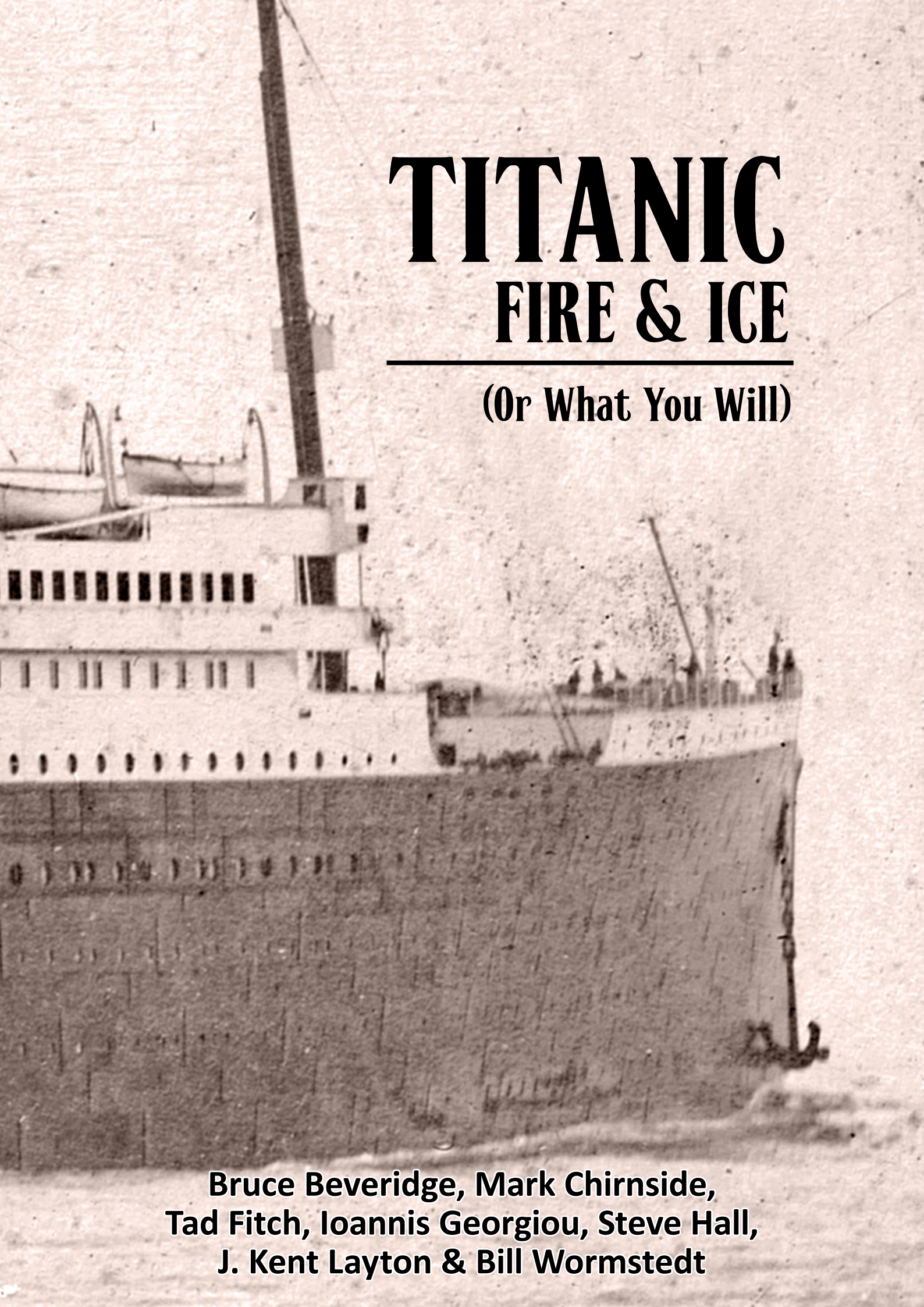

TITANIC
FIRE & ICE
(Or What You Will)

Bruce Beveridge, Mark Chirnside,
Tad Fitch, Ioannis Georgiou, Steve Hall,
J. Kent Layton & Bill Wormstedt

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Cover photograph: Titanic *proceeds down Southampton Water. (*Titanic In Photographs*, Günter Bäbler Collection)*

Introduction

By J. Kent Layton

'Facts are stubborn things; and whatever may be our wishes, our inclinations, or the dictates of our passion, they cannot alter the state of facts and evidence.' — John Adams, *The Portable John Adams.*

In January 2017, British television aired a programme entitled *Titanic: The New Evidence*; which later aired in America under the same title. It sparked a media frenzy around the world. During the programme, it was postulated that new photographic evidence had recently come to light proving that *Titanic* suffered severe hull damage from a coal bunker fire, and that the damage could be seen from outside the ship on the day she left for her trials, 2 April. The show, which prominently featured journalist and *Titanic* author Senan Molony, made some astonishing claims regarding the effects that a fire in a coal bunker had on the maiden voyage, a dangerous gamble by management and officers to send the ship to sea despite the fire, a shortage of coal that proved fatal once the fire had taken hold, cost-cutting and the substitution of less-than-best-quality materials in construction of *Olympic* and *Titanic*, and attempts at a coverup of the whole sordid affair.

However convincing the programme's contents were, and however widely these claims were subsequently spread by the press, this article will show that there were significant historical errors in the theories presented in the programme and later press articles. It will help to set the record straight regarding the coal bunker fire that *Titanic* suffered, and what effect it may have had, if any, on the outcome of the maiden voyage.

It is ironic to me, personally, that just a month ago my latest book, entitled *Conspiracies at Sea: Titanic & Lusitania*, was released. It dealt with many of the side points touched on in the programme. I did not include a complete chapter on the coal bunker fire in that text, something that I now regret, but a conscious decision I made because this theory was so very old, and had long-since been addressed by historians. However, I did write:

> Facts are boring. People will often read the newest book on the subject only because they hear about its popularity in the press; badly bolted together documentaries can present limited facts, outright inaccuracies, or skewed perceptions. However, once the book is finished or the programme finishes airing, it is these 'facts' that are set in the minds of the audience. It is very hard to go back and convince them that the book or documentary they enjoyed so much was actually full of bad data.
>
> Yet it is vital to keep our minds open to the full picture of history. These events happened to real people. Individuals died; still others had to deal with irreparable consequences of these tragedies for the rest of their lives. Even today, the ripple effects of [the sinkings of the *Titanic* and *Lusitania*] can be felt across generations of grandchildren and great-grandchildren. We owe it to the memory of these people and their families to try to tell their stories with a minimum of distortion.
>
> When historical figures made mistakes, the historical record should show that. …
>
> Will this book put a dent in the swirling maelstrom of *Titanic* and *Lusitania* conspiracy theories splashed across books, newspapers, television and movies? Unfortunately, but realistically, probably not. Yet the attempt must be made; we owe it to everyone to tell the stories of these ships and people to the next generation of young enthusiasts – hearing it all fresh, for the first time, and with wild-eyed enthusiasm – in as accurate a manner as possible. …
>
> History is, after all, history. It is not a fictional tale written to entertain. Hopefully we will always remember the difference between the two, and continue to learn the facts … in an unbiased manner, so

their memories will continue to live on untarnished by distortion.[1]

This team knows from years of experience that not everyone who is interviewed for a documentary truly supports the final content of the programme, and sometimes what they say during their interviews is cleverly edited to make it seem like they support the show's premise, when they actually do not. In other cases, experts on one detail or subject can be led astray, trusting that the information they are presented with and asked to make deductions or conclusions from is accurate, when really it is not. So we will simply deal with the claims made in the programme in question, rather than speculate on what anyone involved intended to say, convey, or what they personally believe is true.

This may be a case of 'closing the barn door after the horse has come home', or 'shouting into a hurricane', but in this paper we will carry out a factual investigation of the subject. We will start by looking at the claims made regarding the coal fire; then we will follow the facts to solid, reasonable conclusions – whatever these may be.

Since the claims made in the programme were extremely broad in scope and touch on many different subjects, this will be a lengthy and, at times, very technical article. It is no 'sound bite' that can be read and digested in a few minutes. We hope that you, the reader, will stick it out with us through all the technicalities ahead. If you would prefer, please feel free to jump to the '**Conclusions**' section to get the end results, and then work your way back through how those conclusions were reached, step-by-step.

