Glasgow.	Steamer	3,275	St. John, N.B.	Liverpool	Near entrance to St. John Harbour, N.B.	S.S.W., light breeze; thick fog.	Total	52	2	—	—	54, by remaining on board. (Vessel subsequently condemned.)
22 May	"Glanayron," Aberystwith.	Steamer	1,632	Fernandina, Florida.	Rotterdam	Outer Diamond Shoal, Cape Hatteras, N. Carolina.	S.S.E., fresh breeze; thick haze.	Total	23	—	—	—	23, by lifeboats from Cape Hatteras Station, U.S.A.
15 July	"Tormore," Glasgow.	Steamer	1,698	Cardiff	Halifax N.S.	Powell's Head, Trepassay Bay, Newfoundland.	—, thick...	Total	23	5	—	—	28, by ship's own boats.
15 Oct.	"Palestrina," Sunderland.	Steamer	2,187	Sunderland	Baltimore, U.S.A.	Long Harry Rock, Bay of Bulls, Newfoundland.	S.W., strong breeze; thick fog.	Total	27	—	—	—	27, by ship's own boats.
16 Oct.	"Abbeymoore," South Shields.	Steamer	1,563	Shields	Baltimore, U.S.A.	Renews Island, Newfoundland.	S.E., strong breeze; dense fog.	Total	23	—	—	—	23, by ship's own boats.
17 Nov.	"Memphis," London.	Steamer	2,053	Montreal	Avonmouth	Dunlough Bay, Co. Cork	S., moderate breeze; hazy, thick over land.	Total	33 and 14 cattle-men.	11 (9 crew & 2 cattle-men on articles.)	—	—	30, by ship's own boats; 3 by being taken from rigging by boat from shore. 2, by being lowered on to a rock and rescued by fishermen. Master, by getting ashore on a cattle fitting door.
30 Dec.	"Warwick," Glasgow.	Steamer	1,595	Glasgow	St. John, N.B.	Yellow Murr Ledge, off Grandmannan, New Brunswick.	S.W. by S., strong breeze; overcast.	Total	33 and 19 cattle-men.	—	—	—	52, by ship's own boats; afterwards picked up by schooner "George S. Boutwell."

(2) STRANDINGS—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage		Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To				Crew.	Passengers.	Crew.	Passengers.	
1897.													
20 Jan.	"L'Oriflamme," London.	Steamer	2,129	Philadelphia ...	Rouen ...	Entrance to River Seine, France.	N., moderate breeze; fine and clear.	Total	29 and pilot.	—	—	—	30, by ship's own boats.
23 Jan.	"Little Minnie," Fowey.	Schooner	86	Trapani, Sicily	St. John's, Newfoundland.	Renews Island, Newfoundland.	E.S.E., light breeze; thick heavy snow showers.	Total	5	—	1	—	4, by crawling to land over ice.
9 Feb.	"Angloman," Liverpool.	Steamer	3,036	Boston, U.S.A.	Liverpool ...	West Platter Rocks, Skerries, Anglesey.	S.W., moderate breeze; dense fog.	Total	55 and 27 cattle-men.	—	—	—	74, by shore lifeboats; 8, by means not stated.
5 Apr.	"Assaye," London.	Steamer	3,981	Liverpool ...	St. John, N.B.	Blonde Rock, off Seal Island, Nova Scotia.	S.W., moderate breeze; overcast with rain at intervals.	Total	44, and 16 cattle-men.	3 stow-aways.	—	—	50, by ship's own boats; 13, by lifeboat from shore.
17 July	"Baltimore City," W. Hartlepool.	Steamer	1,534	Montreal ...	Manchester ...	Flat Island, Newfoundland.	S.W., light air; very thick.	Total	25, and 11 cattle-men.	—	—	—	36, by ship's own boats.
25 Aug.	"Attila," Middlesbrough.	Steamer	1,404	Philadelphia ...	Aarhuus ...	Near the Skaw, Denmark.	S., light breeze; fine and clear, slight haze to S.E.	Total	24	1	—	—	25, by ship's lifeboats; afterwards picked up by fishermen.
17 Sept.	"Rhodora," Glasgow.	Steamer	1,698	Boston, Linco.	Delaware Breakwater, U.S.A.	Horn Head, Newfoundland.	S.W., strong breeze; thick fog.	Total	25	—	—	—	25, by ship's own boats; afterwards picked up by coastal steamer "Grand Lake."
26 Dec.	"Harrow," London.	Steamer	1,660	Savannah ...	Bremen ...	Near the South Haaks, Holland.	S.W. by S., moderate gale; clear.	Total	24	—	—	—	24, by lifeboat and surf boat from shore, and taken on board tugs.
1898.													
1 Jan.	"Gerona," Dundee.	Steamer	2,025	Portland, U.S.A.	London ...	Off Seal Island, Nova Scotia.	S.E., moderate breeze; clear.	Total	38, and 18 cattle-men.	—	—	—	56, by ship's own boats.
19 Jan.	"Lord O'Neill," Belfast.	Steamer	1,798	Baltimore, U.S.A.	Dublin ...	Off the Blasquets, co. Kerry.	S.W., fresh breeze; rainy, foggy.	Total	32	—	—	—	32, by ship's own boats; afterwards picked up by steamer "Kinkora."
1 Feb.	"Lady Bertha," Salcombe.	Schooner	93	Alicante, Spain	St. John's, Newfoundland.	Clear's Cove, Newfoundland.	W.S.W., whole gale.	Total	5	—	5	—	—
17 Apr.	"Crofton Hall," Liverpool.	Ship	2,040	Dundee ...	New York ...	Sable Island, Nova Scotia.	S.S.W., strong gale; foggy.	Total	29	—	—	—	29, by ship's own boat.
25 May	"Bernicia," Newcastle-on-Tyne.	Steamer	1,654	Newcastle-on-Tyne.	Montreal ...	Near Cape Ballard, Newfoundland.	N.E., fresh breeze; fog.	Total	27	—	—	—	27, by ship's own boats.
10 June	"Arbela," Liverpool.	Steamer	2,033	Chatham, N.B.	Belfast ...	Near St. Shott's, Newfoundland.	S.W., light breeze; foggy.	Total	25	2	—	—	27, by ship's own boats.
30 July	"Ipsden," W. Hartlepool.	Steamer	1,120	Montreal ...	Plymouth ...	E. point of Belle Amour, Straits of Belle Isle, Labrador.	—	Total	20	1	—	—	21, by ship's own boats.
6 Sept.	"Jane Kelsall," N. Shields.	Steamer	1,180	Philadelphia ...	Copenhagen ...	Near Lister Lighthouse, Norway.	—	Total	21	—	—	—	21, by ship's own boats.
3 Oct.	"Ganges," Dundee.	Steamer	1,430	Montreal ...	Aberdeen, via Newcastle-on-Tyne.	Near Ferrolle Point, Newfoundland.	—	Total	27 and 7 cattle-men.	—	—	—	34, by ship's own boats.
14 Oct.	"Mohegan," Hull	Steamer	4,510	London ...	New York ...	Manacles Rocks, Cornwall.	S.E., strong breeze; clear.	Total	96 and 4 cattle-men.	57	62	44	51, by Porthoustock lifeboat.
15 Nov.	"Bede," London	Steamer	2,101	Norfolk, Va. ...	Hamburg ...	W. end of Mittelgrund, entrance to River Elbe, Germany.	S.W., light air; fog.	Total	28 and pilot.	—	—	—	29, by German tug boat "Terschelling."
23 Nov.	"Winifred," Carnarvon.	Brig	164	Batteau, Labrador.	Genoa ...	Entinas Point, Spain ...	W., fresh breeze; thick and hazy.	Total	7	—	—	—	7, by lines from shore.
30 Nov.	"Scottish King," London.	Steamer	2,148	Antwerp ...	Boston, Mass. ...	Near Seals Cove, Newfoundland.	S.W. moderate gale.	Total	34	—	—	—	34, by ship's own boats and shore boats. (This vessel was got off on 7th June, 1900, and repaired.)
1899.													
1 Mar.	"Labrador," Liverpool.	Steamer	2,998	St. John, N.B.	Liverpool ...	Mackenzie's Rocks, near Skerryvore Lighthouse, W. coast of Scotland.	S.W., moderate breeze; thick and hazy.	Total	94	64	—	—	158, by ship's own boats; one boat reached the lighthouse, and the other boats were picked up by steamer "Viking" of Bergen.
12 Mar.	"Castilian," Glasgow.	Steamer	4,778	Portland, U.S.A.	Liverpool ...	Gannet Dry Ledge, Nova Scotia.	S.W., moderate breeze; fine.	Total	114	50	—	—	164, by tugboat.
12 Mar.	"Oswestry," W. Hartlepool.	Steamer	1,560	Norfolk, Va. ...	Manchester ...	Near Mizen Head, Co. Cork.	W.S.W., light breeze; dense fog.	Total	24	—	—	—	13, by ship's own boats; 11, by line carried ashore by second mate.
14 Aug.	"Croma," Newcastle-on-Tyne.	Steamer	2,071	Dundee ...	New York ...	Swona Island, Orkneys	W., light breeze; dense fog.	Total	28	—	—	—	28, by ship's own boats and shore boats.
22 Sept.	"Scotsman," Liverpool.	Steamer	3,867	Liverpool ...	Quebec ...	N.E. end of Belle Isle, Canada.	S., moderate breeze; fog.	Total	120	279	—	11	388, by ship's own boats.
1 Oct.	"Prodano," Sunderland.	Steamer	1,624	Baltimore, U.S.A.	Leith ...	Wild Cove, St. Mary's Bay, Newfoundland.	S.E., fresh breeze; hazy.	Total	24	—	—	—	24, by ship's own boats.
3 Oct.	"Bay State," Liverpool.	Steamer	4,368	Liverpool ...	Boston, Mass. ...	Cape Ballard, Newfoundland.	S., light breeze; showery.	Total	74	—	—	—	74, by ship's own boats and being taken on board barquentine "Flora," of St. John's, N.F.L.
15 Oct.	"Polar Star," Dundee.	Barque	216	Dundee for whaling.		Lat. 64°10'N., Long. 76°W., Hudson Bay, Canada.	—	Total	33	—	—	—	33, by steamer "Active," of Dundee.
1900.													
20 Jan.	"Sutton," London.	Steamer	1,621	Porman ...	Philadelphia ...	Fenwick Island Shoal, U.S.A.	S.E., moderate breeze; dense fog.	Total	24	—	—	—	24, by ship's own boats.
22 Feb.	"W. H. S.," Plymouth.	Schooner	116	Bay Roberts, Newfoundland.	Patras, Greece	Cape di Faro, Sicily ...	N.W., moderate gale; clear.	Total	6	—	—	—	6, by line from flying boom, held by people on shore.
23 Feb.	"Bath City," Bristol.	Steamer	1,533	New York ...	Bristol ...	Needle Rocks, S.W. end of Lundy Island, Bristol Channel.	W., light breeze; foggy.	Total	27	—	1	—	26, by ship's own boat.
25 June	"Mareotis," Liverpool.	Steamer	2,054	Quebec ...	Liverpool ...	Shoal Point, near Codroy, Newfoundland.	S.E., light breeze; dense fog.	Total	27	—	—	—	27, by ship's own boat.
21 Dec.	"Venus," Carnarvon.	Schooner	100	Fogo, Newfoundland.	Lisbon ...	Entrance to River Tagus	Calm; foggy ...	Total	5	—	—	—	5, by walking ashore when tide receded.

(2) STRANDINGS—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives List.		Number of Survivors and by what means saved.
				From	To				Crew.	Passengers.	Crew.	Passengers.	
1901.													
2 Jan.	"Ivydene," Newcastle-on-Tyne.	Steamer	1,797	Hamburg	Wilmington, N.C.	La Manche Bay, Newfoundland.	Calm; very thick, snow showers.	Total	27	—	1	—	26, by ship's own boats.
5 June	"Assyrian," Liverpool.	Steamer	1,841	Antwerp	Montreal	Near Cape Race, Newfoundland.	W., moderate breeze; dense fog.	Total	34	1	—	—	35, by ship's own boats.
26 June	"Lusitania," Liverpool.	Steamer	2,518	Liverpool	Quebec	Seal Cove, Newfoundland.	S.S.W., moderate breeze; foggy.	Total	95	444	—	—	539, by ship's own boats.
11 Aug.	"Drumalis," Liverpool.	Barque	2,450	Dunkirk	New York	S.W. ledge, near Cape Sable Lighthouse, Nova Scotia.	W., light air; thick fog.	Total	34	2	—	—	36, by ship's own boats.
16 Nov.	"Titania," Liverpool.	Brigantine.	253	Queenstown	St. John's, Newfoundland.	Pound Cove, Trepassy Bay, Newfoundland.	S., fresh gale; dense fog.	Total	8	—	1	—	7, by fishermen's boats.
1902.													
14 Aug.	"Delano," Sunderland.	Steamer	1,920	Rotterdam	Baltimore, U.S.A.	Seal Cove, Newfoundland.	S.S.E., light air; dense fog.	Total	27	—	—	—	27, by ship's own boats.
29 Oct.	"Edward Seymour," Carnarvon.	Barquentine.	176	Cadiz	Gaspé	S. point of Anticosti Island, Canada.	S.W. by S.; heavy gale; foggy.	Total	7	—	1	—	6, by ship's own boat.
1903.													
26 April	"Manchester Market," Manchester.	Steamer	2,650	Manchester	Philadelphia	Gipey Rock, near Tuskar Lighthouse, co. Wexford.	S.E., light breeze; thick fog.	Total	34 and 6 cattle-men.	3 (stow-aways).	—	—	27, by ship's own boat; 5, by Wexford lifeboat; 11, by steamer "Ranger."
14 July	"Monterey," Liverpool.	Steamer	3,489	Montreal	Liverpool and Bristol.	Plate Point, Miquelon Island.	—, foggy	Total	63 and 43 cattle-men.	—	—	—	111, by ship's own boats.
17 Sept.	"Lady Head," London.	Barque	457	Charlton Island, Hudson Bay.	London	Gasket Shoals, Hudson Bay, Canada.	N.E., strong breeze; fog.	Total	Supposed 9.	6	—	—	15, by ship's own boat.
18 Sept.	"Topaze," London	Steamer	1,211	Cardiff	Bonne Bay, Newfoundland.	Ship Rocks, about 3½ miles E. of Port Aux Basques, Newfoundland.	S.W., fresh breeze; dense fog.	Total	22	18	—	—	40, by ship's own boats.
1904.													
27 Sept.	"Loyalist," W. Hartlepool.	Steamer	1,419	St. John, N.B.	London	Drook Point, Trepassy Bay, Newfoundland.	S.W., light breeze; dense fog.	Total	29	—	—	—	29, by ship's own boats.
19 Nov.	"Protector," Cardiff.	Ketch	70	Punchbowl, Labrador.	Seville	Rota Reefs, near Cadiz, Spain.	S.E., moderate gale; very hazy.	Total	4	—	—	—	3, by boats from shore; 1, by swimming.
25 Dec.	"Drumelzier," Liverpool.	Steamer	2,333	New York	Havre	Fire Island Bar, Long Island, U.S.A.	N.E., fresh breeze; snow storm.	Total	30	—	—	—	30, by lifeboats from shore.
1905.													
30 Jan.	"Alba," London	Steamer	2,420	Newport News.	Amsterdam	2 miles S.W. of Zandvoort, Holland.	W.S.W., fresh breeze; little haze.	Total	32 and pilot.	—	—	—	33, by lifeboat from shore.
31 Jan.	"Skidby," W. Hartlepool.	Steamer	2,421	S. Shields	Baltimore, U.S.A.	Sable Island, Nova Scotia	S.W., light breeze; foggy.	Total	26	—	—	—	26, by walking ashore.
1906.													
5 Mar.	"Knarebro," W. Hartlepool.	Steamer	2,019	Baltimore, U.S.A.	Svendborg	Borbiere, Denmark	W., moderate breeze; dense fog.	Total	26	—	—	—	26, by lifeboats from shore.
18 May	"Morena," Leith	Steamer	796	Middlesbrough	Toronto	Brandies Rocks, near Cape Ray, Newfoundland.	Clear	Total	19	—	—	—	19, apparently by own boats.
9 June	"Etolia," Liverpool.	Steamer	2,078	St. John, N.B.	Barrow	½ mile S. of Cape Sable Light, Nova Scotia.	—	Total	38	—	—	—	All, means not stated.
8 July	"Harlyn," W. Hartlepool.	Steamer	929	Trapani, Sicily	Gloucester, Mass.	Black Point, Shelburne, Nova Scotia.	Calm; dense fog	Total	19	—	—	—	19, by ship's own boats.
31 July	"Cyril," Cardiff	Steamer	1,469	St. John, N.B.	Swansea	Pigeon Cove, 8 miles W. of Cape Race, Newfoundland.	S., light breeze; dense fog.	Total	22	—	—	—	22, by steam whaler "Avalon."
29 Oct.	"Elixir," W. Hartlepool.	Steamer	1,461	Hamburg	Charleston	Black Head Rock, near Cape Ballard, Newfoundland.	S. S. W., light breeze; hazy.	Total	22	—	—	—	22, by ship's own boats.
29 Oct.	"Serbury," W. Hartlepool.	Steamer	2,469	Baltimore, U.S.A.	Copenhagen	Homborgsund, Norway	S.E., strong gale; slightly hazy.	Total	26	—	—	—	26, by being transferred to tug towing steamer.
1907.													
25 June	"Windward," Dundee.	Steamer	157	Dundee	for whaling	About 2 miles S.W. of Carey's Island, Davis Strait.	Calm; dense fog	Total	37	—	—	—	37, by ship's own boats.
14 Aug.	"Micmac," Glasgow.	Steamer	1,600	St. John, N.B.	Liverpool	Broad Cove, St. Mary's Bay, Newfoundland.	S.W., light air; thick fog.	Total	24	4	—	—	28, by ship's own boats.
20 Aug.	"Mary Jane," London.	Ketch	71	Cadiz	Bradore, Labrador.	W. of Pinware Bay, afterwards ½ mile W. of Point Amour, Labrador.	W. by N., moderate breeze; thick fog.	Total	4	—	—	—	4, by ship's own boat.
14 Dec.	"Kildona," Dundee.	Steamer	2,349	N. Shields	Portland, U.S.A.	Brazil Rock, Nova Scotia.	W. to W.N.W., moderate breeze; clear.	Total	38	—	—	—	38, by steamer "Louisburg."
1908.													
4 Jan.	"Housatonic," London.	Steamer	2,575	Barrow	New York	Russel Rock, or between Russel and Allen Rocks, Maidens Rocks, Co. Antrim.	S.E., moderate breeze; slight haze.	Total	34	—	2	—	32, by ship's own boats.
13 Feb.	"Roda," London	Steamer	1,587	Huelva	New York	Jones Beach, Long Island, U.S.A.	—, rainy, thick...	Total	26	—	—	—	26, by surf boat.
18 Sept.	"Snowdrop," Scarborough.	Ketch	63	Sukertoppen, Greenland.	Dundee, via Signain.	Countess of Warwick Sound, Frobisher Strait, Canada.	E.S.E., whole gale; snow.	Total	9 and 15 Esquimaux.	28	—	—	52, by getting ashore on ground ice.
9 Oct.	"Stork," London	Barque	479	Charlton Island, Hudson Bay.	London	Lisbon Shoals, James Bay, Hudson Bay, Canada.	W., strong gale; heavy snow.	Total	19	3	—	—	22, by ship's own boats.
1909.													
10 June	"Slavonia," Liverpool.	Steamer	6,725	New York	Gibraltar	S. end of Flores Island, Azores.	S.E., light breeze; misty.	Total	225	373	—	—	About 70 by a line from ship to shore; remainder, about 528, by ship's own boats and boats from shore.
6 Sept.	"Laurentian," Glasgow.	Steamer	2,837	Boston, U.S.A.	Glasgow	Mistaken Point, Newfoundland.	S., moderate breeze; foggy.	Total	113	51	—	—	164, by ship's own boats.
25 Oct.	"Hestia," Glasgow.	Steamer	2,434	Glasgow	St. John, N.B.	Old Proprietor Ledges, Grand Manan, New Brunswick.	E.N.E., strong breeze; thick rain.	Total	37	4	33	2	6, by boats from shore.

(2) STRANDINGS—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To				Crew.	Passengers.	Crew.	Passengers.	
1910. 7 May	"Normandy," London.	Steamer	1,093	Middlesbrough	Toronto and Halifax.	Near Great Island, Newfoundland.	S.W., fresh gale; dense fog.	Total	19	8	—	—	27, by ship's own boats.

(3) COLLISIONS.

1892. 7 Jan.	"Crystal," Newcastle-on-Tyne.	Steamer	1,708	Newcastle-on-Tyne.	New York ...	Near the South Pier, entrance to River Tyne.	W., moderate breeze; hazy.	Total	27	—	—	—	27, by ship's own boat and boat of tug "Gauntlet."
1893. 30 Dec.	"Cyphrenes," Liverpool.	Steamer	1,309	Savannah ...	Liverpool ...	Off the banks of Newfoundland, N. Atlantic.	Hazy ...	Total	27	—	—	—	27, by colliding steamer "La Flandre."
1894. 28 Mar.	"Yesso," Sunderland.	Steamer	1,381	Newport, Mon.	Baltimore, U.S.A.	7 miles N.N.E. of Little Hangman Hill, near Ilfracombe, Devonshire.	E., gentle breeze; fine and clear.	Total	25	2 stow-aways.	2	1, a stow-away.	2, by swimming to colliding ship "Lizzie R. Wilce"; 5, by boat of that vessel; 17, by ship's own boat and being picked up by "Lizzie R. Wilce."
1 Oct.	"Allegheny," London.	Steamer	1,911	Philadelphia ...	Bergen ...	Delaware Bay, U.S.A. ...	N.N.E., gentle breeze; fine.	Total	30, and pilot.	—	—	—	31, by colliding steamer "Caucase," of Belgium.
1898. 6 Jan.	"Lepanto," Hull	Steamer	1,489	Boston, Mass ...	Hull ...	Off Hastings, Sussex ...	W.S.W., light air; dense fog.	Total	32	—	—	—	32, by ship's own boats and boat from colliding steamer "Knight of St. George," and being taken on board that vessel.
27 May	"Foscalia," London.	Steamer	980	New York ...	Bordeaux ...	Lat. 40°26' N., Long. 73°21' W., N. Atlantic.	Variable light airs; thick fog.	Total	21	—	—	—	21, by ship's own boats and being taken on board colliding vessel U.S. cruiser "Columbia."
23 Dec.	"Idaho," Hull ...	Steamer	3,872	Hull ...	New York ...	Entrance to New York Harbour.	W., light breeze; foggy.	Partial	60, and 6 cattle-men.	—	1	—	65, by remaining on board.
1900. 1 Oct.	"Biela," Liverpool.	Steamer	1,374	New York ...	Manchester ...	Lat. 40°9' N., Long. 71° W., N. Atlantic.	E.N.E., light breeze; dense fog.	Total	30	3	—	—	33, by ship's own boats, and being taken on board colliding steamer "Eagle Point," of Liverpool.
21 Nov.	"Numidian," Glasgow.	Steamer	3,107	Liverpool ...	Portland, Maine	Lat. 43°10' N., Long. 65°28' W., N. Atlantic.	S.W., fresh breeze; overcast.	Partial	80	—	2	—	78, by remaining on board.
1902. 28 Mar.	"Holyrood," Glasgow.	Steamer	1,735	Portland, Maine	London ...	Lat. 49°24' N., Long. 10°19' W., N. Atlantic.	N., light air; hazy with fog banks.	Total	25	—	—	—	25, by ship's own boats and boats from colliding steamer "Bernard Hall," of Liverpool.
1903. 18 Jan.	"Georgio," Liverpool.	Steamer	6,570	New York ...	Liverpool ...	Lat. 46°12' N., Long. 45°57' W., N. Atlantic.	W.S.W., moderate breeze; misty.	Partial	106	—	1	—	105, by remaining on board.
21 Feb.	"Martello," Hull	Steamer	2,417	New York ...	Hull ...	Near the Newarp Lighthouse, off Norfolk.	S.S.W., moderate breeze; clear.	Partial	40 and Pilot.	—	1 (crew).	—	40, by remaining on board.

1904. 9 Nov.	"Dorothy," Carnarvon.	Steamer	122	Black Tickle Labrador.	Gibraltar for orders.	About 5 miles S.S.W. of Cape Spartel, N. Atlantic.	E.S.E., fresh breeze; fine and clear.	Total	6	—	—	—	6, by ship's own boat and being taken on board colliding steamer "Adana," of Liverpool.
1906. 10 May	"Ottawa," Liverpool.	Steamer	2,991	Montreal ...	Liverpool ...	Lat. 48°37' N., Long. 62°48' W., Gulf of St. Lawrence.	—, light air; thick fog.	Partial	149	141	1	—	289, by remaining on board.
20 May	"Latona," Dundee.	Steamer	2,708	Montreal ...	London ...	7 miles S. & E. of St. Agnes Lighthouse, Scilly.	N.N.E., light air; dense fog.	Total	45 and 12 cattle-men.	4 and 3 stow-aways.	—	—	64, by ship's own boats and being taken on board colliding steamer "Japanic," of Sunderland.
18 Dec.	"Daghestan," Sunderland.	Steamer	2,212	New York ...	Marseilles ...	Entrance to New York Harbour.	N.N.E., strong breeze; foggy.	Total	30	—	—	—	30, by ship's own lifeboats.
1909. 23 Jan.	"Republic," Liverpool.	Steamer	9,742	New York ...	Gibraltar and Mediterranean Ports.	Lat. 40°17' N., Long. 70° W., N. Atlantic.	W.S.W., moderate breeze; foggy.	Total	291	416	—	3	A number of the crew and 444 passengers proceeded in ship's own boats to the "Florida" (the colliding vessel) and were afterwards transferred to the "Baltic." Remaining members of the crew were subsequently taken on board U.S.A. revenue cutter "Gresham" and transferred to U.S.A. derelict destroyer "Seneca." (Two passengers died from injuries at time of collision and a third died later on from injuries received.)

(4) OTHER CAUSES.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Nature of Casualty.	Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To					Crew.	Passengers.	Crew.	Passengers.	
1891. 11 July	"Polynia," Dundee.	Steamer	359	Dundee ...	For whaling	Crushed by ice	Off Cape Crawford, Lancaster Sound, Baffin Bay.	N.E., strong gale; thick fog.	Total	47	—	—	—	47, by taking to the ice and afterwards going on board the whalers "Maud" and "Aurora," of Dundee.
22 July	"Syringa," Liverpool.	Barque	569	Philadelphia	Vigo ...	Burnt ...	Delaware Bay, U.S.A.	E.S.E., moderate breeze; fine.	Total	11	4	—	—	15, by ship's own boats.
18 Dec.	"Abyssinia," London.	Steamer	2,346	New York ...	Liverpool ...	Burnt; cotton cargo caught fire.	Lat. 47° N., Long. 44° W., N. Atlantic.	N.W., moderate breeze; snow squalls.	Total	88	59	—	—	147, by ship's own boats and boats of German steamer "Spree."
31 Aug.	"James Turpie," N. Shields.	Steamer	1,082	New York ...	Malmö, Sweden.	Lifeboat damaged by heavy sea.	Lat. 51°1' N., Long. 26°13' W., N. Atlantic.	W.N.W., hurricane; rainy.	Partial	20	—	2	—	18, by remaining on board.
7 Sept.	"Cuvier," Liverpool.	Steamer	1,452	New York ...	Antwerp ...	Decks swept ...	About Lat. 40°15' W., Long. 69°15' W., N. Atlantic.	S.E., storm; overcast.	Partial	31	1 stow-away.	1	—	31, by remaining on board.

(4.) OTHER CAUSES—continued.

Date of Casualty	Name and Port of Vessel	Sail or Steam	Tons (Net)	Voyage.		Nature of Casualty	Place of Casualty	State of Wind and Weather at time of Casualty	Total or Partial Loss of Vessel	Persons on board at time of Casualty		Lives Lost		Number of Survivors and by what means saved.
				From	To					Crew	Passengers	Crew	Passengers	
1891.														
7 Sept.	"Lepanto," Hull.	Steamer	1,489	New York ...	Antwerp ...	Decks swept ...	N. Atlantic. ...	Hurricane ...	Partial	32	—	2	—	30, by remaining on board.
6 Oct.	"Critio," Newcastle-on-Tyne.	Steamer	1,701	New York ...	Leith ...	Bridge damaged, &c.	About Lat. 53°30'N., Long. 31°W., N. Atlantic.	N.W., strong gale; clear.	Partial	27	—	1	—	26, by remaining on board.
12 Oct.	"Briggella," Newcastle-on-Tyne.	Steamer	1,234	Baltimore, U.S.A.	Barrow ...	Decks swept ...	Lat. 37°N., Long. 74°W., N. Atlantic.	N.E., hurricane	Partial	25	2	1	—	26, by remaining on board.
14 Oct.	"Moray," Leith	Steamer	1,411	New York ...	Glasgow ...	Decks swept ...	Lat. 40°N., Long. 72°W., N. Atlantic.	N.E., whole gale.	Partial	40	—	1 (a last-car).	—	39, by remaining on board.
14 Nov.	"Nessmore," Barrow.	Steamer	2,216	London ...	Boston, Mass.	Decks swept, &c.	About Lat. 49°N., Long. 50°W., N. Atlantic.	N.N.E., hurricane.	Partial	38	—	1	—	37, by remaining on board.
18 Dec.	"Iona," W. Hartlepool.	Steamer	1,318	West Hartlepool.	Delaware Breakwater	Accident to machinery.	Lat. 47°50'N., Long. 31°10'W., N. Atlantic.	W.S.W., strong breeze; overcast.	Partial	24	—	—	—	While a boat was being launched to speak the "Spee" it capsized and 5 of the crew were thrown into the water; all were picked up, but one man was found to be dead. Two were picked up by the steamer "Spee."
29 Dec.	"Rubinstein," Sunderland.	Steamer	1,579	Sunderland	Baltimore, U.S.A.	Wheel-c's carried away.	About 90 miles W. of the Butt of Lewis, N. Atlantic.	W., very strong; dark, snowing.	Partial	24	—	1	—	23, by remaining on board.
1892.														
14 July	"Chieftain," Dundee.	Steamer	107	Dundee, for whaling.		Damaged by ice—abandoned.	Lat. 73°30'N., Long. 11°40'W., Arctic Ocean.	Light breeze; foggy.	Total	36	—	—	—	18, by the "Bolsena" and 18 by the "Diana."
4 Nov.	"Norcross," Fleetwood.	Barque	897	Philadelphia	Rouen ...	Explosion of petroleum.	Near Honfleur, River Seine, France.	N.E., light breeze; clear.	Total	15 and pilot.	1	9	—	9, picked up from the water by boats from tug, and the "Mabel." One subsequently died.
14 Nov.	"Cubana," London.	Barque	499	Tilt Cove, Newfoundland.	Swansea ...	Leaky, &c.; abandoned. Afterwards picked up derelict and condemned.	About Lat. 51°20'N., Long. 32°40'W., N. Atlantic. Afterwards towed into Kirkwall.	S.W., whole gale.	Total	11	—	—	—	11, by own boat; afterwards picked up by steamer "Angloman."
21 Nov.	"Lunedale," Sunderland.	Steamer	1,045	Philadelphia	Copenhagen	Accident to machinery; vessel abandoned.	Lat. 52°37'N., Long. 26°20'W., N. Atlantic.	E.S.E., fresh gale.	Total	24	—	—	—	24, by ship's own boat; afterwards picked up by steamer "Cynthiana."
21 Jan.	"Sir Francis Drake," Plymouth.	Steamer	1,119	Philadelphia	Leith ...	Steering gear disabled, &c.	Lat. 38°52'N., Long. 66°38'W., N. Atlantic.	N.N.E., fresh gale; clear.	Partial	21	—	1	—	20, by remaining on board.
27 Jan.	"Bedouin," Liverpool.	Steamer	1,234	New York ...	Leith ...	Decks swept ...	Lat. 57°40'N., Long. 11°20'W., N. Atlantic.	W.N.W., whole gale; clear.	Partial	28	—	1	—	27, by remaining on board.
27 Jan.	"Mandalay," Glasgow.	Steamer	1,243	Baltimore, U.S.A.	Antwerp ...	Rails, deck fittings and cargo damaged.	Lat. 36°10'N., Long. 67°W., N. Atlantic.	N.W., whole gale.	Partial	24	—	1	—	23, by remaining on board.
1 Feb.	"Bushmills," Belfast.	Steamer	1,589	Philadelphia	Rotterdam ...	Cargo shifted, &c.	About 300 miles E. of Delaware Lightship, North Atlantic.	N.E., fresh gale; overcast.	Partial	28	—	2	—	26, by remaining on board.
1 Feb.	"Durham City," West Hartlepool.	Steamer	2,037	Boston, Mass.	London ...	Rail and ventilators damaged.	Lat. 50°11'N., Long. 7°56'W., N. Atlantic.	W.N.W., whole gale; overcast.	Partial	31 and 23 cattle-men.	—	1	—	53, by remaining on board.
6 Feb.	"Elvaston," London.	Steamer	1,367	Baltimore, U.S.A.	Leith ...	Decks swept ...	Lat. 42°36'N., Long. 51°15'W., N. Atlantic.	N.W., hurricane; overcast.	Partial	24	—	1	—	23, by remaining on board.
27 Aug.	"Bidar," Liverpool.	Steamer	1,891	Philadelphia	Bristol ...	Decks swept, loss of cattle, &c.	Lat. 46°N., Long. 39°40'W., N. Atlantic.	N.W., storm, hail and rain.	Partial	33 and 8 cattle-men.	—	1	—	40, by remaining on board.
28 Sept.	"Bayonne," London.	Steamer	2,154	Philadelphia	Bristol ...	Damaged by fire caused by leakage of petroleum.	About 90 miles W. of Lundy Island, St. George's Channel.	W.N.W., moderate breeze.	Partial	41	—	2	—	39, apparently in no risk. (Some of crew took to boats, it is alleged, without orders. One of the boats capsized, two of the men being drowned.)
8 Dec.	"Erin's Isle," Liverpool.	Ship	1,715	New York ...	Liverpool ...	Breaking of lift bolt.	About Lat. 40°N., Long. 41°W., N. Atlantic.	Calm ...	Partial	22	—	2	—	20, by remaining on board.
23 Dec.	"Glengoil," Leith.	Steamer	1,915	Norfolk, Va.	Liverpool ...	Decks swept ...	Lat. 45°50'N., Long. 38°10'W., N. Atlantic.	W.N.W., storm; clear.	Partial	30	—	1	—	29, by remaining on board.
24 Dec.	"William Anning," Cardiff.	Steamer	1,450	Baltimore, U.S.A.	Bordeaux ...	Decks swept ...	Lat. 38°N., Long. 65°W., N. Atlantic.	N.W., whole gale; very bad.	Partial	20	—	2	—	18, by remaining on board.
1893.														
27 Feb.	"Adamantine," Liverpool.	Barquentine.	216	St. John's, Newfoundland.	Liverpool ...	Crushed by ice	Lat. 47°24'N., Long. 47°30'W., N. Atlantic.	W.N.W., moderating gale.	Total	9	—	—	—	9, by ship's own boats and being picked up by steamer "Delano."
27 Mar.	"Castlegate," Liverpool.	Steamer	1,146	Dantzic ...	Philadelphia	Damaged by ice; abandoned.	Lat. 48°N., Long. 47°30'W., N. Atlantic.	N.W., light breeze; fine.	Total	24	—	—	—	24, by ship's own boats and afterwards being picked up by steamer "Diana," of St. John's, N.F.L.
25 Sept.	"Zimi," Cardiff...	Barque	943	Quebec ...	Cardiff ...	Leaky; condemned.	South of the Island of St. Pierre, Miquelon.	From N. to S., whole gale; thick with rain.	Total	17	—	—	—	17, by remaining on board.
18 Jan.	"Bolivia," Barrow.	Steamer	2,561	New York ...	Glasgow ...	Ventilator carried away.	Lat. 42°20'N., Long. 60°15'W., N. Atlantic.	N.E., whole gale.	Partial	59	68	1	—	126, by remaining on board.
4 Feb.	"Glenmorven," Leith.	Steamer	1,803	Newport, Mon.	Philadelphia	Decks swept ...	Lat. 47°N., Long. 48°W., N. Atlantic.	W., hurricane...	Partial	31	—	1	—	30, by remaining on board.

(4) OTHER CAUSES—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Nature of Casualty.	Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To					Crew.	Passengers.	Crew.	Passengers.	
1893.														
4 Feb.	"Pomeranian," Glasgow.	Steamer	2,832	Glasgow ...	New York ...	Decks swept ...	Lat. 47°N., Long. 35°40'W., N. Atlantic.	W.N.W., strong gale, squally, with hail.	Partial	55 and 14 cattle-men.	45	7	5	102, by remaining on board.
5 Feb.	"Elton," W. Hartlepool.	Steamer	1,596	Newport News.	Hull ...	Ventilator, &c., carried away	Lat. 38°50'N., Long. 57°50'W., N. Atlantic.	S.W., strong gale; dark, but clear.	Partial	23	—	1	—	22, by remaining on board
17 Feb.	"Inchgarvie," Liverpool.	Steamer	1,706	Newport News.	Antwerp ...	Accident to machinery.	N. Atlantic ...	—	Partial	29	—	1	—	28, by remaining on board.
22 Feb.	"Ashfield," Stockton-on-Tees.	Steamer	1,007	Coosaw, S. Ca.	Birkenhead	Decks swept, &c.	Lat. 39°18'N., Long. 64°40'W., N. Atlantic.	W.S.W., heavy gale, very stormy.	Partial	19	1	1	—	19, by remaining on board
1 May	"Lord Temple-town," Belfast.	Barque	2,093	London ...	Philadelphia	Loss of sail, yard, &c.	About Lat. 44°39'N., Long. 45°19'W., N. Atlantic.	W.N.W., hurricane; hazy.	Partial	34	6	9	—	31, by remaining on board
14 May	"Llandaff City," Bristol.	Steamer	1,259	Swansea ...	New York ..	Bridge damaged.	Lat. 46°51'N., Long. 37°31'W., N. Atlantic.	N., moderate gale, squally.	Partial	30	1	1	—	30, by remaining on board.
10 Aug.	"Coronilla," N. Shields.	Steamer	822	Messina ...	Boston, U.S.A.	Top-sail brace gave way.	Lat. 38°44'N., Long. 8°22'E., Mediterranean.	—	Partial	21	—	1	—	20, by remaining on board.
28 Sept.	"Brazilian," Glasgow.	Steamer	2,085	London ...	Quebec ...	Cattle - stalls carried away, &c.	Lat. 53°45'N., Long. 33°35'W., N. Atlantic.	N.W., whole gale.	Partial	37 and 8 cattle-men.	—	1	—	44 by remaining on board
24 Nov.	"Ross-shire," Glasgow.	Steamer	1,362	Hamburg ...	Philadelphia	Decks swept, &c.	Near the American Coast, N. Atlantic.	Variable, stormy	Partial	22	—	1	—	21, by remaining on board.
11 Dec.	"Fonar," London	Steamer	1,976	Philadelphia	London ...	Port lifeboat and bridge ladder damaged.	Lat. 39°20'N., Long. 66°9'W., N. Atlantic.	W.N.W., fresh gale; overcast.	Partial	43	—	1	—	42, by remaining on board.
1894.														
18 Apl.	"Valetta," W. Hartlepool.	Steamer	874	Penarth ...	St. John's, Newfoundland.	Damaged by ice, abandoned.	Lat. 47°35'N., Long. 51°12'W., N. Atlantic.	E.N.E., fresh breeze; overcast and dark.	Total	20	—	—	—	20, by ship's own boats, afterwards being picked up by Norwegian barque "Liberté."
25 Apl.	"Ruth Palmer," Belfast.	Barque	906	Belfast ...	Miramichi, N.B.	Collision with an iceberg.	Lat. 45°23'N., Long. 55°W., N. Atlantic.	S.W., dense fog	Total	15	—	—	—	15, by ship's own boats and being picked up next day by French schooner "Marie Gabrielle."
3 Jan.	"Glenfruin," Glasgow.	Steamer	1,892	New York ...	London ...	Boats damaged, &c.	Lat. 50°21'N., Long. 14°50'W., N. Atlantic.	E., strong gale; overcast.	Partial	55	—	1	—	54, by remaining on board.
4 Jan.	"Broomhall," Dundee.	Barque	1,338	Hamburg ...	New York ...	Lining of deck-house gave way.	Lat. 60°N., Long. 15°W., N. Atlantic.	—	Partial	25	—	1	—	24, by remaining on board
11 Jan.	"Derwent Holmes," Maryport.	Steamer	1,331	New York ...	Newcastle-on-Tyne.	Bridge carried away and deck swept.	Lat. 55°38'N., Long. 21°35'W., N. Atlantic.	S.W., hurricane; cloudy.	Partial	22	—	2	—	20, by remaining on board.
17 Jan.	"Etruria," Liverpool.	Steamer	3,690	Liverpool ...	New York ...	Upper bridge, rails, and stanchions carried away.	Lat. 48°6'N., Long. 41°10'W., N. Atlantic.	W., whole gale	Partial	About 270	About 200	1	—	About 469, by remaining on board.
31 Jan.	"Aspatia," West Hartlepool.	Steamer	1,336	Newport News.	Hamburg ...	Decks swept, rudder carried away, &c.	Lat. 40°N., Long. 62°W., N. Atlantic.	W.N.W., heavy gale; cloudy and very stormy.	Partial	27	—	1	—	26, by remaining on board.
27 Feb.	"Glengoil," Leith	Steamer	1,915	Charleston, S. Ca.	Bremerhaven	20 feet of main rail carried away.	Lat. 38°25', Long. 53°51'W., N. Atlantic.	S.W., strong gale; clear.	Partial	29	—	1	—	28, by remaining on board.
23 Mar.	"Alma," Sunderland.	Steamer	1,563	Leith ...	Baltimore, U.S.A.	Cabin skylights broken.	Lat. 42°23'N., Long. 44°53'W., N. Atlantic.	—	Partial	29	—	1	—	23, by remaining on board.
23 Mar.	"Greenbrier," West Hartlepool.	Steamer	1,819	London ...	Newport News.	Decks swept, &c.	Lat. 45°11'N., Long. 30°30'W., N. Atlantic.	S.W., stormy; cloudy.	Partial	35	9	2	—	42, by remaining on board.
14 Apl.	"Menantic," Bristol.	Steamer	1,934	Baltimore, U.S.A.	London ...	Decks swept ...	Lat. 38°20'N., Long. 68°50'W., N. Atlantic.	N., strong gale.	Partial	30 and 10 cattle-men.	—	1	—	39, by remaining on board.
30 Sept.	"Terrier," London.	Brig	114	Gaulthois, Newfoundland.	Oporto ...	Damaged by heavy sea.	Lat. 41°44'N., Long. 40°30'W., N. Atlantic.	N.W. to N.W. by N., fresh gale; cloudy and rain.	Partial	10	—	1	—	9, by remaining on board.
16 Nov.	"Lilian," Liverpool.	Barquentine.	146	St. John's, Newfoundland.	Oporto ...	Decks swept, &c.	Lat. 46°20'N., Long. 38°W., N. Atlantic.	Hurricane ...	Partial	8	—	1	—	7, by remaining on board.
24 Nov.	"Potomac," London.	Steamer	2,472	Liverpool ...	New York ...	Poop deck and ladders started.	Lat. 49°N., Long. 38°W., N. Atlantic.	N.W., hurricane; squally and overcast.	Partial	42	—	1	—	41, by remaining on board.
13 Dec.	"Haxby," West Hartlepool.	Steamer	2,252	Savannah ...	Liverpool ...	Decks swept ...	Lat. 54°17'N., Long. 13°47'W., N. Atlantic.	S.W., hurricane; stormy.	Partial	25	—	1	—	24, by remaining on board.
1895.														
20 Nov.	"Principia," London.	Steamer	1,790	Newcastle-on-Tyne.	New York ...	Burnt ...	Off the Faroe Islands, N. Atlantic.	S.S.W., fresh gale; rainy.	Total	28	—	27	—	1, by getting on to a plank and being picked up by a boat at Faroe.
3 Jan.	"Petriana," London.	Steamer	1,181	Philadelphia	Rouen ...	Damaged by heavy seas.	Lat. 49°46'N., Long. 10°45'W., N. Atlantic.	N.N.W., strong gale; clear and squally.	Partial	23	—	1	—	22, by remaining on board.
24 Jan.	"Acanthus," Glasgow.	Steamer	1,877	New York ...	Liverpool ...	Decks swept ...	Lat. 51°N., Long. 15°W., N. Atlantic.	N.W., whole gale; very stormy.	Partial	31	—	2	—	29, by remaining on board.
8 Mar.	"Roehampton," London.	Steamer	1,391	Brunswick, Georgia, U.S.A.	Harburg ...	Lifeboat broke away.	Lat. 47°13'N., Long. 27°4'W., N. Atlantic.	W.N.W., moderate breeze; cloudy.	Partial	23	—	1	—	22, by remaining on board.
10 Mar.	"Glanhafren," Aberystwith.	Steamer	1,451	Huelva ...	Newport News.	Bridge, hatches, &c., damaged.	40 miles W. of Cape St. Vincent, N. Atlantic.	N.W., whole gale; clear.	Partial	22	—	1	—	21, by remaining on board.
13 Oct.	"Scottish Hills," Liverpool.	Ship	1,994	Hull ...	New York ...	Weather sheet parted.	Lat. 43°16'N., Long. 36°W., N. Atlantic.	N, fresh gale	Partial	31	—	1	—	30, by remaining on board.

