Titanic

And the extraordinary sequence of events which led to her sinking

Outline

Introduction

Those reading a paper version of this article should ignore the word 'Go' above, as that relates to the electronic version which is freely available from the website listed at the end of this paper.

RMS Titanic was one of three Olympic-class liners built for the White Star Line. The other two ships were Olympic and Britannic. One of the executives of the White Star Line was so confident about the safety of Titanic, he proclaimed, "Not even God himself can sink this ship!". The enthusiasm for the ship was contagious. So much so, that some of the crew had a banner made up which displayed the boasting words, and it was hung from the stern of the ship for a few days.

I can recall from back in the 1950s and 60s, it was common knowledge that the company which owned Titanic, *White Star*, had made the arrogant bold claim that "Not even God himself can sink this ship", however, in more recent reporting on the sinking, that claim is usually not mentioned, leaving a lot of people in a state of marvel as to how the ship could sink with its safety features which included remotely activated watertight doors. Thankfully, a TV programme titled, *History's Greatest Mysteries*, has mentioned the claim.[1]

Back in the 1970s, a young chap related to myself and at least one other person how a man had purchased a ticket to sail on the Titanic, and that a day or two before the departure date, he carried out a basic inspection of the magnificent looking ship. He noticed a banner hanging from the stern of the steamer making the arrogant claim, and decided that he would not set sail on a ship making such a bold boast; God might take up the challenge he thought, so he either got his money back at the ticket office, or sold his ticket to someone wanting to make the voyage. The man relating the story reported that he was born because his grandfather decided not to sail.

A series of events

Historians marvel at the series of events which took place leading to the sinking. I will list four things which played a part some time prior to her sinking, and another list which played a part on the night of the sinking.

1. The collision of Titanic's sister ship, Olympic, with HMS Hawk.
2. Poor design of watertight compartments; the tops were not sealed.
3. A coal strike.
4. A smoldering fire in a coal bunker on the Titanic.

Captain Edward Smith was captain of Olympic when a badly executed manoeuvre caused his ship to collide with the navy warship, HMS Hawk. Olympic needed to be quickly repaired, so workmen were diverted from the construction of Titanic to facilitate a timely repair. That resulted in a delay in the launch of Titanic.

The coal strike left steam powered ships unable to sail for a time, and consequently they were out of the shipping lane where they could have added their voice to the warnings about icebergs. Further, they could have added support to the rescue.

A smoldering fire in a coal bunker led to the quick consumption of the smoldering coal (according to some) to deal with the fire. That in turn led to the ship travelling at a dangerously high speed.

Events on the night of the 14th June had a more direct bearing on the sinking. They were:

1. Excess speed
2. Calm weather
3. A large number of icebergs in the steamers path
4. No access to the binoculars
5. Sun and moon in wrong position.
6. Decision not to hit the iceberg head on.

In the above list, we see that there are six things which went wrong for the Titanic. If just one of the above issues had not been a concern, Titanic may have been spared its tragic fate.

In addition to the above problems, we have further issues which contributed to a large loss of life.

1. No lifeboat drill and an insufficient number of lifeboats.
2. SS Californian cuts communication after receiving a terse message to stop sending ice messages. It also ignores flares.
3. Few ships in the shipping lane because of the coal strike.
4. Two ships nearby but they did not have radio communication.

Before dealing with what went wrong, we must look at the positives regarding Titanic. We will begin with its captain.

The captain of Titanic was **Edward Smith**. He had served in the Royal Navy Reserve (RNR) where he reached

the rank of Commander. This rank enabled him to fly the coveted blue ensign on ships he commanded instead of the usual red. He was transferred from Olympic to take command of Titanic. Because of his high rank, he was highly regarded by the general public. People felt safe when on a ship under his command. In addition to a high ranking captain, Titanic had good safety features such as:

Watertight compartments: The ship had fifteen watertight compartments, so that if a small section of the ship was flooded, the remaining secure compartments would keep the vessel afloat.

Watertight doors: One report states, "Another design feature that led to Titanic being considered unsinkable was the set of massive watertight doors linking the 15 supposedly watertight compartments. ..." [2] A magazine, commenting on the safety features of the Titanic back in 1911 stated, "The captain can, by simply moving an electric switch, instantly close the doors throughout and make the vessel practically unsinkable." [3]

Double bottom: The ship had a double bottom, consisting of an outer shell of one inch (2.5 centimetre) steel plates and a slightly less thick inner skin. The double bottom was so massive that a man could walk upright between the two shells of the ship. Having two shells gave added protection. If the outer shell was punctured, the inner shell would hopefully survive and give protection against sinking.