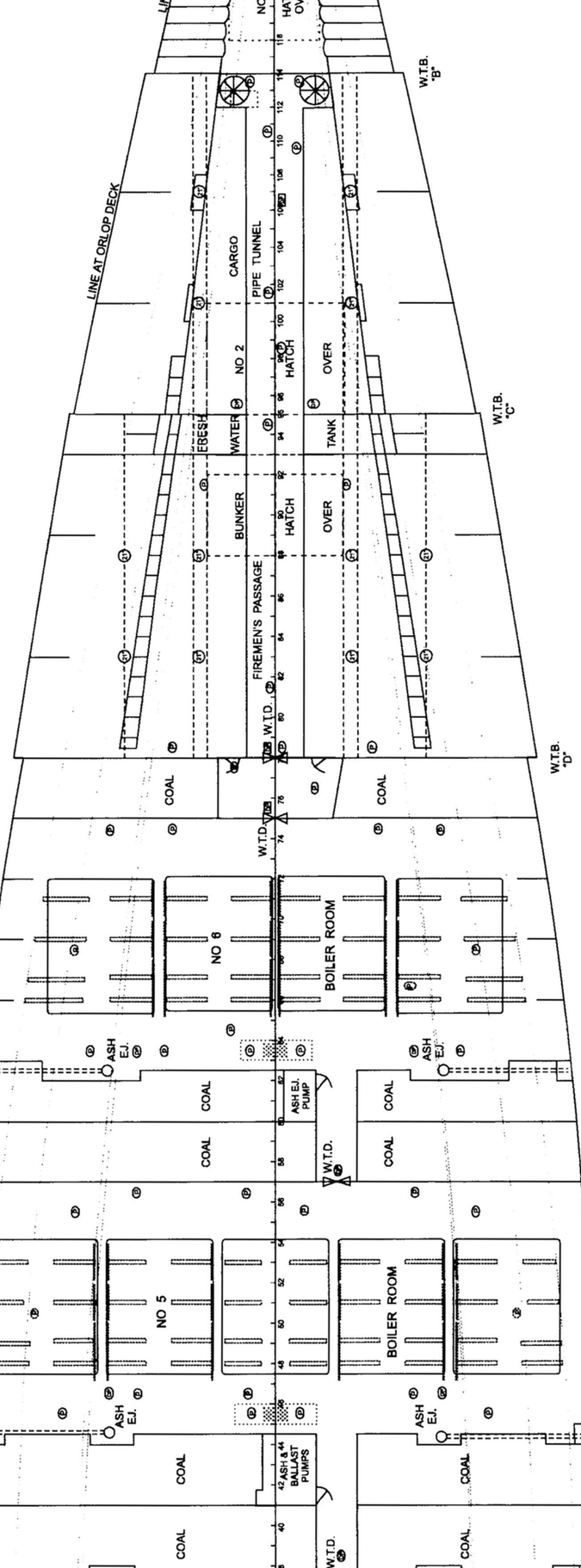
ABOUT THE TEAM: The members of this team are all maritime or *Titanic*-specific historians who have spent decades researching the *Titanic*, the *Olympic*-class ships, and general ocean liner history. We have worked together or independently on many separate projects, including these closely-related volumes:

Below: Titanic *casts off from the quay shortly after noon on Wednesday, 10 April 1912. It was the beginning of the most-scrutinised maiden voyage in maritime history, and has spawned multiple conspiracy theories over the years.* Opposite: *Titanic on 1 April 1912, the day initially scheduled for her sea trials. (Both Authors' Collection)*

- ***Titanic: The Ship Magnificent*** (2008, The History Press. By Bruce Beveridge, Scott Andrews, Steve Hall, Daniel Klistorner & Art Braunschweiger.)
- ***The Olympic Class Ships: Olympic, Titanic, Britannic*** (2011, The History Press. By Mark Chirnside)
- ***Report Into the Loss of the SS Titanic: A Centennial Reappraisal*** (2011, The History Press. By Sam Halpern, Mark Chirnside, Tad Fitch, Bruce Beveridge, Steve Hall, Bill Wormstedt, Cathy Akers-Jordan et. al.)
- ***On A Sea of Glass: The Life & Loss of the RMS Titanic*** (2012, Amberley Books. By Tad Fitch, J. Kent Layton & Bill Wormstedt)
- ***Titanic in Photographs*** (2012, The History Press. By Daniel Klistorner, Steve Hall, Bruce Beveridge, Art Braunschweiger & Scott Andrews)
- ***Titanic or Olympic: Which Ship Sank? The Truth Behind The Conspiracy*** (2012, The History Press. By Steve Hall & Bruce Beveridge.)
- ***The Edwardian Superliners: A Trio of Trios*** (2013, Amberley Books. By J. Kent Layton)
- ***Olympic, Titanic, Britannic: An Illustrated History of the Olympic Class Ships*** (2014, The History Press. By Mark Chirnside)
- ***RMS Olympic: Titanic's Sister*** (2016, The History Press. By Mark Chirnside)
- ***Conspiracies at Sea: Titanic and Lusitania*** (2016, Amberley Books. By J. Kent Layton)

This list of volumes is included, not to attempt to sell copy, but in order to assure the reader that both individually and as a collective team, this article's authors have spent years following evidence to help enlighten individuals regarding the history of these ships, and thus add weight to the presentation to follow. This is our serious peer review of these astonishing new claims, and it will be based on facts and evidence.

NOTE: The British and American versions of this programme differed slightly in content, with the British version being slightly longer, and making more allegations, particularly regarding Bruce Ismay's coded messages. We base this paper upon the claims made in the British version.



Part One
The Claims

In 2012, an album of photographs of the *Titanic* and her sister *Olympic* came to light when it went up for auction. The album originally belonged to John W. Kempster, who had been a Managing Director in charge of the electrical department at Harland & Wolff, and who had narrowly avoided sailing on the *Titanic*'s maiden voyage as part of the Guarantee Group. The photographs he took of *Titanic* were particularly exciting to historians, as it is very rare for previously unknown views of the ship to turn up. Some of the views had been taken as the *Titanic* left the shipyard for the first time on 2 April 1912, when she was about to begin her day-long series trials.

With this piece of background information in mind, let us begin to explore the claims made in the programme. They are broken down into numbered segments for ease of later reference in Part 2 of this paper.

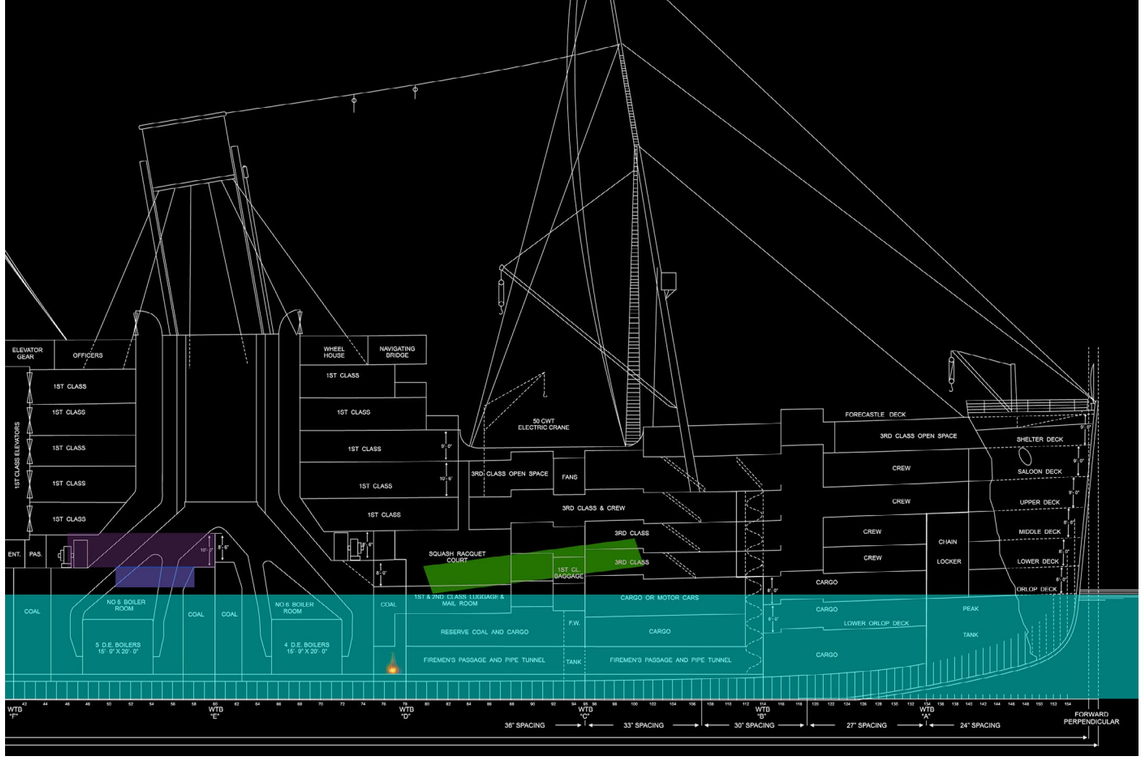
1. The smudge and its location. According to the story told in the programme, the discovery and study of the remarkable photographs in this album led researchers Steve Raffield and Senan Molony to a bit of a mystery. Two photos (reference numbers K12 and K14[2]) were prominently featured in the programme; they were taken on 2 April, and appeared to show a large dark 'smudge',[3] over thirty feet long, on the starboard side of *Titanic*'s hull, below the general area of her Bridge and forward Well Deck. The photographs were taken from two 'significantly' different angles, and yet the smudge remained in a fixed location. It 'follows the line of the hull plating', as was said in the show.

