

# Impact of Titanic Upon International Maritime Law

by Allison Lane

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No other shipwreck in history has left such an indelible imprint upon the public consciousness as that of the RMS *Titanic*. Ninety-two years after her loss, the story of that great liner continues to fascinate people around the world. It has generated countless scholarly books and has been the subject of fictional novels, several Hollywood movies, and a Broadway musical. But far from being the ultimate testament to mankind's fallibility, the *Titanic* has served another role. It was the circumstances of her sinking and the great loss of life that accompanied it which prompted the international community to seriously revise their laws concerning the safety of life at sea.

The *Titanic* was the grandest ship of her time. The second in a planned trio of enormous luxury liners built for the White Star Line, the *Titanic* commenced her maiden voyage from Southampton, England on April 10<sup>th</sup>, 1912. She made stops at Cherbourg, France and Queenstown (now Cobh), Ireland before heading for her final destination in New York. But the *Titanic's* anticipated arrival in America was not meant to be. Shortly before midnight on April 14<sup>th</sup>, the ship struck an iceberg, opening six of its sixteen watertight compartments to the sea. The *Titanic* sank in just under two hours, taking with her 1,502 of her passengers and crew<sup>1</sup>. At the time it was heralded as the worst disaster at sea in history, and many today still regard it as such.

Immediately after news of the *Titanic's* loss began to reach the United States and Britain, committees began to be formed for the purpose of investigating the causes of the disaster. In America, Senator William Alden Smith of Michigan, who had been the driving force behind a great deal of railroad safety regulations passed by Congress<sup>2</sup>, organized an inquiry within days of the sinking. Beginning on April 18<sup>th</sup>, just as the *Carpathia* docked in New York with the *Titanic's* survivors, Smith and his committee began subpoenaing certain individuals (such as J. Bruce Ismay, chairman of the White Star Line, all the surviving ship's officers, and prominent passengers) to testify before them. The inquiry officially began at the Waldorf-Astoria Hotel in New York on April 19<sup>th</sup> and lasted six weeks, during which the proceedings would be moved to Washington, D.C. and a total of eighty-two witnesses would be interviewed.

The British Board of Trade inquiry began on May 3<sup>rd</sup>, 1912. Heading up the group of five assessors appointed to the court was Lord Mersey, the Commissioner of Wrecks. This inquiry lasted five weeks, emphasizing the question of *why* the disaster happened, rather than following the American inquiry's emphasis on *how*<sup>3</sup>. Ninety-six witnesses were called to testify, most of them officers and crewmen from the *Titanic*, *Carpathia*, and *Californian*<sup>4</sup>. Lord Mersey delivered the findings of the wreck commission on June 30<sup>th</sup>.

Both the American and British inquiries would, in their final reports, devote a great deal of time towards making recommendations concerning the safety of life at sea. Both committees came to the conclusion that the existing regulations were far outdated and needed immediate revising. In addition to general proposals for improving safety conditions, the areas they focused on the most were the conduct of wireless operators, actions to be taken by ship captains in the

presence of ice, lifeboat regulations, and shipbuilding codes.

Guglielmo Marconi, an Italian physicist, was the first to develop a practical, working system of wireless telegraphy. In 1901, his device transmitted signals across the Atlantic, which created a worldwide sensation. The first shipboard wireless transmitter had been installed on the *Kaiser Wilhelm der Grosse* in 1900. From that point on, shipboard wireless became immensely popular as more and more land stations were constructed. Separate wireless companies were established in the major competing countries—Marconi in Britain, Telefunken in Germany, and United Wireless in America. Competition for paid traffic in the radio free-for-all of the day was so fierce that operators from rival companies would not acknowledge each other, and would even jam each other's signals<sup>5</sup>. In addition, wireless was largely unregulated. There was no one particular set of equipment being manufactured; two Morse languages, American and International, were in use; there were no laws concerning watch hours; and no definitive place for the wireless operators amongst the ship's crew<sup>6</sup>.

Despite the enmity and general lack of organization, the future of wireless on the sea was bright. During a speech given in the summer of 1911, Marconi himself stated: "those who make long sea journeys are no longer cut off from the rest of the world. ... The chief benefit, however, of radio-telegraphy lies in the facility which it affords to ships in distress of communicating their plight to neighboring vessels or coast stations."<sup>7</sup>

The *Titanic* was equipped with state-of-the-art wireless equipment. At the time, the ship's equipment was the most powerful set in use. Its guaranteed working range was two hundred and fifty miles. However, communications could be maintained over four hundred miles during the day, up to two thousand miles at night.