(4) OTHER CAUSES—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Nature of Casualty.	Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To					Crew.	Passengers.	Crew.	Passengers.	
1895. 13 Dec.	"Belfast," Liverpool.	Ship	1,810	Bremerhaven	New York ...	Halyards of upper fore-top-sail yard parted.	Off the Weser Light-ship, Germany.	Heavy sea ...	Partial	30	—	1	—	29, by remaining on board.
14 Dec.	"Peterston," Cardiff.	Steamer	1,791	Penarth ...	Newport News.	Rail damaged, &c.	Lat. 49°20'N., Long. 21°19'W., N. Atlantic.	W.N.W., hurricane; clear.	Partial	23	—	1	—	22, by remaining on board.
1896. 19 Aug.	"Moldava," London.	Steamer	1,477	Cardiff ...	Halifax, N.S.	Damaged by ice; abandoned—sinking.	Lat. 47°55'N., Long. 49°19'W., N. Atlantic.	Variable, light air; foggy.	Total	23	—	—	—	23 ship's own boats; afterwards picked up by steamship "Circassia" of Glasgow.
24 Jan.	"Ailsawald," Newcastle-on-Tyne.	Steamer	1,881	Hamburg ...	Philadelphia	Decks swept ...	Lat. 40°5'N., Long. 70°28'W., N. Atlantic.	E., strong gale; rain and snow.	Partial	24	—	1	—	23, by remaining on board.
9 Feb.	"Mississippi," London.	Steamer	2,388	New York ...	London ...	Decks swept ...	Lat. 48°N., Long. 33°40'W., N. Atlantic.	S.S.W., strong gale; cloudy.	Partial	45 and 33 cattlemen.	2	1 (cattlemen on articles)	—	80, by remaining on board.
12 Feb.	"Lisleham," New- castle-on-Tyne.	Steamer	1,263	Baltimore, U.S.A.	Stettin ...	Decks swept ...	Lat. 40°N., Long. 36°W., N. Atlantic.	W., hurricane; rainy.	Partial	22	—	1	—	21, by remaining on board.
3 Mar.	"Montank," Liverpool.	Steamer	1,944	New York ...	Rotterdam ...	Decks swept ...	Lat. 48°40'N., Long. 21°W., N. Atlantic.	N.W., whole gale; clear.	Partial	25	—	1	—	24, by remaining on board.
9 Apr.	"Majestic," Liverpool.	Steamer	4,238	New York ...	Liverpool ...	Whaleback, stanchions, beams, &c., broken.	N. Atlantic.	N., heavy gale	Partial	360	548	1	—	907, by remaining on board.
9 July	"Tormore," Glasgow.	Steamer	1,076	Cardiff ...	Halifax, N.S.	Flying bridge carried away.	Lat. 50°55'N., Long. 36°8'W., N. Atlantic.	W.S.W., whole gale; hazy.	Partial	23	6	1	—	28, by remaining on board.
8 Oct.	"Germanic," Liverpool.	Steamer	2,989	New York ...	Liverpool ...	No. 2 hold hatches burst by a sea and cargo damaged.	Eastward of the Fast-net, off County Cork.	S.W., hurricane	Partial	163	About 200	1	—	About 362, by remaining on board.
5 Nov.	"Lady of Avenel," Falmouth.	Brig	139	King's Cove, Newfoundland.	Gibraltar, for orders.	Deck swept ...	Lat. 43°N., Long. 38°W., N. Atlantic.	S.E., hurricane; thick weather.	Partial	6	—	1	—	5, by remaining on board.
28 Nov.	"Manitou," Liverpool.	Steamer	1,618	Cardiff ...	Halifax, N.S.	Explosion of coal gas.	Lat. 51°23'N., Long. 13°19'W., N. Atlantic.	E.S.E., moderate gale; cloudy.	Partial	27	—	1	—	26, by remaining on board.
20 Dec.	"Lady Palmer," Newcastle-on-Tyne.	Steamer	1,802	Palermo, Sicily.	New York ...	Temporary hatches carried away.	Lat. 37°24'N., Long. 2°5'E., Mediterranean.	N., fresh breeze; bad.	Partial	27	—	1	—	26, by remaining on board.

1897. 3 Mar.	"Bialto," Hull ...	Steamer	1,799	Newcastle-on-Tyne.	New York ...	Burnt ...	Lat. 55°25'N., Long. 23°50'W., N. Atlantic.	W.N.W., strong gale; clear.	Total	28	—	1	—	4 by ship's own boat and being taken on board steamer "Carthaginian," of Glasgow, 23 by lifeboat from that steamer.
7 Jan.	"Lorenzo," Hull	Steamer	2,031	Boston, U.S.A.	Hull ...	Decks swept, &c.	Lat. 47°24'N., Long. 44°31'W., N. Atlantic.	N.N.W., whole gale; clear, with squalls.	Partial	30	—	1	—	29, by remaining on board.
22 Jan.	"Coniscliffe," West Hartlepool.	Steamer	1,636	Charleston, U.S.A.	Barcelona ...	Planks, &c., carried away.	N. Atlantic ...	S.W., fresh gale; misty.	Partial	22	—	1	—	21, by remaining on board.
29 Jan.	"Humbert," London.	Steamer	1,206	Coosaw, S. Ca.	Hull ...	Cargo shifted, bridge damaged, &c.	Lat. 39°20'N., Long. 61°W., N. Atlantic.	W., whole gale; thick with sleet.	Partial	23	—	1	—	22, by remaining on board.
31 Jan.	"Benedick," Liverpool.	Steamer	1,758	Bilbao ...	Philadelphia	Decks swept, &c.	Lat. 41°5'N., Long. 39°5'W., N. Atlantic.	N.W., hurricane.	Partial	27	—	1	—	26, by remaining on board.
18 Feb.	"Heathfield," London.	Steamer	1,371	Newport News.	Glasgow ...	Boats, davits, &c., damaged.	Lat. 40°23'N., Long. 43°27'W., N. Atlantic.	W., strong gale	Partial	24	—	1	—	23, by remaining on board.
2 Mar.	"Bellona," Dundee.	Steamer	1,864	Norfolk, U.S.A.	Rotterdam ...	Decks swept, &c.	Lat. 47°N., Long. 21°36'W., N. Atlantic.	W.S.W. to W., storm.	Partial	34	—	1	—	33, by remaining on board.
3 Mar.	"Lucigen," Liverpool.	Steamer	2,183	Rotterdam ...	Baltimore, U.S.A.	Bridge, &c., carried away.	65 miles W. by S. of the Lizard, N. Atlantic.	W.N.W., hurricane; hail squalls.	Partial	30	—	3	—	27, by remaining on board.
3 Mar.	"Peruvian," Glasgow.	Steamer	2,022	Portland, U.S.A.	Glasgow ...	Decks swept, &c.	Lat. 49°30'N., Long. 32°7'W., N. Atlantic.	N.W., hurricane; squally.	Partial	41 and 12 cattlemen.	—	1	—	52, by remaining on board.
17 Mar.	"Templemore," Liverpool.	Steamer	4,103	Liverpool ...	Baltimore, U.S.A.	Rudder broke on 2nd March. Master, first mate, and four men injured on March 17th (master and an A.B. fatally), through being caught by the wire hawser while vessel was being taken in tow.	N. Atlantic ...	—	Partial	55	14	2	—	67, by remaining on board.
26 Mar.	"Caspian," Glasgow.	Steamer	1,599	Glasgow ...	St. John's, Newfoundland.	Wheel house stove in.	Lat. 51°N., Long. 17°36'W., N. Atlantic.	N.W., whole gale.	Partial	45	—	1	—	44, by remaining on board.
31 Mar.	"Azalea," North Shields.	Steamer	1,113	Baltimore, U.S.A.	Southampton	Lifeboat carried away, &c.	Lat. 48°4'N., Long. 24°55'W., N. Atlantic.	W.N.W., whole gale.	Partial	23	—	1	—	22, by remaining on board.
20 June	"Keemun," Glasgow.	Steamer	1,935	Montreal ...	Glasgow ...	Tail-end shaft broke and main steam pipe burst.	Lat. 48°1'N., Long. 50°1'W., N. Atlantic.	N.E., fresh breeze; dull.	Partial	38 and 18 cattlemen.	—	1	—	55, by remaining on board.

(4) OTHER CAUSES—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net)	Voyage.		Nature of Casualty.	Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To					Crew.	Passengers.	Crew.	Passengers.	
1897. 2 Oct.	"Jutópolis," Dundee.	Ship	2,652	Greenock ..	Philadelphia	Eye bolt of foot rope carried away.	Lat. 56°22'N., Long. 20°20'W., N. Atlantic.	Moderate gale	Partial	32	—	2	—	30, by remaining on board.
16 Dec.	"Pontiac," Liverpool.	Steamer	1,076	Trieste ...	New York ...	Lifeboat stove, &c.	Lat. 42°24'N., Long. 32°30'W., N. Atlantic.	N., strong gale; violent rain squalls.	Partial	24	—	1	—	23, by remaining on board.
1898. 18 June	"Para," London	Steamer	1,074	Swansea ...	Tilt Cove, Newfoundland.	Damaged by ice; sank.	About 6 miles E. of Gull Island, Newfoundland, N. Atlantic.	N. light breeze; clear.	Total	21	—	—	—	21, by ship's own boats.
17 Oct.	"Blengfell," Liverpool.	Barque	1,117	New York ...	London ...	Explosion of naphtha vapour.	Off Margate, Kent ...	Moderate; fine	Total	19	2 and pilot.	6	3 (including pilot).	11 by tug "Simla," 1 picked up by boat of tug, and 1 by a small steamer.
7 Nov.	"Westmeath," Sunderland.	Steamer	4,486	Hamburg ...	Quebec ...	Tail-end shaft broke; vessel abandoned.	Lat. 53°4'N., Long. 47°49'W., N. Atlantic.	N.W., strong breeze; moderating.	Total	41	—	1	—	40, by ship's own boat and being taken on board steamer "Monte Videau," of Glasgow.
1 Dec.	"Govino," Sunderland.	Steamer	1,501	Leith ...	Baltimore, U.S.A.	Struck sunken wreckage; abandoned.	Abandoned in Lat. 49°40'N., Long. 42°51'W., N. Atlantic.	W.N.W., strong gale; cloudy.	Total	24	—	—	—	24, by the Danish steamer "Thingvalla."
3 Feb.	"Philadelphian," Liverpool.	Steamer	3,322	Boston, Mass.	Liverpool ...	Lifeboat patent hook broke; boat lost.	Lat. 50°28'N., Long. 24°10'W., N. Atlantic.	W.S.W., fresh gale; clear, stormy.	Partial	50 and 25 cattle-men.	—	2	—	69, by remaining on board and 4 by another of the ship's own boats. (By the casualty 6 men had been thrown into the water.)
25 Mar.	"Forest Brook," Newcastle-on-Tyne.	Steamer	1,729	Baltimore, U.S.A.	Aarhus ...	Boats, bulwarks, &c., carried away.	Lat. 46°34'N., Long. 31°30'W., N. Atlantic.	S.S.E., strong gale; stormy.	Partial	25	—	1	—	24, by remaining on board.
5 Apl.	"Buffalo," Hull	Steamer	2,909	Hull ...	New York ...	Wash boards carried away, &c.	Lat. 44°30'N., Long. 43°20'W., N. Atlantic.	W., strong gale; clear.	Partial	46	—	1	—	45, by remaining on board.
5 Apl.	"Pendarves," Falmouth.	Steamer	1,706	Norfolk, U.S.A.	Bremerhaven	Decks swept ...	N. Atlantic ...	W., storm ...	Partial	23	—	1	—	22, by remaining on board.
19 Apl.	"Iona," Dundee	Steamer	2,085	North Shields	Portland, Maine.	Explosion in furnace.	Lat. 43°55'N., Long. 56°40'W., N. Atlantic.	W., fresh breeze; fine.	Partial	40	—	1	—	39, by remaining on board.
19 June	"Vedra," London	Steamer	2,622	The Tyne ...	Philadelphia	Mainsteam pipe burst.	About 23 miles N. of the Tyne.	N.W., moderate breeze, fine.	Partial	30	—	1	—	29, by remaining on board.
19 Sept	"Arracan," Liverpool.	Barque	2,222	Newport, Mon.	New York ...	Loss of sails, &c.	About Lat. 44°N., Long. 53°W., N. Atlantic.	S.E. to N.W., hurricane; thunder, lightning and rain.	Partial	30	—	1	—	29, by remaining on board.

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12 Nov.	"Rydal Holme," Maryport.	Steamer	1,226	Montreal ...	Hull ...	Decks swept ...	Lat. 50°28'N., Long. 33°W., N. Atlantic.	S.W. by W., strong gale; rainy.	Partial	21	—	1	—	20, by remaining on board.
27 Nov.	"Alsatia," Glasgow.	Steamer	1,772	New York ...	Naples ...	Decks swept ...	Lat. 42°7'N., Long. 60°49'W., N. Atlantic.	—, strong gale	Partial	Not stated.	—	1	—	By remaining on board.
27 Nov.	"Strathesk," Glasgow.	Steamer	1,454	Philadelphia	King's Lynn	Decks swept, &c.	100 miles S.E. of Sandy Hook, N. Atlantic.	N.W., hurricane; blizzard.	Partial	25	—	1	—	24, by remaining on board.
23 Dec.	"Nigretia," Leith	Steamer	1,530	Hamburg ...	Charleston, U.S.A.	Wheel chain rods carried away, &c. ...	Lat. 53°30'N., Long. 28°50'W., N. Atlantic.	W., whole gale; cloudy.	Partial	21	—	1	—	20, by remaining on board.
1899. 16 Oct.	"Coquet," Sunderland.	Steamer	1,463	Quebec ...	Sunderland	Propeller lost; vessel abandoned and finally stranded on Norwegian coast.	Abandoned in Lat. 63°50'N., Long. 5°35'E., N. Atlantic.	S.S.W., moderate gale.	Total	22	—	11	—	11, by ship's own boat.
2 Jan.	"Heathfield," London.	Steamer	1,371	New York ...	Cork ...	Damaged by fire.	Lat. 38°24'N., Long. 69°58'W., N. Atlantic.	W., moderate breeze.	Partial	25	—	1	—	24, by remaining on board.
7 Jan.	"Baltimore," Liverpool.	Steamer	2,459	Boston, Mass.	London ...	Decks swept ...	Lat. 43°N., Long. 31°W., N. Atlantic.	N.W., hurricane; snow.	Partial	37	—	1	—	36, by remaining on board.
7 Jan.	"Rosemore," Liverpool.	Steamer	2,897	Baltimore, U.S.A.	Liverpool ...	Damaged by heavy sea.	Lat. 50°N., Long. 40°W., N. Atlantic.	N.W., whole gale; squalls of sleet.	Partial	43 and 11 cattle-men.	—	1	—	63, by remaining on board.
28 Jan.	"Yanariva," Glasgow.	Steamer	2,154	Baltimore, U.S.A.	Havre ...	Bridge carried away; steering gear broken, &c.	Lat. 37°22'N., Long. 71°52'W., N. Atlantic.	N.E., storm; very bad.	Partial	30	—	1	—	29, by remaining on board.
30 Jan.	"Alton," Whitby.	Steamer	2,169	Philadelphia	London ...	Damaged by heavy seas.	Lat. 45°N., Long. 38°W., N. Atlantic.	N.W., hurricane	Partial	25	—	1	—	24, by remaining on board.
30 Jan.	"Mackinaw," Liverpool.	Steamer	2,050	Philadelphia	London ...	Thrown on beam ends; cargo shifted, &c.	Lat. 42°N., Long. 43°W., N. Atlantic.	W.S.W. to W.N.W., hurricane; foggy.	Partial	45	—	1	—	44, by remaining on board.
30 Jan.	"Martello," Hull.	Steamer	2,424	New York ...	Hull ...	Starboard light-house, boats, rails, &c., carried away.	Lat. 45°10'N., Long. 37°38'W., N. Atlantic.	W. by N., hurricane; thick with rain and blinding spray.	Partial	40	6	4	—	42, by remaining on board.
2 Feb.	"Roda," London.	Steamer	1,588	Philadelphia	Rotterdam ...	Rudder quadrant broke, bridge, chart room, boats, &c., carried away.	S. of Newfoundland Banks, N. Atlantic.	W.S.W., hurricane.	Partial	28	—	2	—	26, by remaining on board.
3 Feb.	"British Trader," Liverpool.	Steamer	2,171	New York ...	Antwerp ...	Deck houses, fittings, &c., damaged.	Lat. 45°N., Long. 40°W., N. Atlantic.	N.W., hurricane	Partial	31	—	1	—	30, by remaining on board.
3 Feb.	"Strathallan," Glasgow.	Steamer	1,489	Havre ...	New York ...	Boats smashed, decks damaged, &c.	Lat. 47°28'N., Long. 39°50'W., N. Atlantic.	N.W., hurricane; overcast.	Partial	29	—	1	—	28, by remaining on board.

(4) OTHER CAUSES—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Nature of Casualty.	Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To					Crew	Passengers.	Crew.	Passengers.	
1899.														
12 Feb.	"Kinsale," London.	Steamer	1,538	Newport News.	Glasgow ...	Wheel chains carried away.	Lat. 44°32'N., Long. 37°30'W., N. Atlantic.	W., strong gale	Partial	Not stated.	—	1	—	By remaining on board.
- Feb.	"Anchoria," Glasgow.	Steamer	2,713	Glasgow ...	New York ...	Boat and binacle carried away, rails smashed, &c.	Lat. 48°N., Long. 42°W., N. Atlantic.	N.N.W., hurricane; thick.	Partial	88	97	1	—	184, by remaining on board.
16 Mar.	"Norwegian," Glasgow.	Steamer	2,253	Portland, Me.	Glasgow ...	Loss of rail, cattle, &c.	About Lat. 43°N., Long. 46°W., N. Atlantic.	N.N.W., strong gale.	Partial	44	—	1	—	43, by remaining on board.
25 May.	"Charmian," Bristol.	Barque	526	Youghal ...	Halifax, N.S.	Rail broke, man clearing log line fell overboard.	Lat. 43°42'N., Long. 50°36'W., N. Atlantic.	—	Partial	Not stated.	—	1	—	By remaining on board.
19 Nov.	"Juteopolis," Dundee.	Ship	2,652	Dunkirk ...	Philadelphia	Gasket gave way.	Lat. 35°N., Long. 73°W., N. Atlantic.	—	Partial	34	—	1	—	33, by remaining on board.
1900.														
14 Mar.	"Pak Ling," London.	Steamer	2,875	Philadelphia	Rotterdam...	Steam steering gear carried away.	Lat. 39°5'N., Long. 62°27'W., N. Atlantic.	N.N.W., whole gale.	Partial	Not stated.	—	1	—	By remaining on board.
4 Oct.	"Memnon," London.	Steamer	2,046	Montreal ...	Avonmouth	Decks swept ...	About 600 miles W. of Fastnet, N. Atlantic.	N.W., hurricane	Partial	34, & 12 cattle-men	—	1 (cattle-man on articles)	—	45, by remaining on board.
2 Nov.	"Lukonia," Glasgow.	Steamer	3,046	Montreal ...	Glasgow ...	Bridge ladder, &c. damaged by heavy sea.	Lat. 57°N., Long. 26°15'W., N. Atlantic.	S.W. by W., bad weather.	Partial	45	—	1	—	44, by remaining on board.
9 Dec.	"Cufio," Liverpool.	Steamer	3,122	Liverpool ...	New York ...	Tail end shaft and propeller lost.	Lat. 51°34'N., Long. 21°11'W., N. Atlantic.	W., moderate breeze.	Partial	58	3 (cattle-men).	1	—	60, by remaining on board.
10 Dec.	"Saxoleine," Newcastle-on-Tyne.	Steamer	2,426	Philadelphia	Cette ...	Lifeboat and bulwarks damaged.	Lat. 39°35'N., Long. 62°40'W., N. Atlantic.	—, whole gale	Partial	Not stated.	—	1	—	By remaining on board.
12 Dec.	"Clan Buchanan," Glasgow.	Barque	1,967	Sharpness ...	New York ...	Loss of sails, &c.	Lat. 54°25'N., Long. 30°20'W., N. Atlantic.	—, heavy gale	Partial	28	—	1	—	27, by remaining on board.
15 Dec.	"Sardinian," Glasgow.	Steamer	2,788	New York ...	Glasgow ...	Ventilator, wheel - house, &c., damaged by heavy sea.	Lat. 48°29'N., Long. 43°37'W., N. Atlantic.	N.N.W., hurricane.	Partial	54	23	1	—	76, by remaining on board.
1901.														
19 Jan.	"Grace," Salcombe.	Schooner	94	Plymouth ...	St. John's, Newfoundland.	Bulwarks and rigging damaged.	N. Atlantic ...	—, whole gale	Partial	5	—	1	—	4, by remaining on board.
1898														
5 Mar.	"Snowflake," Liverpool.	Steamer	1,726	New York ...	London ...	Wheel house door carried away.	Lat. 50°18'N., Long. 13°30'W., N. Atlantic.	—, whole gale	Partial	Not stated.	—	1	—	By remaining on board.
20 Mar.	"King Bladdyn," Glasgow.	Steamer	1,479	New York ...	Hull ...	Decks swept ...	Lat. 43°30'N., Long. 38°25'W., N. Atlantic.	N.W. to W.N.W., hurricane; cloudy with heavy hail squalls.	Partial	24	—	1	—	23, by remaining on board.
21 Mar.	"King Bladdyn," Glasgow.	Steamer	1,479	New York ...	Hull ...	Lifeboat and deck fittings, &c., carried away.	Lat. 42°45'N., Long. 40°W., N. Atlantic.	N.W. to W.N.W., hurricane; cloudy and showery.	Partial	23	—	1	—	22 by remaining on board.
3 Apr.	"Lancastrian," Liverpool.	Steamer	3,321	Boston, Mass.	Liverpool ...	Decks swept ...	Lat. 49°20'N., Long. 22°20'W., N. Atlantic.	E., hurricane...	Partial	70	—	1	—	69, by remaining on board.
4 Apr.	"Alaska," Glasgow.	Steamer	1,348	St. John, N.B.	Glasgow ...	Decks swept ...	Lat. 46°3'N., Long. 41°35'W., N. Atlantic.	N.E., whole gale	Partial	21	—	1	—	20, by remaining on board.
5 Sept.	"Bengore Head," Belfast.	Steamer	1,619	Maryport ...	Montreal ...	Crutches of derrick damaged by heavy sea.	Lat. 56°26'N., Long. 17°12'W., N. Atlantic.	Whole gale ...	Partial	Not stated.	—	1	—	By remaining on board.
8 Sept.	"Muriel," Hartlepool.	Steamer	1,565	Port Royal, S. Ca.	Runcorn ...	Decks swept ...	Lat. 51°25'N., Long. 11°8'W., N. Atlantic.	S.W., fresh gale; clear.	Partial	20	—	1	—	19, by remaining on board.
27 Dec.	"Hardanger," W. Hartlepool.	Steamer	1,570	Baltimore ...	Gothenburg	Deck fittings and boats damaged.	Lat. 49°15'N., Long. 38°35'W., N. Atlantic.	W.N.W., whole gale.	Partial	22	—	1	—	21, by remaining on board.
1902.														
21 Sept.	"Beta," Plymouth	Ketch	70	Cardiff ...	Harbour Briton, Newfoundland.	Burnt ...	Point May, Newfoundland.	S.W., moderate breeze; hazy.	Total	4	—	—	—	4, by own boat.
24 Nov.	"Gulf of Ancud," Greenock.	Steamer	1,700	Quebec ...	Antwerp ...	Decks swept ...	Lat. 49°20'N., Long. 11°10'W., N. Atlantic.	—, hurricane...	Partial	Not stated.	—	1	—	By remaining on board.
7 Dec.	"Valetta," Glasgow.	Steamer	1,937	Middlesbrough.	Philadelphia	Decks swept ...	Lat. 48°40'N., Long. 50°40'W., N. Atlantic.	N.N.W., hurricane; hail squalls.	Partial	28	—	1	—	27, by remaining on board.
20 Dec.	"Cayo Blanco," London.	Steamer	1,737	Savannah ...	London ...	Feed change cock displaced, causing an explosion of steam in engine room.	Lat. 53°22'N., Long. 2°54'E., North Sea.	—	Partial	28	—	1	—	27, by remaining on board.
28 Dec.	"Castlemoor," S. Shields.	Steamer	1,846	Newport News.	Reval ...	Bridge and lifeboat damaged.	Lat. 58°10'N., Long. 8°40'W., N. Atlantic.	—, whole gale	Partial	Not stated.	—	1	—	By remaining on board.
1903.														
31 May	"Vega," Dundee	Steamer	201	Dundee ...	Davis Strait (On a whaling voyage.)	Crushed by ice	Melville Bay, Greenland.	—, light breeze; dull.	Total	44	—	—	—	44, by ship's own boats.
6 Jan.	"Brantwood," Sunderland.	Steamer	2,296	Baltimore, U.S.A.	Antwerp ...	Sounding machine and fore-castle funnels of poop deck carried away.	Lat. 44°39'N., Long. 40°53'W., N. Atlantic.	—, whole gale	Partial	Not stated.	—	1	—	By remaining on board.
6 Jan.	"Chiverstone," Cardiff.	Steamer	1,889	Cardiff ...	Boston, Mass.	Decks swept ...	Lat. 50°59'N., Long. 8°15'W., Off Co. Cork.	Whole gale ...	Partial	Not stated.	—	1	—	By remaining on board.

(4) OTHER CAUSES—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Nature of Casualty.	Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To					Crew.	Passengers.	Crew.	Passengers.	
1903.														
23 Jan.	"Eric," Cardiff...	Steamer	1,788	Glasgow ...	Boston, Mass	Steering gear, &c., damaged.	Lat. 51°58'N., Long. 31°35'W., N. Atlantic.	W.S.W. to W.N.W., terrific gale, hazy, small rain.	Partial	25	—	1	—	24, by remaining on board
26 Jan.	"Simonside," Sunderland.	Steamer	1,956	Blyth ...	Providence, Rhode Island	Decks swept ...	Lat. 57°4'N., Long. 22°25'W., N. Atlantic.	W., hurricane, rainy.	Partial	25	—	1	—	24, by remaining on board
8 Feb.	"Battenhall," London.	Steamer	1,378	Norfolk Va.	Harlingen ...	Loss of deck cargo, &c.	Lat. 38°20'N., Long. 59°50'W., N. Atlantic.	—	Partial	Not stated.	—	2	—	By remaining on board.
19 Feb.	"Roath," Cardiff	Steamer	2,814	Blyth ...	Portland, Maine.	Deck swept ...	Lat. 50°N., Long. 33°20'W., N. Atlantic.	W.S.W., fierce gale, thick with haze.	Partial	28	—	1	—	27, by remaining on board.
20 Feb.	"Genesee," London.	Steamer	1,834	Philadelphia	Copenhagen	Decks swept, &c.	Lat. 55°N., Long. 22°W., N. Atlantic.	W., hurricane	Partial	30	—	1	—	29, by remaining on board.
20 Feb.	"Oakwood," London.	Steamer	2,792	S. Shields ...	Boston, Mass	Decks swept ...	Lat. 50°N., Long. 22°W., N. Atlantic.	S.W., strong gale, hazy.	Partial	38	—	1	—	37, by remaining on board.
21 Feb.	"Monadnock," Bristol.	Steamer	2,791	Blyth ...	Boston, Mass	Decks swept ...	Lat. 58°30'N., Long. 9°30'W., N. Atlantic.	W.S.W., hurricane, thick hail showers.	Partial	29	—	1	—	28, by remaining on board.
23 Feb.	"Ulunda," West Hartlepool.	Steamer	1,096	Liverpool ...	St. John's, N.F.L. and Halifax, N.S.	Decks swept ...	Lat. 49°45'N., Long. 33°20'W., N. Atlantic.	N.N.W., hurricane; dull.	Partial	29	6 (Shipwrecked Seamen)	1	—	34, by remaining on board.
16 Apr.	"London City," West Hartlepool.	Steamer	1,543	Halifax, N.S.	London ...	Loss of deck cargo, &c.	Lat. 43°25'N., Long. 40°59'W., N. Atlantic.	N.W., fresh gale; rainy.	Partial	30	—	1	—	29, by remaining on board.
27 Apr.	"Huelva," London.	Steamer	1,691	Baltimore, U.S.A.	Tralee ...	Stanchion, rails, &c., carried away.	Lat. 46°30'N., Long. 33°40'W., N. Atlantic.	W., strong gale; squally.	Partial	26	—	1	—	25, by remaining on board.
10 Oct.	"Pioqua," Liverpool.	Steamer	1,167	Girgenti ...	New York ...	Cock of water gauge column broke, causing escape of steam.	Lat. 39°28'N., Long. 71°50'W., N. Atlantic.	E.S.E., whole gale.	Partial	22	—	1	—	21, by remaining on board.
14 Dec.	"Devona," Dundee.	Steamer	2,372	Portland, Maine.	London ...	Deck damage through heavy seas.	Lat. 49°N., Long. 28°W., N. Atlantic.	N.W., hurricane; overcast.	Partial	38	—	1	—	37, by remaining on board.
1904.														
29 Mar.	"Elswick Grange," Newcastle-on-Tyne.	Steamer	2,572	Baltimore, U.S.A.	Aarhuus ...	Derrick broke adrift, tearing tarpaulins away.	Lat. 39°34'N., Long. 61°04'W., N. Atlantic.	N.W., whole gale.	Partial	Not stated.	—	1	—	By remaining on board.

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5 Apl.	"Milverton," Liverpool.	Ship	2,070	Leith ...	New York ...	Loss of sails and spars.	About 120 miles W.N.W. of Butt of Lewis, N. Atlantic.	Hurricane ...	Partial	30	—	1	—	29, by remaining on board.
13 Nov.	"Lincluden," W. Hartlepool.	Steamer	1,764	Savannah ...	Manchester...	Bridge work, &c., damaged.	Lat. 36°1'N., Long. 73°33'W., N. Atlantic.	S.W., hurricane; overcast.	Partial	25	—	1	—	24, by remaining on board.
13 Dec.	"Montfort," Liverpool.	Steamer	3,555	Avonmouth...	St. John, N.B.	Hatches, gangway rail, &c., carried away.	Lat. 51°N., Long. 26°W., N. Atlantic.	Whole gale ...	Partial	77	—	2	—	75, by remaining on board.
1905.														
7 Feb.	"Damara," W. Hartlepool.	Steamer	1,145	Liverpool ...	Halifax, N.S.	Supposed to have struck floating wreckage.	108 miles N.49°W. of Sable Island, N. Atlantic; subsequently sank off Jeddore, Nova Scotia.	S.E., strong breeze; light snow falling.	Total	28	3	—	—	31, by ship's own lifeboats.
13 Feb.	"Llangollen," Cardiff.	Steamer	2,443	Norfolk, Va.	Rotterdam...	Life boat smashed, &c.	Lat. 39°25'N., Long. 62°10'W., N. Atlantic.	Whole gale ...	Partial	Not stated.	—	1	—	By remaining on board.
13 Mar.	"Sarmatian," Glasgow.	Steamer	2,431	Glasgow ...	Halifax, N.S.	Decks swept ...	Lat. 47°43'N., Long. 37°6'W., N. Atlantic.	Hurricane ...	Partial	81 and 10 cattle-men.	229	2	—	318, by remaining on board.
26 Mar.	"Bloomfield," Newcastle-on-Tyne.	Steamer	2,869	Philadelphia	Hamburg ...	Fracture of tail-end shaft. Engineer overcome by foul air in after peak tank.	Off Altenbrück, Germany.	E., fresh breeze; dull and showery.	Partial	35	—	1	—	34, by remaining on board.
11 Apl.	"Castano," Liverpool.	Steamer	2,502	Newport News.	Bordeaux ...	Loss of deck cargo.	Lat. 41°12'N., Long. 40°15'W., N. Atlantic.	N.W., whole gale.	Partial	40	—	1	—	39, by remaining on board.
1 June	"Pydna," Liverpool.	Steamer	1,855	Miramichi ...	Manchester ..	Foremast broken, portion of deck-load lost, &c.	Lat. 49°25'N., Long. 37°40'W., N. Atlantic.	W., strong gale; overcast.	Partial	24	2	1	—	5 men were carried overboard, but 4 succeeded in regaining vessel.
11 Oct.	"Campania," Liverpool.	Steamer	4,974	Liverpool ...	New York ...	Gangway burst open by heavy sea.	Lat. 46°20'N., Long. 48°5'W., N. Atlantic.	N.N.E., strong gale; cloudy; clear atmosphere.	Partial	421	1,220	—	5	1,636, by remaining on board.
26 Dec.	"Lakonia," Glasgow.	Steamer	3,046	Baltimore, U.S.A.	Glasgow, via Liverpool,	Decks swept ...	Lat. 47°N., Long. 39°W., N. Atlantic.	N.N.W., strong gale; squally and stormy.	Partial	62	—	1	—	2 men were washed overboard but 1 was saved by means of a rope thrown to him.
1906.														
21 Apl.	"Anglo Peruvian," London.	Steamer	3,520	Newcastle-upon-Tyne.	Philadelphia	Contact with ice.	Lat. 41°50'N., Long. 52°30'W., N. Atlantic.	Variable, light breeze; thick fog.	Total	38	—	—	—	38, by steamer "Mohawk," of Bristol.
31 Oct.	"Nemea," Liverpool.	Steamer	2,259	St. John, N.B.	Manchester ..	Fracture of condenser door.	Lat. 51°11'N., Long. 15°16'W., N. Atlantic.	N.W., hurricane.	Total	27	—	2	—	25, by ship's own boat and boat of steamer "Vedamore," of Liverpool, and being taken on board "Vedamore."
2 Jan.	"Le Coq," Newcastle-upon-Tyne.	Steamer	2,169	Philadelphia	Cette ...	Decks swept ...	N. Atlantic ...	W., hurricane; overcast; rain.	Partial	33	—	1	—	32, by remaining on board.

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NORTH ATLANTIC CASUALTIES.

(4) OTHER CAUSES—continued.

Date of Casualty	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Nature of Casualty.	Place of Casualty.	State of Wind and Weather at time of Casualty.	Total or Partial Loss of Vessel.	Persons on board at time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.
				From	To					Crew.	Passengers.	Crew.	Passengers.	
1908. 8 Jan.	"Rappahannock," Liverpool.	Steamer	2,490	Newport News.	London ...	Decks swept ...	Lat. 48°21'N., Long. 37°7'W., N. Atlantic.	W.N.W., strong gale.	Partial	30	—	1	—	29, by remaining on board.
23 Nov.	"London City," W. Hartlepool.	Steamer	1,509	London ...	Halifax, N.S.	Decks swept ...	Lat. 47°50'N., Long. 42°30'W., N. Atlantic.	W., strong gale; fine and clear.	Partial	29	—	1	—	28, by remaining on board.
1907. 25 Jan.	"Robin," Ply- mouth.	Brigantine.	132	Twillingate, Newfound- land.	Lisbon ...	Crushed by ice	1½ miles off Fogo, Newfoundland.	S.W. to W., whole gale; clear.	Total	6	—	—	—	6, taken on board the tug towing the ship.
16 Apr.	"Lucifer," Liver- pool.	Steamer	2,473	New York ...	Dublin ...	Leaky and high pressure pis- ton rod gland packing blew out.	Lat. 40°19'N., Long. 59°59'W., N. Atlantic.	W., whole gale; bad.	Total	32	—	—	—	32, by ship's own boat and boats of steamer "Sagami," of Sunderland, and being taken on board "Sagami."
21 Oct.	"Escalona," Dundee.	Steamer	1,175	N. Shields ...	Quebec and Montreal.	Decks swept ...	Lat. 55°N., Long. 42°W., N. Atlantic.	W., hurricane; clear.	Partial	25	—	1	—	24, by remaining on board.
20 Nov.	"Martelli," Hull	Steamer	2,417	New York ...	Hull ...	Steering gear carried away, &c.	Lat. 41°41'N., Long. 62°7'W., N. Atlantic.	N.N.W., hurri- cane.	Partial	39	—	1	—	38, by remaining on board.
1908. 2 Feb.	"Saint Outhbert," Liverpool.	Steamer	3,166	Antwerp ...	New York ...	Burnt ...	About Lat. 42°N., Long. 63°13'W., N. Atlantic.	S.E., whole gale; rain and snow squalls.	Total	47 and 1 cattle- man.	7 (stow- aways).	13	1 (stow- away).	41, by boat of steamer "Cymric," of Liverpool, and being taken on board that vessel.
26 Apr.	"Norwood," W. Hartlepool.	Steamer	1,465	Glasgow ...	Sydney, C.B.	Crushed by ice	Lat. 46°30'N., Long. 57°W., N. Atlantic.	S.S.E., rain and sleet.	Total	22	2 (stow- aways).	—	—	24, by ship's own boats and afterwards being picked up by fishing schooner "Howard Young."
21 Mar.	"Exeter City," Bristol.	Steamer	1,359	New York ...	Bristol ...	Decks swept ...	Lat. 47°10'N., Long. 33°52'W., N. Atlantic.	W.N.W., strong gale.	Partial	24	—	1	—	23, by remaining on board.
5 May	"Westhampton," W. Hartlepool.	Steamer	1,162	Pomaron, Portugal.	Baltimore U.S.A.	Gangway car- ried away.	Lat. 35°23'N., Long. 65°11'W., N. Atlantic.	W.N.W., mo- derate gale; boisterous.	Partial	23	—	1	—	22, by remaining on board.
19 May	"Huelva," London.	Steamer	1,691	Huelva ...	Baltimore, U.S.A.	Damaged by ex- plosion caused through tar catching fire.	Lat. 36°34'N., Long. 65°4'W., N. Atlantic.	N., moderate breeze; fine, clear.	Partial	25	—	2	—	23, by remaining on board.
11 Oct.	"Ellen James," Carnarvon.	Schooner	137	Comfort Bight, La- brador.	Gibraltar ...	Patent reefing chain carried away and struck master.	Lat. 46°N., Long. 25°W., N. Atlantic.	N.W., hurricane	Partial	6	—	1	—	5, by remaining on board.