The different camera angles led them to the conclusion that the smudge was no shadow, reflection, or blemish in the photograph. Instead, they felt it must have represented a distortion in the actual hull of the ship. As Molony said on camera, it appeared to him to be evidence of 'a weakness or damage' in the hull in the very area of the ship that would strike the iceberg some days later. A weakness in this area of the ship, it was postulated, could rewrite history. Why?

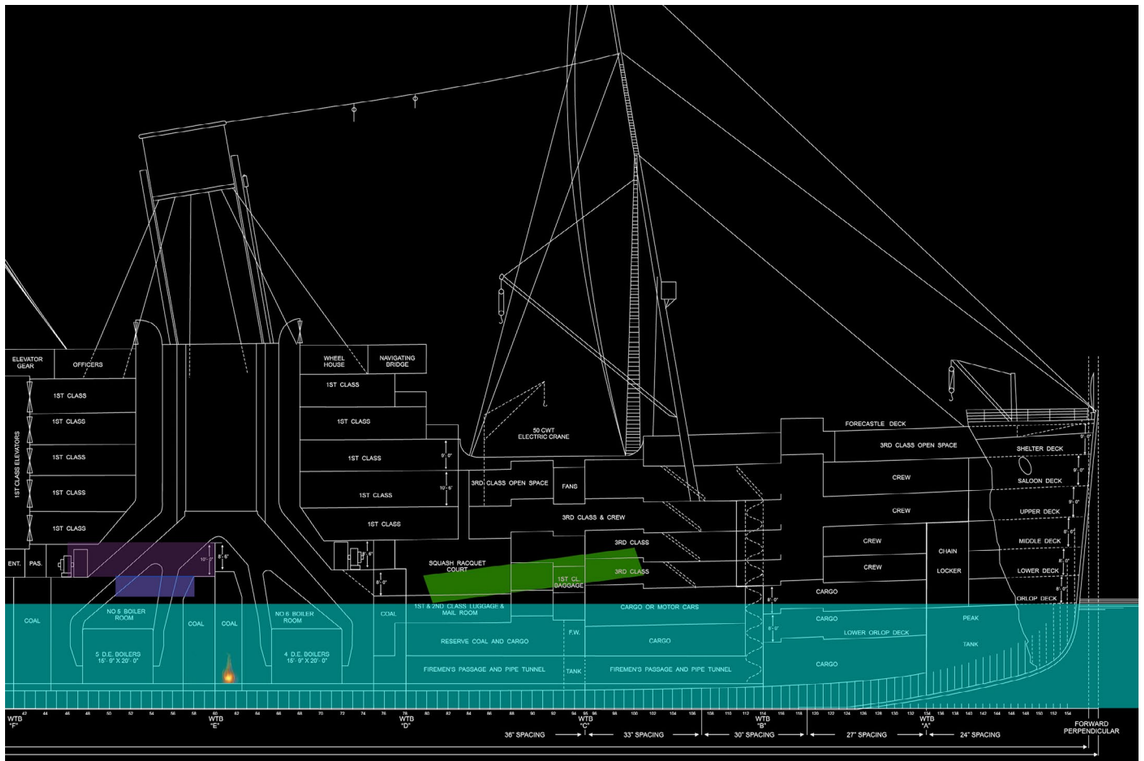
2. The fire. As Molony said in a conversation during the programme, this smudge and its location 'instantaneously' brought to his mind a fact that, it was pointed out, was really known only to serious *Titanic* researchers: that the ship had suffered a fire even before she left Belfast. Molony said that this fire occurred 'in this location', where the newly-discovered smudge was located.

The programme narrator then clarified that the fire had taken hold in a coal bunker in Boiler Room No. 6, and that this bunker was located 'directly behind' the spot where the after extremity of the 'smudge' begins in the photographs. While the fire was mentioned in the 1912 inquiries, it had been judged that it played no part in the outcome of the disaster. Molony next said that many researchers tend to dismiss the fire as an 'irrelevancy'.

Opposite: *This general arrangement plan shows the layout of the* Titanic *in her forward sections. Her bow is toward the top of the page. In particular, Cargo Holds Nos. 2 and 3, as well as Boiler Rooms Nos. 6 and 5 are shown. Boiler Room No. 6 was the forward-most, sitting between watertight bulkheads (WTB) D and E. Boiler Room No. 5 was located between WTBs E and F. (Plan by Bruce Beveridge)*



Above: *This diagram shows the location of the smudge seen on the outer hull (in green). Everything shaded in teal is below the waterline. In purple are shown the location of the First Class Swimming Bath. The verbal descriptions given in the program seems to indicate that the fire was in the Reserve Coal Bunker, directly behind WTB D, as seen in this plan (see flame). The program shows the smudge overlaid with a 3-D digital model of the ship, and focuses in on this area, but without showing the flames. Later in the program, the fire's location is actually shown. The diagram* (below) *shows their actual depiction of the location of the fire on the model. However, but it is not shown in relation to the position of the smudge. The location of the fire, as shown on the digital model is in the coal bunker on the aft end of Boiler Room No. 6, along the forward side of WTB E. (Authors' Collection, plans by Bruce Beveridge)*



While the programme actually did not claim that the coal bunker fire was a new discovery, one would be excused for getting that impression if one were not paying careful attention, or were only following the story from the press articles that followed after it aired. The programme went on to document how Molony followed this thread to some allegedly startling discoveries.

Molony was next shown investigating eyewitness testimony on the fire, particularly the report of surviving Stoker John Dilley. Dilley's account was carried in the press, not recorded at the formal inquiries, and the account was used to show that the fire was far from irrelevant to the disaster.

While the entirety of the account was not given or shown in the programme, we have discovered that Dilley's account was carried in many newspapers shortly after the sinking. The first portion of the story was printed in Logan Marshall's 1912 book, *The Sinking of the Titanic and Great Sea Disasters*, which drew almost entirely on newspaper accounts. However, we did find a paper that carried it in its entirety, and the story is reproduced below:

> I was assigned to the *Titanic* from the *Oceanic*, where I had served as a Fireman. From the day we sailed the *Titanic* was on fire, and my sole duty, together with eleven other men, had been to fight that fire. We had made no headway against it.
>
> Of course the passengers knew nothing of the fire. It started in bunker No. 6. There were hundreds of tons of coal stored there. The coal on top of the bunker was wet, as all of the coal should have been, but down at the bottom of the bunker the coal was dry. The coal at the bottom of the bunker took fire, and smouldered for days. The wet coal on top kept the flames from coming through, but down in the bottom of the bunker the flames were raging.
>
> **Stokers Fight the Flames**
>
> Two men from each watch of stokers was tolled off to fight that fire. The stokers, you know, work four hours at a time, so 12 of us was fighting the flames from the day we put out of Southampton till we hit the iceberg.
>
> No, sir, we didn't get that fire out. And among the stokers there was talk that we would have to empty the coal bunkers after we put our passengers off in New York and then call the fireboats there to help us put out the fire.
>
> But we didn't need such help. It was right under bunker No. 6 that the iceberg tore the biggest hole in the *Titanic*, and the flood that came through the *Titanic* put out the fire that our tons and tons of water hadn't been able to get rid of.
>
> **Told to Shut Mouths**
>
> The stokers were beginning to get alarmed over it, but the officers told us to keep our mouths shut. They didn't want to alarm the passengers.
>
> Another fireman said that because of the fire the ship sank more rapidly than otherwise would have been the case.
>
> It had been necessary to take the coal out of sections two and three on the starboard side forward, he said, And when the water came rushing in after the collision the bulkheads would not hold because they did not have the supporting weight of the coal.
>
> Somebody reported to Chief Engineer Bell that the forward bulkhead had given way and he replied: My God, we are lost.[4]

Dilley's account remains consistent through each retelling that we have seen. It matches up with the snatches seen or quoted during the programme. Thus, we believe this quotation fairly represents the press accounts that told Dilley's story which were referred to in the show.