Heavily riveted: The ship was very heavily riveted. One report makes the point that more than five hundred thousand rivets were used on the lower reaches of the ship and that some sections were quadruple-riveted. More than three million rivets were used in the construction of the ship. I have come across a documentary which reports that a batch of low quality rivets were used, however, it is unlikely that the cheap rivets would have been used in any critical area of the ship.

Radio communication: In 1912, not all ships had radio communication, but Titanic did. That meant that if she got into trouble, a message could be sent out to a base on land, or to nearby ships which were equipped with a radio. In addition to all of the above safety features, Titanic had luxury beyond that of any craft upon the seas.

Luxury

First class cabins featured buttons which when pressed, would signal a steward to come to the cabin. First class passengers were also treated to the luxury of a gymnasium, a squash court, and a Victorian-style Turkish bath. In the same area as this room was an electric bath (in other words, a suntanning cabinet which used ultraviolet lights). People were not aware of the associated sun cancer risk at the time. The Turkish bath had a hot room, warm room, cooling room and two massage rooms. There was a men's smoking room and a reading and writing room. The reception room was quite large. [4]

The ship had a Grand Staircase which ran up through six decks providing access to all first class areas. First class passengers were treated to luxurious and spatial accommodation which was heated, and a high quality menu which included ice cream.

Because the ship had radio communication, passengers (for a price) could send messages transmitted via morse code to a business, or to friends and relatives. The luxury of the vessel attracted some high paying passengers, including multi millionaire, Benjamin Guggenheimer who travelled with his secretary, chauffeur, French mistress and her maid. He did not survive the sinking.

A lot of planning and effort went into making Titanic a safe, luxurious and majestic looking ship. The ship originally had three funnels, however, to make the ship more grand, a fourth funnel was added toward the stern. This funnel helped with ventilation.

With the ship having innovative safety features, and looking so grand, what could possibly go wrong? For those who know the Bible and the power of God, the most serious thing which could go wrong is that someone could make the boast that "not even God himself can sink this ship." Further to that, many could at least think along similar lines without uttering the words.

While things were looking good on the outside, there were things happening behind the scenes which were not conducive to a successful voyage.

A slight change of crew

A sister ship to the Titanic, Olympic, was out of action, leaving its crew without work. Smith was from the Olympic, he brought two officers from the Olympic with him to the Titanic, which resulted in a demotion in rank for two officers on the Titanic. David Blair, a third officer on the Titanic was informed by Smith that his services were not required, so he had to leave the ship, not realising at the time what a blessing his demotion was. When Blair packed up his possessions and left, he inadvertently took the keys to an important locker, that is, the binoculars locker. That oversight would potentially have serious consequences later on.

Some might wonder what benefit there would be in using binoculars at night. Binoculars with an objective lens of 50 mm in diameter (standard size for domestic binoculars) and a magnification of seven or ten are very helpful because the wide objective (front) lens provides a lot of light gathering power. Compare that to the human eye with an iris which opens to a maximum diameter of only around 7mm in dim light.

The above facts reveal why objects in the distance which are only lit by moonlight show up more brightly through binoculars. I have found from personal experience that looking at the moon through a telescope with a large objective lens without a filter to dim the light can be uncomfortable. The binoculars on the titanic would have been of a decent size and quality, therefore, quite useful for spotting icebergs in the distance at night. Another, at least minor problem was a fire in one of the coal bunkers on the Titanic.

The fire

The steamer took on coal at Belfast but was not filled

because of a coal strike. Titanic was able to gain additional coal from other ships when it reached Southampton - just over 4,000 tons was loaded. A fire was discovered in the forward most bunker. One report states that the coal was not damped before loading, consequently, friction from the very dry coal sliding down the chute and then landing in the coal below caused the fire. Another view is that when coal was taken from JP Morgan IMMC ships at Southampton (Titanic was part of the group). A very small portion of the coal that was transferred was actually smoldering.

Fires in bunkers were not an unusual problem, so the passengers were not informed. The decision was made to quickly shovel the burning coal into the boiler fire. That resulted in the ship travelling at a high speed to consume as much of the burning coal as quickly as possible.