5 Dec.	"Metis," Glasgow.	Steamer	2,167	Newport News.	Bordeaux ...	Decks swept ...	Lat. 38°38'N., Long. 64°46'W., N. Atlantic.	W., hurricane; cyclonic gale; rain squalls.	Partial	30	—	1	—	29, by remaining on board.
20 Dec.	"Bostonian," Liverpool.	Steamer	3,030	Manchester...	Boston, Mass.	Decks swept ...	Lat. 50°51'N., Long. 27°54'W., N. Atlantic.	W.N.W., hurri- cane.	Partial	49	—	1	—	48, by remaining on board.
23 Dec.	"Lord Dufferin," Belfast.	Steamer	3,007	Norfolk, Va.	Rotterdam...	Decks swept ...	Lat. 37°50'N., Long. 71°10'W., N. Atlantic.	Very bad ...	Partial	30	—	1	—	29, by remaining on board.
29 Dec.	"Malin Head," Belfast.	Steamer	2,228	Baltimore, U.S.A.	Havre ...	Decks swept ...	Lat. 46°32'N., Long. 36°13'W., N. Atlantic.	Heavy weather	Partial	35	—	1	—	34, by remaining on board.
1909. 6 June	"Geisha," Barnstaple.	Schooner	98	Cadiz ...	St. John's, Newfound- land.	Collision with iceberg.	About one mile N. of Cape Spear, New- foundland.	N.E., light breeze; dense fog.	Total	6	—	—	—	6, by ship's own boat.
25 June	"Lord Londonderry," Belfast.	Steamer	1,621	Huelva ...	Savannah ...	Spontaneous combustion of bunker coal.	Lat. 37°49'N., Long. 10°10'W., N. Atlantic.	N., moderate breeze; good.	Total	24	—	—	—	24, by ship's own boats.
1910. 9 Jan.	"Martello," Hull	Steamer	2,417	Hull ...	New York ...	Rudder and rudder post carried away; towed to port and subse- quently con- demned.	Lat. 50°10'N., Long. 27°6'W., N. Atlantic.	W., strong gale	Total	38	1	—	—	39, by remaining on board. (Ship towed to port.)
29 Aug.	"West Point," Liverpool.	Steamer	3,074	Glasgow ...	Charleston, S.C.	Burnt ...	Lat. 45°41'N., Long. 40°42'W., N. Atlantic.	E., moderate breeze; fine and clear.	Total	32	—	—	—	32, by ship's own boats and being taken on board steamer "Mauretania."
18 Feb.	"Phyllis," W. Hartlepool.	Steamer	1,574	Norfolk, Va.	Rotterdam...	Decks swept, &c.	Lat. 46°13'N., Long. 17°24'W., N. Atlantic.	W.N.W., hurri- cane.	Partial	22	—	1	—	21, by remaining on board.
7 Apl.	"Cairnrons," Newcastle-on- Tyne.	Steamer	4,954	London ...	Portland, Maine.	Explosion of coal gas.	9 or 10 miles W. of Beachy Head, Sus- sex.	N.E., light breeze; fine and clear.	Partial	116	879	1	—	Foreign emigrants trans- ferred to steamers "Kana- wha" and "Uplands," others remained on board. By remaining on board.
10 May	"Caronia," Liverpool.	Steamer	10,306	Liverpool ...	New York ...	Decks swept ...	Lat. 41°1'N., Long. 62°55'W., N. Atlantic.	Fresh gale; dark and wild.	Partial	480	1,728	1	—	31, by remaining on board.
1 Nov.	"Ottawa," London.	Steamer	2,074	The Tyne ...	Philadelphia	Decks swept ...	Lat. 58°27'N., Long. 10°42'W., N. Atlantic.	Heavy weather	Partial	32	—	1	—	42, by remaining on board.
13 Nov.	"Manchester Shipper," Man- chester.	Steamer	2,542	Montreal ...	Manchester	Life-line car- ried away.	Lat. 55°50'N., Long. 32°42'W., N. Atlantic.	N.E., strong gale.	Partial	43	—	1	—	21, by remaining on board.
28 Nov.	"Wathfield," W. Hartlepool.	Steamer	1,944	Charleston, U.S.A.	Bremen ...	Gantline carried away.	Portland Roads, Dor- setshire.	Variable; light; fine and clear.	Partial	22	—	1	—	40, by remaining on board.
11 Dec.	"Galileo," Hull	Steamer	3,064	New York ...	Hull ...	Decks swept ...	Lat. 49°30'N., Long. 25°20'W., N. Atlantic.	W., hurricane; thick.	Partial	42	—	2	—	49, by remaining on board.
1911. 2 Feb.	"Cestrian," Liverpool.	Steamer	5,753	Liverpool ...	Boston, U.S.A.	Explosion of ex- haust steam separator.	About 400 miles off Boston, U.S.A.	—	Partial	49	1	1	—	

(5) MISSING VESSELS

When last heard of.	Name and Port of Vessel.	Sail or Steam.	Tons (Net).	Voyage.		Lives Lost.	
				From	To	Crew.	Passengers.
1891.							
12 Sept. ...	"Daring," Fowey ...	Schooner ...	122	Glasgow ...	St. John's, N.F.L. ...	6	—
14 Sept. ...	"Ellen Catherine," Aberystwith ...	Brigantine ...	118	Tilt Cove, N.F.L. ...	Swansea ...	6	—
5 Oct. ...	"Little Vixen," Plymouth ...	Schooner ...	93	Plymouth ...	St. John's, N.F.L. ...	5	—
16 Nov. ...	"Alice Graham," Swansea ...	Barquentine ...	383	Coosaw, S. Ca. ...	Swansea ...	8	—
1892.							
22 Jan. ...	"Ulster," Liverpool ...	Barquentine ...	290	St. John's, N.F.L. ...	Liverpool ...	11	—
10 Aug. ...	"Clara," Padstow ...	Schooner ...	90	Tayport ...	St. John's, N.F.L. ...	5	2
24 Sept. ...	"Talbot," London ...	Brig ...	170	Oporto ...	Gaulois, N.F.L. ...	10	—
12 October ...	"Selma," Newcastle-on-Tyne ...	Barque ...	349	Dalhousie, N.B. ...	Glasgow ...	9	—
8 December ...	"Flora," Falmouth ...	Schooner ...	90	Piston ...	St. John's, N.F.L. ...	5	—
10 December ...	"Donati," Liverpool ...	Steamer ...	855	New York ...	Oporto ...	26	—
1893.							
11 February ...	"Naronic," Liverpool ...	Steamer ...	4,222	Liverpool ...	New York ...	74, including 17 cattle- men (on articles).	3
20 August ...	"Horn Head," Belfast ...	Steamer ...	1,559	Baltimore, U.S.A. ...	Dublin ...	27	—
1894.							
11 February ...	"Apollo," Hull ...	Steamer ...	2,054	New York ...	Antwerp ...	35	—
3 December ...	"Canute," Cardiff ...	Ship ...	1,215	Sapelo Sound ...	Queenborough ...	17	—
24 December ...	"Kingdom," Liverpool ...	Steamer ...	1,414	Hamburg ...	Charleston, U.S.A. ...	22	—
1895.							
7 December ...	"Lanrestina," North Shields ...	Steamer ...	1,302	Baltimore, U.S.A. ...	Sligo ...	23	—
11 December ...	"Wild Flower," London ...	Steamer ...	1,698	Philadelphia ...	Rouen ...	29	—
1896.							
1 March ...	"Massasoit," Bristol ...	Steamer ...	1,790	Newport News ...	London ...	26	—
16 December ...	"Fort William," Glasgow ...	Steamer ...	1,174	Hamburg ...	Norfolk, Va., via Newcastle-on-Tyne	24	—
28 December ...	"State of Georgia," Aberdeen ...	Steamer ...	1,619	New Fairwater, Germany ...	Halifax, N.S. ...	32	—
1897.							
3 January ...	"Falls of Bracklinn," Glasgow ...	Steamer ...	2,232	Baltimore, U.S.A. ...	Avonmouth ...	56	—
11 February ...	"Ardbeg," London ...	Steamer ...	1,416	Baltimore, U.S.A. ...	Copenhagen ...	22	—
20 November ...	"Beaumont," Plymouth ...	Schooner ...	115	Oporto ...	St. John's, N.F.L. ...	6	—
22 November ...	"Azalea," N. Shields ...	Steamer ...	1,113	Baltimore, U.S.A. ...	Stettin, via Stornoway ...	23	—
1898.							
21 December ...	"Almida," Glasgow ...	Steamer ...	1,542	Hamburg ...	New York, via the Tyne ...	23	1
1899.							
18 January ...	"Britannia," Barnstaple ...	Ketch ...	73	Harbor Grace, N.F.L. ...	Plymouth ...	6	—
20 January ...	"Picton," W. Hartlepool ...	Steamer ...	1,527	Newport News ...	Sligo ...	23	—
23 January ...	"Dora," Liverpool ...	Barquentine ...	199	St. John's, N.F.L. ...	Liverpool ...	9	—
23 January ...	"Dora Forster," London ...	Steamer ...	1,573	Savannah ...	Liverpool ...	26	—
26 January ...	"Croft," Newcastle-on-Tyne ...	Steamer ...	1,710	New York ...	Leith ...	27	—
26 January ...	"Oberon," London ...	Steamer ...	1,763	Baltimore, U.S.A. ...	Antwerp ...	28	—
27 January ...	"Arona," Dundee ...	Steamer ...	2,152	Portland, Maine ...	London ...	38, and 13 cattlemen.	—
27 January ...	"Port Melbourne," London ...	Steamer ...	3,011	New York ...	London ...	49	—
13 August ...	"Pembroke," London ...	Steamer ...	1,903	Savannah ...	Hamburg ...	24	—
25 October ...	"Merrimac," London ...	Steamer ...	2,696	Quebec ...	Belfast ...	38	—
1900.							
29 January ...	"Rosemorran," Newcastle-on-Tyne ...	Steamer ...	1,619	Baltimore, U.S.A. ...	Londonderry ...	24	—
17 February ...	"Planet Mercury," Liverpool ...	Steamer ...	2,092	Portland, Maine ...	Avonmouth ...	29 and 6 cattlemen.	—
19 August ...	"Samuel Moss," Fowey ...	Schooner ...	127	Cadiz ...	St. John's, N.F.L. ...	7	—
1901.							
27 August ...	"Challenge," Fowey ...	Schooner ...	79	Oporto ...	St. John's, N.F.L. ...	5	—
22 October ...	"Perseverance," London ...	Barque ...	164	Cumberland Gulf, Davis Strait ...	United Kingdom ...	14	—
1902.							
11 February ...	"Huronian," Glasgow ...	Steamer ...	4,431	Glasgow ...	St. John, N.B. ...	56	1
1903.							
9 January ...	"Palmas," London ...	Steamer ...	1,598	Newport, Mon. ...	Boston, Mass. ...	39	—
9 February ...	"Salopia," London ...	Steamer ...	1,549	Norfolk, Va. ...	Antwerp ...	22	—
1904.							
9 December ...	"Nelly," Truro ...	Schooner ...	79	St. John's, N.F.L. ...	Barcelona ...	5	—
1905.							
17 May ...	"Norseman," Barnstaple ...	Schooner ...	96	Cadiz ...	St. John's, N.F.L. ...	5	—
19 December ...	"Girl of Devon," Plymouth ...	Schooner ...	131	Herring Neck, N.F.L. ...	Lisbon ...	6	—
1907.							
8 June ...	"Nicaraguan," Liverpool ...	Steamer ...	2,386	Norfolk, Va. ...	Dublin and Liverpool ...	43	1
1908.							
11 December ...	"Challenger," Fowey ...	Dandy ...	57	St. John's, N.F.L. ...	Figueira ...	4	—

No. 16.

CONTACT WITH ICE.

• Statement showing the number of Sea Casualties to vessels registered in the United Kingdom, reported to the Board of Trade during the Twenty Years ended 30th June, 1911, as having occurred in any part of the world through contact with ice.

Year.	Sailing.			Steam.			Total.			Grand Total.
	Total.	Serious.	Minor.	Total.	Serious.	Minor.	Total.	Serious.	Minor.	
1891-92 ...	—	3	2	1	7	11	1	10	13	24
1892-93 ...	4	3	5	6	52	65	10	55	70	135
1893-94 ...	1	1	3	2	24	21	3	25	24	52
1894-95 ...	2	2	5	—	14	38	2	16	43	61
1895-96 ...	—	2	1	—	22	32	—	24	33	57
1896-97 ...	1	1	3	1	39	32	2	40	35	77
1897-98 ...	—	—	1	2	9	14	2	9	15	26
1898-99 ...	—	1	—	1	17	23	1	18	23	42
1899-1900 ...	1	—	—	2	14	26	3	14	26	43
1900-01 ...	—	1	—	—	3	6	—	4	6	10
1901-02 ...	—	1	—	—	2	12	—	3	12	15
1902-03 ...	—	2	—	—	15	12	—	17	12	29
1903-04 ...	—	—	1	1	8	13	1	8	14	23
1904-05 ...	1	—	—	2	17	21	3	17	21	41
1905-06 ...	—	1	—	1	7	5	1	8	5	14
1906-07 ...	1	—	2	—	21	20	1	21	22	44
1907-08 ...	—	2	1	1	13	17	1	15	18	34
1908-09 ...	2	1	—	1	18	39	3	19	39	61
1909-10 ...	—	—	—	2	7	6	2	7	6	15
1910-11 ...	—	—	—	—	20	35	—	20	35	55
	13	21	24	23	329	448	36	350	472	858

No. 17.

CONTACT WITH ICE.

Statement showing the number of Sea casualties involving *Loss of Life* to vessels registered in the United Kingdom reported to the Board of Trade during the twenty years ended 30th June, 1911, as having occurred *everywhere* through contact with ice.

Date of Casualty	Name and Port of Vessel.	Rig of Vessel.	Tons net.	Voyage.		Place of Casualty.	Lives Lost.	Total or Partial Loss of Vessel.
				From.	To.			
1893. 3 March	"Templemore," of Londonderry.	Ship	1,648	Wallaroo, S.A.	English Channel for orders.	Lat., 50°20'S., Long., 50°40'W., S. Atlantic.	2 (crew).	Total.
22 June	"Wellington," of Glasgow.	Ship	1,247	Picton, N.Z.	London	Lat., 53°30'S., Long., 50°W., S. Atlantic.	2 (crew).	Partial
1911. 30 Jan.	"Tai Sang," of London.	Steamer	1,544	Ching-Wang-tai.	Shanghai	78 miles S.E. of Ching-Wang-tai, Yellow Sea.	2 (crew).	Partial.

No. 18.

CONTACT WITH ICE.

LIST OF VESSELS registered in the United Kingdom reported to the Board of Trade during the twenty years ended 30th June, 1911, as totally lost, through striking ice whilst on voyages between European ports and the east coast of the United States, Canada and Newfoundland.

Date of Casualty.	Name and Port of Vessel.	Steam or Sailing.	Tons (net).	Voyage.		Place of Casualty.	Total or partial loss of vessel.	Means by which the lives were saved.
				From.	To.			
11th July, 1891	"Polynia" of Dundee.	Steamer	359	Dundee	for whaling.	Lancaster Sound, Baffin Bay.	Total	47, by taking to the ice and afterwards going on board the whalers "Maud" and "Aurora" of Dundee.
14th July, 1892	"Chieftain" of Dundee.	Steamer	107	Dundee	for whaling.	Lat., 73°30'N., Long., 11°40'W., Arctic Ocean.	Total	36, 18 on the "Balaena" and 18 on the "Diana." (The vessel having been damaged by the ice and making much water and the crew refusing to proceed in her, a survey was held by the masters and carpenters of the whalers "Diana," "Balaena" and "Polar Star," who pronounced her unworthy. She was abandoned the following day and seen to sink.)
27th February, 1893	"Adamantine" of Liverpool.	Barquentine	216	St. John's, Newfoundland.	Liverpool.	Lat., 47°24'N., Long., 47°30'W., North Atlantic.	Total	9, by getting on board s.s. "Delano" in their own boats.
27th March, 1893	"Castlegate" of Liverpool.	Steamer	1,146	Dantzic	Philadelphia	Lat., 48°N., Long., 47°30'W., North Atlantic.	Total	24, by own boat, and afterwards picked up by the "Diana" of St. John's.
18th April, 1894	"Valetta" of West Hartlepool.	Steamer	874	Penarth	St. John's, Newfoundland.	Lat., 47°35'N., Long., 51°12'W., North Atlantic.	Total	20, by taking to their own boats and being picked up next day by barque "Liberté," of Mandal.
25th April, 1894	"Ruth Palmer" of Belfast.	Barque	906	Belfast	Miramichi, N.B.	Lat., 45°22'N., Long., 55°W., North Atlantic.	Total	15, by taking to their own boats and being picked up next day by French schooner "Marie Gabrielle."

Date of Casualty.	Name and Port of Vessel.	Steam or Sailing.	Tons (net).	Voyage.		Place of Casualty.	Total or partial loss of vessel.	Means by which the lives were saved.
				From.	To.			
19th August, 1896 ...	"Moldava" of London.	Steamer	1,477	Cardiff	Halifax, N.S.	Lat. 47°55' N., Long. 49°19' W., North Atlantic. About 5 miles E. of Gull Island, Newfoundland.	Total	28, by taking to their own boats and being picked up by the s.s. "Circassia" of Glasgow.
18th June, 1898 ...	"Para" of London.	Steamer	1,074	Swansea	Tilt Cove, Newfoundland.		Total	21, by taking to their own boats and subsequently landing at Tilt Cove.
31st May, 1903 ...	"Vega" of Dundee.	Steamer	201	Dundee	for whaling.	Melville Bay, Greenland.	Total	44, by taking to their own boats, in which they reached Upernivik.
21st April, 1906 ...	"Anglo Peruvian" of London.	Steamer	3,520	Newcastle on-Tyne.	Philadelphia	Lat. 41°50' N., Long. 52°30' W., North Atlantic. 1½ miles off Fogo, Newfoundland.	Total	38, by s.s. "Mohawk," of Bristol.
25th January, 1907 ...	"Robin" of Plymouth.	Brigantine	132	Twillingate, Newfoundland.	Lisbon		Total	6, taken on board the tug towing the vessel.
26th April, 1908 ...	"Norwood" of West Hartlepool.	Steamer	1,465	Glasgow	Sydney, C.B.	Lat. 46°30' N., Long. 57° W., North Atlantic. 1 mile N. of Cape Spear, Newfoundland.	Total	24 (22 crew and 2 stowaways), by taking to ship's boats and being picked up next day by fishing schooner "Howard Young."
6th June, 1909 ...	"Geisha" of Barnstaple.	Schooner	98	Cadiz	St. John's, Newfoundland.		Total	6, by taking to ship's boat (rowed 50 miles to the shore — according to "Shipping Gazette").

NOTE.—There are no casualties recorded in which there has been loss of life through striking ice during the twenty years ending 30th June, 1911, on voyages dealt with in the above return.

No. 19.

MISSING VESSELS.

List of Vessels registered in the United Kingdom reported to the Board of Trade as missing during the twenty years ended 30th June, 1911, whilst on voyages between European ports and the east coast of the United States, Canada and Newfoundland.

Name and Port of Vessel.	Steam or Sailing.	Tons (Net).	Voyage		Lives Lost.	When last heard of.
			From	To		
"Daring" of Fowey.	Schooner	122	Glasgow	St. John's, Newfoundland.	6 (crew).	12th September, 1891.
"Ellen Catherine" of Aberystwith.	Brigantine	118	Tilt Cove, Newfoundland.	Swansea.	6 (crew).	14th September, 1891.
"Little Vixen" of Plymouth.	Schooner	93	Plymouth	St. John's, Newfoundland.	5 (crew).	5th October 1891.
"Alice Graham" of Swansea.	Barquentine	383	Coosaw, S. Ca.	Swansea	8 (crew).	16th November, 1891.
"Ulster" of Liverpool.	Barquentine	290	St. John's, Newfoundland.	Liverpool	11 (crew).	22nd January, 1892.
"Clara" of Padstow.	Schooner	90	Tayport	St. John's, Newfoundland.	7 (5 crew and 2 passengers).	10th August, 1892.
"Talbot" of London.	Brig	170	Oporto	Gaultois, Newfoundland.	10 (crew).	24th September, 1892.
"Selma" of Newcastle-on-Tyne.	Barque	349	Dalhousie, N.B.	Glasgow	9 (crew).	12th October, 1892.
"Flora" of Falmouth.	Schooner	90	Lisbon	St. John's, Newfoundland.	5 (crew).	8th December, 1892.
"Donati" of Liverpool.	Steamer	855	New York	Oporto	26 (crew).	10th December 1892.
"Naronic" of Liverpool.	Steamer	4,222	Liverpool	New York	77 (74 crew and 3 passengers).	11th February, 1893.
"Horn Head" of Belfast.	Steamer	1,559	Baltimore	Dublin	27 (crew).	20th August, 1893.
"Apollo" of Hull	Steamer	2,054	New York	Antwerp	35 (crew).	11th February, 1894.
"Canute" of Cardiff.	Ship	1,215	Sapelo Sound	Queenboro'	17 (crew).	3rd December, 1894.
"Kingdom" of Liverpool.	Steamer	1,414	Hamburg	Charleston, U.S.A.	22 (crew).	24th December, 1894.
"Laurestina" of North Shields.	Steamer	1,302	Baltimore	Sligo	23 (crew).	7th December, 1895.
"Wild Flower" of London.	Steamer	1,698	Philadelphia	Rouen	29 (crew).	11th December, 1895.
"Massasoit" of Bristol.	Steamer	1,790	Newport News	London	26 (crew).	1st March, 1896.
"Fort William" of Glasgow.	Steamer	1,174	Hamburg	Norfolk, Virginia.	24 (crew).	16th December, 1896.
"State of Georgia" of Aberdeen.	Steamer	1,619	New Fairwater, Germany.	Halifax, N.S.	32 (crew).	28th December, 1896.
"Falls of Bracklinn" of Glasgow.	Steamer	2,232	Baltimore	Avonmouth	56 (crew).	3rd January, 1897.
"Ardbeg" of London.	Steamer	1,416	Baltimore	Copenhagen	22 (crew).	11th February, 1897.
"Beaumont" of Plymouth.	Schooner	115	Oporto	St. John's, Newfoundland.	6 (crew).	20th November, 1897.
"Azalea" of N. Shields.	Steamer	1,113	Baltimore	Stettin	23 (crew).	22nd November, 1897.
"Almida" of Glasgow.	Steamer	1,542	Hamburg	New York	24 (23 crew and 1 passenger).	21st December, 1898.

Name and Port of Vessel.	Steam or Sailing.	Tons (Net).	Voyage		Lives Lost.	When last heard of.
			From	To		
"Britannia" of Barnstaple.	Ketch	73	Harbor Grace, Newfoundland.	Plymouth	5 (crew).	13th January, 1899.
"Pictou" of W. Hartlepool.	Steamer	1,527	Newport News	Sligo	23 (crew).	20th January, 1899.
"Dora" of Liverpool.	Barquentine	199	St. John's, Newfoundland.	Liverpool	9 (crew).	23rd January, 1899.
"Dora Forster" of London.	Steamer	1,573	Savannah	Liverpool	26 (crew).	23rd January, 1899.
"Croft" of New-castle-on-Tyne.	Steamer	1,710	New York	Leith	27 (crew).	26th January, 1899.
"Oberon" of London.	Steamer	1,763	Baltimore	Antwerp	28 (crew).	26th January, 1899.
"Arcna" of Dundee.	Steamer	2,152	Portland, Me.	London	51 (crew).	27th January, 1899.
"Port Melbourne" of London.	Steamer	3,011	New York	London	49 (crew).	27th January, 1899.
"Pembroke" of London.	Steamer	1,903	Savannah	Hamburg	24 (crew).	13th August, 1899.
"Merrimac" of London.	Steamer	2,696	Quebec	Belfast	38 (crew).	25th October, 1899.
"Rosemorran" of Newcastle-on Tyne.	Steamer	1,619	Baltimore	Londonderry	24 (crew).	29th January, 1900.
"Planet Mercury" of Liverpool.	Steamer	2,092	Portland, Me.	Avonmouth	35 (crew).	17th February, 1900.
"Samuel Moss" of Fowey.	Schooner	127	Cadiz	St. John's, Newfoundland.	7 (crew).	19th August, 1900.
"Challenge" of Fowey.	Schooner	79	Oporto	St. John's, Newfoundland.	5 (crew).	27th August, 1901.
"Perseverance" of London.	Barque	164	Cumberland Gulf, Davis Straits.	United Kingdom	14 (crew).	22nd October, 1901.
"Huronian" of Glasgow.	Steamer	4,431	Glasgow	St. John, N.B.	57 (56 crew and 1 passenger).	11th February, 1902.
"Palmas" of London.	Steamer	1,593	Newport, Mon.	Boston, Mass.	39 (crew).	9th January, 1903.
"Salopia," of London.	Steamer	1,549	Norfolk, Virginia.	Antwerp	22 (crew).	9th February, 1903.
"Nelly" of Truro	Schooner	79	St. John's, Newfoundland.	Barcelona	5 (crew).	9th December, 1904.
"Norseman" of Barnstaple.	Schooner	96	Cadiz	St. John's, Newfoundland.	5 (crew).	17th May, 1905.
"Girl of Devon" of Plymouth.	Schooner	131	Herring Neck, Newfoundland.	Lisbon	6 (crew).	19th December, 1905.
"Nicaraguan" of Liverpool.	Steamer	2,386	Norfolk, Virginia.	Dublin and Liverpool.	44 (43 crew & 1 passenger).	8th June, 1907.
"Challenger" of Fowey.	Dandy	57	St. John's, Newfoundland.	Figueira	4 (crew).	11th December, 1908.

No. 20.

HOME TRADE or Excursion Passenger Steamers Registered in the United Kingdom which met with casualties attended with loss of life during the 20 years ended 30th June, 1911.

SUMMARY.

	No. of Vessels.	No. of lives lost.		
		Crew.	Passengers.	Total.
FOUNDREINGS (Total Losses) ...	1	1	14	35
STRANDINGS :				
Total Losses	5	101	272	373
Partial "	3	3	1	4
COLLISIONS :				
Total Losses	5	4	30	34
Partial "	8	4	14	18
OTHER CAUSES :				
Total Losses	—	—	—	—
Partial "	13	18	10	28
TOTALS :				
Total Losses	11	126	316	442
Partial "	24	25	25	50
Total	35	151	341	492

SHIPPING

LIST of STEAMERS registered in the United Kingdom which met with casualties attended Passenger

Date of Casualty.	Name and Port of Vessel.	Tons (Net).	Voyage.		Nature of Casualty.	Place of Casualty.
			From.	To.		
3rd Dec., 1909.	"Ellan Vannin," Douglas.	128	Ramsey	Liverpool	Foundering	Near Q 1 buoy, Estuary of River Mersey.
15th April, 1894.	"Countess of Aberdeen," Aberdeen.	291	Hull	Aberdeen	Stranding	Cove, 4 miles S. of Aberdeen.
30th Mar., 1899.	"Stella," Southampton.	193	Southampton	Guernsey and Jersey	Stranding	The Black Rock of the Casquets, Channel Islands.
5th Jan., 1900.	"Ibex," Milford.	309	Weymouth	Guernsey	Stranding	Platte, Fougère Rock, off Guernsey.
4th Dec., 1900.	"Rossgull," Plymouth.	90	Plymouth	Jersey	Stranding	La Grande Grune Rock, Jersey.
18th Nov., 1903.	"Glendale," Glasgow.	270	Stornoway	Lochalsh	Stranding	Pier, Kyle of Lochalsh, The Minch.
18th Nov., 1905.	"Hilda," Southampton.	373	Southampton	St. Malo	Stranding	Les Pierres des Portes, near St. Malo, France.
21st Feb., 1907.	"Berlin," Harwich.	586	Harwich	Hook of Holland	Stranding	N. Pier, New Waterway, Hook of Holland
4th Oct., 1908.	"Sir William Stephenson," Newcastle.	812	Newcastle	Antwerp	Stranding	Above Watsoorden, R. Scheldt.
1st Nov., 1892.	"Crocus," Liverpool.	35	Liverpool	Seacombe	Collision	River Mersey
14th May, 1893.	"Londoner," Newcastle-on-Tyne.	659	Londo	Newcastle	Collision	4 miles N.W. by N. of Woud Lightship, Norfolk.
12th Sept., 1893.	"Shamrock," Glasgow.	274	Dublin	Greenock	Collision	River Liffey
29th Oct., 1896.	"Wicklow," Dublin.	509	Dublin	Liverpool	Collision	Crosby Channel, Liverpool Bay.
10th Dec., 1899.	"Mabel Grace," London.	246	Boulogne	Folkestone	Collision	4½ miles S.S.E. of Folkestone
24th Dec., 1899.	"Falcon," London.	366	London	Hull	Collision	River Thames
21st July, 1900.	"Dromedary," Glasgow.	440	Belfast	Ardrossan	Collision	Belfast Lough
31st Aug., 1900.	"Larmont," West Hartlepool.	39	Moored at Sunderland	—	Collision	Custom House Quay, River Wear.
26th May, 1903.	"Huddersfield," Grimsby.	681	Antwerp	Grimsby	Collision	River Scheldt.

CASUALTIES.

with loss of life during the 20 years ended 30th June, 1911, while holding Home Trade or Excursion Certificates.

State of Wind and Weather at Time of Casualty.	Total or Partial Loss of Vessel.	Persons on Board at Time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.	Life-saving appliances on board according to Passenger Certificate in force at time of casualty.					
		Crew.	Passengers.	Crew.	Passengers.		Boats.		Deck Seats.		Life-belts.	Life-buoys.
							No.	Persons.	No.	Persons.		
Very stormy	Total	21	14	21	14	—	2	38	1	18	320	6
Light breeze, thick fog.	Total	18	12	1	—	29 by ship's own boats and fishing boats.	3	73	—	—	73	6
Light breeze, strong haze.	Total	43	174	19	86	112 by own boats.	7	222	—	—	754	36
Light breeze, fine, clear, dark.	Partial	35	34	1	1	67 by own boats.	5	182	2	42	600	12
Moderate breeze, very thick drizzling rain.	Total	12	8	8	—	11 by ship's boat and 1 man drifted to Cape Carteret, France.	2	31	3	21	151	6
Light breeze; fine and clear.	Partial	26	Several.	1	—	Survivors remained on board.	4	91	—	—	620	6
Half gale; snowing.	Total	28	109	27	104	5 by s.s. "Ada's" boat, and 1 by a French pilot boat.	6	154	—	—	607	12
Whole gale; clear.	Total	50	93	46	82	12 by Dutch life-boat and 3 by small Dutch boat.	8	24	—	—	957	8
Calm; dense fog	Partial	26	21	1	—	46 remained on board.	6	189	—	—	189	12
Light breeze, thick fog.	Partial	9	About 400	—	1	Two by the "Eurydice" (the colliding vessel), the remainder on own vessel.	1	7	—	—	100	24
Light breeze, dense fog.	Total	35	76	—	1 died on board s.s. "Ashton."	Passengers taken on board s.s. "Sheffield" (colliding vessel) and then on s.s. "Ashton," crew on other vessels.	12	369	1	31	403	18
Light breeze, clear overhead, hazy on water.	Partial	26	50 or 60	1	—	Survivors remained on board.	*	—	—	—	—	—
Light breeze, thick fog.	Partial	28	20	—	1	47, remained on board.	6	191	—	—	600	6
Variable, bright and clear.	Partial	32	44	1	—	75, remained on board.	6	172	3	75	830	12
Light breeze, a little hazy.	Partial	19	1 and pilot.	—	1	21, in own boats. The passenger died after being landed.	5	119	—	—	428	10
Light breeze, dense fog.	Partial	36	790	—	11	815, remained on board.	6	161	—	—	914	6
Strong wind, drizzling rain.	Partial	2 on board at time.	—	1	—	1, pulled ashore by some men.	2	21	—	—	151	12
Moderate breeze, fine.	Total	22	45	—	25	42 by own boats and s.s. "Uto."	7	151	—	—	153	6

* Records for 1893 destroyed.

LIST of STEAMERS registered in the United Kingdom which met with casualties or Excursion Passenger

Date of Casualty.	Name and Port of Vessel.	Tons (Net).	Voyage.		Nature of Casualty.	Place of Casualty.
			From.	To.		
26th May, 1906.	"Carrick," Glasgow.	197	Belfast	Ayr	Collision	5 miles W. by S. of Ailsa Craig, Firth of Clyde.
6th Feb., 1907.	"Portland," Glasgow.	539	Glasgow	Belfast	Collision	Off Cloch Lighthouse, Firth of Clyde.
18th Sept., 1907.	"Kintyre," Campbeltown.	94	Greenock	Campbeltown	Collision	Wemyss Bay
30th May, 1908.	"Onward," London.	333	Folkestone	Boulogne	Collision	16 miles S.E. of Folkestone.
12th Aug., 1895.	"Iveagh," Newry.	197	Loading in Collingwood Dock, Liverpool	—	Explosion of paraffin.	Collingwood Dock, River Mersey.
16th Sept., 1895.	"Iona," Leith	608	Leith	London	Damaged by fire	Thames Estuary
12th Nov., 1897.	"Lady Hudson Kinahan," Dublin.	656	Falmouth	Dublin	Deck cargo (sulphuric acid) broke adrift.	7 miles S. of the Longships, Cornwall.
12th Jan., 1898.	"Xema," Cork	562	Moored at Bristol.	—	Damaged by fire	Cumberland Basin, Bristol.
2nd Jan., 1899.	"Fenella," Douglas, Isle of Man.	216	Liverpool	Douglas	Deck shelter carried away.	18 miles N. of Bar Lightship, Liverpool Bay.
28th Dec., 1900.	"Medway," Glasgow.	500	Swansea	Glasgow	Damaged by heavy seas.	Bristol Channel
17th May, 1902.	"Munster," Dublin.	733	Moored at Holyhead	—	Manhole door gave way.	Old Harbour, Holyhead.
25th June, 1902.	"Iona," Cardiff	28	Cardiff	Penarth	Trunnion pipe got detached from cylinder.	Near black buoy, mouth of river Taff.
23rd July, 1903.	"Royal Sovereign," London.	190	London	Margate and Ramsgate	Combustion, crown plate of boiler collapsed.	Five miles below the Nore, Thames Estuary.
3rd Oct., 1907.	"Vienna," Harwich.	581	Parkeston Quay	Rotterdam	Port combustion chamber crown plate collapsed.	Between Shipwash and Outer Gabbard Lightships.
21st Aug., 1909.	"Mavis," London.	211	Great Yarmouth	London	Transporting chock fractured, causing rope to leave the lead.	Brush Quay, Great Yarmouth.
3rd Dec., 1909.	"Honfleur," Southampton.	122	Southampton	Honfleur	Decks swept	Lat. 49°50'N., Long. 0°25'W., English Channel.
12th Jan., 1911.	"St. David," London.	771	Rosslare	Fishguard	Decks swept	21 miles N.W. of Strumble Head, Pembrokeshire.

attended with loss of life during the 20 years ended 30th June, 1911, while holding Home Trade Certificates—continued.

State of Wind and Weather at Time of Casualty.	Total or Partial Loss of Vessel.	Persons on Board at Time of Casualty.		Lives Lost.		Number of Survivors and by what means saved.	Life saving appliances on board according to Passenger Certificate in force at time of casualty.					
		Crew	Passengers.	Crew.	Passengers.		Boats.		Deck Seats.		Life-belts.	Life-buoys.
							No.	Persons.	No.	Persons.		
Light breeze, dense fog.	Total	14	8	2	4	14 in own boat, and picked up by SS. "Mastiff," 2 by "Duke of Gordon."	5	94	—	—	560	6
Calm, fine, hazy	Total	25	—	1	—	24 by own boats	4	100	—	—	121	6
Calm, fine and clear.	Total	15	—	1	—	13 by boarding the "Maori" (the colliding vessel), by means of ropes, and 1 by a small boat.	4	61	—	—	360	6
Light breeze, foggy.	Partial	47	193	1	—	239, remained on board.	8	253	6	94	1,360	26
Moderate breeze, fine and clear.	Partial	22	—	1	—	21, remained on board.	4.	107	—	—	330	6
Light breeze, fairly clear.	Partial	38	79	1	6	110, remained on board.	8	208	—	—	452	6
Gale	Partial	27	14	—	1	40, remained on board.	8	264	—	—	734	
Calm, fine	Partial	25	6	2	—	29, remained on board.	4	180	—	—	606	6
Very heavy squalls.	Partial	28	120	—	3	145, remained on board.	4	72	2	42	546	6
Heavy gale; dense fog.	Partial	20	5		—	24, remained on board.	6	170	—	—	159	6
Moderate breeze; clear.	Partial	60	5	5	—	60, remained on board.	8	333	—	—	764	12
Light breeze; fine and clear.	Partial	4	1	1	—	4, remained on board.	—	—	6	126	100	35
Light breeze, fine and clear.	Partial	41	800	1	—	840, remained on board.	3	61	74	1,166	27	24
Moderate breeze, fine.	Partial	48	—	2	—	46, remained on board.	8	291	—	—	960	6
Light breeze, fine	Partial	20	About 650	1	—	Survivors remained on board.	3	67	35	234	660	11
Very stormy	Partial	17	—	1	—	16, remained on board.	4	76	—	—	284	12
Very stormy, snow.	Partial	56	73	2	—	127, remained on board.	8	236	10	240	1,440	8

MERCHANT SHIPPING.

SAFETY OF LIFE AT SEA.

DRAFT LIFE-SAVING APPLIANCES RULES, WITH
MEMORANDUM ON SAFETY OF LIFE AT SEA,

BY THE

PRESIDENT OF THE BOARD OF TRADE.

Presented to both Houses of Parliament by Command of His Majesty.



LONDON:
PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE.
To be purchased, either directly or through any Bookseller, from
WYMAN AND SONS, LIMITED, FETTER LANE, E.C., and 32, ABINGDON STREET, S.W.; or
H.M. STATIONERY OFFICE (SCOTTISH BRANCH), 23, FORTH STREET, EDINBURGH; or
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T. FISHER UNWIN, LONDON, W.C.

PRINTED BY
DARLING AND SON, LTD., BACON STREET, E.
1912.

[Cd. 6402.] Price 2½d.

PART I.

The draft Rules dealing with life-saving appliances at sea contained in the present White Paper are necessarily limited to the Statutory Rules which the Board of Trade are authorised to make under Section 427 of the Merchant Shipping Act, 1894.

This section enables the Board of Trade to make Rules for British ships, having regard to the services in which they are employed, the nature and duration of the voyage and the number of persons carried; prescribing the number and description of boats and other life-saving appliances to be carried by ships of each class, and the mode of construction, the equipment, and the launching of such boats or other life-saving appliances.

The Rules themselves will be laid before Parliament at an early date after it resumes its sittings, and, after lying for forty days from the date of presentation, they will have statutory effect. The present White Paper is, however, published in advance in accordance with a statement made by me to the House of Commons on July 31st, with a view to give members, and other persons interested, an opportunity of considering the proposed Rules before they are actually made.

In preparing the revised Rules the Board of Trade have had the advantage of considering the Report of the Court of Inquiry into the "Titanic" disaster, and also the Report of the Merchant Shipping Advisory Committee, to which the Board referred these and other questions relating to safety of life at sea.

Although on some material points I have not been able to adopt the conclusions of the Merchant Shipping Advisory Committee as they stand, the report of that Committee has been of very great value to me and to my advisers, and I take this opportunity of expressing my high appreciation of the time and pains ungrudgingly expended by the members of the Committee, and of its various sub-Committees on the important questions referred to them.

In May last, after consultation with the Advisory Committee, I appointed a Committee of Experts to consider and report on a question of primary importance, viz., the sub-division of vessels by watertight bulkheads. I have also appointed a Committee to consider the best means of stowing and launching boats, and certain other questions bearing thereon. The two Committees last mentioned have not yet reported, and it is probable that some supplementary or amending Rules will be necessary as the result of their Reports when received, and also as the result of the proposed International negotiations on safety at sea. While I have thought it inadvisable to delay the issue of the revised Rules as a whole until the completion of these inquiries and negotiations, it must be understood that in view thereof the present Rules must necessarily be regarded as to some extent provisional.

For the sake of convenience of reference brief notes have been printed at the side of the draft Rules indicating some of the principal changes that have been made as compared with the Rules now in force.

The Rules apply both to Foreign-going and to Home Trade ships, but the requirements differ somewhat in the two cases.

FOREIGN-GOING SHIPS.

The principal changes made may be summarised as follows:—

1. Foreign-going Passenger steamers, emigrant ships, and foreign-going sailing ships carrying passengers are in future to provide sufficient lifeboat accommodation for all on board.

2. The number of boats to be attached to davits is no longer to depend on tonnage, but on the length of the ship; and the davits must be placed amidships.

This Rule is subject to modifications where, in the opinion of the Board of Trade, it is not practicable to provide for the number of sets of davits required either in respect of an existing ship or of a future ship; and a ship will not be required

to carry a larger number of sets of davits than is sufficient to provide lifeboats for all on board.

3. Appliances or arrangements at least as effective for launching boats may be substituted for davits. Where the boat deck is of excessive height above the water the ship may be required to carry in lieu of, or in addition to, davits, some other approved form of launching appliances.

As stated above, the whole question of the most efficient arrangements for stowing boats on steamships of all classes, for launching them in an emergency, and for embarking passengers and crew, has recently been referred to a special Committee—the "Davits and Boats Committee."

4. Lifeboats must be of a prescribed build. In the term "lifeboat" is included the "decked lifeboat," but not a collapsible boat. Existing collapsible boats are, however, allowed to count for a certain period, after which they will be replaced by lifeboats.

The question how far, if at all, life-rafts should be allowed in substitution of lifeboats, has been referred to the Davits and Boats Committee.

5. Changes have been made in the Rules prescribing the type and dealing with the construction of lifeboats, and the method of ascertaining their strength and carrying capacity.

As regards existing lifeboats which do not comply with these Rules, the previous recognised carrying capacity will be reduced.

6. A larger proportion of motor-boats is to be allowed. The question of the suitability or otherwise of motor-boats as ships' lifeboats has been referred to the Davits and Boats Committee.

7. Lifeboats are to be fitted with protective fenders. Their equipment is somewhat enlarged; and every boat must in future carry the prescribed equipment. The boat equipment must be in the boat as soon as the ship leaves the harbour; and must remain throughout the voyage. The number of persons to be carried in each boat, and its dimensions, are to be marked on the boat.

8. All life-jackets and lifebuoys are to be suitably placed, and their position plainly indicated. At least half the lifebuoys must have ignition apparatus attached.

9. The existing General Rule 12, which provides that a lesser number of boats might be provided in the event of the ship being divided into efficient watertight compartments, is abrogated.

10. Foreign-going cargo steamships are at present required to carry on each side boats (of which one must be a lifeboat) sufficient to accommodate all persons on board. In future sufficient lifeboats must be carried on each side to accommodate all on board; and must be fully equipped. The requirements for foreign-going cargo sailing ships are also somewhat increased; in future they must carry sufficient and fully-equipped lifeboats for all on board.

HOME TRADE VESSELS.

Home Trade Passengers ships, including cross-Channel and Excursion vessels, present a more difficult problem than the Ocean-going passenger ships.

By the nature of their service the numbers they are authorised to carry, and can safely and conveniently carry, are in many cases considerably greater in proportion to the size of the vessel than in the case of a foreign-going ship. Most of their voyages are short, many of their voyages are performed entirely in daylight; and the numbers allowed to be carried are accordingly fixed on the assumption that the passengers are not berthed in the ship. Further, the numbers actually carried vary greatly from day to day; and there are certain days in the year—Bank Holidays and the like—on which the numbers carried are greatly in excess of the usual number. The average number carried is far less than the numbers for which the vessel is certified.