Dilley's account does, indeed, describe what sounds like a serious conflagration.[5] The programme narrator then pointed out that this fire was discovered the day *Titanic* prepared to leave Belfast for Southampton. Molony added that since a dozen men were working on it, it spoke to something far more serious than a small fire that was easily extinguished; it should be categorized as a 'major fire', just as Dilley said in the article. The programme claimed that four days later, the fire was getting worse. Yet when the *Titanic* set sail on 10 April, no one was told about the fire raging down below.

The mark on the ship's hull seen in the two Kempster photographs led Molony to conclude that the fire played a much greater role in the disaster than anyone had previously realized. Molony was next shown speaking to Dr. Guillermo Rein, an expert in the dynamics of coal fires. The doctor was shown asking if the smudge was in the location of a coal bunker, and Molony confirmed that the mark was 'going into a coal bunker'. Rein then confirmed that such damage could definitely be due to a coal fire, adding that the fire likely started spontaneously, burning over the course of days or weeks; the coal, the programme pointed out, was loaded into the bunker three weeks before. The heat from such a fire, Rein pointed out, could range from 500°F (932°C) to maybe 1,000°F (1,832°C). This kind of heat could very badly damage the adjacent bulkhead; moreover, having

the coal bunkers directly next to the major watertight bulkheads was described by the doctor as a significant design flaw.

The scale of the blaze, the show pointed out, seemed to have 'spooked' the firemen who worked the ship from Belfast down to Southampton, since only eight of the 160 continued on to America. This was said to be an 'unprecedented change of crew'. So why, it was asked, would the *Titanic* be allowed to proceed to sea with a major fire raging below decks?

3. Financial pressures and substandard ships. The answer, the programme theorised, might have lain with the fact that the *Olympic*-class ships were troubled right from the start. On the surface, they were prestigious, but they were also unprecedented in size and scale. White Star was simultaneously losing business to its rival, Cunard. It was claimed that White Star Chairman J. Bruce Ismay was under pressure to turn the company around, and these ships were his 'master plan' to beat the competition.

At this point, Molony was shown consulting with author Brad Matsen. Matsen told Molony that the commercial urgency driving the White Star Line was moving them 'to cut certain corners that they didn't necessarily have to cut in order to get the ships to sea right away'. On several occasions, it was said, Bruce Ismay directly inserted himself into the design phase of the ship. There were thus reductions in the scantlings, the dimensions of the steel, the number of lifeboats, and a number of other aspects of the ship's construction.

It was said that these cost-cutting measures became evident when the *Olympic* tangled with the *Hawke* in September 1911. The photographs showing the huge hole punched in her hull were said to reveal that the steel used in the *Olympic*-class ships was substandard. In the show, this was confirmed by metallurgist Dr. Martin Strangwood. Because the plates were so weak, it was said, the bow of the *Hawke* could penetrate the hull. Strangwood pointed out that engineers of the period should have seen that problem from the photographs, and he added that this grade of steel does not cope well with extreme heat.

Molony was next shown uncovering an 'extraordinary letter' that suggested there were concerns about the steel even during construction of the sister ships. Molony summarised the letter; he summed it up by saying that in it, a high-ranking Board of Trade official was saying that the *Titanic* should have been using a special quality steel; the response, Molony pointed out, was a 'pretty testy' letter from H&W to the effect that ordinary steel and tests were used throughout the vessel. The whole idea of these two liners being 'superships', it was said, was beginning to fall apart based on this evidence.

4. Withholding information, and the decision to hold to the schedule. In order to get *Olympic* back out to sea as quickly as possible, parts were donated from *Titanic*, delaying her entry into service. Now the fire was threatening another delay, and one too many at that. The publicity would be terrible, and the company's finances were allegedly so fragile that it literally would have brought White Star down. Still, sending the ship to sea afire was absolute madness, and furthermore, passengers were kept in the dark on the fact that the fire was endangering the ship's steel structure. Those in charge of the ship and the company, it was said, were making dangerous decisions, assuming that everything would be okay. The ship was going to sail on schedule no matter what.

5. Covering up the fire at the British Inquiry. According to the programme, the British Government was pressured into investigating the disaster. It was said that most of the witnesses called at the inquiry, presided over by Lord Mersey, were company bigwigs. For eleven days, nothing was said of the fire. But then, after being denied twice, Thomas Lewis, leader of the Firemen's Union, won the right to question his men. Lewis started 'driving' toward the fire, questioning survivor Charles Hendrickson. A dramatic reading of the testimony followed in the programme.

It was stated that Bunker 10 held more than 100 tons of coal, and was only accessible by two hatches. The only way to deal with the fire was to shovel the coal into the furnaces, and this forced the men to move already-burning coal into the furnaces. Three days into the fire they were still shoveling the coal out of the bunker. Yet once the coal was out, Hendrickson reported he had seen evidence of damage done to the bunker. It had been 'red hot'. The steel wall that had taken the brunt of the fire was one of the ship's main watertight bulkheads. This revelation proved that the bulkhead had been 'severely damaged', or 'dented', 'warped', as Hendrickson said in the testimony. This, it was noted, should have raised 'serious concerns', but instead the damage was covered up by rubbing black oil over it. 'What in tarnation,' Molony asked on camera, 'was going on with the control of the ship, the senior officers?'

Despite these revelations, Lord Mersey seemed uninterested in the fire, and eager to move on. He repeatedly interrupted and closed things down when the fire story came up. He didn't want to hear any of it.

6. The fire began to spread – a deteriorating situation. *Titanic* was now just under three days from New York. On the Bridge, Captain Smith and Bruce Ismay were receiving ice warnings. But the programme claimed that new, shocking evidence shows that the situation was now actually deteriorating. It cited page 6 of the 20 April 1912 *New York Tribune*. The pertinent section reads:

> Every stoker who was interviewed declared that the Titanic was afire from the time she left Southampton until Saturday afternoon at 2 o'clock.
>
> This story was first told by an officer of the ship, who requested that his name be withheld, saying that all the men had been warned not to talk about the disaster.
>
> "The fire was in the coal bunkers, forward," said this man, "in stokeholes 9 and 10, on the forward end. In what is known as the second and third sections.
>
> "The fire must have been raging long before she pulled out of her pier in Southampton, for the bunker was a raging hell when, one hour out past the Needles, the fire was discovered.
>
> "Immediately we began to work on the fire, and it took us until Saturday afternoon to extinguish it. We were compelled to dig out all the coal from these sections.
>
> "In my opinion this fire played no small part in the disaster, for when the bow was stove in the waters readily tore open the watertight bulkheads, behind which had been this coal. If the coal had been still in the second and third sections when the vessel struck the iceberg it would have probably helped the bulkhead to resist the strain."[6]

Here the officer said the conflagration was in 'coal bunkers' – ***plural!*** This, it was claimed, was damning evidence that the fire had spread into two coal bunkers. Firemen were now frantically throwing even more coal into the furnaces.

Could this deteriorating situation explain why the ship sped up in spite of the warnings of ice ahead? Previously, this acceleration into danger made no sense. Why would the liner have charged at top speed into the ice field? It was not because she was trying to set a record time, as she wasn't fast enough. Instead, it was because a second fire meant that the men below had to feed even more burning coal into the furnaces, in order to burn it off and put out the fire. *Titanic* charged forth to her destiny. Why wasn't the ship slowed?