At the enquiry into the sinking, there was some discussion over the intention of Thomas Ismay (the top executive of White Star) who was travelling on Titanic, and that of Captain Smith. Were they intending to set a speed record for the crossing of the Atlantic? There were those who were of the opinion that Titanic was trying to set a new record. It was travelling at a rate of twenty-one knots when the iceberg was first sighted, certainly fast for the iceberg environment Titanic was in. However, the above claim was not conclusively proven. The White Star company made the claim that Titanic was designed to be the best in luxury, it was not aiming to be the best in speed.

The iceberg

Smith was made aware of icebergs in his path, and to his credit, he took a more southerly route than usual to avoid trouble as did many ships at the time. However, a current of cold water called the *Labrador Current* was quite strong in April 1912, so it pushed icebergs further south than normal. Men are on watch for icebergs, but they have problems. The men on Titanic who were positioned high up in the crows nest do not have binoculars, and in addition to that problem, the atmospheric conditions were not conducive to spotting an iceberg at a long distance. Normally the sea is a little rough, which is helpful in spotting icebergs, because the sea splashes against the side of the iceberg revealing its presence. However, on the night of the 14th April 1912, the sea was calm. In addition to that problem, there was a slight fog.

A further problem was the position of the moon. If the Titanic had steamed toward its destination around fourteen days earlier or later, the position of the moon would have been on the other side of the earth in relation to the position of the sun, giving the night sky a relatively bright moon, however, on the night of the 14th, the moon was on the same side of the earth as the sun. Around the time the sun slipped below the horizon, so too did the moon (it was near new moon phase). With the night sky being so dark (it was near midnight), it is no wonder the iceberg was close to the ship by the time it was noticed. Further to that problem, the ship was travelling at 21 knots, in the opinion of many, too fast for the conditions it was under.

The iceberg (its mass is estimated in millions of tons) was less than four hundred metres away by the time it was spotted. The alarm was sounded and action was taken to miss the iceberg, that involved making a sharp turn and putting the propellers into reverse. The steamer made a glancing blow on its starboard (right) side with the iceberg, and most people thought disaster had been averted. With the benefit of hindsight, we now know that Titanic would have most likely survived if it had struck head-on.

Making a *sharp* turn was actually not possible for the Titanic. Investigations into her design revealed that the rudder was not big enough to enact a sharp turn for a ship of her massive size. It was only in following years that calculating the size of the rudder for a ship of a given size was clearly understood. A further problem was caused when the propellers were run in reverse. The turbulence in the water in front of the rudder reduced the ability of the rudder to bite into the water and provide good sideways pressure.

The collision did not send a big shudder through the ship. Most passengers slept through the event and some of the people on the deck played with ice which broke from the iceberg, not at all concerned by what was considered to be just a small bump. In reality, the damage was quite serious. A large gash was cut along the side of the ship below the waterline. As a safety measure, the ship had sixteen *almost* watertight compartments. I say 'almost', because there was no sealed top to the compartments. That meant that when the ship was at a sufficient angle, water flowed from the top of one compartment to the next.

With the sixteen supposedly 'watertight' compartments, the ship could cope with a small rip in its side, this gave many the impression that it was unsinkable, however, too many compartments had been breached. It was doomed. It was only a matter of time before the largest and most luxurious ship in the world would break in two, and come to rest at great depth on the ocean floor.

Warnings ignored

Titanic had received warnings of icebergs in its area, however, a very important message was not taken seriously because the sender failed to start the message with the prefix, msg which would have alerted the receiver to the fact that it was an important message. With that oversight, Jack Philips, the senior Morse Code operator on the Titanic simply placed the message under a paper weight, and continued with his task of sending and receiving messages.

Morse code operators on ships were not employed by a shipping company. They were employed by Marconi. Income was received by the Marconi communications company when passengers sent messages (called Marconigrams). Further to that, the radio operators received a meagre base income. Additional income was made from each marconigram which was sent or received.

Messages could only be received when the ship was within range of the land based communications station. This meant that the morse code operators had to work quickly to get their messages out before the ship went out of range; at the time, out of range of Cape Race in Newfoundland (now Canada). There were equipment problems (breakdowns were frequent in the early 1900s) which meant that for a time, no messages were sent or received. When communications were restored, Captain Smith directed that the morse code operators

work extra time to clear the backlog.

Jack Philips was quite busy with sending and receiving marconigrams - and boosting his income. In the meantime, the morse code operator on The California kept sending iceberg warnings. This situation led to Jack Philips sending a terse message to the operator on The California to stop sending him iceberg warnings. The California waited for half an hour, however, because Titanic was still sending messages, it closed down communications for the night.