To impose an obligation on these home trade vessels to carry lifeboats based on the maximum number for which the vessel is certified, would be to demand what is physically impracticable. To provide boats and buoyant apparatus, buoyant deck seats, and the like (apart from life-jackets), would also be in many cases impracticable, especially in the case of the excursion steamers.

In considering these classes of ships it is reasonable to take into account the limitation of their voyages and the conditions under which the voyages are undertaken, e.g., the fact that certain classes of these voyages are confined to daylight hours in

the summer months in waters largely frequented by other shipping, while in other cases the voyages are limited to smooth or partially smooth water. It would be unreasonable to apply to these ships the full requirements necessary for foreign-going vessels which are subject to wholly different conditions; and it is desirable to avoid the unnecessary imposition of a burden which might seriously restrict the trade of cheap excursion steamers in the summer months, from which a very large number of persons derive pleasure and health.

The principles on which the new Rules deal with home trade passenger ships may be briefly summarised as follows:—

- (1) Buoyant apparatus (such as life-rafts, buoyant deck seats, &c.), is recognised as an integral part of the provision as well as lifeboats. This is justified by the nature of the voyages and of the risks encountered, and especially by the fact that, while the provision of sufficient lifeboats for all whom it is desired to accommodate would, in many cases, be impracticable in the case of a home trade passenger vessel, such boats, even if carried, could not be made available in an emergency nearly so quickly as buoyant apparatus.
- (2) Lifeboats and buoyant apparatus (other than life-jackets) are required to be provided sufficient for all persons allowed to be carried by any ship under a passenger certificate which is applicable to any voyage outside partially smooth waters, other than a short voyage limited to daylight hours in the summer months or on certain specified days.
- (3) In the case of voyages limited to daylight hours in summer, or to smooth or partially smooth waters, the requirements as to life-boats and buoyant apparatus (other than life-jackets) are suitably reduced.
- (4) Life-jackets are required to be carried for all persons on board in addition to any other life-saving appliances, and not in substitution therefor.
- (5) As regards existing ships, the new requirements as to the provision of life-boats and buoyant apparatus may, if necessary, be reduced (see below); in the case of the limited voyages referred to in (3) a lower scale of requirements is temporarily applied to existing ships.

Home Trade Passenger steamers will in future be divided into six classes—Classes I., V.—IX.

Classes I. and V. (No. 2 Certificate) include cross-Channel (Continental) boats, and passenger steamships plying along the coast, or between Great Britain and Ireland or the Isle of Man.

These two classes are dealt with in the draft Rules on the same basis.

At present they are required, according to their tonnage, to carry a certain number of boats under davits, and additional boats or buoyant apparatus (other than life-jackets);

In future the number of lifeboats under davits will be proportioned to the length of the vessel; and the lifeboats must reach a certain minimum aggregate cubic capacity. The boats must be always kept fully equipped.

As regards the total number of persons for whom boats and buoyant apparatus must be carried, it is provided that in future there may be two certificates for this class of vessel:—

(a) An ordinary passenger certificate authorising a certain number of persons (crew and passengers) to be carried in the vessel by night or day, all the year round, and in all weathers. The number authorised by this certificate would as a rule be somewhat lower than that for which the vessel would at present be certified, and would be usually limited to the maximum number which, in ordinary circumstances, the vessel would be likely to carry.

(b) A special passenger certificate which, when the vessel is engaged upon short, daylight voyages, during the summer months, or on certain specified days (not exceeding six) in the year, would entitle her to carry persons in excess of the total number of persons allowed by the ordinary certificate.

These vessels will be required to carry lifeboats and rafts, deck seats, and buoyant apparatus (other than life-jackets), sufficient for the full number of persons for which the vessel is certified under the ordinary certificate.

When a special certificate is granted, sufficient lifeboats and rafts, deck seats, and buoyant apparatus (other than life-jackets) must be carried to provide accommodation for eighty per cent. of the number allowed by the special certificate, or for the total number of persons allowed by the ordinary certificate, whichever number is the greater.

In all cases sufficient life-jackets must be carried for all on board, in addition to the buoyant apparatus, together with life-buoys.

Class VI. (No. 3 Certificate).—These steamers are limited by their certificates to short excursions to sea along the coast beyond partially smooth water limits, which must be in fine weather, by daylight, and in the best part of the year (1st April—October 31st). These steamers are at present required to carry two boats, together with buoyant apparatus or life-jackets sufficient to keep afloat all on board; and the provision at present is, as a rule, largely made by means of the life-jackets. In future these vessels are to carry two lifeboats if under, and four lifeboats if over, 200 feet in length, all attached to davits. They must carry also buoyant apparatus (other than life-jackets) sufficient, with the boats, to provide for seventy per cent. of the number for which the vessel is certified.

In all cases sufficient life-jackets must be carried for all on board, in addition to the buoyant apparatus, together with lifebuoys.

Classes VII., VIII., IX.—The remaining classes of home trade passenger vessels do not go far from the shore or bank and ply:—

- (a) In partially smooth water (Class VII., Certificate No. 4).
- (b) In smooth water in estuaries and lakes (Class VIII., Certificate No. 5).
- (c) In rivers, canals and small lakes (Class IX., Certificate No. 5).

There is in these classes a diminished risk attendant on the nature of the voyage. There is, therefore, a diminishing necessity for providing, while there is an increasing practical difficulty in providing, boats or buoyant apparatus (apart from life-jackets) in proportion to the numbers for which the vessel is certified; and the life-jackets (of which there must be sufficient for all on board) become a more effective part of the provision of life-saving appliances.

Many of these home trade passenger vessels hold the three Certificates 3, 4 and 5, the authorised number of persons to be carried increasing substantially with the certificate.

Home Trade Passenger Certificates.—In each of the classes above-mentioned the number of persons which a ship is at present allowed by the passenger certificate to carry can be reduced if the owner desires.

Classes X., XI., XII., XIII.—These classes include steam launches, motor boats, tugs, fish carriers, dredgers, &c., &c.

In addition to the boats and the buoyant apparatus required for each class, sufficient life-jackets for the whole number of persons for which the boat is certified must be carried, as well as a proportionate number of life-buoys.

Existing Home Trade Passenger Ships.—If it is shown that it is not practicable or reasonable in an existing passenger vessel to provide lifeboats or buoyant apparatus to the extent prescribed, the requirements of the Rules may in that case be modified by the Board of Trade; and the requirement that the lifeboats in a vessel in Class I. or Class V. shall reach a certain minimum aggregate cubic capacity does not apply to existing ships. But a vessel in Class I. or Class V. shall in no case provide boat and buoyant apparatus accommodation for less than 70 per cent. of the total number of persons allowed to be carried by her ordinary passenger certificate. Lower percentages are fixed for vessels in Class VI., VII., VIII. or IX.; and until the 1st January, 1916, a vessel in any of the four classes last-mentioned will not be subject to higher requirements than are indicated by the percentages specified.

Home Trade Cargo Vessels. Home trade cargo steamers (except coasting vessels) are at present required to carry on each side boats (of which one must be a lifeboat) to accommodate all persons on board. In future all the boats except one must be lifeboats, and must be fully equipped. As regards home trade sailing ships the requirements have been altered so as to ensure that all the boats shall be lifeboats. In every case the vessel must carry sufficient lifeboats for all on board.

General Rules.—The changes in the General Rules to which reference has been made above under the heading of foreign-going ships will apply, with one or two exceptions, to home trade vessels.

OPERATION OF RULES.

A certain period must be given to enable shipowners to meet the new requirements. The Rules will come into force on the 1st January, 1913, but will not apply to passenger steamers so far as they involve structural alterations to the ship until the lapse of any passenger certificate valid on the 1st October, 1912, *i.e.*, until the vessel comes up for its annual survey.

PART II.

There are other questions of moment connected with *Safety of Life at Sea* which are not (and cannot be) dealt with by these Statutory Rules. Among them are the following:—

WATER-TIGHT SUB-DIVISION OF SHIPS.

As stated above, I appointed a Committee under the title of the “Bulkheads and Watertight Compartments” Committee last May. The terms of reference are as follows:—

To advise the Board of Trade, in the interests of safety of life—

- (1) As to what in their opinion would constitute efficient sub-division with regard to each of the classes of vessels included in the Rules for life-saving appliances made by the Board of Trade under Section 427 of the Merchant Shipping Act, 1894, having due regard to the nature of the service in which they are respectively engaged;
- (2) Whether, independently of the foregoing, the Committee desire to make any recommendations with reference to the sub-division of vessels already built, or of new vessels, which would, in their opinion, contribute to the safety of life at sea.

On receiving the Report of the Court of Inquiry into the loss of the “Titanic,” I referred to the Committee certain special points which that Court recommended should be considered by them, *i.e.*, the desirability and practicability of providing ships with a double skin carried up above the water line, or a longitudinal, vertical, watertight bulkhead on each side of the ship, and with a watertight deck above the water line; and other matters.

When the Committee have reported, it will be seen whether, and to what extent it may be necessary and desirable to seek further Statutory powers in these matters.

DAVITS AND BOATS.

As stated above, I have also appointed a “Davits and Boats” Committee. The terms of reference, which explain themselves, are as follows:—

To advise the Board of Trade in the interests of safety of life—

- (1) As to what are the most efficient arrangements for stowing boats on steamships of all classes, for launching them in an emergency, and for embarking the passengers and crew.
- (2) As to whether, and, if so, to what extent mechanical propulsion can with advantage be adopted either in addition to, or in substitution for, propulsion by oars and sails.
- (3) As to the question of rafts, and, in particular, whether, if of approved character, they should be allowed in substitution for boats; and, if so, to what extent and under what conditions.
- (4) Whether, independently of the foregoing, the Committee desire to make any recommendations with reference to the above-mentioned matters which would in their opinion contribute to the safety of life at sea.

MANNING OF BOATS, &c.

Manning, Competence of Boat Hands, Drilling, Organisation of Crew, &c.

It is evident that the large addition made by the new Rules to the number of lifeboats required to be carried by certain classes of vessels must raise at once the question of the sufficiency of the crew, and their efficiency to handle and manage the boats. The Board of Trade have no power to make a Statutory Life-Saving Rule prescribing a scale of manning for various classes of vessels. They have, however, power under Section 305 of the Merchant Shipping Act, 1894, to require emigrant ships to be manned with an efficient crew to the satisfaction of the emigration officer; and under the Merchant Shipping Act, 1897, they can detain as unseaworthy a vessel which by reason of under-manning is unfit to proceed to sea without serious danger to human life. Under each of these widely differing powers the Board of Trade have in the past given instructions to their officers as to the minimum number of deck-hands to be carried by emigrant, and passenger and cargo ships, respectively, of various sizes.

These instructions are being revised so as to secure a sufficient complement of efficient boat-hands to deal with the total number of boats which will now be required to be carried, and to be manned in an emergency. It is proposed that, in foreign-going passenger steamers, within certain limits the boat-hands must be efficient deck-hands, while outside those limits seamen of other ratings may be drawn upon to make up the complement, provided that they satisfy the Board of Trade by certificate or otherwise of their competence as boat-hands.

The question of the organisation of the crew, and of systematic boat-drill has also been referred to in Lord Mersey's Report, and in that of the Advisory Committee, and I am in general agreement with the views therein expressed. I am advised, however, that the Board of Trade have probably no power to make such drill compulsory; and, in this matter, as well as in regard to the whole question of manning, it may be necessary to seek for further powers.

Survey and Inspection of Passenger and Emigrant Ships as regards Hull, Machinery, Equipment, Manning, &c.

The Board of Trade have varying and limited powers in respect of survey and inspection. It may be found necessary, after a careful review of the whole situation, and especially in the light of Lord Mersey's Report and that of the Advisory Committee, to obtain fuller powers from Parliament to enable the Board adequately to carry out the extended duties for which they will be responsible. In any case considerable strengthening of the Surveying Staff will be necessary.

Wireless Telegraphy.

A Bill to impose compulsorily the institution of Wireless Telegraphy on certain classes of ships has been prepared by the Board of Trade in consultation with the Post Office and the Admiralty. But as this question is one on which International agreement is highly desirable, I should prefer not to proceed with the Bill until after the proposed International negotiations on Safety of Life at Sea, provided that this course does not entail undue delay.

Sight Tests.

A Committee was appointed by me on the 22nd of June, 1910, to enquire into and report on this question. The report was recently received, and action is being taken on the recommendations of the Committee.

Obligation to go to the Relief of a Vessel in Distress.

Acting on the recommendation made by Lord Mersey, a circular has been issued by the Board of Trade to masters of vessels, pointing out that under the Maritime Conventions Act, 1911, it is a misdemeanour not to go to the relief of a vessel in distress where it is possible to do so.

Reporting of Ice.

In accordance with the recommendations of the Merchant Shipping Advisory Committee, preliminary steps are being taken by the Board of Trade to deal with the question of improving the existing arrangements for reporting the movement of ice in the North Atlantic, and they are in consultation with the Hydrographic Department of the Admiralty, the Meteorological Office, and other authorities, with this object.

Steamship Routes—Speed of Steamships in Vicinity of Ice.

These are questions which I hope will be the subject of International discussion.

Both Lord Mersey (Report, Recommendation 24) and the Advisory Committee (Report, Paragraph 45) have strongly urged the importance in regard to all the questions affecting safety at sea, that a common International line of action should be agreed on in order to obtain uniformity of action and International enforcement. With this view I entirely concur, and I would repeat that the present Rules, and any other Regulations or Instructions that may be issued, are subject to further reconsideration by the light of any conclusions arrived at by International negotiation.

SYDNEY BUXTON.

August, 1912.

LIFE-SAVING APPLIANCES.

R U L E S

MADE BY

THE BOARD OF TRADE

UNDER

SECTION 427 OF THE MERCHANT

SHIPPING ACT, 1894.

TO COME INTO EFFECT ON THE 1st JANUARY, 1913.

RULES

MADE UNDER

SECTION 427, MERCHANT SHIPPING ACT, 1894.

The Classes correspond with the Classes in the existing Rules as indicated in this margin opposite the new Class.

		FOREIGN-GOING.		PAGE
Division A., Class 1, and Class 2; and Division B., Class 1.	Class I.	Foreign-going passenger steamers, including emigrant ships	...	3
Division A. Class 4.	Class II.	Foreign-going steamships not certified to carry passengers	...	4
Division B. Class 2.	Class III.	Foreign-going sailing ships carrying passengers	...	4
Division B. Class 3.	Class IV.	Foreign-going sailing ships not carrying passengers	...	5
		HOME TRADE.		
Division A. Class 3.	Class I.	Steamships holding passenger certificates authorising them to carry passengers anywhere within Home Trade limits, <i>i.e.</i> , between places in the United Kingdom, or between the United Kingdom and ports of Europe between the River Elbe and Brest...	...	5
Divisions C. Class 1; and D. Class 3.	Class II.	Steamships trading within Home Trade limits, but not certified to carry passengers	...	6
Division B. Class 4.	Class III.	Sailing ships carrying passengers anywhere within Home Trade limits	...	6
Divisions C. Class 2; and D. Class 4.	Class IV.	Sailing ships trading within Home Trade limits, but not carrying passengers	...	7
Division D. Class 1.	Class V.	Steamships holding passenger certificates authorising them to carry passengers within certain specified limits of the Home Trade, <i>viz.</i> , on short specified passages along the coasts of the United Kingdom, or between Great Britain and Ireland, or between Great Britain or Ireland and the Isle of Man	...	7
Division D. Class 2.	Class VI.	Steamships certified to carry passengers on short excursions to sea, <i>i.e.</i> , beyond partially smooth water limits, between 1st April and 31st October, during daylight, and in fine weather	...	7
	Class VII.	Steamships certified to carry passengers in partially smooth water	...	7

For the purposes of these Rules, ships shall be arranged in the following classes, under the headings "Foreign-going" and "Home Trade":—

Division E. Class 1: but some (estuary) steamers are in Division D. Class 2.	Class VIII.	Steamships certified to carry passengers in smooth water in estuaries and large lakes	...	8
	Class IX.	Steamships certified to carry passengers in smooth water on rivers, canals, and small lakes	...	8
Division D. Class 6.	Class X.	Steam launches, and motor boats certified to carry passengers for short distances to sea	...	8
Division D. Class 5.	Class XI.	Steam fish carriers, tugs, and steam lighters which proceed to sea	...	9
Division E. Class 2.	Class XII.	Tugs and steam lighters which do not proceed to sea	...	9
Division E. Class 3.	Class XIII.	Hulks, dredgers, steam hoppers, &c.	...	9

LIFE-SAVING APPLIANCES RULES.

SECTION 427, MERCHANT SHIPPING ACT, 1894.

For the purposes of this section ships shall be equipped in accordance with the following Rules:—

Ships shall be divided into two classes, *viz.*, Foreign-going and Home Trade, and under Home Trade shall be included all vessels which are not foreign-going vessels, as defined in Section 742 of the Merchant Shipping Act, 1894.

RULES FOR THE VARIOUS CLASSES OF SHIPS.

FOREIGN-GOING.

*CLASS I.

Rules for Foreign-going Passenger Steamers, including emigrant ships.

Rule A. A ship of this class shall carry lifeboats† in such number and of such capacity as shall be sufficient to accommodate the total number of persons—passengers and crew—carried,‡ or which the ship is certified to carry, whichever number is the greater.

The master or owner of a ship of this class claiming to carry on any voyage fewer lifeboats than will provide sufficient accommodation for all the persons for which the vessel is certified, must declare before the Collector or other Officer of Customs, before the time of clearance, that the lifeboats actually carried will be sufficient to accommodate all persons that will be carried at any time during the voyage to foreign ports and back to the United Kingdom.

Rule B.—One spare boat shall be carried in addition to the lifeboats, if the voyage lead south of latitude 40° south. Such boat may be a boat of Section D.

Rule C.—Subject to the provisions of General Rule 14 (a) a ship of this class shall be provided in accordance with its length with such number of sets of davits of approved form as is specified in the Table in Appendix A, and they shall be suitably placed to the satisfaction of a Board of Trade

***Foreign-going Class I.**
—This Class includes emigrant ships as well as foreign-going passenger steamers, and corresponds to Division A., Classes 1 and 2 of the existing Rules.

†The question whether life-rafts of approved character can be allowed in substitution of lifeboats, and if so, of what character, to what extent and under what conditions, has been referred to the Boats and Davits Committee.

‡An emigrant ship may, subject to statutory regulations, be allowed by the Emigration Officer clearing the vessel to carry a larger number of passengers than specified in her passenger certificate.

Surveyor; each set of davits shall have a lifeboat attached to it: Provided that no ship shall be required to have a larger number of sets of davits than is sufficient in the opinion of the Board of Trade to provide lifeboats for the total number of persons carried, or which the ship is certified to carry, whichever number is the greater; Provided also, that where appliances or arrangements at least as effective as davits for launching boats are carried, they may be accepted by the Board of Trade in lieu of davits: Provided also that the Board of Trade may, where it appears to them that the boat deck of a ship of this class is at an excessive height above the centre of the load line disc, require such a ship to carry in lieu of, or in addition to, davits, some other approved form of launching appliances, or such arrangements for launching boats, as may be, in their opinion, at least as effective as davits.

**The object of this Rule is to ensure proper stowage of boats not attached to davits.*

***All lifeboats are to be fully equipped.*

†The provision of life-buoys is no longer to depend upon the number of boats under davits, but on the length of the ship.

‡This provision, which does not appear in the existing Rules, ensures life-jackets suitable for children.

§ Foreign-going Class II.—*This Class corresponds to Division A., Class 4 of existing Rules. An alteration of existing Rules has been made so as to secure that there shall be sufficient lifeboats fully equipped on each side of the ship to accommodate all persons on board. By the existing Rules there must be a lifeboat on each side; and boat accommodation for all on board on each side of the ship.*

|| Foreign - going Class III.—*This Class corresponds to Division B., Class 2.*

Rule D.—*If the lifeboats attached to davits are not sufficient to accommodate all the persons for whom lifeboats have to be provided, the remaining lifeboats shall be stowed, so far as practicable, immediately alongside or beneath the lifeboats attached to the davits. If it is not practicable to stow all the lifeboats in this manner the remaining lifeboats shall be stowed abreast of the davits in such a manner that they can easily be moved to a position beneath the davits; or in some other manner which is in the opinion of the Board of Trade at least as satisfactory.

Rule E.—**All the lifeboats shall be equipped as provided in General Rules 6 and 7.

Rule F.—†If the ship is under 400 feet in length, at least 12 approved lifebuoys shall be carried; if of 400 feet or over, but under 600 feet, at least 18 approved lifebuoys shall be carried; if of 600 feet or over, but under 800 feet, at least 24 approved lifebuoys shall be carried; and if of 800 feet or over, at least 30 approved lifebuoys shall be carried.

Rule G.—Approved life-jackets or other approved articles of equal buoyancy suitable to be worn on the body shall be carried for each person on board, of ‡which a sufficient number shall be of reduced size so as to be suitable for children.

§ CLASS II.

Rules for Foreign-going Steamships not certified to carry Passengers.

Rule A.—A ship of this class shall carry on each side of the ship lifeboats equipped as provided in General Rules 6 and 7 in such manner and of such capacity as will accommodate all persons on board.

Rule B.—Such lifeboats shall be attached to davits, or other approved appliances at least as effective as davits shall be provided in lieu of davits.

Rule C.—At least six approved lifebuoys shall be carried, together with one approved life-jacket for each person on board.

|| CLASS III.

Rules for Foreign-going Sailing Ships carrying Passengers.

Rule A.—A ship of this class shall be provided with lifeboats equipped as provided in General Rules 6 and 7, in such number and of such capacity as shall be sufficient to accommodate all persons on board; and with two spare lifeboats equipped as in General Rule 6.

Rule B.—All the lifeboats shall be carried under davits so far as practicable in the opinion of a Board of Trade Surveyor, or other approved appliances shall be provided.

Rule C.—At least six approved lifebuoys shall be carried, together with one approved life-jacket for each person on board. A sufficient number of the life-jackets shall be of reduced size so as to be suitable for children.

*CLASS IV.

Rules for Foreign-going Sailing Ships not carrying Passengers.

Rule A.—A ship of this class shall carry lifeboats equipped as provided in General Rules 6 and 7 in such number and of such capacity as shall be sufficient to accommodate all persons on board.

Rule B.—Such a ship shall carry in addition one spare boat, which may be a boat of Section D.

Rule C.—Two boats at least shall be attached to davits, or approved appliances at least as effective as davits shall be provided in lieu of davits.

Rule D.—At least four approved lifebuoys shall be carried, together with one approved life-jacket for each person on board.

HOME TRADE.

† CLASS I.

Rules for Steamships holding Passenger Certificates authorising them to carry Passengers anywhere within Home Trade Limits, i.e., between places in the United Kingdom, or between the United Kingdom and Ports of Europe between the River Elbe and Brest.

Rule A.—Subject to the provisions of General Rule 14 (a), a ship of this class shall be provided in accordance with its length with such number of sets of davits of approved form as is specified in the Table in Appendix A, and they shall be suitably placed to the satisfaction of a Board of Trade Surveyor; each set of davits shall have a lifeboat attached to it: Provided that no ship shall be required to have a larger number of sets of davits than is sufficient in the opinion of the Board of Trade to provide lifeboats for the total number of persons which the ship is certified to carry: Provided also that where appliances or arrangements at least as effective as davits for launching boats are carried, they may be accepted by the Board of Trade in lieu of davits.

Rule B.—In a ship of this class launched after the 1st of January, 1913, if the lifeboats attached to davits do not provide the total capacity specified in the Table in Appendix B, additional lifeboats shall be carried; and they shall be stowed immediately alongside or beneath the lifeboats attached to the davits; or in some other manner which is in the opinion of the Board of Trade at least as satisfactory.

Rule C.—The lifeboats shall be equipped as provided by General Rule 6 and paragraphs (b), (d), and (e) of General Rule 7:

Rule D.—Subject to the provisions of Rule 14 (b), if the life-boats carried do not provide sufficient accommodation for the total number of persons which the vessel is allowed by

*Foreign - going Class IV.—*This Class corresponds to Division B., Class 3.*

†This Class corresponds to Division A., Class 3, of the existing Rules—ships having a Passenger Certificate to carry passengers anywhere within the Home Trade limits (Steam 2 certificate). Life-rafts, approved buoyant deck seats, and other approved buoyant apparatus are accepted in addition to lifeboats, but there must be provision for the total number of persons which the ship is allowed to carry by her ordinary passenger certificate; and under a special certificate, and subject to certain conditions, the provision may be sufficient for not less than 80 per cent. of the number allowed..

her ordinary passenger certificate to carry, approved life-rafts, approved buoyant deck seats, or other approved buoyant apparatus shall be carried so that they, together with the lifeboats, shall provide sufficient accommodation for the total number of persons for which the vessel is so certified.

Rule E.—A ship of this class may on application to the Board of Trade be granted a special passenger certificate entitling her when engaged upon short daylight voyages between 1st April and 30th September, or on certain specified days, not exceeding six in any one year, to carry persons in excess of the total number of persons allowed by her ordinary passenger certificate: Provided that the lifeboats, approved life-rafts, approved buoyant deck seats, or other approved buoyant apparatus carried provide sufficient accommodation for 80 per cent. of the number allowed by such special passenger certificate, or for the total number of persons allowed by the ordinary passenger certificate, whichever number is the greater.

Rule F.—At least 10 approved lifebuoys shall be carried, together with one approved life-jacket for each person on board. A sufficient number of the life-jackets shall be of reduced size so as to be suitable for children.

***Class II.**—*This Class corresponds to Division C., Class 1, and Division D., Class 3, of the existing Rules. The existing requirements have been altered so as to ensure all boats but one to be lifeboats. Lifeboats must be equipped as required by General Rules 6 and 7, except that in a vessel employed solely in the coasting trade the equipments specified in General Rule 7 need not be provided.*

†Class III.—*This Class corresponds to Division B., Class 4, of the existing Rules. The existing requirements have been altered so as to ensure all boats being lifeboats, and equipped as required by General Rules 6 and 7, except that in a vessel employed solely in the coasting trade the equipments specified in General Rule 7 need not be provided.*

* CLASS II.

Rules for Steamships trading within Home Trade limits, but not certified to carry Passengers.

Rule A.—A ship of this class shall carry boats on each side of the ship in such number and of such capacity as shall be sufficient to accommodate all persons on board. Such boats shall be attached to davits, or other approved appliances shall be provided.

Rule B.—One of such boats may be a boat of Section D. The remaining boats shall be lifeboats and shall be equipped as provided by General Rules 6 and 7, except that in a vessel employed solely in the Coasting Trade the additional equipment prescribed in General Rule 7 need not be provided.

Rule C.—At least four approved lifebuoys shall be carried, together with approved life-jackets, so that there shall be one for each person on board.

† CLASS III.

Rules for Sailing Ships carrying Passengers anywhere within Home Trade limits.

Rule A.—A ship of this class shall carry a lifeboat or lifeboats, equipped as provided in General Rules 6 and 7, sufficient to accommodate all persons on board, except that in a vessel employed solely in the Coasting Trade the additional equipment prescribed in General Rule 7 need not be provided.

Rule B.—Such boats shall, as far as practicable, be attached to davits. All boats not attached to davits shall be so carried that they can be readily placed in the water to the satisfaction of a Board of Trade Surveyor.

Rule C.—At least four approved lifebuoys shall be carried, together with one approved life-jacket for each person on board. A sufficient number of the life-jackets shall be of reduced size so as to be suitable for children.

***Class IV.**—*This Class corresponds to Division C., Class 2, and Division D., Class 4, of the existing Rules. The new requirement is, that they shall have a lifeboat or lifeboats equipped as required by General Rules 6 and 7, except that in a vessel employed solely in the coasting trade the equipments specified in General Rule 7 need not be provided.*

†Class V.—*This Class corresponds to Division D., Class 1, of the existing Rules (Steamers having the Steam 2 (limited) Certificate); the requirements are (as before) to be the same as those for ships in Class I. (ships carrying passengers anywhere within Home Trade limits).*

†Class VI.—*This Class corresponds to Division D., Class 2, in existing Rules; but Division D., Class 2, in existing Rules also provides for steamers carrying passengers in estuaries or mouths of rivers; such steamers are being provided for in these Rules in a separate Class—Class VIII. The steamers in this Class hold Steam 3 certificates—short excursions to sea during daylight in the summer months and in fine weather.*

§Class VII.—*This Class corresponds to Division D., Class 2, which also included the steamers now in Class VI. The steamers in this Class hold the Steam 4 certificate.*

*CLASS IV.

Rules for Sailing Ships trading within Home Trade limits but not carrying Passengers.

Rule A.—A ship of this class shall be subject to the same requirements as in Class III., Home Trade.

†CLASS V.

Rules for Steamships holding Passenger Certificates authorising them to carry Passengers within certain specified limits of the Home Trade, viz., on short specified passages along the coasts of the United Kingdom, or between Great Britain and Ireland, or between Great Britain or Ireland and the Isle of Man.

Rule A.—A ship of this class shall be subject to the same requirements as in Class I., Home Trade.

†CLASS VI.

Rules for Steamships certified to carry Passengers on short excursions to sea, i.e., beyond partially smooth water limits, between 1st April and 31st October, during daylight, and in fine weather.

Rule A.—A ship of this class shall carry, if under 200 feet in length, at least two lifeboats, and if of 200 feet in length or over, at least four lifeboats. These lifeboats shall be attached to davits, or other approved appliances shall be provided, and the lifeboats shall be equipped as provided in General Rule 6.

Rule B.—Subject to the provisions of General Rule 14 (b) and (c) such further number of lifeboats, or such number of approved life-rafts, approved buoyant deck seats or other approved buoyant apparatus shall be provided, so that they (with the lifeboats required under Rule A) shall be sufficient for 70 per cent. of the total number of persons for which the vessel is certified.

Rule C.—If the ship is under 200 feet in length, at least four approved lifebuoys shall be carried, and if of 200 feet in length or over, at least eight approved lifebuoys shall be carried. One approved life-jacket shall be carried for each person on board. A sufficient number of the life-jackets shall be of reduced size, so as to be suitable for children.

§CLASS VII.

Rules for Steamships certified to carry Passengers in partially smooth water.

Rule A.—A ship of this class shall carry if under 200 feet in length at least two lifeboats, and if of 200 feet in length or over, at least four lifeboats. These lifeboats shall be attached to davits, or other approved appliances shall be provided. The lifeboats shall be equipped as provided in General Rule 6.

Rule B.—Subject to the provisions of General Rule 14 (b) and (c) such additional lifeboats, or such number of approved life-rafts, approved buoyant deck seats, or other approved buoyant apparatus shall be provided, so that they (with the lifeboats required under Rule A) shall be sufficient for 60 per cent. of the total number of persons for which the vessel is certified.

Rule C.—If the ship is under 200 feet in length, at least four approved lifebuoys shall be carried, and if of 200 feet in length or over, at least eight approved lifebuoys shall be carried. Approved life-jackets shall be carried sufficient for all persons on board.

***Class VIII.**—*This Class corresponds to Division D., Class 2 (steamers in estuaries) and Division E., Class 1 (steamers in lakes), of the existing Rules. These steamers hold the Steam 4 and Steam 5 certificates respectively.*

***CLASS VIII.**

Rules for Steamships certified to carry Passengers in smooth water in estuaries and large lakes.

Rule A.—A ship of this class shall carry, if under 150 feet in length, at least one boat, and if of 150 feet in length or over, at least two boats.

Rule B.—Subject to the provisions of General Rule 14 (b) and (c) such additional boats, or such number of approved life-rafts, approved buoyant deck seats, or other approved buoyant apparatus shall be provided so that they (with the lifeboats required under Rule A) shall be sufficient for 40 per cent. of the total number of persons for which the vessel is certified.

Rule C.—If the ship is under 150 feet in length, at least four approved lifebuoys shall be carried, and if of 150 feet in length or over, at least six approved lifebuoys shall be carried. Approved life-jackets shall be carried sufficient for all persons on board.

Rule D.—A discretion may be exercised by the Board of Trade to relieve a vessel of this class wholly or partially from the operation of these Rules.

†CLASS IX.

†Class IX.—*This Class is a new Class for vessels on rivers, canals, and small lakes; in the existing Rules these vessels are in Division (E.), Class I. These steamers hold the Steam 5 certificate.*

Rules for Steamships certified to carry Passengers in smooth water on rivers, canals, and small lakes.

Rule A.—A ship of this class shall carry a boat in such a position that it can readily be got into the water.

Rule B.—Subject to the provisions of Rule D in this class and of General Rule 14 (b) and (c), such additional boats or such number of approved life-rafts, approved buoyant deck seats, or other approved buoyant apparatus shall be provided, so that they (with the lifeboats required under Rule A) shall be sufficient for 40 per cent. of the total number of persons for which the vessel is certified.

Rule C.—At least four approved lifebuoys shall be carried. Approved life-jackets shall be carried sufficient for all persons on board.

Rule D.—A discretion may be exercised by the Board of Trade to relieve a vessel of this class partially or wholly from the operation of these Rules.

§CLASS X.

§Class X.—*This Class corresponds to Division D., Class 6, of the existing Rules, but motor boats which have the Steam 6 Certificate have been added to steam launches. This certificate allows a vessel to ply during daylight only, provided the weather is settled and the sea is calm.*

Rules for Steam Launches, and Motor Boats certified to carry Passengers for short distances to sea.

Rule A.—A vessel of this class shall carry two approved lifebuoys.

Rule B.—Such a vessel shall carry approved life-jackets, so that there may be one for each person on board.

|| This Rule provides for a steam launch or motor boat being required to carry a boat or boats if it is large enough to do so.

***Class XI.**—*This Class corresponds to Division (D.), Class 5, of existing Rules. These vessels are now to be required to have a boat of Section D. in addition to a lifeboat.*

***CLASS XI.**

Rules for steam fish carriers, tugs, and steam lighters which proceed to sea.

Rule A.—A vessel of this class shall carry a lifeboat, equipped as provided in General Rule 6; and one boat in addition, which may be a boat of Section D. The lifeboat shall be so placed as to be readily put out on either side of the vessel, and amply sufficient to carry all the persons on board.

Rule B.—Such a vessel shall carry two approved lifebuoys.

Rule C.—Such a vessel shall carry approved life-jackets, so that there shall be one for each person on board.

†CLASS XII.

Rules for tugs and steam lighters which do not proceed to sea.

Rule A.—A vessel of this class shall carry a boat, which may be a boat of Section D, sufficient to carry all persons on board.

Rule B.—Such a vessel shall carry two approved lifebuoys.

Rule C.—Such a vessel shall carry approved life-jackets, so that there may be one for each person on board.

‡CLASS XIII.

Rules for hulks, dredgers, steam hoppers, etc.

Rule A.—A vessel of this class shall carry, if it does not proceed to sea, a boat which may be a boat of section D, sufficient to carry all persons on board the vessel.

If such a vessel proceeds to sea it shall carry a lifeboat, equipped as provided in General Rule 6, and one boat in addition which may be a boat of Section D. The lifeboat shall be so placed as to be readily put out on either side of the vessel, and amply sufficient to carry all persons on board.

Rule B.—Such a vessel shall carry two approved lifebuoys.

Rule C.—If such a vessel proceeds to sea it shall carry approved life-jackets so that there may be one for each person on board.

GENERAL RULES.

§Rule 1.—*This is a new rule. It follows the definition of the Board of Trade of "passenger" for the purpose of a passenger steamer certificate.*

||Rule 2.—*This Rule corresponds to Rule 1 of the existing General Rules; but it has been amended so*

1. §Person.—The term "person" wherever used in the rules shall be held to include not only an adult but every child over the age of one year.

2. ||Boats.—All boats shall be properly constructed and equipped as provided by these rules, and shall be of such form and proportions that they shall have sufficient freeboard, and ample stability in a seaway, when loaded with their full

as to secure the following:—

(a) *Lifeboats to have sufficient freeboard and stability in a seaway when loaded with their full complement of persons and equipment.*

(b) *Lifeboats to be of sufficient strength to be lowered full of people from the davits.*

(c) *Seats to be fitted low and bottom boards fitted not too far below the thwarts.*

(d) *Boats and other life-saving appliances to be kept ready for use and fitted and arranged to the satisfaction of a Board of Trade Surveyor. This is to ensure proper stowage and availability.*

(e) *The old Section "C." boat is no longer to be allowed. The new Section C. boat is the decked lifeboat allowed by the Rule of 14th June, 1911. The Section E. (collapsible) boat will no longer be allowed.*

(f) *The motor boat is to be allowed under the same conditions as under existing rules, but whereas under existing rules (Rule of 24th May, 1909) only one of the lifeboats under davits may be a motor boat, the use of motor boats as lifeboats will not be thus restricted.*

complement of persons and equipment. All boats shall be marked in such a way as to indicate plainly their dimensions and the number of persons for which they are approved. Lifeboats shall be of sufficient structural strength to carry safely when being lowered from the davits the total number of persons for which they are approved.

All thwart and side seats must be fitted as low in the boat as practicable, and bottom boards must be fitted so that the thwarts shall not be more than 2 feet 9 inches above them.

All boats and other life-saving appliances are to be kept ready for use, and fitted and arranged to the satisfaction of a Board of Trade Surveyor. Internal buoyancy apparatus may be constructed of copper or yellow metal of not less than 18 ozs. to the superficial foot, or of other durable material.

The term "lifeboat" when used in these rules shall be held to mean an open lifeboat of either Section (A) or Section (B) as described in this rule, or a decked lifeboat of Section (C) as described in this rule. The lifeboats provided in any vessel may be either open lifeboats or decked lifeboats, but not more than half the lifeboats shall be decked lifeboats with collapsible bulwarks.

*Section (A).—*A boat of this section shall be a lifeboat, of whaleboat form, properly constructed of wood or metal, having for every 10 cubic feet of her capacity, computed as in Rule 3, at least 1 cubic foot of strong and serviceable air-tight compartments, so constructed that water cannot find its way into them. In the case of metal boats an addition will have to be made to the cubic capacity of the air-tight compartments, so as to give them buoyancy equal to that of the wooden boat. A boat of this section shall be fitted with a satisfactory continuous protective fender of coir or other approved material.

*Section (B).—*A boat of this section shall be a lifeboat, of whaleboat form, properly constructed of wood or metal, having inside and outside buoyancy apparatus together equal in efficiency to the buoyancy apparatus provided for a boat of Section (A). At least one-eighth of the outside buoyancy shall be fitted in the form of a satisfactory continuous protective fender.

*Section (C).—*A boat of this section shall be a lifeboat, of whaleboat form, fitted with a strong watertight deck, and constructed in a manner approved by the Board of Trade. A decked metal lifeboat must be fitted with strong and serviceable air-tight compartments, having a capacity of at least 1 cubic foot for each person whom the boat is deemed fit to carry; but in a wooden decked boat, enclosed air-tight compartments may be dispensed with, subject to such conditions as may be approved by the Board of Trade.

*Section (D).—*A boat of this section shall be a properly constructed boat of wood or metal, and may be square sterned.

Motor Boat.—A motor boat may be carried as a lifeboat subject to the following conditions:—

(1) It shall be approved by the Board of Trade, and proper appliances must be provided for putting it into the water speedily to the satisfaction of a Board of Trade Surveyor.

(2) It shall be adequately provided with fuel, and kept so as to be at all times fit and ready for use.

(3) Where the number of lifeboats carried is four or more, one of them may be a motor lifeboat; when the number of lifeboats is twelve or more, two of them may be motor lifeboats; when the number of lifeboats is twenty or more, three of them may be motor lifeboats; and for every eight lifeboats beyond twenty, one of them may be a motor lifeboat.

**3. Cubic Capacity.*—The cubic capacity of an open boat shall be ascertained by multiplying the product of the length, breadth and depth by '6, subject, however, to the following provisions:—

The length shall be measured from the foreside of the rabbet on the stem to the afterside of the rabbet on the stern post (in square sterned boats to the end of planking); and the greatest breadth shall be measured from the outside of plank to the outside of plank amidships. The depth shall be measured from the top of the gunwale to the top of the bottom plank next to the keel, but the depth used in calculating the cubic capacity shall not in any case exceed 3·6 feet or 45 per cent. of the breadth whichever is least.

If the oars are pulled in rowlocks, the bottom of the rowlock is to be considered as the gunwale in measuring the depth of the boat.

If any question is raised requiring absolute accuracy, the cubic capacity of a boat shall be ascertained by Stirling's rule; subject to the foregoing provisions as to depth.

The cubic capacity of a decked lifeboat shall be deemed to be the number of cubic feet obtained by multiplying by 10 the number of persons the boat is deemed fit to carry.

Subject to the provisions of General Rule 14 (d), the capacity of a boat shall not be less than 125 cubic feet.

4. Number of persons for boats. (a).—Subject to the provisions of paragraphs (b) and (d) of this rule, the number of persons an open boat shall be deemed fit to carry shall be the number of cubic feet ascertained as in Rule 3 divided by 10. The space in the boat shall be sufficient for the seating of the persons carried in it, and for the proper use of the oars.

(b) An open boat shall not be deemed to be fit to carry the number of persons ascertained as in paragraph (a) of this rule unless it has passed a satisfactory test with that number on board, or unless the boat is so constructed that it has a mean sheer of at least half an inch for each foot of its length, that the boat's half-girth amidships measured outside the planking, from the side of the keel to the top of the gunwale, is at least equal to nine-tenths of the sum of the boat's depth inside and half its maximum breadth amidships, and that the mean of the half-girths measured in the same manner at two points, one-quarter of the length of the boat from the stem and sternpost respectively, is at least equal to eight-tenths of the sum of the depth inside and half the maximum breadth amidships. If the sheer and the girth do not comply with this paragraph the number of persons shall be found by dividing the number of cubic feet by 12, unless and until the boat has been tested afloat with its equipment and a number of persons on board, when the number allowed shall be the number which the boat is able to carry, subject to the provisions of paragraph (a).

(c) The number of persons a decked boat shall be deemed fit to carry shall be such that the top of the deck amidships

**Rules 3 and 4.—These Rules prescribe the type and construction of lifeboats, and the method of ascertaining their carrying capacity. If existing boats do not comply with the requirements as to sheer and girth, they are dealt with by allowing them to be carried, but reducing the number they are deemed fit to carry by dividing their cubic capacity by 12 instead of by 10. In decked boats the deck space required for each person is to be 4 square feet instead of 3·8 square feet as under the existing Rule, the present figure being insufficient to ensure the proper accommodation of the total number of persons for which the boat is approved.*

is at such height above the water as may be approved by the Board of Trade when the boat is so loaded, subject to there being a deck space of at least 4 square feet for each person.