The *Titanic* had two wireless operators: the senior operator, John "Jack" Phillips, and the junior operator, Harold Bride. Most ocean liners had only one operator, so the *Titanic* having two was considered a sign of her importance. The two men were not considered ship's officers, and indeed wore separate uniforms, that of the British Marconi Marine. They worked long hours for little pay, through slow periods and spates of heavy traffic; in emergencies they were expected to work around the clock without rest. One or the other was at the key at all times. During the day they had no fixed hours, and relieved each other to suit the other's convenience. At night, Phillips took the eight-to-two watch, and Bride took the two-to-eight watch. The operating room was connected to the ship's telephone exchange, but had no direct link to the bridge. Many scholars argue that this led to the poor communication to the ship's officers of information regarding ice in the *Titanic's* path<sup>8</sup>.

Many of the messages sent and received from the *Titanic's* wireless room were passenger telegrams. Between leaving Southampton and the time of the ship's collision with the iceberg, a total of four days, two hundred and fifty telegrams were sent or received. Incoming passenger telegrams were sent to the inquiry desk via pneumatic tube; messages concerning navigation were hand-delivered to the bridge. The wireless operators also took down the nightly news transmitted from the Poldhu, Cornwall station for publication in the *Atlantic Daily Bulletin*, the onboard newspaper<sup>9</sup>.

On April 14<sup>th</sup>, the day of the collision, Phillips received several transmissions concerning ice. In the morning and early afternoon the *Caronia*, a Cunarder; the *Noordam*, a Dutch liner; the *Baltic*, a fellow White Star liner; and the *Amerika*, a German liner, all sent messages reporting ice in the vicinity of 42 N 49 W. Harold Bride took the *Caronia's* message to the bridge, where Fourth Officer Joseph Boxhall plotted the position of the ice on the ship's chart. The *Baltic's* message was taken directly to Captain E.J. Smith; he later showed the message to J. Bruce Ismay, the onboard representative of the White Star Line, who pocketed it. The messages collectively illustrated a belt of ice stretching across the *Titanic's* path—but since only one position had been plotted, the crew was unaware of the extent of the ice field<sup>10</sup>.

In midafternoon the *Titanic's* wireless set went down, and it took Phillips until just after 7:00 PM to get it working again. By then the backlog of wireless traffic had grown enormous. It was because of this that a further, crucial message went undelivered to the bridge. The *Mesaba*, an Atlantic Transport liner, had sent out a warning describing heavy pack ice and large icebergs from latitude 42 N to 41.25 N, longitude 40 W to 50.30 W. Phillips, who had no way of knowing that the *Titanic* was already in the area described in the message, merely put it in the stack of messages on his desk and continued working to clear the backlog.

At 12:15 AM on April 15<sup>th</sup>, roughly thirty-five minutes after the *Titanic's* collision with the iceberg, Captain Smith gave the wireless operators the command to send the regulation distress call. Phillips immediately began tapping out "CQD", the international distress signal, followed by "MGY", the *Titanic's* call letters, and the ship's position. After just a few minutes, the Canadian Pacific liner *Mount Temple*, the Russian steamer *Birma*, and the Allen Line's *Virginian* all responded that they were changing course to come to the *Titanic's* aid. At 12:25 AM, the Cunard liner *Carpathia* was also alerted to the *Titanic's* distress. Fifty-eight miles away, the *Carpathia* was the closest of the ships racing to the *Titanic's* position. Phillips also had sporadic contact with the German liner *Frankfurt*, whose operator did not seem to understand what was happening<sup>11</sup>, as well as the *Titanic's* sister ship, the *Olympic*. At length Harold Bride remembered that an international convention had recently introduced a new distress call to replace CQD, and suggested that Phillips use it; at 12:45 AM, the *Titanic* became the first ship in history to send out SOS as a distress signal. Both Phillips and Bride took turns at the wireless, continuing to send out both SOS and CQD and remaining in contact with ships such as the *Carpathia*, until the *Titanic's* electricity finally gave out 2:10 AM. This was *after* Captain Smith had released them from their duties and ten minutes before the ship finally foundered. Bride survived aboard Collapsible Lifeboat B to be rescued by the *Carpathia*. Phillips's exact fate is unclear, but the general consensus is that he died of hypothermia sometime during the night<sup>12</sup>.