Life raft drill cancelled

Captain Smith decided to cancel a lifeboat drill on the 14th, this left many crew and passengers unprepared for the disaster which unfolded that night. We don't know why Smith cancelled the drill because he went down with the ship. One issue which would have played a part in his decision was his great confidence in the safety of the steamer. That confidence was shared by the vast majority of the people.

Many lifeboats entered the water under capacity, partly due to nervousness about stepping into a lifeboat high above water - particularly in the beginning. Passengers had enjoyed heating on the Titanic. On the night of the sinking, the temperature dropped from 06 degrees Celsius to 0.5 C. (half a degree above the freezing point of water). That would have contributed to many being reluctant to leave the comfortable environment of Titanic for a liferaft. Further to that, it was some time before many grasped the fact that the majestic vessel they were enjoying was sinking.

A call for help initially ignored

The small liner, SS Virginian picked up a distress call. "She was over 170 miles (273 km) away when the radio operator picked up the distress call. He at once ran up to the bridge where the first officer was on watch. The officer read the message, then glared at the radio man. The Titanic was a famous ship and was known to be on its prestigious maiden voyage. He believed that the young radio man was having a joke and ordered him off the bridge. The radio man refused to budge and found himself seized by the arms by two deckhands who lifted him off the ground and at the officer's orders were carrying him towards the stairs that led down to the radio room. The radio man broke free, ran to the captain's cabin and began punching and kicking at the door. Only then did the first officer think that the signal might be genuine." [5] The captain emerged from his cabin groggy with sleep and ordered his men to head to the given position.

The ships Hudson and SS Baron Ardrossan were close to the tragedy, however, they did not have a radio, so they had no idea that anything was amiss, so continued on their way.

Weak rivets

Investigations into the sinking were conducted in Britain and the US in 1912. Since the discovery of the wreck in 1985, there has been renewed interest in the several contributing issues which played a part in the sinking. One line of enquiry has been into an order found in books for a low-grade batch of rivets. According to this line of investigation, the substandard rivets had a high level of slag which would have caused them to fail under heavy stress. However, that point needs to be balanced with the fact that an excessive number of rivets were used in the construction.

Those who missed the sinking

In the providence of almighty God, some who were intending to make the Atlantic crossing to New York did not do so. We have already mentioned the chap who saw the sign, 'not even God can sink this ship'. Another who changed his mind was JP Morgan who had to remain in the UK for business reasons. Some others included four firemen.

"Six firemen had gone ashore for a last drink at the Bunch of Grapes pub beside the dock entrance. At ten to twelve the men left the pub and headed towards Titanic. When they heard the whistle blow, two of the men ran towards the ship, but the other four did not, thinking that they still had time to get aboard. They did not get to the gangway in time and missed the ship." [6]

In another case, a man had a dream in which he saw wreckage floating on the ocean. He was so bothered by the dream, he changed his mind about taking the voyage. Many others decided not to take the maiden voyage. Titanic was not at full passenger capacity because there was a national coal strike in the UK. Many would-be passengers decided to delay their travel plans until the strike was over. Some coal was transferred from other vessels which were tied up at Southampton. 'White Star' transferred 4,016 tonnes from five other J. P. Morgan owned IMMC (International Mercentile Marine) company ships.

The strike had finished a few days before Titanic sailed; however, that was too late to get coal from pits to ship on time. Thankfully, several potential passengers delayed travel plans because of the strike.

The rescue

In addition to several things going wrong which led to the collision and sinking, there were also problems with the rescue.

There should have been several ships within sight of Titanic, but because of the coal strike, they were held up in port waiting to be loaded with fresh coal. In addition to that problem, there was a ship nearby which did not help.

SS Californian

SS Californian ignored flares from the Titanic and continued on her way. Potentially, many more lives could have been saved, however, there was a problem with this ship. Although she could carry both cargo and passengers, on the night in question, she was only carrying cargo, this meant the ship would only have supplies for a its small amount of crew. Dealing with a relatively large number of hungry cold survivors would have been quite a challenge for a small and busy crew. Officers on the Titanic were well equipped to deal with unruly passengers. When the mood of some of the passengers became a bit intense, Chief Officer Wide distributed, pistols, rifles and ammunition to officers, boatswains and other senior deck hands.

At 12.25 am Jack Phillips received a signal from **RMS Capathia**, steaming from New York to Italy. Capathia, a Cunard liner of 13,500 tons was about 60 miles (96 km) to the

south-east, she turned round and headed toward Titanic.