7. *Titanic* was short of coal. Britain was then in the throes of a coal strike, and had only taken on just enough coal to make it to New York. She had already burned through much of her stock, and burning more to stop the fire would use up even more of her precious fuel, causing her to run short. She simply didn't have enough coal reserves left to do anything but maintain speed and stick to her course. The programme claimed that the officers and Captain Smith had been backed into a corner. The possibility of hitting an iceberg seemed unlikely, while the danger of running out of coal in the middle of the Atlantic seemed very likely. Running out of fuel would damage the prestige of the White Star Line, so against the higher risk of embarrassment, they chose to forge forth and gamble. The gamble backfired, and *Titanic* struck the iceberg.

8. Thomas Andrews believed the ship would survive. The show next claimed that the ship's designer, Thomas Andrews, initially assessed the damage and said that the ship would not sink – but only if critical bulkheads held. What he did not know was that one of the critical bulkheads had been badly damaged by the fire.

9. The fire played one final, deadly role in the disaster: the fire-damaged bulkhead gave way, causing the ship to sink, and the enormous loss of life. After the collision, the bulkheads held firm, and a rescue vessel was not far away. Brad Matsen stated that if the *Titanic* had only held out for an hour and a half longer, *Carpathia* would have arrived and no one would have died.

Buried in the American Inquiry testimony, it was said, Fireman Fred Barrett testified that he took refuge behind the very bulkhead warped by the fire. About two hours after the collision, the bulkhead gave way. This breach sealed the ship's fate. When it went, a series of tipping dominoes followed, giving the upper hand to the ocean. It was pointed out that an academic study has shown that at that precise moment, the ship started to sink rapidly. Thirty minutes later, the Bridge chronometer was beneath the waves. But was it the fire that caused the bulkhead to give way?

Working together, Drs. Rein and Strangwood estimated the damage that the fire inflicted on the ship's steel structure. The evidence that the bulkhead was dinged aft, and the other part was dinged forward, fell right into line with their computer modeling. They said that this kind of warping only happens at very high temperatures, confirming that the fire was far more significant than the British Inquiry concluded.

The effect of the fire on the bulkhead's steel would have been 'catastrophic', the narrator said, reducing its strength to about one-quarter of its original strength. It would have made the steel very brittle. The water pressure began building up, and took its toll, and so the bulkhead began to fail. The initial failure crack spread rapidly. The modern analysis, it was said, underpins the story told by Dilley.

It was claimed that these revelations revolutionize our understanding of how the *Titanic* sank. The narration continued:

> NARRATOR: The coal bunker fire fatally weakened the steel to a quarter of its original strength. Eventually the water pressure took its toll, and the brittle bulkhead gave way. … The failure of the fire-damaged bulkhead is central to the huge loss of life on the *Titanic*. The bulkheads were the sole reason the *Titanic* carried so few lifeboats. If they'd held, the ship would have stayed afloat long enough for everyone to be ferried to a rescue vessel. Instead, 1,500 men, women, and children plunged to their deaths in the icy Atlantic water.

The failure of this bulkhead, it is thus claimed, led directly to the deaths of 1,500 men, women and children.

All of this evidence was available to the Inquiry in 1912. So why did it take so long to come to light?

10. There was a culture of coverup at the White Star Line, and the whole matter was buried. The answer is simple, according to the programme: the ship's owners hid the truth. As soon as he was on the rescue ship, Ismay sent telegrams back to White Star headquarters in New York, to attempt to stop the truth from getting out. His first concern was to send coded telegrams signed 'YAMSI', to the effect that they should get the crew out of the United States as quickly as possible. He wanted them all out of the country, so they could be kept quiet. White Star told the American inquiry that no firemen had survived, it was said, but Fred Barrett was still working in their service. At the British Inquiry, Lord Mersey did not call 57 surviving firemen, and brushed over the evidence of those who did appear. He attributed the entire disaster to high speed, and then buried evidence regarding the fire.

Despite the conspiracies, the show concluded, we finally we have the full story after 105 years.

Part 1B: The Media Frenzy.

With the release of the programme, the worldwide press went wild. Always eager for a good *Titanic* story, headlines proclaimed that the real cause of the *Titanic* disaster had at last been found, and that the coal bunker fire had been behind it all, not the iceberg.

The media has frequently been at fault over the years for producing sensational headlines that bear no resemblance to the original story. Facts have gotten twisted, and even the best-intentioned of historian or researcher can quickly find himself mired in a hotbed of controversy over things he doesn't even believe. Indeed, before we began our full investigation of the claims made in the programme, this team largely believed that the media had probably run amok once again, and that the original show could not possibly have made the claims carried in the press coverage.

However, in this case, the media has not gone that far astray of the original point of the show. Why do we say this? Although it does not directly state this in so many words, as it progresses, the programme clearly makes the case that ***the entire disaster was due to the coal bunker fire***. It was the reason the ship was steaming so fast through the ice field, and struck the iceberg; it was also the reason the ship sank as quickly as it did, when the fire-damaged bulkhead gave way.

PART TWO
THE FACTS

As a team, we know only too well that programmes on the *Titanic* frequently present a cherry-picked selection of information in order to tell a good story, make headlines, and get viewers. Sometimes the facts are mixed up, and selective editing can make well-respected historians or technical experts sound as if they support the premise on which the show is based, when they may not always be in such full agreement, or in agreement at all. We are unable to speculate on whether some or all of the experts and researchers featured in the programme fully agree with the conclusions presented therein; however, it is not personal beliefs that are in question, as much as whether the details in the programme are accurate. It is these details we will now address in order to set the historical record straight.

To begin with, we should consider the fact that the theory that a coal bunker fire contributed to or caused the sinking of the *Titanic* is not new at all. The truth is that the coal bunker fire had been a matter of public record since April 1912. While it may have been a rather unknown fact up until the 1980s, that began to change before that decade was over. The conspiracy theories to the effect that it played a major part in the disaster were quick to follow.

In 1987 a live television show titled *Return to the Titanic* was broadcast, hosted by actor Telly Savalas. It showed some artifacts recently recovered from the wreck site by the French oceanographic institute IFREMER, which had been involved with the 1985 discovery of the ship's remains. It also propagated any number of absurd historical errors and conspiracy theories, such as the 'curse of the mummy'. The coal fire was also discussed. During the show, a huge hole in the starboard side of the *Titanic* wreck was mentioned. The hole had been observed and explored during the 1987 expedition. A tantalizing theory was then expounded to explain this hole on the wreck which, it was claimed, caused the sinking of the ship: an internal explosion.

A man named William Deibel was interviewed; he told a story he had heard from his father, who had heard the tale aboard the United States troopship *Mercury* when returning from World War One. It purportedly came from a survivor of the *Titanic* disaster he met on the troopship during the voyage. The story went that the *Titanic* never struck an iceberg, but sank from an explosion in the coal bunker. The family had always felt that the tale of the iceberg was concocted to cover up the real cause of the sinking for insurance purposes.

One Dr. Robert Essenhigh, a professor of mechanical engineering, was next interviewed; he explained that the bunker where the fire was located was not near enough to the hole observed in the hull to be connected to the disaster. He also gave other reasons why the fire could not have caused an internal explosion and created the hole. However, he also explained that if the coal fire was getting out of control, it could have forced Captain Smith to decide between fighting the fire at sea, or racing into New York where he could obtain assistance fighting it. All of this sounds very similar to the new claims.

Although the new programme claimed the coal bunker fire is largely known only to *Titanic* historians, the theory that the coal bunker fire had contributed to the disaster was repeated many, many times in the years since the sinking, particularly after 1987. It has been addressed in numerous shows and books widely available to the public.

With this in mind, let's continue to consider the new show's claims point by point. Each numbered point will match the numbered claim outlined in Part 1.

1. The smudge and its location. The smudge shown in photographs K12 and K14[7] from the Kempster album is, interestingly, in almost exactly the same spot that the hull of the wreck is now breached – in other words, under the Bridge and Well Deck, not far from the Mail Room.[8] The smudge followed a diagonal line from the lower-aft extremity, just above the painted waterline, up to the upper-forward extremity, following the bend, or curve, of the ship's hull, more or less between F and G Decks. It runs from approximately Frame 80F – directly beneath the forward face of the Bridge – to around Frames 100F or 101F – directly under where the Forecastle Deck ended and the open forward Well Deck began. The smudge was over 30 feet long. A cursory examination of the ship's plans shows what was directly behind the smudge on the outer hull: on F Deck, Third Class cabins outboard, and the Squash Racquet Court just inboard of those; on G Deck, this area contained some Third Class cabins forward, as well as the First Class Baggage Hold and the Sorting Room of the Post Office.