Confusion reigned on the radio waves in the immediate aftermath of the sinking, as other ships in the vicinity and operators all along the east coast of the United States who had caught wind of the disaster clogged the air with traffic, all seeking information. Out of these jumbled signals emerged a rumor that the *Titanic* was being towed to Halifax, with all aboard safe. This was most likely a misinterpreted message from the steamer *Asian*, which reported that it was towing an oil tanker to Halifax. Newspapers across the United States and Britain carried false news that the *Titanic* had merely suffered a scrape with an iceberg and that no lives had been lost. However, once the full enormity of the disaster was understood and it was realized that the Cunard liner *Carpathia* carried the only survivors of the *Titanic*, the *Carpathia's* one wireless operator, Harold Cottam, was bombarded with messages inquiring as to who had survived. Cottam was so exhausted after a night of communicating with the sinking *Titanic* that Harold Bride had to be brought up from the infirmary with frostbitten feet to assist him in plowing through the accumulated pile of messages from survivors<sup>13</sup>. Ignoring all queries both governmental and civilian, including messages from the USS *Chester*, a U.S. Navy cutter sent by President Taft<sup>14</sup>, the two operators concentrated solely on sending those personal messages. Bride was still transmitting when the *Carpathia* finally docked in New York City on April 18<sup>th</sup>.

The mass confusion in communications concerning the loss of the *Titanic* prompted American officials to call for more regulation of wireless operations both shipboard and land-based. Citing the "glaring need" for the regulation of wireless, the American inquiry committee into the *Titanic* disaster made several recommendations in their final report that would become part of the Radio Act of 1912. It was recommended that an operator be on duty at all times so that any and all messages could be received. Direct communication should be established between the wireless room and the bridge by means of a telephone, voice tube, or messenger. Auxiliary power

sources should be installed to keep the wireless working at all times. Legislation should be introduced to prevent amateur operators from interfering in official channels of communication, and steps taken to secure the privacy of wireless messages. A bill was quickly proposed in Congress that would make the committee's proposals law, and was passed as the Radio Act of 1912. In addition to the inquiry committee's recommendations, the Radio Act stated that all wireless operators now had to be licensed and adhere to certain bandwidths, while a large portion of the radio spectrum would be given over to the United States Navy for official use. Amateurs would be allowed to listen to any transmissions, but not broadcast any of their own messages on any wavelength save for the shortest ones, which were considered useless<sup>15</sup>.

In response to the third International Conference on Wireless Telegraphy, held in London shortly after the *Titanic* disaster, the British inquiry committee made its own recommendations regarding wireless regulations. All ships should be fitted with wireless equipment; a sufficient number of trained operators should be provided to ensure continuous operation and service of the wireless; and where practical, a silent room for "receiving" messages should be installed<sup>16</sup>.

Another area of maritime law that the *Titanic* disaster helped to change was that concerning navigation in ice fields. Prior to the sinking of the *Titanic*, it had been forty years since any ship in the North Atlantic had suffered severe damage at the hands of an iceberg. Even then, there had been no loss of life. In 1880, the Guion Line's *Arizona* had struck an iceberg head-on in dense fog, but the ship's collision bulkheads held, and the crew was able to guide the ship to a safe port at St. John's, Newfoundland<sup>17</sup>. In the aftermath of the *Titanic*, there was demand in both the United States and Britain for an ice patrol that would ensure the safety of the North Atlantic shipping lanes. An international conference on the safety of life at sea met in London on November 12<sup>th</sup>, 1913. This conference produced an agreement to establish a permanent ice patrol in areas deemed the most dangerous to shipping, signed on January 20<sup>th</sup>, 1914. On February 7<sup>th</sup>, the United States Coast Guard assumed responsibility of running the International Ice Patrol (IIP). The patrol's functions are specifically outlined by both United States law and international treaties<sup>18</sup>.

In the beginning, cutters were used to patrol the shipping lanes and make note of the location of ice. After World War II, aircraft began to be employed in the patrol due to their greater mobility. Both human eyesight and special radar are used to search an area between the 52<sup>nd</sup> parallel (near northern Newfoundland) to the 40<sup>th</sup> parallel (equal to Philadelphia) during the February-July ice season. Flights are made an average of five days a week every other week, and ice reports are updated twice a day with information on the location of icebergs, their courses, and rates of speed. The IIP is comprised of a fifteen-member unit of active Coast Guardsmen and civilians operating out of Groton, Connecticut. Its budget is paid for by the seventeen nations belonging to the IIP. Every year, on April 15<sup>th</sup>, the chart transmissions sent out by the IIP mark not only the positions of icebergs but that of the *Titanic*'s final resting place, six hundred miles south-southeast of Newfoundland's Cape Race. Two wreaths are dropped over the spot by Coast Guardsmen from a Hercules C-130 airplane. One belongs to the *Titanic* Historical Society, and the other is on behalf of the International Ice Patrol.