When the dimensions and form of the boat are such that, in the opinion of the Board of Trade, a practical test of the boat afloat is unnecessary, the number of persons the boat is fit to carry shall be deemed to be the number obtained by dividing the area of the deck in square feet by 4.

(d) If the Surveyor is doubtful as to the number of persons any open or decked boat is fit to carry he may require the boat to be tested afloat with the intended number of persons on board.

**Rule 5.—One or two amendments have been made in paragraph (b), mainly with the object of ensuring that the appliances for lowering boats shall be of sufficient strength.*

Paragraph (a) provides for davits or other appliances being placed in suitable positions. Paragraph (c) provides for proper appliances or arrangements for getting into the water the boats not attached to davits. Paragraph (d) allows of alternative appliances or arrangements to davits.

5. **Appliances for lowering boats.* (a).—The davits or appliances for lowering boats shall be fitted in such positions that the boats may be safely lowered from them. In no case shall davits be fitted in the bows of a vessel, nor in the case of a screw steamer having more than one propeller, on the quarters. In the case of a vessel having a single screw the Board of Trade may exercise a discretion as to allowing davits to be fitted on the quarters.

(b) Appliances for getting a boat into the water must fulfil the following conditions:—

Means are to be provided for speedily, but not necessarily simultaneously or automatically, detaching the boats from the falls; the boats placed under davits are to be attached to the falls and kept ready for service; the davits are to be strong enough and so spaced and placed that the boats can be swung out with facility; the points of attachment of the boats to the falls are to be sufficiently away from the ends of the boats to ensure their being easily swung clear of the davits; the boats' chocks shall be of such construction and arrangement as shall be satisfactory to a Board of Trade Surveyor. The davits, falls, blocks, and all other gear required for lowering the boats, shall be of sufficient strength to lower the boats when loaded with their full complement of persons and equipment. The boat's falls are to be long enough to lower the boat into the water with safety when the vessel is light. Life-lines shall be fitted to the davit spans, and shall be long enough to reach the water when the vessel is light. Hooks are not to be attached to the lower tackle blocks.

(c) If the boat is not attached to davits the appliance or appliances or arrangements for getting it into the water must be such as to ensure it being put into the water speedily to the satisfaction of a Board of Trade Surveyor.

(d) The Board of Trade may accept in lieu of the appliances described in this Rule any other appliance, appliances or arrangements which appear to them at least as effective as the appliances herein described.

†Rules 6 and 7.—The existing Rules as to equipments have been amended, so as to secure a full and adequate equipment for boats.

All boats are to have hatchets, a life-line, and an efficient lantern.

6. *†Equipments for Boats and Life-rafts.*—I. *Boats.*—In order to be properly equipped, each boat shall be provided as follows:—

(a) With the full single banked complement of oars and two spare oars.

(b) With two plugs for each plug hole, attached with lanyards or chains, and one set and a half of thole pins or crutches, attached to the boat by sound lanyards.

(c) With a sea anchor, a baler, a galvanised iron bucket, a rudder and a tiller, or yoke and yoke lines, a painter of

The vessel of fresh water is to be of 10 gallons capacity, and to have a dipper attached; and a bucket has been added to the equipment.

All lifeboats are to have a full equipment (Rule 7) except in certain classes of the Home-trade; with the proviso that only half of the lifeboats in Class 1, Foreign-going ships, need have the mast and sail.

Rule 7 (c) provides for biscuits in lifeboats—this is new; and Rule 7 (e) is new.

sufficient length, and a boat-hook. The rudder, the baler, and the bucket to be attached to the boat by sufficiently long lanyards, and kept ready for use. In boats where there may be a difficulty in fitting a rudder a steering oar may be provided instead.

(d) With a vessel capable of holding 10 gallons, which shall be kept filled with fresh water, and provided with a dipper with lanyard.

(e) With two hatchets, if the falls are of rope, one to be kept in each end of the boat, and to be attached to the boat by a lanyard.

(f) With a line securely becketted round the outside of the boat.

(g) With an efficient lantern trimmed, with oil in its receiver sufficient to burn eight hours; or with some other lantern or light at least as effective approved by the Board of Trade.

II. All boats shall be fully equipped as soon as the ship leaves harbour, and the equipment shall remain in the boat throughout the voyage, while the ship is at sea.

III. *Life-rafts.*—Life-rafts shall be provided with a suitable approved equipment.

7. *Additional Equipment for Lifeboats.*—I. In addition to the equipment prescribed in the preceding rule, the lifeboats in all classes of foreign-going ships, and in ships of Classes II, III, and IV in the Home Trade (except Coasting ships), shall be provided as follows, but not more than half the lifeboats in Class I, Foreign-going, need have the equipment prescribed in paragraph (a):—

(a) With a mast or masts, and with at least one good sail and proper gear for each; but this does not apply to an approved motor boat.

(b) With an efficient compass.

(c) With an air-tight case containing 2 lbs. of biscuits for each person for whom the boat is approved.

(d) With one gallon of vegetable or animal oil, and a vessel of approved pattern for distributing it in the water in rough weather.

(e) With one dozen self-igniting red lights in a watertight tin, and a box of suitable matches in a watertight tin.

II. The additional equipment shall be in the lifeboats as soon as the ship leaves harbour, and this equipment shall remain in the boat throughout the voyage, while the ship is at sea.

8. *Number of Persons for Life-Rafts.*—The number of persons that any approved life-raft for use at sea shall be deemed to be capable of carrying shall be determined with reference to each separate pattern approved by the Board of Trade; provided always that for every person so carried there shall be at least 3 cubic feet of strong and serviceable enclosed air-tight compartments, constructed so that water cannot find its way into them. Any approved life-raft of other construction may be used provided that it has equivalent buoyancy to that hereinbefore described. Every such approved life-raft shall be marked in such a way as to plainly indicate the number of persons for which it is approved.

9. *Buoyant Apparatus.*—Approved buoyant apparatus, whether buoyant deck seats, buoyant deck chairs or other buoyant apparatus, shall be deemed sufficient, so far as buoyancy is concerned, for a person or a number of persons to be ascertained by dividing the number of pounds of iron which it is capable of supporting in fresh water by 32. Such buoyant apparatus shall not require to be inflated before use, shall be of approved construction, and marked

*Rule 10. — *The term "life-jacket" is substituted for the term "life-belt."*

†Rule 11. — *Lifebuoys are to have lifebuoy lights, as prescribed. Sea-going passenger steamers are already required to have lifebuoy lights; and the new Rule extends the requirement to other vessels.*

‡Rule 12. — *The Rule has been amended to secure the placing of lifebuoys and life-jackets in suitable places, properly indicated.*

in such a way as plainly to indicate that it is buoyant and the number of persons for which it is approved.

10. **Life-Jackets.*—An approved life-jacket shall mean a jacket which does not require to be inflated before use, and which is capable at least of floating in fresh water for 24 hours with 15 lbs. of iron suspended from it. Life-jackets, if worn under the arms, are to be cut out so as to remain securely in their place when put on. Life-jackets suitable for children shall be of a reduced size, and capable at least of floating in fresh water for 24 hours with 12 lbs. of iron suspended.

11. †*Lifebuoys.*—An approved lifebuoy shall mean either:—

(a) A lifebuoy built of solid cork, capable of floating in fresh water for at least 24 hours with 32 lbs. of iron suspended from it, or

(b) A strong lifebuoy of any other approved pattern or material, provided that it is capable of floating in fresh water for at least 24 hours with 32 lbs. of iron suspended from it, and provided also that it is not stuffed with rushes, cork shavings, or other shavings, or loose granulated cork, or other loose material, and does not require inflation for use.

All lifebuoys shall be fitted with beackets securely seized, and at least one on each side of the vessel shall be fitted with a life-line at least 15 fathoms in length. At least half the lifebuoys required in any ship, and not fewer than six in any passenger steamer (other than a steamer in Class VI., VII., VIII., IX. or X. in the Home Trade), shall have placed near them, with means for attachment to them, efficient lifebuoy lights, inextinguishable in water, to the satisfaction of a Board of Trade Surveyor.

12. ‡*Position of Lifebuoys and Life-jackets.*—All lifebuoys and life-jackets shall be suitably placed to the satisfaction of a Board of Trade Surveyor and so as to be readily accessible to all persons on board; and their position shall be plainly indicated so that it may be known to those for whom they are intended.

13. *Application of Rules.*—(a) These rules shall come into force on the 1st January, 1913, and shall apply to all vessels launched on or after the 1st January, 1913.

(b) These rules shall also apply on and after the 1st January, 1913, to all ships which come under the operation of the Merchant Shipping Acts, 1894 to 1911, with the following exceptions:—

(I) Such requirements as involve structural alterations to the ship shall not apply to any passenger vessel having a passenger certificate valid on the 1st October, 1912, until the lapse of that certificate. The owner of any passenger vessel having a passenger certificate valid on the 1st October, 1912, may, on application to the Board of Trade, receive a passenger certificate in lieu thereof, with a lesser number of passengers specified than the number specified in that certificate; or the number specified in the passenger certificate valid on the 1st October, 1912, may be altered by the Board of Trade on application by the owner of the vessel. Such requirements as involve structural alterations to the ship shall not apply to the vessel until the lapse of the certificate.

(II) Any boat, other than a collapsible boat, which forms part of the equipment of a vessel that was launched before the 1st January, 1913, and which has been inspected and approved by a Board of Trade Surveyor before the 1st October, 1912, may be accepted as

equivalent to a lifeboat until the 1st January, 1915, so long as it remains in good condition. Subject to the same conditions a collapsible boat may be accepted until the 1st January, 1914.

14. *Exemptions.*—(a) If it shall appear to the Board of Trade, on the application of the owner of any vessel, that it is not practicable to fit or place in that vessel the number of sets of davits required by these rules, the Board of Trade may direct that one or more sets of davits may be dispensed with in that vessel, subject to such conditions, if any, as the Board may impose.

(b) If it shall appear to the Board of Trade on the application of the owner of any passenger steamer in the Home Trade, launched before the 1st January, 1913, that it is not practicable, or reasonable, to provide in that vessel the lifeboats, approved life-rafts, approved buoyant deck seats, or other approved buoyant apparatus required, the Board of Trade may direct that the requirements of these rules may be modified as regards that vessel, subject to such conditions as they may impose, provided always that:—

(i) In the case of a vessel in Class I. or Class V. the total number of persons which can be accommodated in the lifeboats, approved life-rafts, approved buoyant deck seats, or other approved buoyant apparatus, shall not be less than 70 per cent. of the total number allowed to be carried by the ordinary passenger certificate;

(ii) In the case of a vessel in Class VI., Class VII., Class VIII., or Class IX., the total number of persons which can be accommodated in the lifeboats, approved life-rafts, approved buoyant deck seats, or other approved buoyant apparatus, shall not be a lower percentage of the total number of persons which the vessel is certified to carry than is stated in paragraph (c) of this Rule for these classes of ships respectively.

(c) Notwithstanding anything contained in these rules, a passenger steamer in Class VI., Class VII., Class VIII., or Class IX., in the Home Trade, launched before the 1st January, 1913, shall not, until the 1st January, 1916, be required to be provided with lifeboats, approved life-rafts, approved buoyant deck seats or other approved buoyant apparatus more than sufficient to accommodate the following percentage of the total number of persons which the vessel is certified to carry:—

In Class VI.	...	...	50 per cent.
In Class VII.	...	...	40 per cent.
In Class VIII.	...	...	25 per cent.
In Class IX.	...	...	25 per cent.

In every case approved life-jackets shall be carried sufficient for all persons on board.

(d) If a small vessel is unable to carry more than one boat a discretion may be exercised by the Board of Trade, but whenever one boat only is carried there must be proper provision to enable it to be placed readily in the water on either side of the ship; and a discretion may be exercised by the Board of Trade if it is impracticable in any case to carry a boat of the minimum capacity prescribed by General Rule 3.

APPENDIX A.

TABLE SHOWING THE MINIMUM NUMBER OF SETS OF DAVITS REQUIRED TO BE PROVIDED IN A SHIP IN CLASS I, FOREIGN-GOING, OR CLASS I OR CLASS V IN THE HOME TRADE.

Registered length of vessel in feet.					Minimum number of sets of davits.
Under 160 ...	...	...	...	...	2
160 and under 220	...	...	...	...	4
220 "	270	...	...	...	6
270 "	330	...	...	...	8
330 "	390	...	...	...	10
390 "	450	...	...	...	12
450 "	510	...	...	...	14
510 "	590	...	...	...	16
590 "	670	...	...	...	18
670 "	750	...	...	...	20
750 "	840	...	...	...	22
840 "	940	...	...	...	24
940 "	1,040	...	...	...	26

In the case of a vessel of over 1,040 feet, the number of sets of davits to be provided shall be prescribed by the Board of Trade.

APPENDIX B.

TABLE SHOWING THE MINIMUM AGGREGATE CUBIC CAPACITY OF LIFEBOATS TO BE CARRIED IN A SHIP IN CLASS I OR CLASS V IN THE HOME TRADE, LAUNCHED AFTER THE 1ST JANUARY, 1913.

Registered length of vessel in feet.					Minimum aggregate capacity of lifeboats, in cubic feet.
100 and under 120	...	...	...	...	400
120 "	140	...	...	...	600
140 "	160	...	...	...	900
160 "	180	...	...	...	1200
180 "	200	...	...	...	1400
200 "	220	...	...	...	1600
220 "	240	...	...	...	1850
240 "	270	...	...	...	2300
270 "	300	...	...	...	3150
300 "	330	...	...	...	3850
330 "	360	...	...	...	4480
360 "	390	...	...	...	5000
390 "	420	...	...	...	5500
420 "	450	...	...	...	6000

In the case of a vessel of under 100 feet, or over 450 feet, the cubic capacity of the lifeboats to be carried shall be prescribed by the Board of Trade.

INTERIM REPORT

OF THE

DEPARTMENTAL COMMITTEE

ON

BOATS AND DAVITS.

Presented to both Houses of Parliament by Command of His Majesty.



LONDON :

PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE.

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PRINTED BY
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1913.

[Cd. 6558.]

Price 2½d.

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MINUTES OF APPOINTMENT.

AT THE COUNCIL CHAMBER, WHITEHALL,

This second day of August 1912.

PRESENT

THE RIGHT HONOURABLE SYDNEY C. BUXTON, M.P.

The Board of Trade are pleased to appoint the following gentlemen, viz. :—

PROFESSOR J. H. BILES (Chairman),
 REAR-ADMIRAL THE HON. S. A. GOUGH-CALTHORPE, C.V.O.,
 MR. A. E. DOXFORD,
 CAPTAIN J. G. H. FLINT,
 MR. MICHAEL JOYCE, M.P.,
 MR. JAMES MAXTON,
 MR. F. J. STEPHEN, and
 MR. H. B. WORTLEY,

to be a Committee to advise the Board of Trade, in the interests of safety of life :—

- (1) as to what are the most efficient arrangements for stowing boats on steamships of all classes, for launching them in an emergency, and for embarking the passengers and crew ;
- (2) as to whether, and if so, to what extent, mechanical propulsion can with advantage be adopted either in addition to, or in substitution for propulsion by oars and sails ;
- (3) as to the question of rafts, and, in particular, whether, if, of approved character, they should be allowed in substitution for boats ; and if so, to what extent and under what conditions ;
- (4) whether, independently of the foregoing, the Committee desire to make any recommendations with reference to the above-mentioned matters which would, in their opinion, contribute to the safety of life at sea.

The points to which the Board desire to draw particular attention are specified in detail in the accompanying memorandum which has been drawn up by Captain A. H. F. Young, Professional Member of the Marine Department, and Mr. W. D. Archer, one of the Principal Consultative Officers of the Marine Department.

The Board are further pleased to appoint Mr. F. P. Robinson to be Secretary to the Committee.

(Signed) SYDNEY BUXTON.

AT THE COUNCIL CHAMBER, WHITEHALL,

This twenty-second day of October 1912.

PRESENT

THE RIGHT HONOURABLE SYDNEY C. BUXTON, M.P.

Read Minute of 2nd August 1912, appointing a Committee to advise the Board of Trade, in the interests of Safety of Life at Sea, as to the most efficient manner of stowing, launching, and propelling boats ; and to what extent and under what conditions rafts should be allowed.

Read letter from Mr. A. E. Doxford resigning his position as a member of the Committee.

The Board of Trade are pleased to appoint Captain J. T. W. Charles, C.B., R.D., Commander R.N.R., and Mr. D. B. Morison, to be additional members of the said Committee.

(Signed) SYDNEY BUXTON.

INTERIM REPORT

To the Right Hon. SYDNEY CHARLES BUXTON, M.P., President of the Board of Trade.

SIR,

IN accordance with your request we have the honour to submit the following interim report as to the stowage of ships' boats.

The terms of reference under which we are conducting our inquiry are as follows :—

To advise the Board of Trade in the interests of safety of life :—

- (1) As to what are the most efficient arrangements for stowing boats on steamships of all classes, for launching them in an emergency, and for embarking the passengers and crew ;
- (2) As to whether, and if so, to what extent, mechanical propulsion can with advantage be adopted either in addition to, or in substitution for propulsion by oars and sails ;
- (3) As to the question of rafts, and, in particular, whether, if of approved character, they should be allowed in substitution for boats ; and, if so, to what extent and under what conditions ;
- (4) Whether, independently of the foregoing, the Committee desire to make any recommendations with reference to the above-mentioned matters which would, in their opinion, contribute to the safety of life at sea.

These terms of reference were further amplified by a memorandum drawn up by Captain A. H. F. Young, Professional Member of the Marine Department and Mr. W. D. Archer, one of the Principal Consultative Officers of the Marine Department. This Memorandum is as follows :—

“ MEMORANDUM.

“(a) Stowing, launching, and propelling ships' boats.

“(b) Life-rafts.

“ Stowage of Boats.

“(1) The question of the efficient stowage of ships' boats is intimately connected with the number of boats to be carried, and whether these boats are to be carried under davits, abreast of the davits or inboard.

“By section 427, Merchant Shipping Act, 1894, the Board of Trade are empowered to make rules as to the Life Saving Appliances to be carried on different classes of ships, and as to the stowage of these boats, &c. ; these rules have to be laid before Parliament for at least 40 days before they come into force. The rules at present in force were made in 1902, but draft rules to replace those now in force have been published ; and the rules will be laid before Parliament shortly. The Draft Rules are contained in the White Paper [Cd. 6402] attached to this Memorandum.

“(2) In addition to the statutory rules, the Board issue instructions to their surveyors as to the interpretation of the statutory rules. These instructions at present in force are contained in clause 43 of the Regulations and Suggestions as to the Survey of Steamships carrying passengers and are as follows :—

“43. ‘All boats required by the rules to be placed under davits are to be kept fit and ready for use, and when they are swung inboard and resting on the chocks, the chocks are to be so constructed that the boat can be at once swung outboard without requiring to be lifted by the tackles, i.e., it should not be necessary to do more than take the weight of the boat.

“‘The manner in which the additional boats not requiring to be placed under davits are to be stowed will vary in different ships, but they must be stowed to the satisfaction of the surveyors so as to be as readily available for use as is practicable, having due consideration to the circumstances mentioned in the rules.

“‘In all cases where boats are stowed on skids, a batten and space platform of about 2½-inch planks should be fitted from skid to skid under and alongside of the

boat to serve both as a support to the boat, when being launched forward or aft, and as a platform for the men.

"The statutory rules and regulations therefore contemplate three different methods of stowing boats:—

"(a) Boats placed under and attached to davits;

"(b) Inboard boats not necessarily attached to davits but stowed alongside boats placed under davits;

"(c) Other boats stowed to the satisfaction of the surveyors.

"The manner of stowing boats is dealt with specifically in the Draft Rules. (See e.g., Rules C. and D., Class I, Foreign-going.)

"Usual Practice in Emigrant Steamers and Large Passenger Steamers."

"It is the usual practice to carry all or nearly all the boats on a 'boat deck,' which is usually the highest deck in the ship and often extends for about half the vessel's length amidships.

"In very large vessels the boat deck may be as much as 60 feet above the load line.

"In some vessels boats are carried on the quarters as well as amidships, but such an arrangement is thought to be unsatisfactory in screw steamers, especially if they have more than one propeller, and the practice has been discouraged by the Board's surveyors. This point is covered by General Rule 5 (a) of the Draft Rules.

"Suggestions for improving Methods of Stowing Boats."

"(4)—(a) A suggestion has been made, in a paper read before the Institute of Naval Architects in the current year, that the prevailing practice of confining the stowage of boats to the uppermost deck should be discontinued, and that some or all of the boats should be stowed on a deck below the uppermost deck. The advantages alleged being that, in very large vessels, the boats, being nearer the water, would be in a more favourable position for lowering, and also that increased space for stowage would be obtained, and the stowage of boats on the vessel's quarters avoided. This suggestion is worthy of careful consideration, and an expression of opinion by an influential committee would have value in directing the attention of the owners and builders of large emigrant and passenger steamers to the matter. It may, however, be noted that, in the case of boats stowed on a deck below the uppermost one, it would usually not be possible to move them from one side of the vessel to the other.

"(b) Suggestions have also been made that the arrangements could be such that the boats stowed upon the boat deck could be transferred from one side of the vessel to the other in order to provide for the contingency, which may frequently occur, of conditions which prevent boats being lowered on both sides of the ship.

"It is a common practice in large vessels to construct upon the central part of the boat deck a range of deck houses which are devoted to the accommodation of passengers, &c., and which prevent the transference of the boats from one side of the deck to the other.

"It is for careful consideration whether, and, if so, to what extent it is practicable to make such arrangements that boats can be safely and readily transferred from one side of the deck to the other, and, if so, what special arrangements are necessary in the form of skids, rails, or otherwise.

"If it should be found practicable to make the arrangements referred to, the further question arises as to whether it is necessary that such arrangements should be compulsory in regard to a proportion of the boats in any class or classes of vessels or whether the matter may be left to the initiative of the owners of such vessels.

"Launching Ships' Boats."

"(5) The almost invariable practice in launching ships' boats has, until recently, involved—

"(a) Taking the weight of the boat from the chocks by means of the tackles;

"(b) Swinging the boat out by hand;

"(c) Lowering the boat to the water by the tackles.

"The chief objections found to this method of launching boats are:—

"(1) In the event of the ship having the slightest list to the side opposite to that on which the boat is stowed, the operation of swinging out can only be performed with difficulty and requires a number of men to effect it. This difficulty has, however, been overcome by the adoption in many recent emigrant and passenger steamers of an improved form of davit in which the lifting and swinging out of the boat are effected simultaneously by the operation of a screw.

"(2) The boat while being lowered is free to swing transversely and is liable to be dashed against the vessel's side and possibly stove in.

"It has been suggested that this might to some extent be avoided by fitting to the vessel's side a pair of jackstays at each pair of davits so that the boat might be held close to the vessel's side while being lowered. The arrangement, however, has not, so far as is known, been adopted in mercantile vessels.

"(3) In the event of it being necessary to launch a second boat from the same davits it is necessary to round up the tackles and this is a matter of considerable difficulty, especially when the falls are of new rope.

"The following questions appear to require consideration:—

"(a) Is it desirable and also practicable to adopt some appliance or appliances, either in substitution for, or in addition to, davits of the usual forms, which shall be capable of lowering ship's boats at a greater distance from the vessel's side, in order to minimise the risk of the boat being stove in against the vessel's side?

"If it is desirable and also practicable, what appliance or appliances should be adopted, and should such appliances be actuated solely by hand or alternatively by hand and by power?

"If the employment of some mechanical power is desirable, from what source should the power be derived?

"(b) When davits of the forms at present in use are employed for launching boats, is it practicable to fit arrangements in the form of jackstays or otherwise by means of which it would be possible to control the transverse motion of the boat and reduce the risk of it being stove in against the ship's side?

"(c) Is it desirable and also practicable to substitute for the hemp or manilla ropes at present universally used in the lowering tackle, steel wire falls, and, if so, what appliances are necessary, in the form of winches or otherwise, for operating such steel wire falls?

"(d) When hemp or manilla falls are used, should any special form of block be used to facilitate the recovery of the falls?

"(e) Are special arrangements necessary in the case of boats which require to be launched from a considerable height, and, if so, what should they be?

"Embarking Passengers and Crew."

"(6) The difficulty of embarking passengers in ships' boats is always a serious one, but especially so in very large vessels, owing to the great height of the weather deck above the water.

"It is for consideration whether, and to what extent, special arrangements are necessary, in the case of very large vessels; e.g., gangway ports in the vessel's side, platforms on the outside of the vessel in the vicinity of the ports, ladders, or other similar appliances.

"Mechanical Propulsion of Ships' Boats."

"(7) The advantage of mechanical propulsion appears to depend greatly on the special circumstances under which it might be necessary to take to the boats. In the case of a vessel aground on a lee shore it might be possible to transfer passengers to an assisting vessel lying to windward by boats having mechanical means of propulsion when such an operation would be impossible by boats propelled only by oars or sails. The excellent services rendered in the recent case of the s.s. *Delhi* by a steam launch from the French cruiser *Friant* may be mentioned in this connection.

"It is conceivable that a mechanically propelled launch able to carry a considerable supply of fuel might be of great service in the case of a vessel wrecked on some unfrequented route by establishing connection with a port or with some other vessel, especially if such a launch could be equipped with machinery for wireless telegraphy.

"The committee will, no doubt, be influenced largely in making any recommendations on this subject by the consideration that, if a boat is mechanically propelled, means will have to be taken to ensure that a competent person is placed in charge. Possibly the engineering staff of the vessel will be able to fill this position.

"It is for consideration—

- "(a) Whether mechanically propelled boats or launches should be carried in any classes of vessels, and if so, in what classes; also what proportion of the boats carried should be of this type?
- "(b) What form of mechanical power is most suitable and least likely to deteriorate on a sea voyage?
- "(c) What supply of fuel should be carried?
- "(d) Whether one or more of such boats could or should be fitted with apparatus for wireless telegraphy?

"Life-Rafts.

"By General Rule 8 of the Draft Rules, a life-raft is required to have at least three cubic feet of strong and serviceable enclosed air tight compartments for every person carried, or to have equivalent buoyancy in some other form. By General Rule 6 a life-raft is to be provided with a suitable approved equipment.

"A decked lifeboat referred to in the Draft Rules Nos. 2, 3, and 4 is distinguished from a life-raft by the following essential characteristics:—

- "(a) The decked lifeboat is required by General Rule 3 to have a freeboard, as approved by the Board of Trade, but the deck of the raft may be level with the water surface.
- "(b) The decked lifeboat is required, by instructions issued by the Board, to have bulwarks for the shelter of the persons on board, and it is fitted with appliances by means of which it may be lowered from davits. The life-raft would probably either be thrown overboard or it would be left to float off when the vessel sank.

"The following questions appear to be for consideration:—

- "(1) Is it practicable to provide appliances by means of which life rafts may be launched from a vessel's deck before she sinks?
- "(2) Is three cubic feet of buoyancy, as required by the existing Statutory Rules, sufficient for life-rafts?
- "(3) Would the existing type of life-rafts or life-rafts of improved construction be sufficiently effective for life-saving purposes in the event of an emergency to entitle them to be calculated as a part of the actual life-saving appliances with regard (a) to foreign going vessels; (b) to home trade vessels; and, if so, to what extent?
- "(4) What equipment is necessary in the case of a life-raft?

"A. H. F. YOUNG.
W. DAVID ARCHER."

The stowage question involves the consideration of the following points:—

1. The total capacity of boats to be carried.
2. The limits of size of boats.
3. The types of boats.
4. The types of rafts, if any, which can be carried in place of boats.
5. The proportion of life-saving capacity in rafts which can be allowed in place of boats.
6. The types of other buoyant apparatus which can be allowed in the various types of steamships.

The question "as to what are the most efficient arrangements for stowing boats on steamships of all classes" appears to us to present peculiar difficulties in certain cases, especially in existing ships, and we are of opinion that it may assist the Board of Trade if we inform them, at this present juncture, of the investigations which we have made, and the conclusions at which we have arrived, in regard to this matter. In the above memorandum reference is made to the draft Life-Saving Appliances Rules contained in the White Paper (Cd. 6402). We observe that these rules would allow of the adoption of life rafts in substitution for lifeboats in foreign-going

ships and also of the use of efficient appliances for launching ships' boats other than davits, should either or both of these proposals ultimately be considered satisfactory by the Board of Trade. As to the question of rafts, we have arrived at decisions based upon such investigations as we have been able to make. These decisions will be found in Part II. of this report. The question of appliances for launching boats is being carefully considered by us in accordance with our reference, but the present state of our investigation does not permit of our making any definite recommendations respecting it in this interim report.

We desire to state generally that our conclusions may require some modification in the light of our future investigations, but we are of opinion that we have reached a satisfactory solution of the problem in the case of foreign-going ships, although possibly future investigation may reveal that it is not the best. We have not been able to reach as satisfactory a solution in the case of all ships in the Home Trade.

PART I.

ANALYSIS OF THE REQUIREMENTS OF THE BOARD OF TRADE DRAFT LIFE-SAVING APPLIANCES RULES ISSUED IN THE WHITE PAPER (Cd. 6402).

1. It will be desirable, before we attempt to deal in detail with the reference submitted to us, to consider the classification of the various types of vessels in the draft Life-Saving Appliances Rules. This classification is as follows:—

Foreign-going:—

- Class I.—Passenger steamers, including emigrant ships.
- Class II.—Steamships not certified to carry passengers.
- Class III.—Sailing ships carrying passengers.
- Class IV.—Sailing ships not carrying passengers.

Home Trade:—

- Class I.—Steamships holding passenger certificates authorising them to carry passengers anywhere within Home Trade limits, i.e., between places in the United Kingdom or between places in the United Kingdom and ports of Europe between the River Elbe and Brest.
- Class II.—Steamships trading within Home Trade limits, but not certified to carry passengers.
- Class III.—Sailing ships carrying passengers anywhere within Home Trade limits.
- Class IV.—Sailing ships trading within Home Trade limits, but not carrying passengers.
- Class V.—Steamships holding passenger certificates authorising them to carry passengers within certain specified limits of the Home Trade, viz., on short specified passages along the coasts of the United Kingdom, or between Great Britain and Ireland, or between Great Britain or Ireland and the Isle of Man.
- Class VI.—Steamships certified to carry passengers on short excursions to sea, i.e., beyond partially smooth water limits, between 1st April and 31st October, during daylight, and in fine weather.
- Class VII.—Steamships certified to carry passengers in partially smooth water.
- Class VIII.—Steamships certified to carry passengers in smooth water on estuaries and large lakes.
- Class IX.—Steamships certified to carry passengers in smooth water on rivers, canals, and small lakes.
- Class X.—Steam launches and motor boats certified to carry passengers for short distances to sea.
- Class XI.—Steam fish carriers, tugs and steam lighters which proceed to sea.
- Class XII.—Tugs and steam lighters which do not proceed to sea.
- Class XIII.—Hulks, dredgers, steam hoppers, &c.

2. Classes III. and IV. of the foreign-going ships, and Classes III. and IV. of the Home Trade ships comprise sailing ships and are not covered by our reference. Further, in view of the small number of persons carried in steamships not certified to carry passengers, it will be unnecessary in a preliminary report to consider Class II. of the foreign-going ships and Class II. of the Home Trade ships. Classes X., XI., XII., and XIII. have not been dealt with in this report. In regard to the remaining

classes, viz., Class I. of the foreign-going ships and Classes I., V., VI., VII., VIII., and IX. of the Home Trade ships, it will be desirable to set out the requirements of the draft Life-Saving Appliances Rules. These are as follows:—

3. *Class I. Foreign-going.*—A ship in this class is required to carry lifeboats for all persons on board, or for the total number of persons which the vessel is certified to carry, whichever is the greater,* except in so far as it may be decided to allow rafts of an approved type in substitution for boats. The boats are required to be stowed under davits, under the boats under davits, or immediately alongside the boats under davits. If it is not practicable to stow all the required boats in this manner, the remaining boats may be stowed abreast of the davits or in some other manner, which, in the opinion of the Board of Trade, is at least as satisfactory. A minimum number of davits, based upon the length of the ships, is specified in Appendix A. of the draft rules. If, however, it shall appear to the Board of Trade, on the application of the owner of any vessel, that it is not practicable to fit or place in that vessel the specified number of sets of davits, one or more sets of davits may be dispensed with in that vessel, subject to such conditions, if any, as the Board may impose.

Class I. and Class V. Home Trade.—Where practicable, a number of sets of davits, specified in Appendix A. of the draft rules is required to be fitted, and, in the case of vessels launched after the 1st January 1913, a minimum cubic capacity of lifeboats must be carried in accordance with the table in Appendix B. of the draft rules, ranging from 400 cubic feet in vessels of 100 feet to 120 feet in length to 6,000 cubic feet in vessels of 420 feet to 450 feet in length.

Two passenger certificates will be issued to vessels in these two classes:—

- (a) An ordinary certificate for the maximum number, which in ordinary circumstances the vessel would be likely to carry.
- (b) A special certificate which, when the vessel is engaged upon short, daylight voyages during the summer months, or on certain specified days (not exceeding six) in the year, would entitle her to carry persons in excess of the total number of persons allowed by the ordinary certificate.

When plying under the ordinary certificate, (a), the vessel is required to carry in lifeboats, rafts, and other buoyant apparatus, sufficient accommodation for the number of persons which she is authorised to carry by that certificate. In the case of vessels launched before the 1st January 1913, wherein it is not practicable, in the opinion of the Board of Trade, to carry accommodation for all persons for which the vessel is certified, this rule may be modified provided always that the number of persons which can be accommodated in the lifeboats, approved life rafts, approved buoyant deck seats or other approved buoyant apparatus shall not be less than 70 per cent. of the total number allowed to be carried by the ordinary passenger certificate, (a).

When plying under the special certificate, (b), the vessel must have lifeboats, rafts, and other buoyant apparatus for at least 80 per cent. of the number certified to be carried under the special certificate, (b), or for all under the ordinary certificate, (a), whichever number is the greater.

Class VI. Home Trade.—A steamship of this class under 200 feet in length shall carry at least two lifeboats attached to davits, and if of 200 feet in length or over at least four lifeboats. A vessel launched after the 1st January 1913 shall, in these lifeboats and in further lifeboats, approved rafts, or other buoyant apparatus, be able to accommodate 70 per cent. of the total number of persons which she is certified to carry. A steamer of this class, launched before the 1st January 1913, shall not, until the 1st January 1916, be required to be provided with lifeboats, approved life rafts, or other approved buoyant apparatus more than sufficient to carry 50 per cent. of the total number of persons which the vessel is certified to carry.

Class VII. Home Trade.—A steamship of this class, if under 200 feet in length, shall carry at least two lifeboats attached to davits, or, if of 200 feet in length or over, at least four lifeboats. A vessel launched after the 1st January 1913 shall, in these lifeboats and in further lifeboats, approved rafts, or other buoyant apparatus, be able to accommodate 60 per cent. of the total number of persons which she is certified to carry. A steamship of this class launched before the 1st January 1913 shall not, until the 1st January 1916, be required to be provided with lifeboats,

* A vessel which clears as an emigrant ship may carry more persons than the number which appears in her passenger certificate.

approved life rafts, or other approved buoyant apparatus more than sufficient to carry 40 per cent. of the total number of persons which the vessel is certified to carry.

Class VIII. Home Trade.—A vessel of this class under 150 feet in length shall carry at least one boat, and if of 150 feet in length or over at least two boats. If launched after the 1st January 1913 she shall carry in boats, approved rafts, and other approved buoyant apparatus, accommodation for 40 per cent. of the total number of persons which the vessel is certified to carry. A vessel launched before the 1st January 1913, shall not, until the 1st January 1916, be required to be provided with boats, approved rafts and other buoyant apparatus more than sufficient for 25 per cent. of the total number of persons which the vessel is certified to carry.

Class IX. Home Trade.—A ship of this class shall carry one boat in such a position that it can readily be got into the water. A vessel launched after the 1st January 1913 shall carry in boats, approved rafts, and other approved buoyant apparatus sufficient accommodation for 40 per cent. of the total number of persons which the vessel is certified to carry. A vessel launched before the 1st of January 1913, shall not, until the 1st January, 1916 be required to be provided with boats, approved rafts, and other approved buoyant apparatus more than sufficient for 25 per cent. of the total number of persons which the vessel is certified to carry.

4. These requirements can be tabulated as follows:—

Table showing the Requirements of the Draft Rules.

Trade.	Class.	No. of Davits required.	Lifeboat Capacity.	Life Rafts, if allowed.	Buoyant Apparatus.	Percentage of No. of Persons for which the Vessel is certified for which Life-saving Appliances are required.	
						Vessels Launched after 1st January 1913.	Vessels Launched before 1st January 1913.
Foreign	I.	App. A., 2 to 26.	All on board, or total number for which the vessel is certified, whichever is the greater.	(?)	None	100 per cent.	100 per cent.
Home	I. & V.	App. A., 2 to 26.	App. B.: 400 cubic feet to 5,000 cubic feet.	Yes	Yes	Ordinary certificate, 100 per cent. Special certificate, at least 80 per cent. or all under ordinary certificate whichever is the greater.	70 per cent.
	VI.	2 lifeboats for vessels under 200 feet and 4 lifeboats for vessels over 200 feet.		Yes	Yes	70 per cent.	50 per cent.
	VII.	Ditto		Yes	Yes	60 per cent.	40 per cent.
	VIII.	1 boat for vessels under 150 feet in length, 2 boats for vessels over 150 feet in length.		Yes	Yes	40 per cent.	25 per cent.
	IX.		1 boat	Yes	Yes	40 per cent.	25 per cent.

5. In addition to these rules there are certain other general requirements contained in the White Paper (Cd. 6402) which affect considerably that part of our reference at present under consideration. Of these the most important are General Rules 2 and 5 (a). The former provides that the lifeboats in any vessel may be either open lifeboats or decked lifeboats, but that not more than half the lifeboats shall be decked lifeboats with collapsible bulwarks; while the latter requires that "the davits or appliances for lowering boats shall be fitted in such positions that the boats may safely be lowered from them. In no case shall davits be fitted in the bows of a vessel nor, in the case of a screw steamer having more than one propeller, on the quarters."

6. In our investigations we have applied the above rules as to the number of persons for which accommodation is to be provided in lifeboats, approved rafts, and other buoyant apparatus to all existing ships in the classes stated in the above table (see

Part III.) on the assumption that, if it is possible for existing ships to comply with these rules, there will be considerably less difficulty in the case of ships which may be built in the future. New ships can be designed to comply with the new rules, whereas the adaptation of existing ships may in some cases present serious difficulty.

7. Before investigating in detail the arrangements of existing ships we took evidence from a number of witnesses who were nominated by representative firms of shipowners and shipbuilders. Many of these gentlemen hold the position of Marine Superintendent in their respective companies and have had considerable sea-going experience. Further, by the courtesy of the White Star, Cunard, and Anchor Lines, and the Caledonian Steam Packet Company, we were enabled to make practical investigations in regard to certain points germane to our enquiry. In this manner we were led to the following general conclusions:—

PART II.

GENERAL CONCLUSIONS REGARDING TYPES OF BOATS, RAFTS, AND STOWAGE AFT, OR ON DECK BELOW THE UPPERMOST DECK.

I.—Types of Boats.

8. The ideal appliance for life-saving at sea is an unswampable, self-emptying boat, which provides adequate shelter for the passengers and which is carried attached to davits, or to some other approved appliance, so as to be readily available for launching and saving life in all cases of emergency. It is unfortunately impossible to attain to this ideal in the majority of cases, and we have therefore been obliged to weigh the comparative merits of different types of boats under different conditions of service.

9. After careful consideration we have arrived at the conclusion that, while the decked lifeboat, as defined in the Board of Trade Circular, No. 1511, is practically self-emptying and unswampable, it is less handy for conveying passengers from ship to ship than an ordinary open lifeboat.

10. Several of the witnesses whom we have examined stated that they considered decked lifeboats quite as valuable for saving life as open lifeboats, but when asked whether, in that case, they would agree to the substitution of decked lifeboats in the place of all the open lifeboats, they all expressed the opinion that some considerable proportion of the boats attached to davits should be open boats. We have, therefore, decided provisionally that the most satisfactory arrangement is to stow open boats attached to all the davits. If that does not give sufficient accommodation, we recommend that a decked boat be stowed underneath each of a sufficient number of the open boats which are attached to davits; and, if this is not sufficient, we further recommend that at only a certain number of davits shall open boats be carried; at the other davits the open boats shall be replaced by decked boats, so that it may be possible to stow three decked boats under one set of davits.

11. The decked boat has one undoubted point of superiority over an open boat, in that it is a raft in itself. That is to say, if the bulwarks are damaged, or if there is not sufficient time to launch the boat properly or to open out the bulwarks, it will still float with unimpaired stability. For this reason all boats which are not stowed under davits may be decked lifeboats.

II.—Rafts.

12. We have experienced considerable difficulty in arriving at a decision as to the exact meaning to be placed upon the word "raft" in our reference. We believe that in the popular view a raft is generally assumed to consist of a number of spars, planks, &c., lashed or otherwise fastened together, so as to form a floating platform. A large number of the designs for rafts which have been submitted to us fall into this category.

13. We cannot approve for use in foreign-going vessels any life raft, such as that described in subsection (a) paragraph 8 of the Board of Trade Memorandum, in which the deck may in certain cases be level with the water.

14. We are, however, of opinion that an appliance which may be defined as a reversible pontoon raft, should be accepted as part of the statutory life-saving appliances required to be carried in ships of the above class.

15. We believe that a satisfactory appliance of this type can be designed on the lines of certain rafts which we inspected, by the courtesy of the White Star Line and

Cunard Steamship Company, on board the s.s. "Laurentic" and "Lusitania" in the Liverpool Docks. These rafts, which were designed to carry 25 persons each, consist of eight cylindrical copper tanks, placed in pairs end to end, and set in a framework of wooden battens. Each tank is subdivided into three compartments, making 24 watertight compartments in all, with a total buoyancy of 75 cubic feet or 3 cubic feet per person. The outside dimensions of the framework are approximately 16 ft. by 9 ft. by 2 ft. 2 ins. overall, and when loaded with the full complement of persons for which they are certified, the rafts were found to have a freeboard of 9 inches measured to the top of the battens.

16. Approved pontoon rafts, which we recommend should be accepted as part of a vessel's equipment of life-saving appliances, should be reversible, and should have bulwarks which may be of canvas and collapsible. They should also be of such size and weight that they can be conveniently handled, and if necessary, thrown from the vessel's decks.