In other words, the smudge is not directly outside of any machinery space, boiler room, or coal bunker. It is separated from the very tip-top of the coal bunker at the forward end of Boiler Room No. 6 by watertight bulkhead D, and by G Deck itself. The intervening bulkhead and deck, and the open space between the bunker and the smudge, would have acted to some degree as insulators, preventing significant damage to the outer hull plating where the smudge is seen in the two photos. Moreover, the Post Office clerks and Third Class passengers in the areas behind the external smudge would certainly have taken umbrage with their quarters – or the Post Office where they worked – being so hot that the hull plates outside of them were deforming. What is more, the mails seen floating in the rising water on the night of 14-15 April would likely have spontaneously combusted during the fire, yet they were instead seen floating about unsinged.

Worse yet for this theory, the location of the coal bunker which is shown ablaze during the programme is nowhere close to the location of the smudge. Initially, the smudge was shown for a split second, overlaid upon a three-dimensional graphic model of the *Titanic*, and with Boiler Room No. 6 shown directly behind the smudge. To be clear, the forward coal bunker of No. 6, known as the 'Reserve Coal Bunker' – located between Frames 75 to 78,[9] behind watertight bulkhead ('WTB') D – was not actually shown alight on the model in that fraction of a second where the smudge was shown overlaid on the model. Yet the implication – given both verbally in the programme and, to some extent, visually – was unmistakably clear: the bunker fire and the smudge were very close to each other.

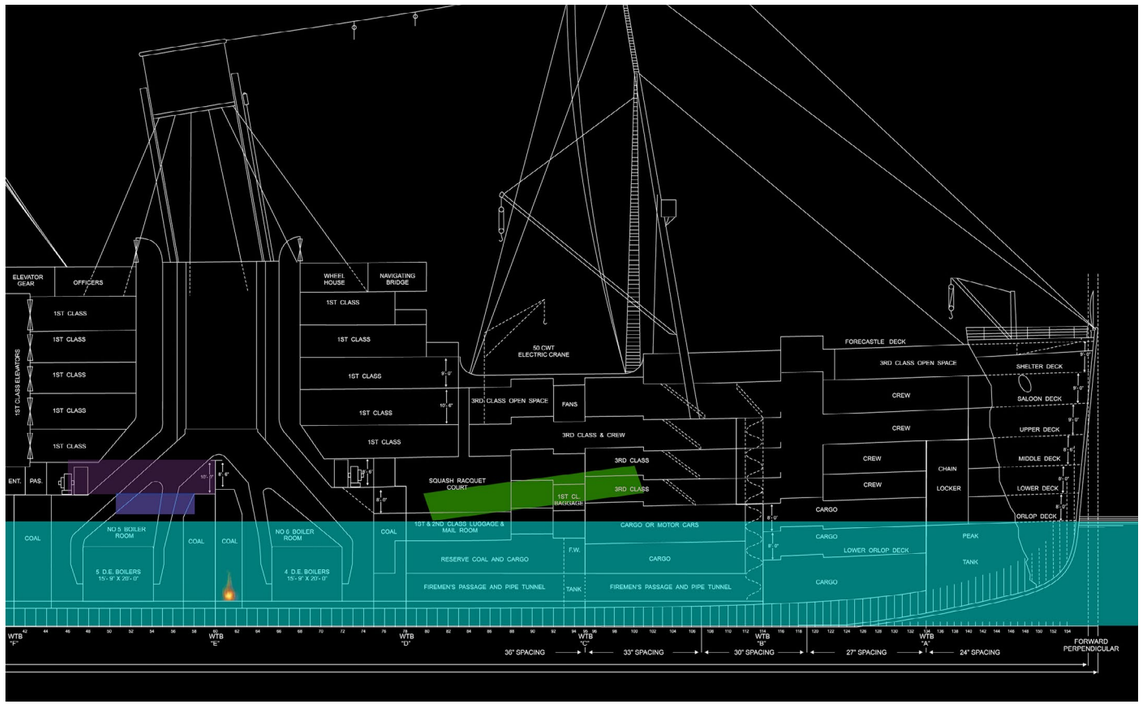
Later in the show, the fire was shown on the model by way of highlighting it in bright orange. Initially, the programme portrayed the fire taking place in the aft coal bunker of Boiler Room No. 6 (located between Frame 60 and a point halfway between frames 62 and 63). This portrayal is at least somewhat close to what Fireman Frederick Barrett testified, namely that the bunker between Boiler Rooms Nos. 6 (the most forward boiler room) and 5 (just aft of it) was empty; he later clarified that this was the bunker that had previously had the fire in it. His testimony would place the fire in one of the bunkers that lined transverse watertight bulkhead E, located on Frame 60, which separated those two boiler rooms.

Historians have long believed that Barrett was indicating that the fire had been in the forward coal bunker of Boiler Room No. 5, located between Frames 57 and 60, on the ***aft*** side of WTB E. This was because Barrett clearly stated that he could see water entering this bunker after the collision, just astern of WTB E, and he affirmed that this was the bunker which had been emptied because of the fire.

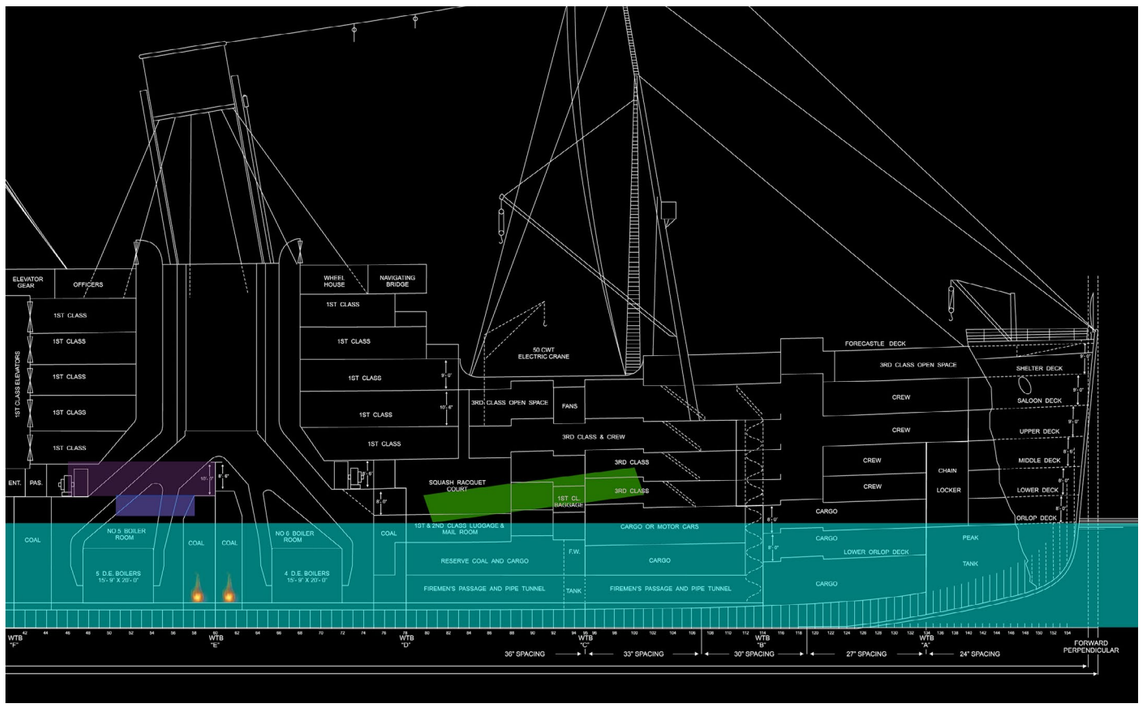
As the show progressed, it was claimed that the coal fire began to spread. A careful examination of the graphic model used in the show reveals that they portray the coal in the bunker on the forward side of Boiler Room No. 5 (between Frames 57 and 60), just astern of WTB E, catching fire. This latter bunker is more of a match for the traditional conclusion reached by historians on where the fire was located.