The sinking of the *Titanic* was also instrumental in changing the existing regulations for lifeboats on passenger liners. The *Titanic* was fully compliant with the lifeboat regulations of the day, yet carried only sixteen of them, enough to hold 1,178 passengers—and the *Titanic* was booked with 2,207 passengers and crew<sup>19</sup>. However, due to the reluctance of many passengers to leave the ship, believing that it was unsinkable, nearly all the lifeboats were lowered away without their full complement of passengers. In the end, only 705 were saved.

Both the American and British inquiry committees made numerous recommendations towards the revision of existing lifeboat regulations. The American committee proposed that every ship

carry sufficient lifeboats to hold all passengers and crew onboard in the event of an emergency, a measure that was already being taken by steamship lines across the world in the wake of the *Titanic*'s loss. No less than four crew members with knowledge of handling boats would be assigned to every lifeboat, and lifeboat drills for the crew would be conducted and noted in the ship's log a minimum of twice a month. Both crew and passengers would be assigned to lifeboats before the start of the voyage; the assignments would be allocated as to provide passengers the shortest route possible to a lifeboat, and both assignments and directions to the lifeboats would be posted in each stateroom<sup>20</sup>.

The British committee's plans for revising lifeboat regulations were much more detailed. Lifeboat accommodation on passenger ships would be based on the projected number of passengers to be carried, rather than tonnage, and such accommodations would be considered independently of the subdivision of the ship into watertight components. (This involved striking down Rule 12 of the Life-Saving Appliance Rules of 1902.) In special cases where the Board of Trade believed the provision of lifeboats for all on board to be impractical, requirements would be altered accordingly. This involved changing the sizes and types of lifeboats on board, changing the manners of stowing them, or setting aside an entire deck to the storage of lifeboats and the drilling of the crew. All lifeboats would be fitted with a "protective fender" or bumper, to prevent damage when being lowered. In addition, the committee proposed that the Board of Trade be empowered to require that one or more lifeboats be fitted with "some form of mechanical propulsion"—i.e. an engine. All lifeboats would be on board before any ship commenced a voyage, and be equipped with lamps and pyrotechnics for signaling, as well as compasses and provisions; they would also be marked to easily indicate the maximum capacity of adult individuals when being lowered. Finally, the committee recommended that Board of Trade inspection of lifeboats should be more strict and searching in the future<sup>21</sup>.

The British inquiry committee also made a number of recommendations for the conduct of lifeboat drills. They proposed that if a ship did not carry enough deckhands to sufficiently man all the lifeboats, other members of the crew should be trained and tested in boat work to take up the slack. In this light, the committee recommended that steps be taken to encourage boys to train in the merchant service. More frequent lifeboat drills should be conducted; in all ships a lifeboat drill, a fire drill, and a watertight door drill should be conducted as soon as possible upon leaving port, and then again during the voyage at convenient intervals lasting no longer than a week. All this should be recorded in the ship's log. Before allowing a ship to leave port, the Board of Trade should be satisfied that all requirements had been met and that each officer of the ship knew the plan for efficiently working the lifeboats<sup>22</sup>.

In the wake of the *Titanic* disaster, a need was seen to revise shipbuilding regulations as well. In their final report, the American inquiry set forth the following recommendations: All steel ships carrying more than one hundred passengers should have an interior watertight skin in the form of bottom or longitudinal bulkheads extending no less than ten percent of the load draft above the full-load waterline. The watertight skin should run from the forward collision bulkhead to no less than two-thirds the length of the ship. Bulkheads should be spaced so that any two adjacent compartments could be flooded without destroying the stability or "floatability" of the ship. Watertight transverse bulkheads should extend between each side of the ship and attach to the outside hull. Transverse bulkheads surrounding the ship's machinery should continue vertically to the uppermost continuous structural deck, which should be made watertight as well. Bulkheads in the vicinity of the machinery should extend no less than twenty-five percent of the ship above the load waterline, and all should end at a watertight deck. All watertight decks and bulkheads should be able to withstand water pressure equal to five feet more than the full height of the bulkhead without critical damage, and smaller bulkheads should be tested by subjection to actual water pressure<sup>23</sup>.