17. A pontoon raft which satisfies these conditions should be accepted in substitution for a portion of the boats not carried directly under davits, provided that in the case of foreign-going ships the percentage of persons for whom accommodation is carried in the form of rafts does not exceed 25 per cent. of the total number of persons for which the vessel is certified or of the total number of persons on board, whichever is the greater.

18. Circumstances may arise in which a pontoon raft of this type will alone be valuable as a means of saving life, and although we are not prepared to recommend that the carriage of a certain number of pontoon rafts should be made compulsory, we consider that shipowners should in certain cases be allowed the option of carrying a part of the life-saving equipment in the form of pontoon rafts.

19. In this connection we submit the following answers to the questions in paragraph 8 of the Board of Trade Memorandum:—

(1) Is it practicable to provide appliances by means of which life rafts may be launched from a vessel's deck before she sinks?

Yes; but we are of opinion that approved pontoon rafts should be of such a size that they can be handled without the use of such appliances, and, if necessary, thrown from the deck on which they are stowed.

(2) Is 3 cubic feet of buoyancy as required by the existing statutory rules sufficient for life rafts?

Yes, in the case of the pontoon rafts which we recommend.

(3) Would the existing type of life rafts or life rafts of improved construction be sufficiently effective for life-saving purposes in the event of an emergency, to entitle them to be calculated as a part of the actual life-saving appliances with regard (a) to foreign-going vessels, (b) to home trade vessels; and if so, to what extent?

Pontoon rafts satisfying the conditions which we have laid down may be accepted as part of the actual life-saving appliances both in foreign going and home trade vessels. They should not however, be accepted in lieu of boats which can be attached to davits or of those which can be stowed under the boats attached to davits, and in the case of foreign-going vessels the percentage of persons for which accommodation is provided in this manner, should in no case exceed 25 per cent. of the total number of persons which the vessel is certified to carry, or of the total number of persons on board, whichever is the greater.

(4) What equipment is necessary in the case of a life raft?

The equipment of a pontoon raft need not be as elaborate as that required for a lifeboat. We are of opinion that the following equipment is sufficient:—

- (1) Four oars.
- (2) Five rowlocks.
- (3) A sea anchor.
- (4) A painter.
- (5) A receptacle for provisions.
- (6) A receptacle for water.
- (7) Six red lights.
- (8) A "Holmes Light" similar to that required for life-buoys should be attached to each raft, so that, when it is afloat, those on board or in the water may be aware of its position.

20. In the investigations of which an account is given in Part III. of this Report we have worked on the principle that all decked lifeboats possible are carried before any rafts are added, provided the decked boats are stowed in such a way that not more than six boats are served by one set of davits, the boats being stowed in two tiers of three, one tier under the davits and the other immediately alongside the davits. A sufficient space for the efficient working of the boats actually under davits must be left between the two tiers, and the davits must be of a satisfactory type and arrangement.

21. On this assumption we have found that practically all existing foreign-going ships can comply with the Draft Rules. In many of them an alternative arrangement can be obtained by substituting rafts for a certain proportion of the boats placed immediately alongside the boats under davits. An option between rafts and decked boats stowed inboard not under davits is thus left to the shipowner in a number of cases.

III.—*Dimensions, &c., of Boats.*

22. We are not yet in a position to make any recommendations regarding the dimensions, &c., of ships' boats. In these investigations we have assumed that a 30-foot boat is the maximum length of boat, and that the capacity of such a boat will be 600 cubic feet, and that its form will allow of its carrying 60 persons.

IV.—*Stowage of Boats on Decks below the Uppermost Deck.*

23. Reference is made in paragraph 4 (a) of the memorandum accompanying our reference to a suggestion made in a paper read before the Institute of Naval Architects in the current year that, in certain cases, some of the boats should be stowed on a deck below the uppermost deck. It is urged that by stowing some of the boats in this manner the embarkation of the passengers will be easier than if all the boats are concentrated on one deck. This argument does not appear to be valid, as we are of opinion that the passengers should not be placed in the boats at the boat deck, where a lower open deck is available. In this way the boat deck will be kept free of passengers and the handling of the boats will not be impeded. We have, however, carefully considered the suggestion, and, in view of the general agreement amongst the witnesses whom we have examined that the proposal is not feasible, we cannot recommend it as a solution to the problem of stowage. Should a shipowner wish to stow a portion of the boats on a lower deck we see no objection, provided effective precautions are taken to prevent the lower boat from being fouled by the boat stowed immediately above it on the uppermost deck.

V.—*The transference of Boats from one side of the Ship to the other.*

24. In paragraph 4 (b) of the Board of Trade Memorandum we are asked to consider whether it is practicable for arrangements to be made whereby the boats on the boat deck may be transferred from one side of the deck to the other. We have not yet completed our examination of the various proposals submitted to us which purport to accomplish this, and are not in a position to give a decision on the point.

VI.—*Stowage of Boats aft.*

25. We observe that on page 11 of the recent report of the Merchant Shipping Advisory Committee, a recommendation is inserted that all davits should be erected within the midship portion represented by two-thirds of the length of the vessel. Further, in General Rule 5 (a) in the Draft Rules it is laid down that in no case shall davits be fitted in the bows, nor in the case of screw steamers having more than one propeller, on the quarters.

26. It is undesirable that boats should be stowed in the bows of a vessel, for in that position they will be liable to damage. On the other hand, we are of opinion that no limitation should be placed upon the stowage of boats in the after part of a ship. In many ships the space available for davits is limited to the length of the machinery space and that part of the deck which is aft of the aftermost hatch. Circumstances may arise where a boat carried in davits directly over the propeller may be subject to

damage by the blades of the propeller, but the occasions when this will happen will be very rare if due care is taken in launching the boat. It is preferable to have boats under davits although immediately over the propeller, rather than to stow them inboard away from davits. Further, it is sometimes of the greatest importance to have the boats spread over as large a length of the ship as possible. Fears were expressed by some of the witnesses that cases might arise in which all the boats stowed amidships would be destroyed by fire and only the boats stowed on the poop would be able to be launched; also, in cases of stranding or collision, the after boats might be the most valuable. We therefore recommend that this rule be modified so as to permit of davits being carried, without any limitation as to their position in the after part of the ship.

PART III.

APPLICATION OF CONCLUSIONS TO DIFFICULT CASES IN EXISTING SHIPS.

27. Having dealt with the questions of the size and types of boats, the value of rafts and the advisability of stowing boats aft, and on decks below the uppermost decks, we now proceed to examine in detail such vessels already afloat as appeared to us to present difficulty in complying with the Draft Rules, by reason of their special design or the large number of persons which they are authorised to carry.

Class I.—Foreign-going Ships.

28. The vessels in this class vary considerably in design, and in certain cases the length of deck available for the stowage of boats is a comparatively small proportion of the total length. There are, at one end of the scale, ships which carry large cargoes, with many cargo hatches and a short length of machinery space, and at the other, ships which carry small cargoes and have few hatches and a comparatively large length of machinery space. Many vessels of the former type are adapted to carry large numbers of passengers, principally emigrants. If the vessel is sufficiently subdivided so as to remain afloat with two adjacent compartments flooded, a considerable number of hatchways will be necessary. These hatchways are worked by derricks on masts between them so that the longitudinal spaces between the hatchways is encumbered with rigging. It therefore follows that there is very little space suitable for the stowage of boats attached to davits except in way of the machinery spaces and abaft the after-hatch. In considering ships of this class therefore we have assumed that General Rule 5 (a) of the Draft Rules will be altered in accordance with our recommendation in paragraph 26 of this Report.

29. The method of our inquiry is as follows:—On pages 3–16 of the House of Commons Return (No. 303), dated the 13th May, “giving the number and names of “British Vessels holding a Board of Trade passenger certificate, and showing in each “case the authorised number of passengers and crew, the number of lifeboats under “davits, and other boats or life rafts, with their carrying capacity,” there is a table of all foreign-going passenger steamers holding passenger certificates from the Board of Trade on the 25th April 1912. In this table the number of persons which the vessel is authorised to carry corresponds in each case with the number which appeared on the passenger certificate at that date. In the following calculations we acted on the assumption that the number of persons carried is that which appears on the passenger certificate, although in the case of ships which clear as emigrant ships, the actual number of persons carried may exceed this number.

30. There are in this list 521 vessels, of which 130 do not carry boats under davits sufficient for the total number of persons which the vessel is certified to carry. Of the 130 vessels which do not carry in their boats under davits sufficient accommodation for the total number of persons which the vessel is certified to carry, there are four vessels which are certified for more than four times the number of persons for which there is accommodation in the boats under davits; there are 13 which are certified to carry between three and four times the number of persons for which there is this accommodation; 27 which are certified for between two and three times, and 86 which are certified for between one and two times the number of persons for which there is accommodation in the boats under davits.

31. We are of opinion that under every set of davits it is a practicable and satisfactory arrangement to stow an open lifeboat attached to the davits and underneath it a decked lifeboat of the same capacity with collapsible bulwarks. It is thus possible to double the accommodation already provided in boats under davits. In this manner the boat capacity of the 86 vessels which are at present certified to carry a number of passengers which is between one and two times that provided in the boats under davits can be increased to comply with the requirements of the Draft Rules, without increasing the number of davits or infringing General Rule 2, which specifies that not more than 50 per cent. of the lifeboats may be decked lifeboats with collapsible bulwarks. In cases where this may be considered impracticable, and in cases in which the number of boats given in the foregoing table as "under davits" does not correspond with the actual number of davits, one or more boats can be stowed immediately alongside of the boats actually under davits. On this assumption these cases have not been investigated further, although it is possible that in some cases extra davits will have to be fitted in order to comply with Appendix A. If the fitting of these extra davits is not practicable it would appear that exemption might reasonably be granted, since the necessary equipment can be provided in an efficient manner as indicated above.

32. In the remaining 44 cases it will generally be necessary to increase the number of sets of davits. The number of decked boats with collapsible bulwarks may also have to be increased to more than 50 per cent. of the total number of boats carried. In order to comply with Appendix A. of the Draft Rules, 20 of these vessels will be required to augment the number of sets of davits already carried. In 4 cases the increased accommodation obtained by placing an open lifeboat and a decked boat under the additional davits will enable the vessels to comply with the Draft Rules. In 5 cases it will be impracticable in our opinion to fit the additional davits required by Appendix A.

33. The deck plans of these five cases and of the remaining 35 cases, in which it is not possible to provide all the necessary additional accommodation by placing decked boats under the open boats attached to davits, have been carefully examined. In order to provide the required lifeboat accommodation in these cases it will be necessary to carry more boats than could be obtained by placing decked boats under the boats attached to davits.

34. It is now necessary to consider how best to stow more than two lifeboats for each set of davits. The alternative methods are—

- (a) to stow immediately alongside the boats under davits an open lifeboat, with or without a decked lifeboat underneath, or one or more decked lifeboats stowed one above the other;
- (b) to dispense entirely with open lifeboats at a certain number of the sets of davits, and in place of the open lifeboat and decked lifeboat to carry three decked lifeboats stowed one above another;
- (c) to stow open lifeboats, or decked lifeboats in places away from the davits, e.g., in rows athwartships parallel with the davits.

Of these, method (b) would involve the modification of General Rule 2 in such a way as to allow of a greater percentage of decked lifeboats. In many cases it would also be necessary to increase this percentage in methods (a) and (c).

35. If method (a) were adopted, a considerable amount of deck space would be filled with boats. If the boats are stowed away from the davits, delay in launching them may result, and in our opinion boats should not be stowed in this manner if it is practicable to carry all the boats under or alongside the davits.

36. As stated above (Part II., paragraph 9) we are of opinion that a decked lifeboat with collapsible bulwarks compares favourably with an ordinary open lifeboat as a means of saving life at sea, and we therefore recommend that the limitation as to the proportion of decked lifeboats may be removed.

37. There are, however, certain contingencies in which open lifeboats may prove of greater value than decked lifeboats. While, therefore, the number of decked lifeboats should be considerably increased, a definite proportion of the boats attached to davits should be open boats. We accordingly recommend that Appendix A. of the Draft Rules should be amended by the addition of a column specifying the

minimum number of open boats* which should be carried attached to davits. Appendix A. will then read as follows:—

APPENDIX A.

38. Table showing the minimum number of sets of davits and of open boats attached to davits, required to be provided in a ship, in Class I., Foreign going, or Class I. or Class V. in the Home Trade:—

Registered Length of Vessel in Feet.	Minimum Number of Sets of Davits.	Minimum Number of Open Boats attached to Davits.
Under 160	2	2
160-220	4	4
220-270	6	4
270-330	8	6
330-390	10	6
390-450	12	8
450-510	14	10
510-590	16	12
590-670	18	12
670-750	20	14
750-840	22	14
840-940	24	16
940-1,040	26	16

39. If the number of open lifeboats attached to davits is reduced in accordance with this table, it will be possible to stow immediately under a certain number of the sets of davits three decked lifeboats stowed one above another. This will not, in general, involve any difference in the height of the davits, for, allowing for proper supports and chocks, the height occupied by three decked lifeboats is practically the same as that occupied by an open lifeboat superposed on a decked lifeboat. This is on the assumption that the decked lifeboat is not required to have a sheer in the deck, but only in the bulwarks.

40. We are, therefore, of opinion that it is practicable to stow three decked boats, one upon another, under one set of davits, and that, provided suitable means are adopted for securing that they can be efficiently launched, method (b) will be the most efficient method of providing the necessary boat accommodation in ships which cannot provide sufficient boats by carrying an open boat and a decked boat at each set of davits.

41. We are not yet in a position to make any definite recommendation in regard to the most efficient appliances for launching boats nor as to what appliances would, in our opinion, be efficient and satisfactory for handling three or more boats served by one set of davits, but we are of opinion that in cases in which three boats are stowed under one set of davits, the drift between the davits should be greater than the length of the boats, or some equally satisfactory arrangement should be adopted for turning the boats out rapidly. Also, lest any delay should occur in launching the second and following boats, the use of efficient appliances for preventing the falls from becoming fouled or cable-laid should be made compulsory in all cases where more than one boat is handled by one set of davits. We have not yet been able to examine in detail all the appliances which have been suggested for this purpose, but we have witnessed tests which have convinced us that at least one satisfactory appliance has been devised for removing this difficulty. With this block no difficulty was experienced in recovering the falls, and two boats were launched in our presence from the same set of davits in a few minutes.

42. We have accordingly applied method (b), whereby three decked lifeboats may be stowed under one set of davits, to the remaining number of ships which cannot provide sufficient accommodation by stowing two boats at each set of davits, and we find that in twelve of them it will be possible by this means to obtain the necessary accommodation, although in four cases more sets of davits than the minimum number required by Appendix A. would have to be fitted.

* This rule should be subject to the exemption provided in General Rule 14 (a) of the Draft Rules.

43. In the remaining 28 vessels it will be necessary to provide further accommodation in the form of decked lifeboats stowed alongside the boats under davits or rafts stowed there or elsewhere.

44. We are of opinion that it is not generally possible to launch with sufficient rapidity more than six boats from any one set of davits in an emergency. When more than three boats are served by one set of davits there must be some approved means of lowering them rapidly, such as wire falls attached to drums controlled by brakes.

45. We are further of opinion that in cases in which it is not practicable to fit the number of davits required by Appendix A. no more than five boats should be served by one set of davits. We are led to make this reservation, because we find that in the greater number of cases in which the full number of davits required can be fitted, it will in general only be necessary for two tiers of boats to be stowed at a comparatively small number of sets of davits, the majority of the davits serving only two or three boats; whereas, if the specified number of davits cannot be fitted a comparatively large number of davits will be required to serve more than three boats. In the former case, the deck space saved by stowing tiers of three decked boats immediately alongside the boats under a comparatively small number of sets of davits can, in our opinion, be allowed without reducing materially the efficiency of the means of saving life. When it is necessary for a large number of the davits to serve more than three boats, we are of opinion that deck space must be sacrificed in order to increase the efficiency of the means of saving life.

46. We have, therefore, examined the above 28 vessels on these assumptions, and find that in 19 of them it is practicable to stow a further number of lifeboats, sufficient to provide the required accommodation, in tiers immediately alongside the davits, in no case allowing more than six or five boats respectively at any one set of davits, according as to whether the vessel is or is not fitted with the full number of davits required by Appendix A.

47. In the remaining 9 cases it will be necessary to carry rafts sufficient to make up the full complement of accommodation required. In 7 cases this can be done without exceeding the limit of 25 per cent. which we have recommended. The two remaining cases are ships plying from Hull across the North Sea, but not within the Home Trade limits. These vessels are of a similar character to the vessels in Class I. of the Home Trade, and should in our opinion be dealt with individually by the Board of Trade, as they do not appear to us to be capable of complying with the requirements of the Draft Rules and our suggested modifications, with their present passenger certificates.

48. In arriving at these conclusions we have assumed that vessels will where necessary be fitted with the maximum number of davits which it is practicable to fit, even if that number is in excess of the number required in Appendix A. of the Draft Rules, and that, where necessary, the number of open boats is not more than the minimum specified in the third column of the Appendix as modified in paragraph 38. In such cases the specified number of open boats becomes at once a maximum and a minimum.

49. In this investigation we have only dealt with ships which held passenger certificates from the Board of Trade on the 25th April 1912, and only for the number of persons on the passenger certificate. We have not attempted to deal with the case of ships which, when they have emigrants on board, carry more persons than the number on the passenger certificate; nor with those which have been launched since the 25th April or which are at present under construction, but we consider that it is a justifiable assumption that these ships can be dealt with on the general principles which we have applied to other cases.

Classes I., V., VI., VII., VIII., IX., Home Trade.

50. In dealing with vessels in these classes we have adopted a similar method to that employed in our investigations in regard to the foreign-going steamships. From the table in the Parliamentary Return to which reference has already been made we selected those cases in which the number of passengers appeared very large in proportion to the number of persons for whom accommodation was already provided. A number of deck plans of railway companies' steamers specially selected by the respective companies as cases in which compliance with the Draft Rules would be

difficult have also been examined. In this manner a large number of cases were brought to our notice which we are of opinion may be taken as representatively difficult cases. We have examined these cases in detail and we are of opinion that in every one of them it is possible to provide satisfactorily and efficiently accommodation in boats and deck seats and other buoyant apparatus for the full number of persons which the vessel is certified to carry or for the percentage required by the Draft Rules, as the case may be.

51. Of those vessels in this class which do not already carry the accommodation required by the Draft Rules, some would have to fit extra davits, and others would have to carry decked boats under the open boats, and possibly to carry a larger boat accommodation than that specified in Appendix B. We are satisfied, however, that a solution to the problem of providing the necessary accommodation can be found in one or more ways.

52. It has been stated in evidence that it is necessary in some vessels that the boats should be swung out when the vessel leaves the quay. We are of opinion that from the point of view of increasing the value of the boats for saving life it is not necessary that this should be done, and, if it is necessary to swing out the boats in order to provide deck space for the passengers, the owners of the vessel can adopt the alternative of building special boat supports above the present deck. In many of these vessels it would be practicable to add davits in excess of the number required by Appendix A. of the Draft Rules, and if at a number of the davits open boats with decked boats under were carried in accordance with the table in paragraph 38, decked boats in tiers of three being stowed under the remaining davits, accommodation in boats could be provided in excess of the minimum specified in Appendix B; when possible, we consider it desirable that this should be done.

53. We have already made certain tests in regard to an existing form of buoyant deck seat to determine if it provides an efficient means of saving life. We propose to make some further investigation before presenting our final report.

54. In the majority of cases in Class I. and Class V. it will be possible to provide boat accommodation for the total number of persons carried in ordinary circumstances, this number being in general a small percentage of the total number which the vessel is at present certified to carry. The probability is that, in the event of disaster, the boat accommodation will be sufficient for all persons actually on board at the time of the disaster. It is obvious that open boats and decked boats are of more value as life-saving appliances than buoyant deck seats in this class of vessel. If the minimum of boat capacity specified in the Draft Rules is regarded also as a maximum, the buoyant deck seats will form the larger proportion of the life-saving appliances on vessels of this class, and therefore the aggregate boat capacity should be as large as possible.

55. It has been suggested to us that in Home Trade steamers, and, in particular, in the smaller types of vessels which carry large numbers of "excursionists," the risk of panic is very great, and that an attempt would probably be made to "rush" the small number of boats carried in accordance with the Draft Rules. In such a case disaster would inevitably ensue. On the other hand, it is suggested that if no boats, but only deck seats or similar appliances were carried, the risk of such panic would be considerably less.

56. We recognise that this contention should be allowed some weight in Classes VI., VII., VIII., and IX., and while we are of opinion that our recommendation that the number of boats should be increased as far as possible, so as to provide accommodation for the number of passengers ordinarily carried, will go far to minimise the anticipated danger in Classes I. and V., we do not think effect should be given to it in the other classes of the Home Trade.

57. We are not, however, at present in a position to make recommendations of a more definite character in reference to existing vessels of the Home Trade, for, while we may be able to reach conclusions as to stowage, we are of opinion that other considerations, such as the effect on stability, the extra windage and the extra draught of water due to the increased life-saving appliances, can only be properly dealt with in many cases by examining each case on its individual merits.

58. In the detailed investigation of particular steamers, both foreign going and home trade, on which the above conclusions have been based, we have made two further assumptions which appear to us to be reasonable. Firstly, we have assumed that any additional boats which are placed on board will have at least the same capacity as the

existing boats, whether they be open boats or decked boats; and secondly, that if the design of the boats at present on board is such that the number of persons which they are certified to carry will be reduced in accordance with General Rules 3 and 4 of the Draft Rules, then these boats will be replaced by boats of a satisfactory design which will carry the number of persons for which the former are at present certified.

PART IV.

SUMMARY OF RECOMMENDATIONS.

59.—(1) No limitation as to longitudinal position should be placed on the fitting of davits aft.

(2) The most satisfactory arrangement is to stow an open boat attached to each set of davits. If that does not give sufficient boat accommodation a decked boat should be stowed underneath each of a sufficient number of the open boats which are attached to davits. If this does not give sufficient accommodation the number of open boats carried may be reduced so that it may be possible to stow three decked boats under a set of davits. An additional column (*see* paragraph 38) should be added to Appendix A. in the Draft Rules specifying the minimum number of open boats which *must* be attached to davits.

(3) Decked lifeboats may be stowed three in height, one above another, under a set of davits provided that—

- (a) Removable supports or other satisfactory appliances are provided to carry each boat so that its weight is not unduly supported by the boat underneath it.
 - (b) The drift between the davits is greater than the length of the boat, or some other equally satisfactory arrangement adopted for turning out the boats rapidly.
 - (c) Satisfactory means are provided for launching the three boats in turn from the same set of davits.
 - (d) Efficient appliances for preventing the falls from becoming fouled are fitted in all cases where more than one boat is handled by one set of davits.
- (4) Further lifeboats, open or decked, may be carried inboard immediately alongside the boats under davits, provided that—
- (a) No more than six boats in two tiers of three each are so placed as to be served by one set of davits, with the reservation that if it is not practicable in any existing ships to fit the number of davits required in Appendix A., no more than five boats shall be served by any one set of davits;
 - (b) Where more than three boats are served by one set of davits there is some approved means for lowering the boats in turn and rapidly. In these cases wire falls attached to drums and controlled by brakes should be used.

(5) In foreign-going ships in which the boat accommodation is so large that it is necessary to carry boats not actually attached to or not under other boats actually attached to davits, pontoon rafts of an approved pattern as defined in Part II. of this Report should be allowed in substitution of the above-named boats not actually attached to or not under other boats actually attached to davits, provided that the total number of persons for whom accommodation is provided in this form does not exceed 25 per cent. of the total number of persons the vessel is certified to carry, or the total number of persons on board, whichever is the greater.

We have the honour to be,

Sir,

Your obedient Servants,

J. H. BILES (*Chairman*).
 ARTHUR GOUGH-CALTHORPE.
 J. T. W. CHARLES.
 J. G. H. FLINT.
 MICHAEL JOYCE.
 JAMES MAXTON.
 D. B. MORISON.
 FRED J. STEPHEN.
 H. B. WORTLEY.

F. P. ROBINSON (*Secretary*).
 9th December 1912.

REPORT

OF THE

DEPARTMENTAL COMMITTEE

ON

BOATS AND DAVITS.

Presented to Parliament by Command of His Majesty.



LONDON:

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1913.

[Cd. 6846.]

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MINUTES OF APPOINTMENT.

AT THE COUNCIL CHAMBER, WHITEHALL,

This second day of August 1912.

PRESENT

THE RIGHT HONOURABLE SYDNEY C. BUXTON, M.P.

The Board of Trade are pleased to appoint the following gentlemen, viz.:—

PROFESSOR J. H. BILES (Chairman),
 REAR-ADMIRAL THE HON. S. A. GOUGH-CALTHORPE, C.V.O.,
 MR. A. E. DOXFORD,
 CAPTAIN J. G. H. FLINT,
 MR. MICHAEL JOYCE, M.P.,
 MR. JAMES MAXTON,
 MR. F. J. STEPHEN, and
 MR. H. B. WORTLEY,

to be a Committee to advise the Board of Trade, in the interests of safety of life—

- (1) as to what are the most efficient arrangements for stowing boats on steamships of all classes, for launching them in an emergency, and for embarking the passengers and crew;
- (2) as to whether, and if so, to what extent, mechanical propulsion can with advantage be adopted either in addition to, or in substitution for propulsion by oars and sails;
- (3) as to the question of rafts, and, in particular, whether, if, of approved character, they should be allowed in substitution for boats; and if so, to what extent and under what conditions;
- (4) whether, independently of the foregoing, the Committee desire to make any recommendations with reference to the above-mentioned matters which would, in their opinion, contribute to the safety of life at sea.

The points to which the Board desire to draw particular attention are specified in detail in the accompanying memorandum which has been drawn up by Captain A. H. F. Young, Professional Member of the Marine Department, and Mr. W. D. Archer, one of the Principal Consultative Officers of the Marine Department.

The Board are further pleased to appoint Mr. F. P. Robinson to be Secretary to the Committee.

(Signed) SYDNEY BUXTON.

AT THE COUNCIL CHAMBER, WHITEHALL,

This twenty-second day of October 1912.

PRESENT

THE RIGHT HONOURABLE SYDNEY C. BUXTON, M.P.

Read Minute of 2nd August 1912, appointing a Committee to advise the Board of Trade, in the interests of Safety of Life at Sea, as to the most efficient manner of stowing, launching, and propelling boats; and to what extent and under what conditions rafts should be allowed.

Read letter from Mr. A. E. Doxford resigning his position as a member of the Committee.

The Board of Trade are pleased to appoint Captain J. T. W. Charles, C.B., R.D., Commander R.N.R., and Mr. D. B. Morison, to be additional members of the said Committee.

(Signed) SYDNEY BUXTON.

AT THE COUNCIL CHAMBER, WHITEHALL,

This twenty-third day of December 1912.

PRESENT

THE RIGHT HONOURABLE SYDNEY C. BUXTON, M.P.

Read Minute of the Board of Trade dated 2nd August 1912, appointing a Committee to advise the Board, in the interests of Safety of Life at Sea, as to the most efficient manner of stowing, launching, and propelling boats; and as to what extent and under what conditions rafts should be allowed.

The Board of Trade are pleased to appoint Vice-Admiral John E. Bearcroft, C.B., M.V.O., to be a member of the said Committee, vice Rear-Admiral the Hon. S. A. Gough-Calthorpe, C.V.O., resigned.

(Signed) SYDNEY BUXTON.

REPORT

To the Right Hon. SYDNEY CHARLES BUXTON, M.P., President of the Board of Trade.

SIR,

THE reference under which we have conducted our inquiry is as follows:—

- (1) As to what are the most efficient arrangements for stowing boats on steamships of all classes, for launching them in an emergency, and for embarking the passengers and crew.
- (2) As to whether, and if so, to what extent, mechanical propulsion can with advantage be adopted either in addition to, or in substitution for propulsion by oars and sails.
- (3) As to the question of rafts, and, in particular, whether, if of approved character, they should be allowed in substitution for boats; and, if so, to what extent and under what conditions.
- (4) Whether, independently of the foregoing, the Committee desire to make any recommendations with reference to the above-mentioned matters which would in their opinion contribute to the safety of life at sea.

This reference was supplemented by a Memorandum prepared by Captain A. H. F. Young and Mr. W. D. Archer, of the Marine Department of the Board of Trade, directing our attention to important aspects of the questions covered by our reference. Captain Young and Mr. Archer attended as witnesses before us to explain various points in the memorandum on which we desired further information.

The question of fitting a protective continuous fender to all ships' boats to lessen the risk of damage when they are being lowered in a seaway, was also referred to us in a letter from the Board of Trade dated the 16th August 1912. This letter, and the memorandum referred to above, are printed in the Appendix to this report.

In December last we presented an Interim Report dealing with the question of Stowage in existing ships, and we have now the honour to submit our final Report. We desire to express our regret that Mr. A. E. Doxford was obliged to resign his membership at a very early stage of our inquiry, and that Rear-Admiral the Hon. S. A. Gough-Calthorpe, C.B., C.V.O., having been appointed to a sea-going command, had to resign after the presentation of our Interim Report. Their places have been taken by Mr. D. B. Morison and Vice-Admiral J. E. Bearcroft, C.B., M.V.O.

We considered it desirable that we should take evidence at an early stage as to the existing arrangements for stowing and launching ships' boats, and we accordingly selected representative firms of shipowners and requested to nominate witnesses to appear before us. Captain C. A. Bartlett, Marine Superintendent of the White Star Line, and Mr. Leonard Peskett and Captain G. H. Dodd, of the Cunard Steamship Company, gave us evidence regarding the largest type of transatlantic passenger ships. Captain G. M. Hicks, Marine Superintendent of the Royal Mail Steam Packet Company, Captain R. C. McFee, of the Anchor Line, and Captain J. W. Harris, of the Booth Line, gave us evidence in regard to the medium-sized passenger vessels; Captain G. F. Dixon, of the South Eastern and Chatham Railway Company, Captain D. Maxwell, of the London and South Western Railway Company, Captain W. S. Atkin, of the Lancashire and Yorkshire Railway Company, in regard to vessels in Class I. of the Home Trade; Captain J. Williamson, of the Caledonian Steam Packet Company, Mr. W. M. Corkill, of the Isle of Man Steam Packet Company, and Mr. John Nicoll, of the Coast Development Corporation, in regard to vessels in other classes of the Home Trade. We also invited Captain G. E. Holland, of the London and North Western Railway Company, to give evidence before us. Captain Holland, however, communicated his views so fully in a letter that it was found unnecessary for him to attend as a witness. Mr. P. A. Hillhouse, of the Fairfield Shipbuilding Company, and Mr. George Jackson, of Messrs. Denny and Bros., Dumbarton, gave us information as to the stability

of existing ships and as to the construction and form of boats, strength of davits, and other matters on which the experience of shipbuilders was of value.

In regard to the question of the mechanical propulsion of ships' lifeboats, Mr. E. H. Norris, of Messrs. Norris, Henty, and Gardners, Mr. J. E. Thornycroft, of Messrs. J. I. Thornycroft and Company, and Mr. J. Rennie, of the Rennie Forest Shipbuilding Company and of Messrs. Mumford and Company, of Colchester, put before us the technical considerations involved in fitting internal combustion engines in ships' lifeboats; also Mr. Arthur F. Evans, M.I.A.E., kindly volunteered some useful suggestions in regard to the design of engines for this particular purpose. It was also thought desirable to ascertain the experience of the Admiralty in this matter, and we accordingly heard evidence from Engineer-Lieutenant C. B. Stoneman, R.N., who was nominated for that purpose by the Admiralty.

We likewise heard evidence from Mr. J. H. Richardson, of the Seamless Steel Boat Company, and from Mr. P. Macalister, of the British Engelhardt Decked Lifeboat Company, in regard to the special types of boat which their respective firms construct.

The Marconi International Marine Communication Company put before us a carefully considered scheme for equipping a certain number of a ship's boats with small range wireless telegraphy installations, and Mr. G. E. Turnbull, the assistant manager, amplified these proposals in evidence.

Mr. C. P. Whitcombe, of the Submarine Signal Company, explained to us the method by which submarine signalling might be adapted for indicating the position of a ship's boats to a rescuing ship.

We also took evidence from Captain H. Mowatt, of the Canadian Pacific Railway Company, Captain C. McDonald, of the Union Steam Ship Company of New Zealand, and others.

After careful consideration we have decided not to put this evidence before you as an appendix to this report. The opinions expressed by the witnesses have, in many cases, been contradictory, and, further, a considerable portion of the evidence which we have taken is, in our opinion, of a confidential character and its publication would be undesirable.

We have ourselves made various investigations of a practical nature in regard to which we are indebted to various shipowning firms for placing ships, boats and buoyant apparatus at our disposal.

The Greenock Baths Company and the Liverpool Corporation were each good enough to place a swimming bath at our disposal for some tests of buoyant deck seats; and the Mersey Docks and Harbour Board lent us their tender "Galatea" for the purpose of testing the Submarine Signal Bell.

The Committee has held 33 meetings in addition to the meetings of sub-committees appointed to investigate particular points on behalf of the Committee.

We have had submitted to us for our consideration over six hundred inventions and proposals affecting the subject of our inquiry. Each of these inventions has been examined, and it may be said at once that very few, if any, contained new principles of practical utility. We have thought it better to make no reference to particular inventions in this report, although it will be found that a considerable number of appliances are in existence which will comply with the general recommendations which we now offer for your consideration.

We wish to express our thanks for, and our appreciation of the great value of, the services rendered to us as a Committee by our Secretary, who has displayed abilities of a high order in carrying out his duties.

PART I.

FORM, CAPACITY, AND STABILITY OF SHIPS' BOATS.

1. In order to deal adequately with the problem of how best to stow and launch the large number of boats required by the new Life Saving Appliances Rules of the Board of Trade, we found that attention would have first to be paid to the capacity and type of the boats carried. As our investigations in this matter proceeded we were led beyond the limits of the question of stowing and handling the boats, but in view of the fourth paragraph of our terms of reference we felt justified in continuing our inquiry and in putting before you the results of our investigations into the capacity and stability of boats.

Attached to this report is a series of diagrams which will show graphically much that cannot easily be expressed in a verbal report.

2. The present regulations governing the form and capacity of open boats and the number of persons for open or decked boats are contained in General Rules 4 and 5 of the Life Saving Appliances Rules which came into force on the 1st March 1913. These rules are as follows:—

" 4. Cubic Capacity.

" The cubic capacity of an open boat shall be ascertained by multiplying the product of the length, breadth, and depth by '6, subject, however, to the following provisions:—

" The length shall be measured from the foreside of the rabbet on the stem to the afterside of the rabbet on the stern post (in square-sterned boats to the end of planking); and the breadth shall be measured from the outside of plank to the outside of plank amidships at the point where the width of the boat is greatest. The depth shall be measured amidships from the top of the gunwale to the top of the bottom plank next to the keel, but the depth used in calculating the cubic capacity shall not in any case exceed 45 per cent. of the breadth.

" If the oars are pulled in rowlocks, the bottom of the rowlock is to be considered as the gunwale in measuring the depth of the boat.

" If any question is raised requiring absolute accuracy of adjustment, the cubic capacity of a boat shall be ascertained by Stirling's rule; subject to the foregoing provisions as to depth.

" The cubic capacity of a decked lifeboat shall be deemed to be the number of cubic feet obtained by multiplying by 10 the number of persons the boat is deemed fit to carry.

" No boat shall be carried in purported compliance with these Rules of a capacity of less than 125 cubic feet; subject to the provisions of General Rule 16 (4).

" 5. Number of Persons for Boats.

" (1) Subject to the provisions of subsections (2) and (4) of this rule, the number of persons an open boat shall be deemed fit to carry shall be the number of cubic feet ascertained as in General Rule 4 divided by 10. The space in the boat shall be sufficient for the seating of the persons carried in it, and for the proper use of the oars.

" (2) An open lifeboat constructed after these Rules come into force shall not be deemed to be fit to carry the number of persons ascertained as in subsection (1) of this rule unless it has passed a satisfactory test with that number on board; or unless the boat is so constructed that it has a mean sheer of at least half an inch for each foot of its length, that the boat's half-girth amidships measured outside the planking, from the centre line of the keel to the top of the gunwale, is at least equal to eighty-eight hundredths of the sum of the boat's depth inside and half its maximum breadth amidships, and that the mean of the half-girths measured in the same manner at two points, one-quarter of the length of the boat from the stem and sternpost respectively, is at least equal to eight-tenths of the sum of the depth inside and half the maximum breadth amidships. If the sheer and the girth do not comply with this subsection the number of persons shall be found by dividing the number of cubic feet by 12, unless and until the boat has been tested afloat with its equipment and a number of persons on board, when the number allowed shall be the number which the boat is able to carry, subject to the provisions of subsection (1).

" The number of persons a boat of section D shall be deemed fit to carry shall be determined in the same manner, except that the half-girth amidships and the mean of the half-girths at one quarter of the length from the ends shall be 86 per cent. and 78 per cent. respectively of the sum of the boat's depth and half-breadth amidships.

" The number of persons that an open boat, constructed before the commencement of these Rules, shall be deemed fit to carry, is to be found by the following rule, unless and until the boat has been tested afloat with its equipment and a number of persons on board, when the number allowed shall be the number which the boat is able to carry subject to the provisions of subsection (1) above:—When the mean of the two half-girths, measured as described in subsection (2) at one quarter the length of the boat from the stem and stern post respectively, is 78 per cent. or more of the sum of the boat's depth inside and half its maximum breadth amidships, the number of cubic feet is to be divided by 10.

" When the mean of the two half-girths is 74 per cent. of the sum of the depth and half-breadth, the number of cubic feet is to be divided by 12, and when the percentage is between 78 and 74 or less than 74, the divisor is to be in proportion.

" (3) The number of persons a decked boat shall be deemed fit to carry shall be such that the top of the deck amidships shall be at such height above the water as may be approved by the Board of Trade when the boat is so loaded, subject to there being a deck space of at least four square feet for each person.

" Provided, however, that if the boat is so constructed that persons can be accommodated below the deck the Board of Trade may allow a deck space of less than four square feet for each person.

" When the dimensions and form of the boat are such that, in the opinion of the Board of Trade, a practical test of the boat afloat is unnecessary, and the boat is not so constructed that persons can be accommodated below the deck, the number of persons the boat is fit to carry shall be deemed to be the number obtained by dividing the area of the deck in square feet by four.

" (4) If the depth of an open boat exceeds 3·6 feet, the number of persons the boat is deemed fit to carry shall be determined by the Board of Trade on the application of the owner, and until the application of the owner has been received and determined the depth of the boat for the purpose of ascertaining its cubic capacity shall be deemed not to exceed 3·6 feet.

" (5) If the surveyor is doubtful as to the number of persons any open or decked boat is fit to carry he may require the boat to be tested afloat with the intended number of persons on board.

" (6) Boats that have been properly marked need not be remeasured, unless there is reason to believe that the marks have been tampered with or are otherwise defective or improper.

3. The present Life Saving Appliances Rules are a modification of the draft rules presented to Parliament on the 4th September 1912. One of the boats with which we experimented was built in accordance with these draft rules, and it will be well, therefore, to quote those portions which deal with the form and capacity of open lifeboats. The relevant sections are as follows:—

" 3. *Cubic Capacity.*—The cubic capacity of an open boat shall be ascertained by multiplying the product of the length, breadth, and depth by ·6, subject, however, to the following provisions:—

" The length shall be measured from the foreside of the rabbet on the stem to the afterside of the rabbet on the stern post (in square-sterned boats to the end of planking); and the greatest breadth shall be measured from the outside of plank to the outside of plank amidships. The depth shall be measured from the top of the gunwale to the top of the bottom plank next to the keel, but the depth used in calculating the cubic capacity shall not in any case exceed 3·6 feet or 45 per cent. of the breadth whichever is least.

" If the oars are pulled in rowlocks, the bottom of the rowlock is to be considered as the gunwale in measuring the depth of the boat.

" If any question is raised requiring absolute accuracy, the cubic capacity of a boat shall be ascertained by Stirling's rule; subject to the foregoing provisions as to depth.

" The cubic capacity of a decked lifeboat shall be deemed to be the number of cubic feet obtained by multiplying by 10 the number of persons the boat is deemed fit to carry.

" Subject to the provisions of General Rule 14 (d), the capacity of a boat shall not be less than 125 cubic feet.

" 4. *Number of Persons for Boats.*—(a) Subject to the provisions of paragraphs (b) and (d) of this rule, the number of persons an open boat shall be deemed fit to carry shall be the number of cubic feet ascertained as in Rule 3 divided by 10. The space in the boat shall be sufficient for the seating of the persons carried in it, and for the proper use of the oars.

" (b) An open boat shall not be deemed to be fit to carry the number of persons ascertained as in paragraph (a) of this rule unless it has passed a satisfactory test with that number on board, or unless the boat is so constructed that it has a mean sheer of at least half an inch for each foot of its length, that the boat's half-girth amidships measured outside the planking, from the side of the keel to the top of the gunwale, is at least equal to nine-tenths of the sum of the boat's depth inside and half its maximum breadth amidships, and that the mean of the half-girths measured in the same manner at two points, one-quarter of the length of the boat from the stem and sternpost respectively, is at least equal to eight-tenths of the sum of the depth inside and half

" the maximum breadth amidships. If the sheer and the girth do not comply with this paragraph the number of persons shall be found by dividing the number of cubic feet by 12, unless and until the boat has been tested afloat with its equipment and a number of persons on board, when the number allowed shall be the number which the boat is able to carry, subject to the provisions of paragraph (a).

" (c) The number of persons a decked boat shall be deemed fit to carry shall be such that the top of the deck amidships is at such height above the water as may be approved by the Board of Trade when the boat is so loaded, subject to there being a deck space of at least 4 square feet for each person.

" When the dimensions and form of the boat are such that, in the opinion of the Board of Trade, a practical test of the boat afloat is unnecessary, the number of persons the boat is fit to carry shall be deemed to be the number obtained by dividing the area of the deck in square feet by 4.

" (d) If the Surveyor is doubtful as to the number of persons any open or decked boat is fit to carry he may require the boat to be tested afloat with the intended number of persons on board.