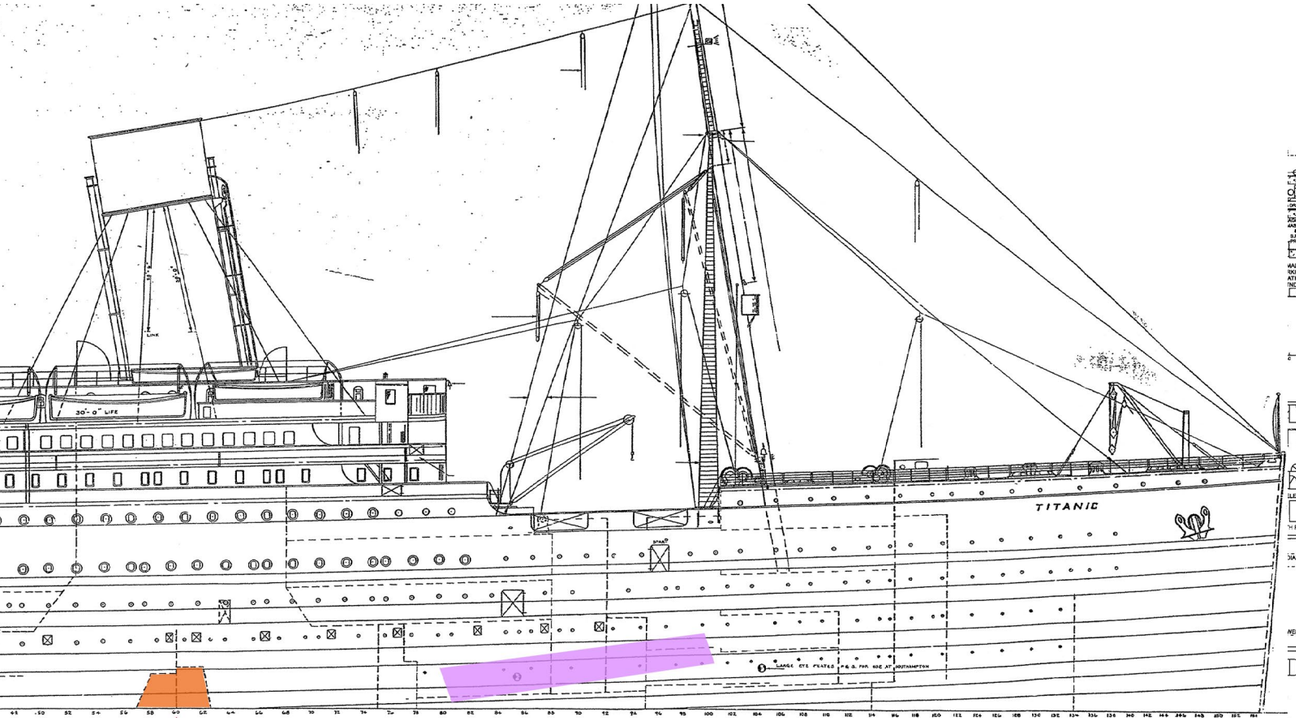
It is important to note that in his testimony, Frederick Barrett indicated that WTB E ran *through* the middle of the bunker that was afire. This could indicate that in his mind, the bunker at the aft end of Boiler Room No. 6, just on the forward side of WTB E, was the same bunker as that at the forward end of Boiler Room No. 5, despite the fact that these two bunkers were completely independent spaces divided from each other by the bulkhead and entered from separate boiler rooms.

Although historians have long concluded that the bunker at the forward end of No. 5 is the one that was afire, for years it has been acknowledged that heat could have passed through WTB E, forcing the removal of all coal from the bunkers on both sides of that bulkhead. In that sense, the visual representations of the fire's location shown in the program are not too far astray of historical fact.[10]



Above: *This plan shows the location of the fire initially shown in the programme, in the bunker at the aft end of Boiler Room No. 6. While a location closer to the smudge (shown in green) is verbally implied, this plan shows what the graphics never did: the fifty-plus feet of distance between the bunker where they claimed the fire started, and the smudge.* Below: *During the programme, it was claimed that the fire spread to the bunker on the aft side of WTB E, accessible only from boiler Room No. 5. Both plans show the location of the First Class Swimming Bath in purple. (Authors' Collection, plans by Bruce Beveridge)*



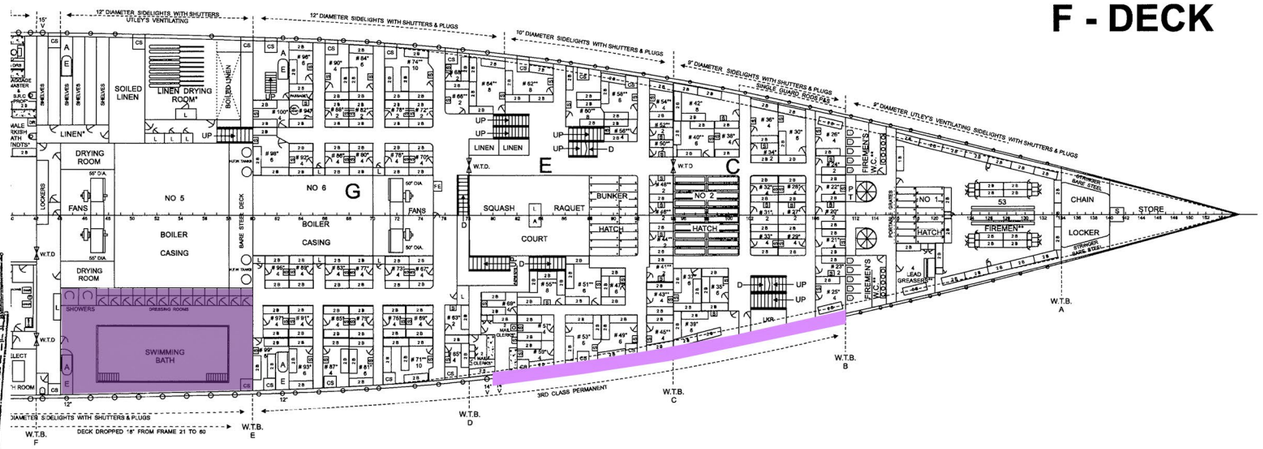


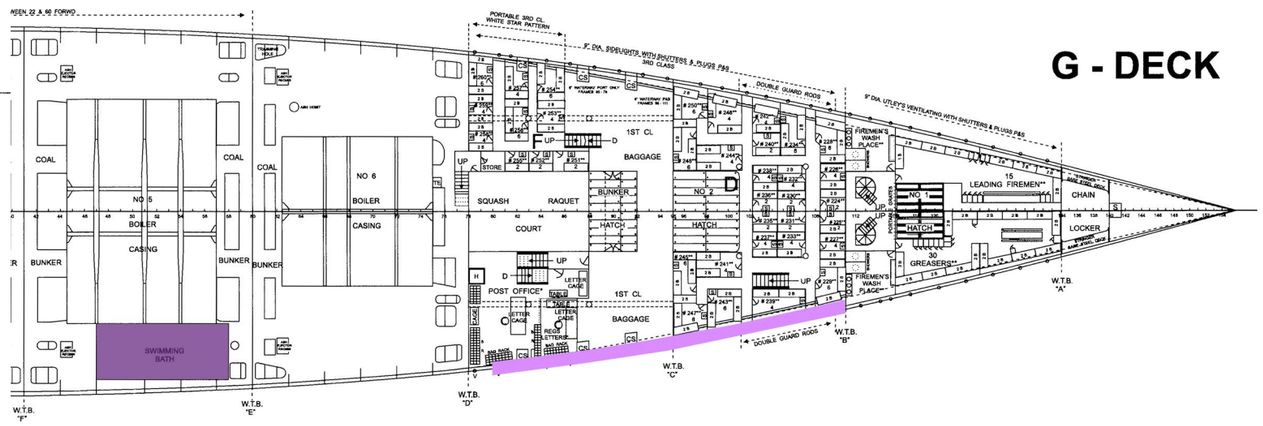
Above: *Since we can not reproduce the Kempster photographs in question in this article, we will instead transfer the vital marks to plans that we can reproduce. We refer the reader back to the original Kempster photographs and the programme as a reference. This rigging plan of the* Titanic *shows the starboard side of the ship. In purple is the location of the smudge shown in Kempster photos K12 and K14. In orange is the top of the bunkers surrounding WTB E, which were shown to be aflame in the programme. (Authors' Collection)*