The British were also very thorough in their outline for new shipbuilding regulations, making several proposals similar to those of the Americans. A Bulkhead Committee was to report on the

“desirability and practicality” of providing ships with a number of new protections. Ships could have a double skin carried up above the waterline; longitudinal and vertical watertight bulkheads extending as far forward and aft as convenient on each side of the ship; or a combination of both. All of this was to be in addition to watertight transverse bulkheads. Inquiries were also to be made as to the feasibility of fitting ships with watertight decks above the waterline, and a report made as to how such decks should be made watertight. The inquiry committee recommended that the Board of Trade its their proposals into consideration and, if it chose to approve of them, seek legislation to enforce them. They also recommended that the Board of Trade be given legislative powers to require future construction of passenger ships to adhere to the new guidelines<sup>24</sup>.

In addition, both the American and British inquiry committees made a number of general recommendations aimed towards the further improvement of safety at sea; the American committee’s final report emphatically stated “this accident clearly indicates the necessity of additional legislation to secure safety of life at sea.” By law, the United States accepted the inspection certificates of foreign ships whose home countries had similar inspection laws. In its recommendations for the revision of maritime law, the committee proposed that unless other nations saw fit to alter their inspection laws accordingly as well, such “reciprocal arrangements” would end. No ship would be licensed to carry passengers from American ports until it conformed to the rules and regulations set forth by United States law. In addition, each steamship carrying a hundred or more passengers should be equipped with two electric searchlights to aid in the detection of ice and other potential obstacles. Firing rockets or other distress signals for any reason other than to communicate an emergency should be made a misdemeanor<sup>25</sup>.

The British committee also made a number of general recommendations. All lookouts should undergo sight tests at regular intervals. On all ships, a police system should be devised to ensure control on board in times of emergency. All steamship companies should include in their regulations that when ice has been sighted near or in the path of a ship, the ship should either alter its course to steer well clear of the danger or proceed at moderate speeds during nighttime. All ship captains should be made aware that under the Maritime Conventions Act of 1911, it is considered a misdemeanor to not aid a ship in distress when it is possible to do so. All regulations required of emigrant ships should also apply to all foreign-bound passenger liners. Finally, the recommendation was made that an international conference should be convened to establish common laws concerning construction of ships, provision of lifeboats, installation and operation of wireless sets, courses of action in regards to ice, and the use of searchlights<sup>26</sup>.

In the years that followed, the joint recommendations of the American and British inquiry committees were passed into law by nations around the world. This heralded a commitment to the continuing preservation of safety of life at sea that has continued to this day. Since the implementation of the International Ice Patrol, no ship that has heeded its warnings has been lost or damaged near the Grand Banks. All passenger ships are now required by law to carry enough lifeboats for everyone on board, and they all have exact guidelines to follow in any type of emergency. The days of ship owners conducting “business as usual”<sup>27</sup> are gone. This, more than anything, is the *Titanic*’s enduring, living legacy. Never again, the public declared—and indeed, to this day there has never been another tragedy quite like that of the RMS *Titanic*.

Allison Lane

April 19<sup>th</sup>, 2004

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<sup>1</sup> Daniel Allen Butler, *Unsinkable: The Full Story of the RMS Titanic*. Cambridge: DaCapo Press, 2002.

2 Daniel Allen Butler, *Unsinkable: The Full Story of the RMS Titanic*. Cambridge: DaCapo Press, 2002.

3 Daniel Allen Butler, *Unsinkable: The Full Story of the RMS Titanic*. Cambridge: DaCapo Press, 2002.

4 The *Californian* was a Leyland Line steamer captained by Stanley Lord. On the night of April 15<sup>th</sup>, 1912, the ship was stopped on the fringes of an ice field. Third Officer Charles Groves observed a liner he estimated to be no more than fifteen miles distant passing them; later Second Officer Herbert Stone and apprentice James Gibson observed the distant ship firing off white rockets. When informed, Lord was generally unconcerned and told them to note everything in the log. Stone and Gibson continued to watch until the ship disappeared, around 2:20 AM—the time the *Titanic* sank. None of them learned what had actually happened until Chief Officer George Stewart went to wake up the wireless operator, Cyril Evans, asking him to find out what ship had been firing rockets. Lord would later be severely condemned by both the American and British inquiries for his lack of action, and be fired by the Leyland Line. He would spend the rest of his life trying to clear his name.