Flares from the Titanic were sent at five minute intervals. A single signal would not have been recognised as a cry for help, nor would signals sent out in a random order. In addition to the flares, morse code signals were also sent.
The usual Morse Code distress signal was 'CQD' which had been sent out repeatedly. On this night, Jack Philips used the new distress signal, SOS (... - - - ..., Save Our Souls). It was the first time it was used in an actual emergency situation.

The night did not go well for Jack Philips. After the ship sank, some men made their way to an overturned boat. One of those who made their way to the overturned boat was the senior radio operator, Jack Philips. He rested on top of the boat, however, due to the terribly cold conditions, he died (from hypothermia to use the technical term). The youngest survivor of the sinking was third-class passenger, Elizabeth Dean who was only nine weeks old. She was carried safely to a liferaft by her mother. They were among the fortunate ones. Titanic had sufficient lifeboats to hold 1,178 people, but the ship was carrying 2,223. Clearly, not everyone could survive.

The high loss of life (more than 1,500) would have been remarkable from an ordinary ship. However, Titanic was no ordinary ship, she was built with safety as a high priority, and yet she sank. One thing was clearly missing, and that was humility. Making the proud boast that not even God can sink this ship was not just arrogant, it was clearly wrong when all that was required was an iceberg and a few unfavourable events.

Bizarre twist

In a bizarre twist of events, HMS Titanic claimed additional lives more than one hundred years after her sinking. A submersible named, *Titan*, owned and operated by OceanGate, a tourism and expeditions company imploded during a descent to the wreck of the Titanic on 18 June 2023. Stockton Rush, CEO of OceanGate, rejected concerns that his submersible was not safe. He along with four others died in the tragedy.

Pride

Pride was a key factor in the destruction of **Nineveh**, the capital city of the Assyrian empire. Nineveh was destroyed by Babylon in 612 BC. It is a city which made the boast, 'I am, and there is none besides me.' (Zephaniah 2:15).

The prophet Zephaniah warned that God would "... stretch out his hand against the north and destroy Assyria, leaving Nineveh utterly desolate as dry as the desert. Flocks and herds will lie down there, creatures of every kind." (2:13-14). That is exactly what happened. Nineveh has been completely destroyed, never to rise again. Creatures of the desert have settled in her ruins.

Regarding pride, the Bible says, "The Lord detests all the proud of heart. Be sure of this: they will not go unpunished." (Prov. 16:5).

World War I

The sinking took place just two years before the beginning of World War I (1914-1918). It had a profound influence on the mood of Great Britain. It produced a nation which was more willing to humbly go to its knees in prayer before almighty God in its hour of great need.

The world inside Titanic

The world inside Titanic was in may ways like the outside world. It contained a wide range of people, from the wealthy businessman to the hard working labourer. Everyone was expecting in a few days time to arrive in New York. However, that was not to be. Before the sun rose on the 15th April 1912, the cold waters of the Atlantic Ocean would claim the lives of over 1,500. Not even possessing great wealth could offer protection. The situation brings to mind a parable spoken by Jesus on the subject of death. He said:

"... The land of a rich man produced plentifully, and he thought to himself, 'what shall I do, for I have nowhere to store my crops?' And he said, 'I will do this: I will tear down my barns and build larger ones, and there I will store all my grain and my goods. And I will say to my soul, 'Soul, you have ample goods laid up for many years; relax, eat, drink, be merry.'" But God said to him, Fool! This night your soul is required of you, and the things you have prepared, whose will they be?' So is the one who lays up treasure for himself and is not rich toward God." (Luke 12:16-21). Sadly, there were many on the ship (as on earth today) who were rich in the eyes of the world, but they were not rich toward God.

> "But seek first the kingdom of God and his righteousness, and all these things will be added to you." (Matt 6:33). See also: 2 Cor. 4:18, Rom. 12:2.