" NOTE.—Rules 3 and 4.—*These Rules prescribe the type and construction of lifeboats, and the method of ascertaining their carrying capacity. If existing boats do not comply with the requirements as to sheer and girth, they are dealt with by allowing them to be carried, but reducing the number they are deemed fit to carry by dividing their cubic capacity by 12 instead of by 10. In decked boats the deck space required for each person is to be 4 square feet instead of 3·8 square feet as under the existing Rule, the present figure being insufficient to ensure the proper accommodation of the total number of persons for which the boat is approved.*"

4. It appears from the above Rules that the assumed criterion of the fitness of an open boat to carry a particular number of persons is (a) the capacity of the boat subject to certain regulations as to the girth of the midship and quarter-length sections, or (b) the testing of the boat afloat with the intended number of persons on board. With reference to (a) we may remark that, although clause 5 of General Rule 5 gives the Surveyor power to test afloat any boat about which he is doubtful as to the number of persons which it is fit to carry, no provision is made in the Rules for the determination of the actual stability of the boat. With reference to (b), though we tested afloat several boats with the intended number of persons on board, we could only carry out such tests in still water. We are not satisfied that such tests are sufficient to determine the fitness of a boat to carry in a seaway the intended number of persons. We have, therefore, thought it desirable to obtain not only the actual capacity of the boats but, in addition, a measure of the stability of each boat and of the influence of form upon capacity and stability.

We have divided our investigations into two parts, dealing with open boats and decked boats respectively.

1.—Open Lifeboats.

5. For the purpose of ascertaining the influence of form upon capacity and stability four different types of open lifeboats have been designed, of the same dimensions, but of different models. The dimensions are:—Length, 28 feet; breadth, 8 feet 6 inches; depth, 3 feet 6 inches. The coefficients of internal capacity range from ·694 down to ·6, the capacity being reckoned to the top of the gunwale. A fifth boat (called hereafter boat "E"), of slightly different dimensions, has also been utilised. All except the fifth boat have sheer in accordance with the Board of Trade Life Saving Appliances Rules at present in force. [See Table I., page 10.]

6. For convenience of reference the boats have been called Boat "A," Boat "B," Boat "C," Boat "D," and Boat "E." Their distinguishing characteristics are as follows:—

Boat "A."—This boat is the fullest that has been proposed by the Board of Trade. The girths are in accordance with the requirements of the draft Life Saving Appliances Rules which were presented to Parliament on the 4th September last. The lines of the boat are shown in Diagram I.

Boat "B."—The girths of this boat comply with the requirements of the Life Saving Appliances Rules which came into force on 1st March, and which represent a slight modification of those originally proposed by the Board of Trade. The lines are given in Diagram II.

Boat "C."—This boat has a 15-inches rise of floor which gives a midship girth less than that required by the Rules, but the quarter girths comply with the Board of Trade rules. The lines are shown in Diagram III.

Boat "D."—This boat has the same midship section as Boat "C," but the quarter girths are only of sufficient fullness to give an actual internal capacity coefficient of .6. The form is the finest of all the types we have investigated; its lines are shown on Diagram IV.

Boat "E."—This model was selected as being a design which diverged considerably from the rules. Its girths are less than those of any other boat which we could obtain. Diagram V. gives the lines of this boat.

7. *Capacities of the Different Boats.*—The capacities of the different boats have been calculated by Integrator, by Stirling's Rule, and by the Board of Trade Coefficient Formula (capacity = length $\times$ breadth $\times$ depth $\times$.6). The difference between the results obtained by the Integrator and by Stirling's Rule was negligible. It should be stated that in the application of Stirling's Rule the internal dimensions only are used, whereas in the Coefficient Formula only one internal dimension, viz., depth, is used, the length and breadth being external measurements taken over the planking. The differences, however, are of no importance.

8. *Number of Persons for which the Boats would be Certified by the Board of Trade.*—The methods of calculating the number of persons for which a boat should be certified are laid down in General Rule 5 of the Life Saving Appliances Rules. In cases where the boats are built to the prescribed girth and sheer the capacity divided by 10 gives the number of persons for which the boat is certified; but where the sheer and girths are less than the prescribed amounts the divisor is to be 12 instead of 10, "unless and until the boat has been tested afloat with its equipment, and a number of persons on board, when the number allowed shall be the number which the boat is able to carry, subject to the provisions of subsection (1)," which states that "the space in the boat shall be sufficient for seating the persons carried in it, and for the proper use of the oars."

9. The chief dimensions and capacities of the different models are given in the following table:—

TABLE I.

Type of Boat.	Dimensions in feet.			$\left(\frac{1}{2} \text{ Girth} \right.$ $\left. \frac{1}{2} \text{ Breadth} + \text{Depth} \right) 100.$				Capacity in cubic feet.		No. of Persons.					Mean Sheer in inches.
	Length.	Breadth.	Depth.	Measured to side of Keel as per Draft Life Saving Appliances Rules.*		Measured to Centre of Keel as per Life Saving Appliances Rules.†		$L \times B \times D \times .6.$	Stirling's Rule.	Actual Co effi- cient.	$L \times B \times D \times .6.$ 10	Stirling's Rule Capacity + 10	Stirling's Rule Capacity + Girth Numeral.*	$\frac{L \times B \times D \times .6.}{\text{Girth Numeral}^*}$	
				Amid-ships.	Quarter Length from ends.	Amid-ships.	Quarter Length from ends.								
A	28	8.5	3.5	90	80	91.5	81.5	500	577	.694	50	58	58	50	15.5
B	28	8.5	3.5	86	79.5	87.7	81.1	500	556	.667	50	56	56	50	15.5
C	28	8.5	3.5	81.3	78.2	83	79.7	500	540	.65	50	54	45	42	15.5
D	28	8.5	3.5	81.3	74.2	83	76	500	500	.60	50	50	42	42	15.5
E	26.62	8.17	3.33	86.2	73.7	87.5	75	435	438	.605	43	44	36	36	11.5

* The girth numeral is the divisor 10 or 12 laid down by General Rule 5, according as to whether the boat complies with prescribed girths and sheer, or not.

† By the draft Rules the figures in the two columns should be 90 and 80 respectively.

§ By the present Rules the figures in the two columns should be 88 and 80 respectively.

10. It will be seen from the above table that the Coefficient Formula with divisor 10 would allow 50 people to be carried in each of the boats "A," "B," "C," and "D," but that the application of the Girth Rule divisor will decrease the numbers that may be carried in boats "C" and "D" by 8; whereas the application of Stirling's Rule to the calculation of the capacity will increase the number of persons that may be carried in "A" and "B" boats by 8 and 6 respectively. If Stirling's Rule is employed for calculating the capacity of "C" and "D" boats, the application of the Girth Rule divisor 12 will reduce the number of persons by 9 and 8 respectively below that which would be obtained if the divisor 10 were allowed.

It would therefore appear that "C" boat, which is of the same dimensions as "A" boat but of finer form, would be certified to carry 13 persons less than "A" boat, a difference of over 20 per cent. The comparison between boats "D" and "A" is still more striking, the difference being 16 persons, which is over 25 per cent. It may be added that we saw boats "A" and "E" rowed round the Alfred Dock at Birkenhead and that they appeared to us equally capable of carrying 58 and 44 persons respectively, which are the numbers obtained by using Stirling's Rule and the divisor 10.

11. *Stability.*—The initial stability of the five boats has been investigated. The metacentric heights under different conditions are shown on Diagrams IX. to XIII. and have been tabulated as follows:—

TABLE II.

Model.	Metacentric Height in Light Condition. With Equipment only.	Metacentric Height in Load Condition. With 50 Persons in Each Boat.	Metacentric Height in Load Condition. With Maximum Number of Persons allowed.	
			Capacity (calculated by Stirling's Rule) divided by 10.	Capacity (calculated by Stirling's Rule) divided by Girth Numeral.
	Feet.	Feet.	Feet.	Feet.
A - -	5.18	1.67	1.46 (with 58 persons).	1.46 (with 58 persons).
B - -	4.5	1.65	1.52 (with 56 persons).	1.52 (with 56 persons).
C - -	3.4	2.0	1.90 (with 54 persons).	2.1 (with 45 persons).
D - -	2.68	1.3	1.3 (with 50 persons).	1.47 (with 42 persons).
E - -	3.38	1.02 (with 44 persons only).	1.02 (with 44 persons).	1.26 (with 36 persons).

12. It would therefore appear that "C" boat loaded with 54 persons has 30 per cent. more initial metacentric height than "A" boat loaded with 58 persons. By the present rule, however, "C" boat will only be allowed to carry 45 persons because, although the quarter-length girths are of the prescribed amounts, the midship girth falls below the measurements prescribed by General Rule 5 by about 5 per cent.

13. In order to ascertain the conditions which would give equal stability to boats having the same dimensions but different forms, we tried the alternatives of initial metacentric height and freeboard, but ultimately abandoned both in favour of maximum righting moment as a measure, because reserve buoyancy and freeboard are both factors which influence the curve of righting moments.

14. A curve showing the weights to be applied on the gunwale to heel the boat to the vanishing angle of stability has been drawn for the boats "A," "B," "C," and "D," when laden with a number of persons ranging from 35 to 70 (see Diagram XIX.).

15. It will be seen that the maximum upsetting moment is reached in boats "B," "C" and "D" when laden with 50, 55, and 65 persons respectively, but that in "A" boat the upsetting moment decreases in value as the number of persons increases. The actual values of the moments are, for "B" boat 2.79 foot tons, for "C" boat 2.61 foot tons, and for "D" boat 2.41 foot tons. For "A" boat the corresponding moments will be 2.76 foot tons, 2.69 foot tons, and 2.50 foot tons.

16. *Freeboard.*—The relative freeboards for different numbers of persons are shown on Diagram XIX.

17. *Ballast.*—We have not investigated the extent to which the addition of ballast might increase or decrease the number of persons for which a lifeboat could be certified, but the curve of righting moments of boats "A," "B," "C," and "D" (see Diagram XIX.) throws considerable light upon the problem. It will be seen that additional numbers of persons beyond those shown in Table I. would increase the stability, but there is not seating accommodation for them with the seats as at present fitted. If a weight equal to that of the additional persons were carried in the form of ballast the stability could be increased. We are, however, of opinion that the use of ballast in a fully laden boat is not desirable.

18. *Experiments made to Ascertain the Stability of Open Lifeboats in a Partially Swamped Condition.*—Lifeboats "A," "B," and "E" have been tested for stability in a partially swamped condition. It was arranged to withdraw the plugs from the drain holes, and to allow the water to enter until it found its level with the water outside. "A" boat was found to have admitted 3.9 tons, "B" boat 4.03 tons, and "E" boat 3.83 tons of water. The plugs were then inserted and weights, consisting of iron, logs of timber and bags each containing 2 cwt. of sand, were put on board. the total weight of iron, logs and sand being in each case equal to the weight of the complement of persons for which the boat would be certified under Stirling's Rule with divisor 10 (viz., 58, 56, and 44 respectively). The centre of gravity of the weights was arranged to coincide as nearly as possible with the centre of gravity of

the persons. The bags of sand were then moved, one after another, to one side of the boat (*see* Diagram XVII.). In the case of the "A" boat, when 6 cwts. had been transferred from the centre line to the centre of the side seats, the boat heeled through an angle of $14\frac{1}{2}$ degrees and, after another half hundredweight had been shifted, water flowed over the gunwale. In this position the righting lever was found to be 1.5 inches, the righting moment just balancing the upsetting moment. The boat capsized immediately after the water began to flow over the gunwale.

In the case of the "E" boat the transference of $6\frac{1}{2}$ cwts. caused it to capsize, the angle of inclination being 11 degrees, and the righting lever 1.6 inches.

The curves of righting moments in the partially swamped condition are shown in Diagram XX.

19. The following table gives the relative figures for the three boats in the partially swamped and unswamped conditions:—

TABLE III.

	"A" Boat.		"B" Boat.		"E" Boat.	
	Unswamped.	Partially Swamped.*	Unswamped.	Partially Swamped.*	Unswamped.	Partially Swamped.*
Weight applied on gunwale to bring it to water's edge.	13.5 cwts.	6 cwts.	14 cwts.	8.5 cwts.	10.35 cwts.	5.5 cwts.
Degrees of heel when gunwale touched the water.	28.5	16	28	14	26.5	11
Number of people	58	58	26	56	44	44
Righting lever in inches	5.4	1.5	5.9	2.0	5.0	1.6

* NOTE.—No allowance was made in the experiments on account of the buoyancy due to the persons in the boats.

20. Time did not permit of our investigating the effect of swamping in any other conditions, but it has been demonstrated that the stability in the swamped condition is greatest when the water inside is at the level of the water outside.† The water did not reach the same level inside and outside when the weights had been added, so that the stability was less than the maximum. Any attempt to make the levels the same was impracticable because in that condition of swamping and with these weights on board the boat would have sunk below the gunwale and have capsized.

II.—Decked Lifeboats.

21. Similar experiments have been made in regard to two different types of decked lifeboats with collapsible canvas bulwarks. The types chosen were a boat "X," having the interior filled with cork cuttings, and a boat "Y," specially built for the purposes of the investigation by one of our members, Mr. F. J. Stephen. This boat has cellular buoyancy air chambers. It has no sheer and is designed to have finer lines than is usual in a decked lifeboat.

For purposes of comparison we have added a boat "Z," which is only partially decked, having a well in the centre.

The dimensions of the boats are:—

Boat.	Length.	Breadth.	Height to top of deck.	Height to top of bulwarks when extended.
	Feet.	Ft. ins.	Ft. ins.	Ft. ins.
X	28	8 6	1 5	3 5
Y	28	8 6	1 9	4 2
Z	28	8 0	1 4	3 9

The drawings of these boats are shown on Diagrams VI., VII., and VIII. respectively.

22. *Stability.*—The initial stability* of the three boats has been calculated for the light condition with equipment, and for the loaded condition with the people sitting and standing. The stability curves for each type of boat have also been calculated and drawn to scale in Diagram XXI.

Experiments were made to check these calculations in a similar manner to that adopted with the open boats in the partially swamped condition. In the case of the "X" boat and the "Y" boat the water was allowed to flow freely through the ports in the canvas bulwarks while the boats were heeling over under the influence of the shifted weights. (The grouping of the loads and the method of conducting the experiments are shown in Diagram XVIII.).

† Paper by A. Cannon, Esq., read before the Institution of Naval Architects on March 28th, 1912.

23. We have not been successful in our attempts to obtain accurate experimental data regarding the stability of the "Z" boat in the swamped condition. A series of experiments were made, but for various reasons none were absolutely conclusive. The results of the most successful are shown on Diagram XVI. At the conclusion of this test, however, it was found that about 7 inches of water had leaked into the buoyancy chambers on the submerged side of the boat, so that the experiment cannot be regarded as entirely satisfactory.

24. The full lines of this boat, and the low centre of gravity of its complement of persons, give it high initial stability which is combined with a long range of stability, provided that the canvas bulwarks are watertight and that the boat remains unswamped. Even when the boat had been completely swamped, and 7 inches of water had found its way into the buoyancy chambers on the submerged side, it did not capsize until a weight of 10 cwts. had been moved to the centre of the side seats, while 6 cwts. capsized the "A" boat in its partially swamped condition.

25. The results of these investigations are shown in the following table, to which the corresponding results for "A" and "E" boats, the fullest and finest types respectively, are added for purposes of comparison:—

TABLE IV.

	Open Boats.				Decked Boats.		
	"A" Boat.		"E" Boat.		"X" Boat.	"Y" Boat.	"Z" Boat (unswamped).
	Unswamped.	Partially Swamped.	Unswamped.	Partially Swamped.			
	Cwts.		Cwts.		Cwts.	Cwts.	Cwts.
Weight of boat without equipment (obtained from scales).	35.5	—	32	—	35	21.5	22
Number of persons in boat.	58	58	44	44	46	46	49
Displacement Coefficient (in loaded condition).	.545	.59	.462	.545	.693	.547	.645
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Freeboard to gunwale of open boat (in loaded condition).	23½	14½	21½	11	—	—	—
Freeboard to deck of decked boat (in loaded condition).	—	—	—	—	4½	6½	3½
Sheer on hull	15 and 16	—	10 and 13	—	9½	None	None
	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
Metacentric height in light condition with equipment.	5.18	—	3.38	—	9.3	8.16	10.5
Metacentric height in loaded condition, people sitting.	1.46	—	1.02	—	3.45	2.41	4.32
Metacentric height in loaded condition, people standing.	1.46	—	1.02	—	2.63	1.17	3.52
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
*Maximum righting lever, i.e., when gunwale touches the water and boat capsizes.	5.4	1.5	5.0	1.6	—	—	—
Maximum righting lever, i.e., at angle of greatest stability.	—	—	—	—	6.5	4.12	6.12
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Weight applied at gunwale of open boat to bring it to water's edge (i.e., weight to capsize boat, if weight remains fixed).	13.5	6	10.35	5½	—	—	—
Weight applied at deck edge to bring decked boat to angle of greatest stability (i.e., weight to capsize boat, if weight remains fixed).	—	—	—	—	14.8	8.2	12.1
	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.
Degrees of heel when gunwale of open boat touches the water (i.e., angle of greatest stability which, in the open boat, is also the angle of vanishing stability if weight remains fixed).	28½	16	26½	11	—	—	—
Degrees of heel at angle of greatest stability which, in the decked boat, is the angle at which the boat capsizes if the weight remains fixed.	—	—	—	—	19	13	8
Degrees of heel in decked boat at angle at which stability becomes zero.	—	—	—	—	31½	27½	—

26. It should be observed that when an open boat is inclined either by a fixed weight or by an external force, such as a sea, the angle of vanishing stability is that at which the gunwale becomes immersed; the moment of stability at that point is the upsetting moment. In a decked boat the angle of vanishing stability is the angle of maximum stability if the weight is fixed, but it is the angle at which the stability becomes zero if it is caused by a wave which passes away very quickly. These considerations are, of course, purely statical.

27. *Note.*—The centre of gravity of the boats in the loaded and unloaded condition was ascertained in the following manner. The centres of gravity of boats "A," "E," "X," and "Z" were obtained by experiment. The centres of gravity of the others were estimated from the data thus obtained.

The centre of gravity of the complement of persons sitting on the thwarts was obtained experimentally by tying a man in a sitting posture upon a plank poised upon a knife-edged trestle. The man chosen was 5 feet 9 inches in height, and weighed 10 stone 6 lbs. It was found that his centre of gravity was 1 foot $1\frac{1}{2}$ inches above the seat. This man is slightly above the average height and weight.

In our calculations, therefore, we have assumed the centre of gravity of the persons to be in all cases 1 foot above the top of the thwarts. In boats "A," "B," "C," and "D" the height of the midship thwarts was 2 feet 7 inches, and the end thwarts 2 feet $10\frac{1}{2}$ inches above the garboard strake. In the "E" boat the heights were 2 feet $7\frac{1}{2}$ inches and 2 feet 9 inches respectively.

In cases where the stability has been calculated on the assumption that the people are standing, the centre of gravity has been taken at the height of the centre of gravity of a man above his feet. In the case of open boats, the centre of gravity of the people proved to be the same whether they were sitting or standing.

III.—*Deductions and Recommendations.*

28. *Capacity of Different Types of Open Lifeboats.*—Although Stirling's Rule has been recognised by the Board of Trade Life Saving Appliances Rules since 1894 for ascertaining the capacity of open boats, it has not been frequently applied. Nevertheless, the importance of its application cannot be overlooked. In the case of "A," "B," and "C" boats the application of Stirling's Rule will give a capacity greater by 15.4 per cent., 11.2 per cent., and 8 per cent. respectively, than that obtained by the Coefficient Formula. Stirling's Rule gives a more accurate measure of capacity than the Coefficient Formula, and, where the total number of boats required is large, the difference between the numbers obtained by using Stirling's Rule and the Coefficient Formula is of great practical importance in the problem of stowage. We therefore recommend that in all cases Stirling's Rule should be used to determine the capacity of open boats.

29. *The Effect of Form on the Capacity of Open Lifeboats.*—It has been shown above (paragraph 9) that under the existing rules the number of persons which the "C" boat would be certified to carry is 22.4 per cent. less than the number for which the "A" boat would be certified. The "C" boat, it will be remembered, has a 15-inches rise of floor, and does not comply with the midship girth rule, but the quarter-length girths are in accordance with the rules.

30. We understand that the midship girth rule was framed with the object of fixing the number of persons which a boat may be certified to carry in accordance with its *fitness* to carry that number. Freeboard and reserve buoyancy are both of great importance, but, as both these factors enter into the consideration of stability, we are of opinion that the most valuable criterion of the fitness of a lifeboat, so far as form and proportions are concerned, is its stability. We have therefore directed our attention principally to stability in estimating the comparative fitness of the various boats. Our calculations have shown that the "C" boat, when loaded with 54 persons, has 30 per cent. greater metacentric height than the "A" boat when loaded with 58 persons and that the upsetting moment of the "C" boat remains constant for all numbers of persons between 45 and 60, whereas the upsetting moment of the "A" boat decreases continuously from 35 persons onwards. The upsetting moments in these boats loaded with 60 persons are practically the same.

It may be urged that the "A" boat has 1.5 inches more freeboard than the "C" boat when the boats are loaded with 58 and 54 persons respectively. But with these numbers on board we have found that practically the same weight must be applied

to the gunwale of each boat to bring it to the water's edge. The actual weights required are 13.5 cwt. and 13.4 cwt. respectively. In view of this, and of what has been pointed out in regard to the relative upsetting moments, we do not attach any value to the small additional freeboard.

31. The advantage in weatherliness gained by the $16\frac{1}{2}$ per cent. additional immersion in the light condition possessed by "C" boat over "A" boat cannot be ignored if ever the boats have to be rowed to the assistance of those on board another vessel. It has been stated that this additional immersion can be obtained in such cases by the temporary use of ballast, but if the best results cannot be obtained without ballast it is evident that midship girth cannot be a complete criterion of fitness of form and proportions.

32. It will also be seen that when loaded with 50 persons, "C" boat has 2.61 foot tons upsetting moment against 2.79 foot tons in the "B" boat, a difference of $6\frac{1}{2}$ per cent. Yet because the midship girth of the "C" boat falls $5\frac{1}{2}$ per cent. below the 88 per cent. required by the Rules, that boat is certified to carry $16\frac{2}{3}$ per cent. fewer persons than either the "A" or the "B" boat, (if the capacity in both cases is calculated by the co-efficient formula). Further it will be seen from Diagram XIX. that if the number of persons is reduced by the $16\frac{2}{3}$ per cent. the upsetting moment, so far from being increased, is actually reduced by 2 per cent. As, therefore, a considerable variation in midship girth can be permitted without much variation in the stability, it appears that the number of persons which boats of different forms could carry with equal safety is independent of the girth of the midship section, within wide limits. We think that any unnecessary restriction upon design is undesirable, and we therefore recommend that the midship girth rule be not enforced in administering the Life Saving Appliances Rules.

33. It will also be seen from Diagram XIX. that any decrease in the number of persons in "D" boat below 65 is accompanied by a decrease in stability; in "C" boat any decrease below 55, and in "B" boat below 50 is also accompanied by a decrease in stability. In the case of a boat which has an actual capacity as determined by Stirling's Rule of not less than $(L \times B \times D \times .6)$, if the quarter girth is less than 80 per cent., i.e., the percentage required by the Rules, the number of persons carried will be reduced by 16.6 per cent. But it will be seen from Diagram XIX. that the upsetting moment in the boat "D," which has a quarter girth of 74 per cent. only, will be 3 per cent. less with the reduced number of persons.

We are, therefore, of opinion that in the case of a boat which has an actual capacity, as determined by Stirling's Rule, of not less than $(L \times B \times D \times .6)$, the quarter girth rule also need not be enforced. We make these recommendations on the assumption that the girth is always measured to a sheer line having a mean sheer of half an inch to the foot of length.

34. *The Stability of Decked Lifeboats.*—It has often been urged against the ordinary type of decked lifeboat that, although it may be valuable for saving life when there is a large number of persons on board a ship, its form is such that it cannot be propelled rapidly, and that therefore it is not so valuable as an open lifeboat of fine form for transferring persons from ship to ship. There appeared to us to be no reason why a decked boat should not be designed with finer lines, which would render it a more handy boat; with this object in view the "Y" boat was built. The curves of stability of the decked boats (see Diagram XXI.), however, show that there is a marked difference in the stability of the "X" boat and "Y" boat. Both boats have the same dimensions and have the same carrying capacity in persons.

35. The explanation of the difference in stability appears to be threefold:—

- (a) The "X" boat has over 60 per cent. more weight of hull than the "Y" boat. The centre of gravity of the "X" boat fully laden is therefore lower than that of the "Y" boat, partly on this account and partly because it is of less depth.
- (b) The fuller waterlines of the "X" boat give a higher metacentre than the finer lines of the "Y" boat.
- (c) The "Y" boat has no sheer, but on the other hand it has 63.6 per cent. more freeboard amidships in the loaded condition than the "X" boat. The latter, however, has $9\frac{1}{2}$ inches sheer at each end.

36. As regards the "Z" boat it may be said that the weakness of the design lies chiefly in the fact that the buoyancy chambers are of wood. The presence of water can only be detected by the amount of list which it gives to the boat, and even when it is detected, there are no means of baling out of the water. The insertion of cork cuttings or metal buoyancy tanks would overcome this disadvantage, provided due

allowance be made on account of the additional weight. While "Z" boat has this weakness in design, it has an advantage over the "X" and "Y" boats in that the wells in the centre of the boat allow of the people being seated lower, thus lowering the centre of gravity of the boat when loaded and increasing its stability, even when flooded, compared with the "X" and "Y" boats.

37. In general it appears that the stability of completely decked lifeboats can only be ensured, provided that the deck can be cleared of water almost instantaneously. Inasmuch as 2 cwts. placed on the gunwale of the decked lifeboat will submerge it, the difficulty of rapidly discharging the water through side ports becomes at once apparent.

38. *Capacity of Decked Lifeboats.*—It has been shown that the open boat "A" may be certified to carry 58 people. On the other hand the decked lifeboat, which occupies as much deck area as the "A," "B," "C," or "D" lifeboats, is certified to carry 46 persons only. With this number of persons on board the maximum righting moment is about the same as that of the "A" boat with 58 persons on board; it increases steadily as the number of persons on board is increased and does not attain a maximum even when loaded with 60 persons (*see* Diagram XXI.); but the range of stability, though nearly constant within these limits, is small. If the range of stability of the decked boat can be increased there is no reason why the decked boat should not be certified to carry more people as there is ample deck area. The effect of this upon the stowage problem would be appreciable.

39. *Suggested improvements in Decked Lifeboats.*—We expressed the opinion in our Interim Report that "the ideal appliance for saving life at sea is an unswampable, self-emptying boat which provides adequate shelter for the passengers." By adding permanent watertight bulwarks to the decked lifeboat, placing buoyancy tanks along the sides in the angle between the deck and the bulwarks in order to increase the maximum righting moment, and providing means for rapidly discharging the water which breaks aboard, a lifeboat which would approximate very closely to this ideal appliance would be obtained. Such a design, however, would involve "nesting" in order that the boats may be stowed two or three in height, as recommended in our Interim Report. If the boats are "nested," however, they must be lifted clear prior to launching. All that would be necessary in such cases would be that a geared hand-winch should be fitted to the davits. The other objection to "nesting" which is that it involves the weight of the upper boat being borne by the boat below can easily be provided for in the design of the boat. The shape of the decked boat ensures that the weight will be widely distributed. We accordingly recommend that decked lifeboats having permanent watertight bulwarks and buoyancy tanks fitted along the sides in the angle between the deck and the bulwarks should be allowed to carry an increased number of persons.

40. *Suggested large Lifeboats capable of carrying People below Deck.*—In dealing with the question of stowage it has been found necessary to place as many as six decked lifeboats to be served by one set of davits. We have seen that there is some difficulty and inevitable delay in the recovery of the falls after each boat has been launched, and we have seen cases in which ships will require as many as 90 boats. Our investigations have revealed the fact that the stability of the ordinary 28 feet open lifeboat might well be increased. A material increase in the range of stability can be obtained by partially or completely decking over the boat. A boat partially decked over is, however, not entirely free from the risk of swamping, and does not appear to be so satisfactory as a boat decked over completely. If the boat is completely decked, accommodation for all must be found below the deck, so that increased depth of boat will be required. Increased depth will necessitate increased beam and increased beam will frequently be accompanied by increased length. Although there is a considerable body of opinion among seamen against increasing the size of ships' lifeboats under present conditions, we feel that future development may safely be along these lines. The development of mechanical appliances for launching ships' boats and the application of motor power to their propulsion, or for towing purposes, appears to us to meet to a very large extent the usual objections which are urged against any appreciable increase in size.

41. We have prepared a plan of a boat of this type, 50 feet long, 15 feet broad, and 6 feet 8 inches deep. The boat is decked over, and has adequate ventilation. The number of persons which such a boat can carry cannot, of course, be calculated by the same rules as are applied to ordinary open boats. We have satisfied ourselves that, with the seats spaced two feet apart, 17 inches being allowed for each person, a boat of

these dimensions would carry 250 persons. Eight such boats would therefore provide accommodation for 2,000 persons. The weight of such a boat, with equipment and 250 persons on board, would be about 28 tons. We have had submitted to us a design for davits by which these boats could be launched, even by hand alone. We are, therefore, satisfied that the scheme is practicable.

PART III.

STOWAGE OF BOATS.

In our Interim Report we carefully considered the cases of all existing foreign-going passenger vessels and found that it is possible for all such vessels to carry accommodation for all persons for which they are certified according to the House of Commons Return (No. 303) of the 13th May 1912. In order to do this, however, it was necessary in certain cases to stow decked lifeboats in tiers of three in such a way that six boats would be served by one set of davits. In some few cases part of the accommodation had to be supplied in the form of rafts. We do not desire to modify our previous report in any way in regard to existing ships, but we think that it will be possible in new ships to provide some more satisfactory means for stowing and handling the large number of boats which will in many cases be required under the new Life Saving Appliances Rules. The subject is considered in the following paragraphs.

43. *Arrangements for transferring boats across the deck.*—It is highly desirable that the boat deck should be designed with a view to giving one or more clear spaces across the deck at intervals in order that arrangements may be made for transferring the boats from one side of the deck to the other, for in many cases it is impossible to launch boats on the weather side of the vessel. It has been suggested to us that in such circumstances the vessel might be turned round after the boats on one side had been safely lowered and a lee formed for the boats on the other side, but we see no insurmountable difficulty in arranging for the boats to be transferred across the deck, and this plan is in our opinion the more satisfactory. The boats may be transferred by trolleys, skids, or other satisfactory means.

44. In view of the possibility of its being necessary to move the boats across the deck against a heavy list, we think that, where the number of boats is large, some effective mechanical appliance is desirable. The majority of the nautical witnesses whom we have examined concur in the opinion that adequate means for transferring the boats across the decks should be made compulsory. In future vessels there should be little difficulty in making the necessary provision for this, and we accordingly recommend that in foreign-going passenger and emigrant ships the fitting of such arrangements should be compulsory. It should, however, be noted that, in our opinion, the stokehold ventilation should not in any way be sacrificed to obtain this result.

45. *Stowage of Boats on Decks below the uppermost deck.*—A special type of davit has recently been devised for launching boats stowed on a deck below the uppermost deck, and we were informed that this arrangement was to be adopted on certain large vessels now in course of construction. In these cases it is not proposed to stow boats on a lower deck in such a way that they would, when in position to be launched, be immediately under boats on the boat deck. The principal objections to stowing boats in this manner are that it is practically impossible to arrange satisfactorily for the boats to be transferable from one side of the deck to the other, and that the boats, being stowed under a deck, would be carried down with the ship if time did not permit of their being successfully launched before the vessel sank. For these reasons we cannot recommend the general adoption of this system, but at the same time we recognise that to stow boats on a lower deck may sometimes be a necessary expedient when it is not possible, by reason of the rigging and hatches, to fit all the sets of davits required by the Life Saving Appliances Rules on the uppermost deck. There are certain classes of ships with short machinery spaces in which this may easily happen. Where the boats on one deck are immediately above the boats on another, effective precautions must be taken to prevent the upper boat being lowered on the underneath boat in an emergency.

46. When it is necessary to carry more boats than can be provided by stowing open boats and decked boats directly under davits in accordance with the arrangements sanctioned by Appendix A. of the Life Saving Appliances Rules, the extra

boats should be stowed parallel with the davits so far as possible. These boats may be open boats or decked boats, and they may be stowed singly or in tiers of two or three. Where boats are stowed parallel with the davits in this way, approved appliances should be provided for moving the boats up to the davits.

Appliances similar to those recommended for use in transferring the boats from one side of the ship to the other should be employed. In fact, it would be desirable to arrange for the extra boats to be stowed in rows, possibly two in height, across the boat deck with a pair of davits at each end. This will, of course, only be possible, in general, in ships to be built in the future.

Cranes, derricks, or gantries could also be used for bringing boats stowed inboard into position for launching, but their use for launching the boats is open to serious objections to which further reference is made in paragraphs 64, *et seq.* of this Report.

47. We have referred in paragraph 40 of Part I. of this Report to the question of increasing the size of ships' boats in the future. If this is done, the problem of stowage and rapid launching will be considerably simplified, but with these large boats it will be more than ever important to provide efficient mechanical appliances for handling them and transferring them across the deck.

48. *Chocking*.—We understand that it has been a regulation of the Board of Trade to require that the chocks in which a boat is stowed shall be of a type which do not require the boat to be raised in order to release them. We are of opinion that if mechanical appliances (*e.g.*, geared winches) are fitted by which the boat can easily be raised by one man at each end, this regulation may be dispensed with. In stowing boats one above another much valuable space is taken up by collapsible chocks and, further, the "nesting" of boats is made impracticable. The abolition of the regulation in cases where mechanical appliances are fitted will contribute greatly to the solution of the stowage problem, without any loss of efficiency.

49. *Home Trade Passenger Vessels*.—In the case of existing vessels in Classes I. and V. of the Home Trade we are of opinion that, when the stability and draught conditions permit, our recommendations in regard to the forms, stowage and handling of boats in foreign-going passenger vessels should also be applied to vessels in these classes of the Home Trade. We are also of opinion that as large a proportion of the life saving appliances as is reasonably practicable should be lifeboats. When it is difficult to carry lifeboats, pontoon rafts to as great an extent as is reasonably possible should be fitted, the remainder of the life-saving appliances being supplied in buoyant deck seats or other approved buoyant apparatus. We realise, however, that the interpretation of these recommendations by rigid administrative regulations is impracticable and each case must be dealt with on its merits.

New vessels in these classes should be designed so as to ensure that the necessary conditions of stability and draught are complied with, in order that these recommendations may be carried out.

In the remaining classes of Home Trade steamships which carry passengers we are of opinion that the number of boats specified in the Life Saving Appliances Rules is sufficient.

50. *Non-passenger Vessels*.—The problem of providing life-saving appliances in non-passenger vessels has not been materially altered by the new Life Saving Appliances Rules. We have not thought it necessary, therefore, to deal in detail with this class of vessel.

PART III.

PONTOON RAFTS AND OTHER BUOYANT APPARATUS.

51. *Pontoon Rafts*.—In our Interim Report we referred to a type of pontoon raft consisting of buoyancy tanks in a wooden framework which could be developed into a satisfactory life-saving appliance. We have also seen a type of pontoon raft consisting of two cylindrical wing tanks, with a platform between, which would be satisfactory if collapsible bulwarks were added.

We consider that an approved pontoon raft should fulfil the following conditions:—

- (1) It should be reversible and fitted with bulwarks of wood, canvas, or other suitable material on both sides. These bulwarks may be collapsible.

- (2) It should be of such size, strength, and weight that it can be handled without mechanical appliances, and if necessary be thrown from the vessel's decks. There is, however, no reason why rafts should not be launched by means of derricks, cranes, or other appliances, if time and circumstances permit. They could also be launched by means of sliding ways, which could be either temporary or permanent.

- (3) It should have not less than 3 cubic feet of buoyancy for each person for which it is certified.

- (4) It should have a deck area of not less than 4 square feet per person, and the platform should not be less than 6 inches above the water level when the raft is loaded.

- (5) To secure the greatest stability, the buoyancy tanks should be placed as near as possible to the sides of the raft.

These recommendations are based upon the assumption that the dimensions of the pontoon raft will be approximately the same as those of the pontoon rafts upon which we have experimented (*viz.* 16 feet by 9 feet). It is obvious that by greatly increasing the length and correspondingly reducing the breadth an unstable raft could be constructed which would still comply with the above conditions. If, therefore, in any case any considerable departure from the above dimensions is contemplated, the stability must be investigated.

Diagrams XXII. *et seq.* show pontoon rafts of different types and the stability corresponding to each type.

52. The equipment of rafts should be that specified in our Interim Report, *viz.*:—

- | | |
|--------------------|----------------------------------|
| (1) Four oars. | (5) A receptacle for provisions. |
| (2) Five rowlocks. | (6) A receptacle for water. |
| (3) A sea anchor. | (7) Six red lights. |
| (4) A painter. | (8) A "Holmes Lifebuoy Light." |

In ships which carry rafts a number of rope ladders should be kept readily available for embarking persons on the rafts.

53. We are strongly of opinion that many occasions may arise in which an approved pontoon raft of the type which we recommend will be even more useful than an open lifeboat or a decked lifeboat.

Our investigations have proved that these pontoon rafts, if the buoyancy tanks are spread out as near the edges of the raft as possible, can be given stability greater than that of an open or decked life-boat. They also have the important advantage of requiring no appliances for launching. Being reversible it is immaterial which side floats uppermost when they are thrown from a vessel's deck. The addition of bulwarks will provide some protection against the weather and sea.

54. We are therefore of opinion that, when it is not possible in foreign-going passenger and emigrant ships to provide sufficient accommodation in boats attached to davits or in boats stowed immediately under the boats attached to davits, in compliance with the arrangements sanctioned by Appendix A. of the Life Saving Appliances Rules, approved pontoon rafts should be accepted in lieu of extra boats which would be required to make up the necessary complement, subject to the reservation that the total number of persons for whom accommodation is supplied in the form of rafts should in no case exceed 25 per cent. of the total number of persons for which the vessel is certified, or the total number of persons on board, whichever is the greater.

55. Provision is already made in the Board of Trade Life Saving Appliances Rules for the carriage of approved rafts in Home Trade vessels to make up the flotation which may be required in addition to that carried in the form of boats. The approved pontoon raft which we recommend is suitable for this purpose.

56. *Buoyant Deck Seats, Life-Jackets and Lifebuoys for Home Trade Passenger Steamers*.—We have made a number of tests of buoyant deck seats and have found that many of these seats are lacking in stability. We think that stability and buoyancy are of equal importance in this type of buoyant apparatus, and we accordingly recommend that all new deck seats should be required to support a weight of 32 lbs. per foot length hung along any edge without capsizing.

The allowance of 32 lbs. of buoyancy per person called for in the existing Rules is presumably based on the assumption that the net weight of a person supported in the water is not more than 32 lbs. If, therefore, a deck seat will support a weight of 32 lbs. per foot length hung along one edge, it would not capsize if one person per foot length grasped the life lines on one side, there being no one

on the other sides of the seat. The ordinary single deck seat of about 2 feet in width cannot sustain this weight, but we have seen a type of deck seat which, when in use on the deck, is a single seat, that is, it is not more than 2 feet wide, but which, when it is in the water, opens out to about 4 feet wide and has stability sufficient to support 32 lbs. per foot length on any edge.

57. If double decked seats are used, however, it is possible to obtain even greater stability. The following table shows the number of pounds per foot length which a double deck seat 8 feet long and 4 feet wide with two sets of buoyancy tanks placed at the edges of the seat will support without capsizing, the width of the tanks being varied from 9 inches to 18 inches and the depth being 15 inches on the outside and 13 inches on the inside:—

Width of Tanks in inches.	Weight per foot length.
9 - - - - -	26
10 - - - - -	30
11 - - - - -	34
12 - - - - -	37
13 - - - - -	42
14 - - - - -	44
15 - - - - -	44.5
16 - - - - -	45
17 - - - - -	44.5
18 - - - - -	43

58. Every deck seat should also be able to support a weight of 32 lbs. for each person, for which the seat is certified.

59. We are of opinion that a life-jacket is a most valuable appliance for saving life, and that the proper distribution of life-jackets to passengers in an emergency is a matter of prime importance. The arrangements for the distribution of life-jackets on vessels at present are not such as to ensure that each person will secure a life-jacket in all emergencies. We therefore recommend that a suitable proportion of life-jackets should be stowed as near the seats as possible; where double deck seats are used a space for life-jackets might conveniently be found between the tanks. The remainder should be stowed in suitable receptacles, which should be as numerous as possible, so that the life-jackets may be widely distributed over the ship.

Lifebuoys are also of value as life-saving appliances, but the necessity for proper distribution is equally imperative.

PART IV.

APPLIANCES FOR LAUNCHING SHIPS' BOATS.

60. In view of the large number of boats which must be carried in foreign-going passenger and emigrant ships in order to provide accommodation for all persons on board the question of the best means for launching boats has become more important than formerly, for the number of persons carried does not in general correspond to the length of the ship nor to the proportion of the length which is available for stowing boats.

Numerous proposals which purport to deal successfully with large numbers of boats have been submitted to us, all of which we have carefully examined. In some cases the inventors have submitted crude sketches from which it has scarcely been possible to form any opinion of the value of the proposal. On the other hand, some have placed their ideas before us fully and carefully worked out; in these cases as fair an estimate of the practicability of the scheme can be formed as is possible without seeing the apparatus tested under service conditions.

The appliances which have come within our purview may be classified broadly into six groups, and we think it may be of value if we state briefly our conclusions in regard to these groups.

61. "*Chutes*" or *Slipways*.—A very popular scheme has been the application of the principle of the "chute" or slipway to launching ships' boats. There are two varieties of this proposal: the one in which the slipway runs down the side of the ship in a fore and aft direction, the boat being launched down the slipway and close to the side of the ship; the other in which the launching way is directed away from the ship, the outboard end being supported by pontoons. The latter type is impracticable because of the size and weight of the pontoon which would be required. In the other type the difficulties are not insurmountable, but the adoption of such an appliance

would interfere materially with the design of the ship and its use would involve an undue concentration of the boats at one launching way. Further it is very doubtful whether a boat could be launched successfully by means of it, except in calm weather. We have ourselves seen no scheme embodying this principle which in our opinion offers a practical solution of the problem of launching boats at sea in an emergency.

62. *Cradles*.—The use of cradles for lowering boats is, in our opinion, highly dangerous. If the vessel rolls when the boat is just waterborne and not wholly clear of the cradle, the boat will be upset or seriously damaged. We have seen no suggestions for overcoming this difficulty successfully, nor can we ourselves devise any means whereby it could be done.