5 Geoffrey Marcus, *The Maiden Voyage*. New York: Viking Press, 1969.

6 Daniel Allen Butler, *Unsinkable: The Full Story of the RMS Titanic*. Cambridge: DaCapo Press, 2002.

7 Geoffrey Marcus, *The Maiden Voyage*. New York: Viking Press, 1969.

8 There was no set protocol for delivering messages to the bridge. Messages for the captain, or ones concerning navigation, were generally sent up to the bridge as soon as possible; however, as will later be seen, this did not always happen.

9 Geoffrey Marcus, *The Maiden Voyage*. New York: Viking Press, 1969.

10 Information in this paragraph, and succeeding paragraphs concerning the ice warnings and the conduct of the wireless operators during the sinking, is taken from Daniel Allen Butler, *Unsinkable: The Full Story of the RMS Titanic*. Cambridge: DaCapo Press, 2002.

11 The operator on the *Frankfurt* never did seem to get the gist of the situation. Several times he broke in to Phillips's distress calls, asking such questions as "what is the matter with you?" even after Phillips had explained the situation. Phillips eventually became so frustrated with the *Frankfurt* operator's ineptitude that he shouted "The damn fool! He says, 'What's up, old man?'" and told the operator to keep out and stop jamming his equipment. His treatment of the German operator would be the cause of a small international incident where the German ambassador would lodge a formal complaint with Great Britain.

12 In his statement to the *New York Times*, Bride states that the last time he saw Phillips alive was when they left the wireless room; Bride ran towards the collapsible boats, and Phillips ran aft. During his testimony before the American senate committee, however, Bride says that he heard that Phillips made it aboard Collapsible B, where Bride and others had spent the night waiting to be rescued, and died during the night. He states that as far as he knew, Phillips's body was taken aboard the *Carpathia* and was later given a burial at sea. In his memoirs, Second Officer Lightoller also recounts this story. However, there are no records of Phillips having been brought aboard the *Carpathia*. Needless to say, the exact details of Phillips's death are a hotly debated topic amongst Titanic historians. (This one is inclined to believe that he made it to Collapsible B.) As stated, the general consensus is that he died of hypothermia; where, however, is left to speculation.

13 Geoffrey Marcus, *The Maiden Voyage*. New York: Viking Press, 1969.

14 Taft was gravely concerned about his close friend and aide, Major Archibald Butt, who had been sailing home on the *Titanic*. (Butt died in the sinking.) He was so concerned, in fact, that he chartered the *Chester* to get within range of the *Carpathia*'s wireless set and inquire after the Major. Cottam and Bride ignored the *Chester*, just as they ignored all the other inquiries coming their way. They did this because the Marconi office in New York had advised them that Guglielmo Marconi himself had secured a deal on their behalf with the *New York Times*, where they would each be paid for providing the newspaper an exclusive.

15 See: "Report of the Committee of Commerce, United States Senate, Pursuant to S. Res. 283 Directing the Committee on Commerce to Investigate the Causes Leading to the Wreck of the White Star Liner 'Titanic'", and:

"*Titanic Accident and the Radio Act of 1912, 1912.*" *DISCovering U.S. History*. Gale Research, 1997. Reproduced in History Research Center. Farmington Hills, MI: Gale Group.

16 British Wreck Commission's "Report on the Loss of the Titanic", July 1912.

17 Daniel Allen Butler, *Unsinkable: The Full Story of the RMS Titanic*. Cambridge: DaCapo Press, 2002.

18 Information on the IIP gathered from: Blanche Evans-Stewart and Edward J. Kruska, "The Titanic and the International Ice Patrol." *Reservist* (April 1997).

19 Daniel Allen Butler, *Unsinkable: The Full Story of the RMS Titanic*. Cambridge: DaCapo Press, 2002.

20 "Report of the Committee of Commerce, United States Senate, Pursuant to S. Res. 283 Directing the Committee on Commerce to Investigate the Causes Leading to the Wreck of the White Star Liner 'Titanic'."

21 British Wreck Commission's "Report on the Loss of the Titanic", July 1912.

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23 "Report of the Committee of Commerce, United States Senate, Pursuant to S. Res 283 Directing the Committee on Commerce to Investigate the Causes Leading to the Wreck of the White Star Liner 'Titanic'."

24 British Wreck Commission's "Report on the Loss of the Titanic", July 1912.

25 Geoffrey Marcus, *The Maiden Voyage*. New York: Viking Press, 1969.

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26 British Wreck Commission's "Report on the Loss of the Titanic", July 1912.

27 Daniel Allen Butler, *Unsinkable: The Full Story of the RMS Titanic*. Cambridge, DaCapo Press, 2002.

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