Addendum

Statistics

Electricity: The electrical power generated on Titanic, was at least equal to many stations in British cities. Here are some more interesting statistics:

Built by: Harland and Wolff shipbuilding company in Belfast.
Chief naval architect: Thomas Andrews Jr.
Cost: Titanic cost about 7.5 million pounds to construct, an enormous amount at the time.
Length: 269.1m (882 ft 9 in). In 1912, there was not a single building on the earth which was taller than 269 metres.
Beam: 28.2 m (92 ft 6 in)
Tonnage: 46,329 GRT, 21,831 NRT.
Displacement: 52,310 tonnes.
Drought: 10.5 m (34 ft 7 in)
Decks: 9 (A-G)
Capacity: 2,453 passengers and 874 crew for total of 3,327. Crew made up 35.6% of the total.
2,223 people on board the Titanic when she hit the iceberg. That's 66.8% of total capacity.
Engines: Total power of engines is 46,000 h.p.
Propellers: Weight of three-bladed wing propellers was 34 tonne each.
Speed: In service 21 knots (39 km/h, 24 mph). Max: 23 knots (43 km/h; 26 mph).
Fuel load: 6,611 tons of coal could be carried in Titanic's bunkers, with a further 1,092 tonnes in hold No. 3.
Consumption: Titanic consumed over 600 tonnes of coal per day, requiring 176 firemen to work around the clock. 100 tons of ash per day had to be ejected into the sea.
Food: Food loaded onto the Titanic included fresh meat - 34 tonne. Potatoes - 35.7 tonne. Eggs - 40,000.
Lifeboats: 20 (only sufficient for around half the number of passengers on board at the time). This low number met the maritime safety standards of the day.
Loss of life: Over 1,500 The exact number is not known. Some of the passengers travelled under a false name.
One report states, "Of the 2,223 people on board the Titanic when she hit the iceberg, only 706 had been saved. ... Of the first class passengers 60 percent had been saved, of second class just 42 percent and of third class only 24 percent. ... Of the men on board only 20 percent had got away, but 75 per cent of women and children had survived." [7]. That high percentage was due to the policy of 'women and children first' into liferafts. The survival rate for the total of 2,223 was 31.7% (less than one in three).
Among the notable people who lost their lives were the captain of the ship, Edward Smith, the chief naval architect, Thomas Andrews Jr and the multi millionaire, Benjamin Guggenheimer.
A notable person who was going to travel, but changed his mind was JP Morgan. He went on to play a substantial role in bringing the US out of its financial woes from the stock market crash seventeen years later (1929).
Location of Titanic wreck: 41 deg. 43' 32" N. X 49 deg. 56' 49" W. (41.72556 N. 49.94694 W.).
The ship which rescued passengers from Titanic:
RMS Capathia, a Cunard liner.

Time line

1840s **White Star Line** founded. Its main business was taking immigrants to Australia. This business receives a boost when gold is discovered in Australia in 1851. Because of the discovery, the population of Australia increased from 430,000 to one million seven hundred thousand (1,700,000) in three years.
1867 White Star is taken over by **Thomas Henry Ismay**. The company was suffering severe financial difficulties. He with several business partners build iron steamers and enter the Atlantic market.
1902 American financier, **J P Morgan** acquires the financially struggling White Star Line.
1909 On 31 March, Harland & Wolff's keel number 401 began to be laid. It eventually becomes the Titanic.
1912 On 10 April, Titanic begins her maiden voyage.
On 14 April at 2340, Titanic hits an iceberg.
On 15 April, at around 0200, the 'unsinkable' ship breaks in two and sinks.
1985 On 01 September the wreck is discovered. The wreck is confirmed to be that of the Titanic from one of the massive boilers. It is also confirmed that Titanic had broken in two as she slipped beneath the waves. There is a significant distance between the two halves.
2023 On 18 June, five tourists died when the submersible they were in, named *Titan*, imploded during a descent to the wreck of Titanic.

Bibliography

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- *About History: Book of the Titanic*, Sixth Edition, Future Publishing, Dorset UK, © 2017.
- Sinead FitzGibbon, "*Titanic: History in an Hour*", 60 pages.
- Rupert Matthews, "*Titanic: The Tragic Story of the Ill-Fated Ocean Liner*", 208 pages.

There is a short movie clip on the Wikipedia website which is quite helpful. Go to: www.wikipedia/Titanic

End Notes

1. Australian TV station, SBS, History's Greatest Mysteries, Episode five, *The Sinking of the Titanic*, 01 December 2024. For a short period of time, residents of Australia can view the programme via 'SBS On Demand'.
2. All About History Book of the Titanic, p. 40.
3. Shipbuilder magazine, 1911.
4. Titanic, Wikipedia.
5. Rupert Matthews, "*Titanic: The Tragic Story of the Ill-Fated Ocean Liner*", p. 270.
6. Rupert Matthews, p. 94.
7. Rupert Matthews, p. 295.

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