63. *Moving Platforms*.—We have received several carefully worked out schemes for launching boats by means of platforms which can be lowered down the ship's sides in guides. In some cases the platform is lowered below the water line, so that the boat floats off; in others it is only lowered part of the way, the boat being put into the water with the help of davits or other appliances. If the platform is lowered below the water level it is subject to all the disadvantages inherent in the type of appliances referred to in the previous paragraph; in the other case no material advantage is obtained commensurate with the extra complications in the launching apparatus. Further, all appliances of this kind are open to the serious objection that the guides in which the platform moves down the ship's sides are liable to damage, when the platform would inevitably jam, so that any method of launching boats which involves a platform of this kind must, in the nature of the case, be unreliable.

64. *Cranes and Derricks*.—It has been suggested to us that it would be advantageous to utilise derricks or cranes for handling and launching boats. The advantages claimed for this method of handling boats are that the boats can be stowed in groups round the crane or derrick, and that they can be lowered at a sufficient distance outboard to obviate any risk of the boat being damaged against the vessel's side. We are of opinion that an ordinary cargo derrick is not suitable for this purpose because it requires a large number of men to control the guys, and because it is often the practice to unrig the ship's derricks at sea.

65. Cranes are not open to these objections, but we are of opinion that there is danger in lowering boats at a great distance from the ship's side, because the further the boat is away the more difficult it is to control it and the heavier the launching apparatus becomes; the boat can, besides, be lowered more safely by keeping it in as close to the ship's side as possible.

We are further of opinion that single cranes are not so suitable as davits for launching boats for the following reasons:—

- (a) The difficulty of controlling the trim and direction of the boat when it is being lowered.
- (b) The difficulty of designing a disengaging gear which will not be a source of danger to the persons in the boat.

66. It is possible that some system may be designed which will overcome the more serious difficulties in the lowering of boats from a single point of suspension, but we have seen none that would be satisfactory except for use in ships with small freeboard.

67. *Gantries*.—An important class of proposals is that in which the underlying characteristic is rows of boats stowed athwartships under one, or two, overhead rails on which a traverser moves in such a way that a boat can be picked up from any position and moved to the vessel's side for launching. The boat is either launched direct from the traverser, which is arranged in such a way that it carries the boat out some distance from the vessel's side, or it is brought into position by the traverser and is then launched by the ordinary appliances. By means of gantries it is possible to handle expeditiously a large number of boats, but such appliances may be open to the serious objection that if time does not permit of all the boats being launched before the vessel sinks, the remaining boats may be carried down with the ship, whereas if they were free on an open deck there would be a considerable chance that they would float off and be instrumental in saving life. In cases in which this objection is largely reduced, such as where a ship is so subdivided that the risk of its sinking rapidly is small, we recommend that the use of gantries be allowed, provided that the number of launching places already specified in the Life Saving Appliances Rules is retained; for any greater concentration of boats at one launching place is undesirable.

68. *Davits*.—Having carefully considered all the proposed alternatives, we have arrived at the conclusion that there are several types of davits in existence which fulfil all the requirements which we consider necessary. Some few are designed for use in special types of ships, but the majority would be satisfactory in all ordinary conditions. As previously stated, we are of opinion that it is in general safer to lower a boat as close to the vessel's side as possible, but a permanent rod or jackstay extending from the boat deck to the waterline for steadying the boat while lowering would frequently be undesirable and impracticable. If the vessel rolled heavily when the boat was near the water, the boat might be carried under the water and swamped, while the maintenance of the large number of rods or jackstays required, if this proposal were adopted, would be a serious problem, especially in ships which are habitually berthed alongside high quays, or have to go through dock entrances, against which they commonly rub for considerable distances along the sides. For steadying the boat and keeping it close to the ship's side while the passengers are being embarked, lizards could be attached to a jackstay extending from the boat deck to the deck at which the passengers are to be embarked. These lizards could alternatively be attached to stanchions, ring bolts, or the deck rail. Other means could doubtless be provided or improvised for further steadying the boat until the operation of lowering is completed, but no general recommendations can be made, as these means must be suited to the individual case. We are of opinion, however, that the Board of Trade should in every case satisfy themselves that efficient means are available for keeping the boat close to the ship's side whilst the passengers are embarking and until a favourable opportunity occurs for finally launching it. These appliances should be used at all boat drills at which the boats are lowered. We are of opinion that, if arrangements of the type indicated above are adopted, the lowering of the boat can be satisfactorily performed by means of davits, and that no further appliances are necessary even in cases in which boats are lowered from a considerable height.

69. We have based our recommendations in regard to the arrangements necessary if davits are used upon the number of boats to be served by one set of davits. These recommendations only apply in cases where boats of the size and type at present in use are to be handled. If large boats such as those indicated in paragraph 40 are adopted, mechanical davits will be required.

70. The application of power to supplement the hand gear may be an advantage, but power should never be allowed in complete substitution for hand gear but only in addition to it. The operation of launching boats does not in general involve hoisting except in certain cases for freeing the boats from the chocks, and for recovering the falls for launching another boat. For these operations hand gear is sufficient, but power will be of considerable utility in hoisting the boats at boat drills and on other occasions. The most suitable power appears to be electricity, which should be derived from a completely independent generating installation placed as high above the water level as possible.

71. *Where more than two boats are served by one set of davits*.—The davits and falls should be required to comply with the following conditions:—

- (a) A gear must be fitted of sufficient power to turn the boat out against a considerable list.
- (b) There must be positive control in all positions.
- (c) Wire falls should be used, and we recommend either a single or gun tackle purchase.
- (d) The falls should be led to drums fitted with a powerful and reliable hand brake for controlling the lowering of the boat.
- (e) The winding gear must be so designed that it is possible to adjust the trim of the boat, in order that if the vessel is down by the head or the stern the boat may be lowered into the water on an even keel. This should apply to all cases in which winding gear is used.
- (f) For hoisting the boat and recovering the falls rapidly there should be a quick-return geared hand-winch to which some system of power might, with advantage, be fitted as an auxiliary.
- (g) If the tackles consist of more than a single part some approved type of non-toppling blocks should be fitted to prevent the falls fouling when they are recovered. When the tackles consist of several parts there is a serious risk that the lower blocks will capsize. Several types of blocks have been

designed which overcome this difficulty with varying success. The simplest arrangement which we have seen is that of weighting the lower blocks below the sheaves and carrying the cheeks of the lower blocks above the top of the sheaves to prevent toppling, and fitting a span between the blocks with a weight in the centre to prevent the falls cable-laying. We think that this arrangement should prove quite satisfactory with a gun tackle purchase. It is probable that other types of blocks exist, or will be devised, which will overcome this difficulty. We refrain, therefore, from recommending any particular type, but suggest that in cases where more than two boats are served by one set of davits the Board of Trade should satisfy themselves that reliable non-toppling blocks are fitted.

72. *Where there are not more than two boats to be served by one set of davits*.—The ordinary bent davits and rope falls are sufficient. In passenger and emigrant ships there should be an efficient mechanical gear which can be made readily available for completely controlling the slewing and turning out of the boats against a considerable list. The ordinary guys, as used almost universally at present, are not satisfactory, and they do not comply with the requirement of controlling completely the operation of putting the boat out. The expression "mechanical gear" can, however, be interpreted in this connection so as to include a gear consisting solely of ropes and blocks provided that it gives complete control and is efficient even when there is a heavy list.

73. *When two boats are to be served by one set of davits*.—Approved non-toppling blocks to prevent the rope falls fouling and a span between the lower blocks to prevent cable-laying should be fitted. If non-toppling blocks are not fitted, a second set of falls should be carried for lowering the second boat, or some other equally satisfactory arrangements be made for ensuring that the launching of the second boat may not be delayed by the falls becoming fouled or cable-laid.

74. Mechanical gear for slewing the davits is not so necessary in ships not certified to carry passengers. Ships of this class are provided with boats for all on both sides of the ship so that it should not be necessary in general to put out the boats against a list.

75. We have seen several types of davits which in our opinion are satisfactory, and provided the above principles are embodied in the design to the satisfaction of the Board of Trade, the particular type of davit should be left to the option of the shipowner who will be guided by the special circumstances of his particular trade.

76. Several inventors have submitted proposals to us in which the winch is situated in the boat itself. We do not consider this a desirable arrangement.

77. We are strongly of opinion that in all passenger vessels the boats, davits, and falls should be of such strength that the boat may be lowered safely with the full complement of persons, but we recognise that there are difficulties in carrying out this recommendation in many existing ships. When necessary the decks must be strengthened to withstand the resulting strain.

78. *Disengaging Gear*.—The evidence of the witnesses whom we have questioned regarding the use of disengaging gears confirmed the existence of a very marked diversity of opinion in regard to the efficacy of these appliances. After careful consideration we incline to the view that in passenger and emigrant ships, where a large number of boats are carried and where the boats will be filled with people unskilled in the rudiments of seamanship some approved disengaging gear by which both ends of the boat can be simultaneously released should be fitted in all open boats. In the circumstances, however, we do not feel justified in recommending that they should be made compulsory. There are many satisfactory types of disengaging gear already in use, but it is highly desirable that the method of operating the gear, and the position of the handle, chain, or whatever actuates the gear, should be standardised in order that there may be no failure owing to the crew being unfamiliar with the particular pattern fitted in the boat.

PART V.

MECHANICAL PROPULSION OF SHIPS' BOATS.

79. In considering the question of mechanical propulsion for ships' boats we have confined our attention to the problem of fitting motors or other engines in ships' boats of the size and type at present in use. The future may see the introduction of

a larger type of lifeboat which is superior in many respects to the existing lifeboat. In such circumstances the recommendations on this part of our reference may require modification, although, even if the size of the lifeboats were increased, it is doubtful whether it would be necessary or desirable that they should all be fitted with mechanical propulsion.

80. We have assumed that the expression "mechanical propulsion" in our reference embraces the question of propulsion by any kind of mechanical gear, even if the gear is operated by hand power alone. We have therefore examined all schemes for the manual propulsion of ships' boats which have been put before us. We are convinced that no method of manual propulsion which we have seen is as efficient and simple as ordinary oars, and therefore when we use the term mechanical propulsion in this report we exclude from that term all methods of manual propulsion.

81. The present regulations governing the carriage of mechanically propelled boats as part of a ship's complement of lifeboats are contained in General Rule 5 of the new Life Saving Appliances Rules. This rule is as follows :—

"*Motor Boat*.—A motor boat may be carried as a lifeboat subject to the following conditions :—

"(a) It shall be approved, and proper appliances must be provided for putting it into the water speedily to the satisfaction of the Board of Trade.

"(b) It shall be adequately provided with fuel, and kept so as to be at all times fit and ready for use.

"(c) Where the number of lifeboats carried is not less than four and less than ten, one of them may be a motor lifeboat; where the number of lifeboats is not less than ten and less than fifteen, two of them may be motor boats; and of every five lifeboats beyond ten one may be a motor lifeboat. The Board of Trade may on the application of an owner allow an increased proportion of motor lifeboats to be carried, if they are satisfied that the efficiency of the life-saving equipment will not thereby be diminished."

82. We recommend that the carriage of mechanically propelled boats should be optional for all classes of steamships. But since the efficiency of a lifeboat for saving life is not diminished because it is fitted with a motor, we recommend that whatever be the number of boats carried on any ship, the shipowner should be allowed the option of carrying one mechanically propelled boat if he so desires.

83. In the case of a vessel carrying a considerable number of lifeboats it would be preferable to carry a small number of high-powered motor-boats rather than a large number of low-powered boats. Instead of increasing the number of motor-boats on a scale corresponding with the total number of boats carried, the size and power of the motor-boats should be increased as the number of other boats increases. In general, two motor-boats on each side should be sufficient.

The reasons which lead us thus to limit the number of motor boats carried are mainly connected with considerations of the efficient supervision and maintenance of a large number of engines and with the difficulty of ensuring that one or more men who are conversant with the working of a motor would be assigned to each motor boat in the confusion of taking to the boats in an emergency. Further, in view of the fact that an increasing number of ships are being fitted with wireless telegraphy it is not desirable that the ship's boats should proceed far from the neighbourhood of the disaster. The motor boats would be used for keeping the other boats together and generally shepherding them rather than for towing a number of boats a long distance. In certain trades, of course, they could go reasonable distances in search of succour. Also one or two powerful motor boats might be of service in rendering assistance in bad weather on a lee shore. In these circumstances we recommend that the motor boats carried should be as large and as powerful as possible, having regard to the size of the ship and the means available for handling and launching such boats.

84. As to the type of engine which is most suitable for this purpose it may be said that steam is of little value owing to the delay involved in starting the engine. The use of petrol in bulk is viewed with disfavour owing to the risk of fire and explosion. On the whole, therefore, we recommend the type of engine known commercially as the paraffin engine. This engine is simple, safe, and reliable, and there are several satisfactory patterns on the market. Even with this engine, if paraffin alone is used, considerable delay in starting the engine may result from the difficulty of heating the vapouriser under unfavourable conditions of weather. The use of a small quantity

of petrol, however, materially facilitates the starting, and we have seen a system of petrol starting which obviates the ordinary dangers arising from the use of petrol in bulk. The petrol is carried in small hermetically sealed cylinders which contain one starting charge only, so that the possibility of leakage and evaporation is minimised.

85. Special attention should be given to making the ignition gear damp-proof and the casing of the engine watertight.

86. Evidence has been put before us which shows that fuel could easily be carried to cover a radius of 100 miles. This quantity of fuel should be the minimum.

87. In order to ensure that the engines are always in working order, they should be started up at every boat drill. Steps should be taken to secure that this rule shall always be observed. In order that no damage may result from starting the engine on the vessel's decks, provision should be made for proper water circulation in such cases, when the design of the engine necessitates water cooling.

PART VI.

MISCELLANEOUS MATTERS INTIMATELY CONNECTED WITH THE LIFE SAVING EQUIPMENT OF SHIPS.

(1) *Embarkation of Passengers into the Boats.*

88. When the boats are being launched it is desirable that all passengers should be kept off the boat deck. It is therefore impossible to place the passengers in the boats before they are swung out. It has been suggested to us that at night and in bad weather passengers will be incapable of climbing over the rail into the boats, and that, unless they are placed in the boats before the boats are swung out, many of them will hang back and thereby cause confusion and delay. This may be so, but it is, in our opinion, far more important to keep the boat deck clear for the handling of the boats. We therefore recommend that passengers should be embarked at the lowest open deck, the boats being lowered to that level from the boat deck and being kept close to the ship's side in the manner indicated in paragraph 68 of this Report.

This should apply to all classes of passenger vessels unless the height of the lowest open deck above the water level is such that the passengers can be embarked into the boats without danger or difficulty after they have been launched.

(2) *Allocation of Places in the Boats to Passengers.*

89. We are of opinion that it is impracticable to allot places in particular boats to the passengers and that unless the number of boats is small such an arrangement is likely to cause confusion.

(3) *Equipment of Boats.*

90. In foreign-going ships masts, sails and compasses are not, in our opinion, required in any but open boats directly attached to davits in accordance with Appendix A. of the Life Saving Appliances Rules. The compasses may be either boat or pocket compasses. In Home Trade ships masts, sails or compasses are not required in any boats. A small medical bag might with advantage be carried in each motor boat.

(4) *Fenders.*

In regard to the question of fitting a continuous protective fender on all ships' boats, we are of opinion that pudding fenders, not fitted to the boat but attached to it by lanyards so that they can be put over the side when and where necessary, are more serviceable than a continuous fender. It is, however, desirable that in future boats the moulding usually fitted under the gunwale strake should be increased in size and made of soft wood so as to form a rubbing piece.

(5) *The Application of Wireless Telegraphy and Submarine Signalling to Ships' Boats.*

The Marconi Company placed before us a carefully considered scheme for equipping one or more of a ship's lifeboats with Radiotelegraphic installations which would have a guaranteed range of from 20 to 25 miles. The Submarine Signal Company also showed us a special disc bell of small size for carrying in boats which would have a range of about seven miles.

The only advantage to be obtained from fitting a ship's boats with appliances of this kind is that they may assist a relieving vessel in picking up the boats. The ordinary wireless telegraphy installation would be of little value for this purpose. Mr. G. E. Turnbull, however, suggested in his evidence that the Marconi "Direction-finder" would be useful. We understand that this apparatus has not yet been fully developed or perfected.

In all the circumstances we do not feel that there is any necessity to require any of a ship's boats to be fitted either with a Wireless Telegraphy installation or with a special submarine bell, such as was shown to us.

(6) *Floating Decks and Deckhouses.*

We have had submitted to us several designs for deckhouses so constructed that when the vessel sinks the deckhouse will float off and serve as a refuge for a large number of persons. None of these schemes, however, have formed part of a complete design of a ship. The many difficulties involved in the details of construction and fitting could only be considered and provided for in connection with the complete design. We have not, therefore, been able to form a definite opinion as to the practicability of fitting such deckhouses. Schemes have also been put before us whereby portions of the deck, which normally would form an integral portion of the structure of the ship, may be utilised in a similar manner. The chief difficulty in designing such an appliance is to attach it sufficiently rigidly to the ship and yet in such a way that in the event of disaster the attachments can be readily released. We have seen no design which, in our opinion, offers a practical solution to this problem.

In any case, even if such appliances could be designed satisfactorily so that they would float off with certainty, we cannot recommend that any relaxation should be made in the statutory requirements as to Life Saving Appliances on that account, for there are circumstances in which it is necessary to leave the ship, even though the ship does not sink.

PART VII.

SUMMARY OF RECOMMENDATIONS.

I.—*Form, Capacity, and Stability of Ships' Boats.*

(1) Stirling's Rule should, in all cases, be used to determine the capacity of open boats.

(2) As a considerable variation in midship girth can be permitted without much variation in stability, the midship girth rule (General Rule 5 (2) of the Life Saving Appliances Rules) should not be enforced.

(3) In the case of an open boat which has an actual capacity as determined by Stirling's Rule of not less than $(L \times B \times D \times .6)$ the quarter girth rule also should not be enforced.

(4) The actual stability of a boat when fully loaded should be the criterion of the fitness of the boat to carry the intended number of persons.

(5) The stability of completely decked lifeboats can only be ensured provided that the deck can be cleared of water almost instantaneously; but by adding permanent watertight bulwarks, placing buoyancy tanks along the sides in the angle between the deck and the bulwarks in order to increase the maximum righting moment and providing means for rapidly discharging the water which breaks aboard, an efficient type of life-saving appliance will be produced, and a decked lifeboat fitted with these suggested improvements should be allowed to carry an increased number of persons.

(6) Future development may safely be along the line of increasing the size of ships' lifeboats of completely decked types, the people being accommodated below the deck.

II.—*Stowage of Boats.*

(1) In foreign-going passenger and emigrant ships arrangements for transferring boats from one side of the deck to the other should be compulsory, but the stokehold ventilation must not in any way be sacrificed to obtain this object.

(2) The stowage of boats on decks below the uppermost deck is not recommended for general adoption, but it may sometimes be a necessary expedient. Where boats on one deck are immediately above the boats on another, effective precautions must be taken to prevent the upper boat being lowered on the underneath boat in an emergency.

(3) When it is necessary to carry more boats than can be provided by stowing open boats and decked boats directly under davits in accordance with the third column of Appendix A. of the Life-Saving Appliances Rules, the extra boats should be stowed parallel with the davits so far as possible. These boats may be open boats or decked boats and they may be stowed singly or in tiers of two or three. Approved appliances should be provided for moving the boats up to the davits. In general it would be desirable to arrange for the additional boats to be stowed in rows, possibly two in height, across the boat deck with a pair of davits at each end. Alternatively cranes, derricks, or gantries could be used for bringing boats stowed in board into position for launching.

(4) If mechanical appliances are fitted by which the boat can be raised by one man at each end, it is not necessary that the boat be stowed in chocks which are released simultaneously with taking the weight off them.

(5) In Classes I. and V. of the Home Trade our recommendations in regard to the forms, stowage, and handling of boats should be applied so far as stability and draught conditions permit. As large a proportion of the life saving appliances as is reasonably practicable should be lifeboats. When it is difficult to carry lifeboats, pontoon rafts to as great extent as is reasonably possible should be fitted, the remainder of the life-saving appliances being supplied in the form of buoyant deck seats or other approved buoyant apparatus. New vessels in these classes should be designed with this in view.

III.—*Pontoon Rafts and other Buoyant Apparatus.*

(1) An approved pontoon raft should satisfy the following conditions:—

- (a) It should be reversible and fitted with bulwarks of wood, canvas, or other suitable material on both sides. These bulwarks may be collapsible.
- (b) It should be of such size, strength, and weight that it can be handled without mechanical appliances, and, if necessary, thrown from the vessel's decks.
- (c) It should have not less than 3 cubic feet of buoyancy for each person for which it is certified.
- (d) It should have a deck area of not less than 4 square feet per person, and the platform should not be less than 6 inches above the water level when the raft is loaded.
- (e) To secure the necessary stability, the buoyancy tanks should be placed as near as possible to the sides of the raft.

(2) When it is not possible in foreign-going passenger and emigrant ships to provide sufficient accommodation in boats attached to davits or in boats stowed under the boats attached to davits in compliance with the arrangements sanctioned by Appendix A. of the Life-Saving Appliances Rules approved pontoon rafts should be accepted in lieu of extra boats which would be required to make up the necessary complement, subject to the reservation that the total number of persons for whom accommodation is supplied in the form of rafts should in no case exceed 25 per cent. of the total number of persons for which the vessel is certified, or the total number of persons on board, whichever is the greater.

(3) The equipment of approved pontoon rafts should consist of—

- (1) Four oars.
- (2) Five rowlocks.
- (3) A sea anchor.
- (4) A painter.
- (5) A receptacle for provisions.
- (6) A receptacle for water.
- (7) Six red lights.
- (8) A "Holmes Life Buoy Light."

In ships which carry rafts, a number of rope ladders should be kept readily available for embarking persons on the rafts.

(4) In buoyant deck seats, stability and buoyancy are of equal importance. New deck seats should therefore be required to support a weight of 32 lbs. for each person for which the seat is certified, and to ensure adequate stability, they should be required to support a weight of 32 lbs. per foot length hung along any edge without capsizing.

(5) A life-jacket is a most valuable appliance for saving life in Home Trade passenger steamers. The proper distribution of life-jackets to passengers in an emergency is therefore a matter of prime importance. A suitable proportion of life-jackets should be stowed as near the seats as possible; when double-deck seats are used, a space for life-jackets might conveniently be found between the tanks. The remainder should be stowed in suitable receptacles which should be as numerous as possible, so that the life-jackets may be widely distributed over the ship.

Life buoys are also of value as life-saving appliances, but the necessity for proper distribution is equally imperative.

IV.—Appliances for Launching Ships' Boats.

(1) There are serious objections to the use of "chutes" or slipways, cradles, moving platforms which are lowered down the vessel's sides in guides, cranes and derricks for launching ships' boats.

(2) By means of overhead rails on which a traverser moves in such a way that boats can be picked up from any position athwartships, it is possible to handle expeditiously a large number of boats, but if time does not permit of all boats being launched before the vessel sinks, the remaining boats, which will generally be stowed under the gantries, may be carried down with the ship. In cases where this objection is largely reduced, such as when a ship is so subdivided that the risk of its sinking rapidly is small, the use of gantries should be allowed, provided that the number of launching places already specified in the Life-Saving Appliances Rules is retained.

(3) It is, in general, safer to lower boats as close to the vessel's side as possible. There are several types of davits in existence which fulfil all the necessary requirements. If these requirements are complied with, the lowering of the boat can be satisfactorily performed by means of davits, and no further appliances are necessary even in cases in which boats are lowered from a considerable height.

(4) The Board of Trade should in every case satisfy themselves that efficient means are available for keeping the boat close to the ship's side whilst the passengers are embarking and until a favourable opportunity occurs for finally launching it. These appliances should be used at all boat drills at which the boats are lowered.

(5) The application of power to supplement the hand gear may be an advantage. It should, however, be optional, and power should never be allowed in *complete substitution* for hand gear but only in addition to it.

The most suitable power appears to be electricity which should be derived from a completely independent generating installation placed as high above the water level as possible.

(6) Our recommendations in regard to the arrangements necessary if davits are used are based upon the number of boats to be served by one set of davits, and may be tabulated as follows:—

No. of boats to be served by one set of davits.	Recommendations.
More than 2	(a) A gear must be fitted of sufficient power to turn the boat out against a considerable list. (b) There must be positive control in all positions. (c) Wire falls should be used—either single or gun-tackle purchase. (d) The falls should be led to drums fitted with a powerful and reliable hand brake for controlling the lowering of the boat. (e) The winding gear must be so designed that it is possible to adjust the fore and aft trim of the boat. This should apply to all cases in which a winding gear is used. (f) For hoisting the boat and recovering the falls rapidly there should be a "quick-return geared hand-winch to which some system of power might with advantage be fitted as an auxiliary. (g) If the tackles consist of more than a single part some approved type of non-toppling block should be fitted to prevent the falls fouling when they are recovered, and a span between the blocks with a weight in the centre to prevent cable laying.

No. of boats to
be served by one
set of davits.

Recommendations.

- Not more than 2 (a) The ordinary bent davits and rope falls are sufficient. In passenger and emigrant ships there should be an efficient mechanical gear which can be made readily available for completely controlling the slewing and turning out of the boats against a considerable list.
- (b) Where there are two boats to be served by one set of davits, approved non-toppling blocks, with a span between them, should be fitted; or, if not, a second set of falls should be carried for lowering the second boat or some other equally satisfactory arrangements made for ensuring that the launching of the second boat may not be delayed by the falls becoming fouled or cable-laid.

Subject to the above conditions being complied with, the particular type of davit used should be left to the option of the shipowner.

(6) It is not desirable that the winch to which the falls are led should be situated in the boat itself.

(7) In *all* passenger vessels the boats, davits, and falls should be of such strength that the boat may be lowered safely with the full complement of persons, but we recognise that there are difficulties in carrying out this recommendation in many existing ships.

(8) There are many satisfactory types of disengaging gear already in use, but it is highly desirable that the method of operating the gear and the position of the handle, chain, or whatever actuates the gear, should be standardised.

V.—Mechanical propulsion of Ships' Boats.

(1) The carriage of mechanically propelled boats should be optional for all classes of steamships, but whatever be the number of boats carried on any ship, the shipowner should be allowed the option of carrying one mechanically propelled boat if he so desires.

(2) In the case of a vessel carrying a considerable number of lifeboats, it would be preferable to carry a small number of high-powered motor boats rather than a large number of low-powered boats. Instead of increasing the number of motor boats on a scale corresponding with the total number of boats carried, the size and power of the motor boats should be increased. In general, two motor boats on each side should be sufficient, and they should be as large and as powerful as possible, having regard to the size of the ship, and the means available for handling and launching the boats.

(3) The engine known commercially as the paraffin engine is the most suitable for this purpose. It is simple, safe, and reliable, and there are several satisfactory patterns on the market. Provision should be made for rapid starting under adverse conditions of weather.

(4) Special attention should be given to making the ignition gear damp-proof and the casing of the engine watertight.

(5) At least sufficient fuel to cover a radius of 100 miles should be carried.

(6) In order to ensure that the engines are always in working order, they should be started up every boat drill.

VI.—Miscellaneous.

(1) Passengers should be embarked at the lowest open deck, the boats being lowered to that level from the boat deck. This should apply to all classes of vessels unless the height of the lowest open deck above the water level is such that the passengers can be embarked into the boats without danger or difficulty after they have been launched.

(2) The allocation of places in particular boats to the passengers is impracticable, and, unless the number of boats is small, is likely to cause confusion.

(3) In foreign-going ships, masts, sails, and compasses are not required in any but open boats, attached to davits in accordance with Appendix A. of the Life-Saving Appliances Rules. In Home Trade ships, masts, sails and compasses are not required in any boats. A small medical bag might with advantage be carried in each motor boat.

(4) Pudding fenders are more serviceable than a continuous fender. It is, however, desirable that in future boats the moulding usually fitted under the gunwale strake should be increased in size and made of soft wood so as to form a rubbing piece.

(5) It is not necessary to require any of a ships' boats to be fitted either with a wireless telegraphy installation or with a special submarine bell.

(6) No relaxation in the statutory requirements as to life-saving appliances should be made on account of floating decks or deck houses.

The efficiency of the arrangements for saving life at sea depends as much upon the competency of the officers and crew as upon the life-saving appliances on board. The boats and other appliances require efficient crews to handle them. Strict discipline and obedience are essential. We wish therefore to say, in conclusion, that our recommendations are based upon the assumption that the men are competent to handle the life-saving appliances on board and that proper discipline and obedience are secured so as to ensure that the fullest efficiency is attained. We understand that these matters are receiving the careful attention of the Board of Trade.

We have the honour to be;

Sir,

Your obedient servants,

J. H. BILES (*Chairman*).

JOHN E. BEARCROFT.

J. T. W. CHARLES.

J. G. H. FLINT.

MICHAEL JOYCE.

JAMES MAXTON.

D. B. MORISON.

FRED J. STEPHEN.

H. B. WORTLEY.

F. P. ROBINSON (*Secretary*).
15th May 1913.

APPENDIX.

MEMORANDUM.

- (a) Stowing, launching, and propelling ships' boats.
(b) Life-rafts.

Stowage of Boats.

(1) The question of the efficient stowage of ships' boats is intimately connected with the number of boats to be carried, and whether these boats are to be carried under davits, abreast of the davits or inboard.

By section 427, Merchant Shipping Act, 1894, the Board of Trade are empowered to make rules as to the Life Saving Appliances to be carried on different classes of ships, and as to the stowage of these boats, &c.: these rules have to be laid before Parliament for at least 40 days before they come into force. The rules at present in force were made in 1902, but draft rules to replace those now in force have been published; and the rules will be laid before Parliament shortly. The draft rules are contained in the White Paper [Cd. 6402] attached to this Memorandum.

(2) In addition, to the statutory rules, the Board issue instructions to their surveyors as to the interpretation of the statutory rules. These instructions at present in force are contained in clause 43 of the Regulations and Suggestions as to the Survey of Steamships carrying passengers and are as follows:—

43. "All boats required by the rules to be placed under davits are to be kept fit and ready for use, and when they are swung inboard and resting on the chocks, the chocks are to be so constructed that the boat can be at once swung outboard without requiring to be lifted by the tackles, i.e., it should not be necessary to do more than take the weight of the boat.

"The manner in which the additional boats not requiring to be placed under davits are to be stowed will vary in different ships, but they must be stowed to the satisfaction of the surveyors so as to be as readily available for use as is practicable, having due consideration to the circumstances mentioned in the rules.

"In all cases where boats are stowed on skids, a batten and space platform of about 2½-inch planks should be fitted from skid to skid under and alongside of the boat to serve both as a support to the boat, when being launched forward or aft, and as a platform for the men."

The statutory rules and regulations therefore contemplate three different methods of stowing boats:—

- (a) Boats placed under and attached to davits;
(b) Inboard boats not necessarily attached to davits but stowed alongside boats placed under davits;
(c) Other boats stowed to the satisfaction of the surveyors.

The manner of stowing boats is dealt with specifically in the Draft Rules. (See, e.g., Rules C. and D., Class J. Foreign-going.)

Usual Practice in Emigrant Steamers and Large Passenger Steamers.

It is the usual practice to carry all or nearly all the boats on a "boat deck," which is usually the highest deck in the ship and often extends for about half the vessel's length amidships.

In very large vessels the boat deck may be as much as 60 feet above the load line.

In some vessels boats are carried on the quarters as well as amidships, but such an arrangement is thought to be unsatisfactory in screw steamers, especially if they have more than one propeller, and the practice has been discouraged by the Board's surveyors. This point is covered by clause 5 (a) of the Draft Rules.

Suggestions for Improving Methods of Stowing Boats.

(4)—(a) A suggestion has been made, in a paper read before the Institute of Naval Architects in the current year, that the prevailing practice of confining the stowage of boats to the uppermost deck should be discontinued, and that some or all of the boats should be stowed on a deck below the uppermost deck. The advantages alleged being that, in very large vessels, the boats, being nearer the water, would be in a more favourable position for lowering, and also that increased space for stowage would be obtained, and the stowage of boats on the vessel's quarters avoided. This suggestion is worthy of careful consideration, and an expression of opinion by an influential committee would have value in directing the attention of the owners and builders of large emigrant and passenger steamers to the matter. It may, however, be noted that, in the case of boats stowed on a deck below the uppermost one, it would usually not be possible to move them from one side of the vessel to the other.

(b) Suggestions have also been made that the arrangements could be such that the boats stowed upon the boat deck could be transferred from one side of the vessel to the other in order to provide for the contingency, which may frequently occur, of conditions which prevent boats being lowered on both sides of the ship.

It is a common practice in large vessels to construct upon the central part of the boat deck a range of deck houses which are devoted to the accommodation of passengers, &c., and which prevent the transference of the boats from one side of the deck to the other.

It is for careful consideration whether, and, if so, to what extent it is practicable to make such arrangements that boats can be safely and readily transferred from one side of the deck to the other, and, if so, what special arrangements are necessary in the form of skids, rails, or otherwise.

If it should be found practicable to make the arrangements referred to, the further question arises as to whether it is necessary that such arrangements should be compulsory in regard to a proportion of the boats in any class or classes of vessels or whether the matter may be left to the initiative of the owners of such vessels.

Launching Ships' Boats.

(5) The almost invariable practice in launching ships' boats has, until recently, involved—

- (a) Taking the weight of the boat from the chocks by means of the tackles.
(b) Swinging the boat out by hand.
(c) Lowering the boat to the water by the tackles.

The chief objections found to this method of launching boats are:—

- (1) In the event of the ship having the slightest list to the side opposite to that on which the boat is stowed, the operation of swinging out can only be performed with difficulty, and requires a number of men to effect it. This difficulty has, however, been overcome by the adoption in many recent emigrant and passenger steamers of an improved form of davit in which the lifting and swinging out of the boat are effected simultaneously by the operation of a screw.

- (2) The boat while being lowered is free to swing transversely and is liable to be dashed against the vessel's side and possibly be stove in.

It has been suggested that this might to some extent be avoided by fitting to the vessel's side a pair of jackstays at each pair of

davits so that the boat might be held close to the vessel's side while being lowered. The arrangement, however, has not, so far as is known, been adopted in mercantile vessels.

- (3) In the event of it being necessary to launch a second boat from the same davits it is necessary to round up the tackles and this is a matter of considerable difficulty, especially when the falls are of new rope.

The following questions appear to require consideration:—

- (a) Is it desirable and also practicable to adopt some appliance or appliances, either in substitution for, or in addition to, davits of the usual forms, which shall be capable of lowering ship's boats at a greater distance from the vessel's side, in order to minimise the risk of the boat being stove in against the vessel's side?

If it is desirable and also practicable, what appliance or appliances should be adopted, and should such appliances be actuated solely by hand or alternatively by hand and by power.

If the employment of some mechanical power is desirable from what source should the power be derived?

- (b) When davits of the forms at present in use, are employed for launching boats, is it practicable to fit arrangements in the form of jackstays or otherwise by means of which it would be possible to control the transverse motion of the boat and reduce the risk of it being stove in against the ship's side.
- (c) Is it desirable and also practicable to substitute for the hemp or manilla ropes at present universally used in the lowering tackles, steel wire falls, and, if so, what appliances are necessary, in the form of winches or otherwise for operating such steel wire falls?
- (d) When hemp or manilla falls are used, should any special form of block be used to facilitate the recovery of the falls?
- (e) Are special arrangements necessary in the case of boats which require to be launched from a considerable height, and if so, what should they be?

Embarking Passengers and Crew.

- (6) The difficulty of embarking passengers in ship's boats is always a serious one, but especially so in very large vessels, owing to the great height of the weather-deck above the water.

It is for consideration whether and to what extent special arrangements are necessary, in the case of very large vessels, e.g., gangway ports in the vessel's side, platforms on the outside of the vessel in the vicinity of the ports, ladders or other similar appliances.

Mechanical Propulsion of Ships' Boats.

- (7) The advantage of mechanical propulsion appears to depend greatly on the special circumstances under which it might be necessary to take to the boats. In the case of a vessel aground on a lee shore it might be possible to transfer passengers to an assisting vessel lying to windward by boats having mechanical means of propulsion when such an operation would be impossible by boats propelled only by oars or sails. The excellent services rendered in the recent case of the s.s. *Delhi* by a steam launch from the French cruiser *Friant* may be mentioned in this connection.

It is conceivable that a mechanically propelled launch able to carry a considerable supply of fuel might be of great service in the case of a vessel wrecked on some unfrequented route by establishing connection with a port or with some other vessel, especially if such a launch could be equipped with machinery for wireless telegraphy.

The committee will, no doubt, be influenced largely in making any recommendations on this subject by the

consideration that, if a boat is mechanically propelled, means will have to be taken to ensure that a competent person is placed in charge. Possibly the engineering staff of the vessel will be able to fill this position.

It is for consideration:—

- (a) Whether mechanically propelled boats or launches should be carried in any classes of vessels, and if so, in what classes; also what proportion of the boats carried should be of this type?
- (b) What form of mechanical power is most suitable and least likely to deteriorate on a sea voyage?
- (c) What supply of fuel should be carried?
- (d) Whether one or more of such boats could or should be fitted with apparatus for wireless telegraphy?

Life-Rafts.

By General Rule 8 of the Draft Rules, a life-raft is required to have at least three cubic feet of strong and serviceable enclosed air tight compartments for every person carried, or to have equivalent buoyancy in some other form. By General Rule 6 a life-raft is to be provided with a suitable approved equipment.

A decked life-boat referred to in the Draft Rules Nos. 2, 3, and 4 is distinguished from a life-raft by the following essential characteristics:—

- (a) The decked life-boat is required by General Rule 3 to have a freeboard, as approved by the Board of Trade, but the deck of the raft may be level with the water surface.
- (b) The decked lifeboat is required, by instructions issued by the Board to have bulwarks for the shelter of the persons on board and it is fitted with appliances by means of which it may be lowered from davits. The life-raft would probably either be thrown overboard or it would be left to float off when the vessel sank.

The following questions appear to be for consideration:—

- (1) Is it practicable to provide appliances by means of which life-rafts may be launched from a vessel's deck before she sinks?
- (2) Is three cubic feet of buoyancy, as required by the existing Statutory Rules, sufficient for life-rafts?
- (3) Would the existing type of life-rafts or life-rafts of improved construction be sufficiently effective for life-saving purposes in the event of an emergency to entitle them to be calculated as a part of the actual life-saving appliances with regard (a) to foreign going vessels; (b) to home trade vessels; and, if so, to what extent?
- (4) What equipment is necessary in the case of a life-raft?

A. H. F. YOUNG.
W. DAVID ARCHER.

On the 16th August the following letter was addressed to the Committee by the Board of Trade.

Marine Department,
7, Whitehall Gardens,
London, S.W.

SIR,

I AM directed by the Board of Trade to transmit herewith a copy of a despatch of 1st May last, from His Majesty's Consul-General at New York on the subject of the use of lifeboats on large vessels, and to state that the President desires it to be considered by the Boats and Davits Committee.

I am at the same time to state, that a list has been prepared of various suggestions addressed to the Board of Trade recently on the subject of the construction, stowage, and launching of boats and rafts, and other kindred matters connected with the saving of life at sea; and prints of the list will be forwarded as soon as they are available for the information of the Committee.

I am to add that, in connection with the first clause of the terms of reference to your Committee, the Board would be glad if the Committee would give consideration to Recommendation No. IX. (necessity of a fender for boats), in the Report of the Court of Inquiry into the loss of the steamship "Titanic."

I am, Sir,

Your obedient servant,

W. F. MARWOOD.

The Secretary,
Boats and Davits Committee,
7, Whitehall Gardens, S.W.

Enclosure.

H.B.M. Consulate General,
New York.

Consular No. 25.
SIR.

May 1, 1912.

HAVING taken a number of depositions as to the loss of the "Titanic," I venture to offer the following remarks as to the use of lifeboats on large vessels.

The boats are stowed on the boat deck at a height of from 70 to 100 feet above the level of the water. In the case of the "Titanic" they were lowered one deck, and there loaded at a height of about 70 feet. A lifeboat, when suspended by the falls, cannot with safety be fully loaded, as there is great danger—

1. Of the falls or davits smashing;
2. Of the boat buckling.

That no accident of this sort occurred on the "Titanic" speaks very highly for the care which had been taken in providing extra strong boats, and extra strong falls and davits. To load a boat safely she should be in the water, going down with only a boat's crew. The imminent danger of buckling no doubt partly accounts for the first boats being sent away only half loaded, and there is reason to believe that they had orders to steer for a light supposed to be a vessel close by, and return for more passengers. This hope was a vain one, and therefore, later on, bigger chances were taken, and the boats heavily loaded while on the falls.

It would appear desirable to stow boats on a lower deck where they could be more easily launched. There is no doubt but that many women were afraid to enter the boats at such a height above the water, and one

witness examined by me said that the only time he felt he was in danger was at the moment of being let down in a small boat from such a giddy height.

At the time of the disaster the sea was absolutely calm. Had it been otherwise, had there been a heavy sea, with a roll on the ship, boats let down from a height of a hundred feet would have been smashed like eggshells against the side of the vessel, and, in all human probability, not a soul would have been saved.

The "Titanic" disaster, therefore, was unique. It occurred in a calm sea, and that alone enabled the boats to be of service. It is not likely that such a sea would be encountered again in a similar disaster, as wrecks usually occur in bad weather.

Had there been boats enough would all the passengers have been saved? I consider this point a doubtful one, as it is questionable whether there were enough seamen—boatmen—on the "Titanic" to manage more boats. As it was, all the boats were not successfully launched, and they were, as a rule, not full when they left the ship, and some four hundred persons might, theoretically, have been carried.

In nine cases out of ten the ship herself is the best means of saving life. In the tenth case arrangements other than those adopted on the "Titanic" should be made, such as:—

- (1) Boats to be stowed on a lower deck, where they could be launched with less danger.
- (2) The boats to be loaded in the water, and not on the falls.
- (3) More seamen used to handling boats should be shipped, and appointed to boat stations.
- (4) More boats of a suitable type should be carried. The "Titanic" lifeboats did very well in a calm, but were, in many cases, overloaded, and could not have lived in a sea. The collapsible boats, Englehardt type, did fairly well; one rescued a number of people; another, launched by passengers, capsized, but floated and served as a life saver.

I have the honour to be, with the greatest respect,

Sir,

Your most obedient humble servant,

(Signed) C. W. BENNETT,
Consul-General.