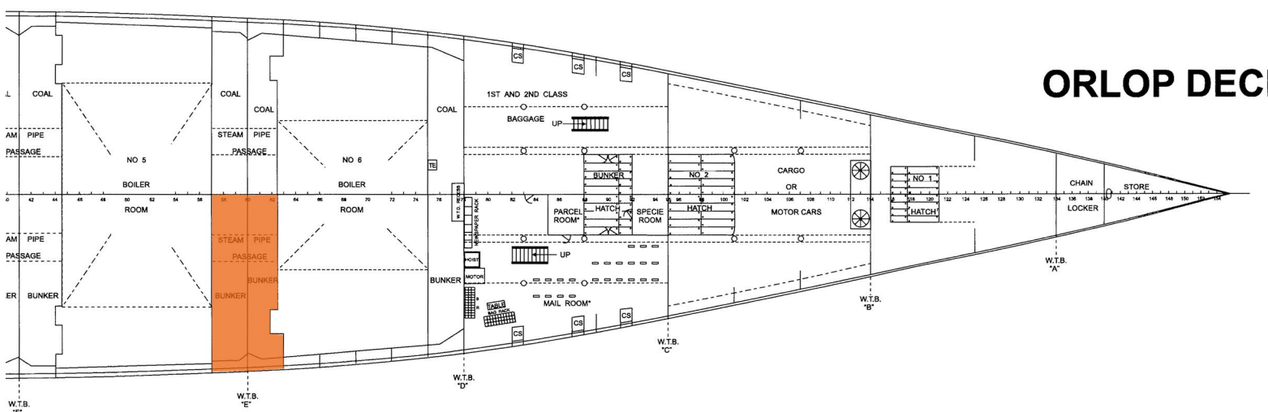
Opposite: *These plans of F, G and the Orlop Decks show the location of the smudge (along F and G Decks, forward of WTB D), the bunkers shown to be afire in the programme (in orange), and the location of the Swimming Bath on F Deck, as well as the recess for the bath itself on G Deck, which was located directly over the coal bunkers, just behind WTB E.*

What is immediately obvious is that the area of the smudge contained cabins for Third Class passengers, as well as the upper level, or Sorting Room, of the Post Office. It was not adjacent to the area of the coal bunker fire.

The fire was not in a coal bunker 'directly behind' where the smudge begins, as claimed in the show. (Authors' Collection, plans by Bruce Beveridge)







Yet, the show did not make its viewers aware of a critical detail: while they *verbally* implied that the fire was directly adjacent to the smudge, closer to WTB D, their actual portrayal of the fire's location was quietly placed back by WTB E, in the vicinity where historians knew it had been all along.

Yet the location of the fire was actually a minimum of some 17 frames, or some 51 feet,[11] aft of WTB D. And if the fire had only been contained in the forward bunker for Boiler Room No. 5, located between Frames 57 and 60, as traditionally assumed, then it was 18 frames, and some 54 feet, removed from the after extremity of the smudge!

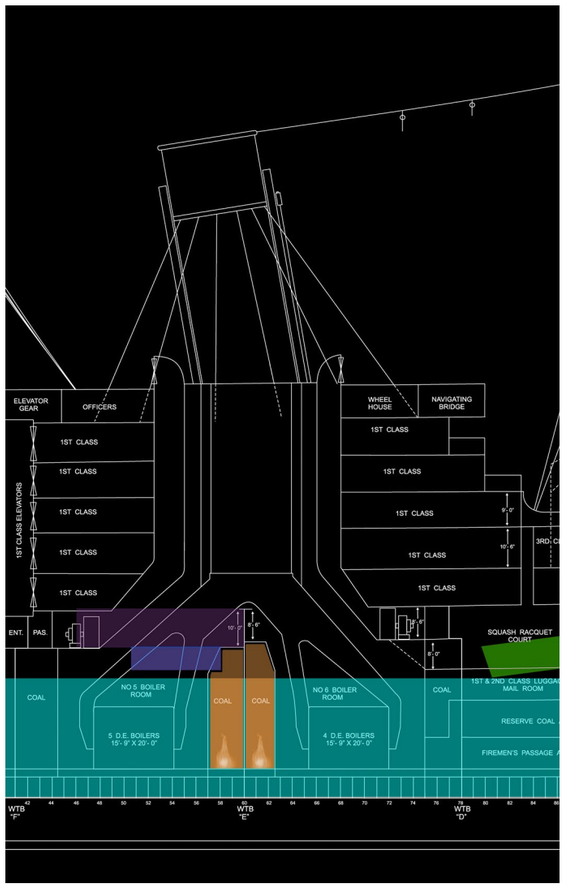
Watertight Bulkhead D, as mentioned before, is what separated the foremost coal bunker from the cargo holds forward, and above that hold was the Third Class cabins, Baggage Room and Post Office, behind which lay behind the smudge. This is the location initially implied in the programme. Yet the fact that the fire was actually located in the vicinity of WTB E places the fire a whole boiler room, one or two watertight bulkheads, and ***over fifty feet away*** from the after extremity of the smudge seen in the Kempster photographs K12 and K14.

The known, factual distance between the smudge and the fire, whichever side of WTB E it was located on, literally makes the smudge ***irrelevant***. Since the fire was located near WTB E, any resulting hull damage or smudge caused by the fire would actually have been visible in the areas immediately outside that bunker, directly below the No. 1, or forward, funnel, and not beneath the forward Well Deck, over fifty feet away.

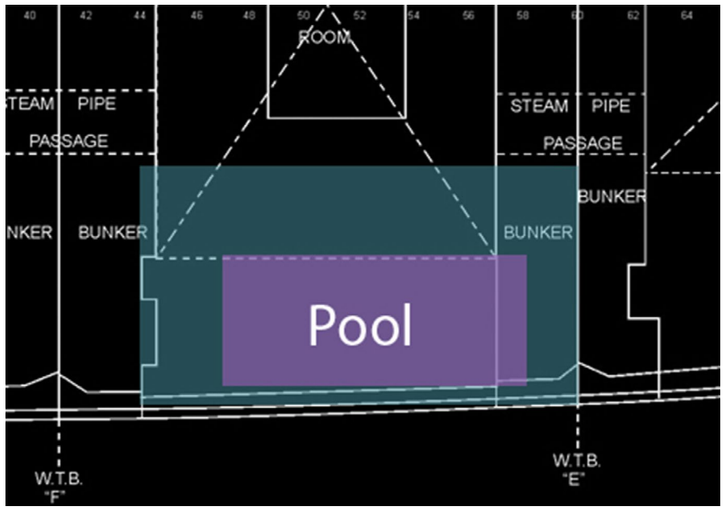
Furthermore, the show frequently refers to the fire as some sort of conflagration, with burning flames dramatically overlaid over images of working stokers in the boiler rooms. Barrett did say that it was 'fire', not just 'heat'.[12] Yet if the bunker was filled with roaring open flames, and had heated up to some 500°C (932°F) to maybe 1,000°C (1,832°F), as was claimed in the programme, it would have been impossible for men without protective gear to get close to the pile to empty the bunker out. One also has to consider the fact that a large fire would have been produced significant evidence above the point of the fire. What was above the fire here?

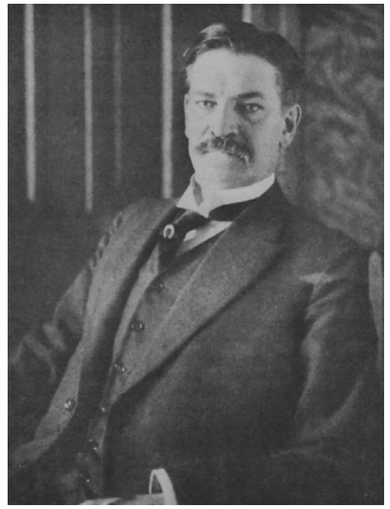
Directly above the bunker, on the starboard side of G Deck, was the First Class Swimming Bath. If temperatures in the coal bunker directly below it had reached as high as 500-1,000°C (or 932-1,832°F), then the water in the pool would likely have been nearly boiling hot, as water boils at only 100°C (212°F). Certainly, the deck at the forward edge of the pool would have been searing hot, paint would have been bubbling off, and the hull plates outside of the pool would likely also have been deforming from the incredible heat.

Yet photographs of the pool taken in Southampton show no evidence of a red hot deck, boiling water, smoke, or deforming outer hull. What is more, survivor Archibald Gracie reported that he took a dip in the pool on Sunday morning, and found it 'heated to a refreshing temperature', not a scalding one. 'In no swimming bath had I ever enjoyed such pleasure before,' he added.[13] This is especially important since the programme claimed that the fire was getting worse as time passed, not better; Sunday would have been the time when the heat from the fire would have been most obvious to anyone in the pool directly above it.

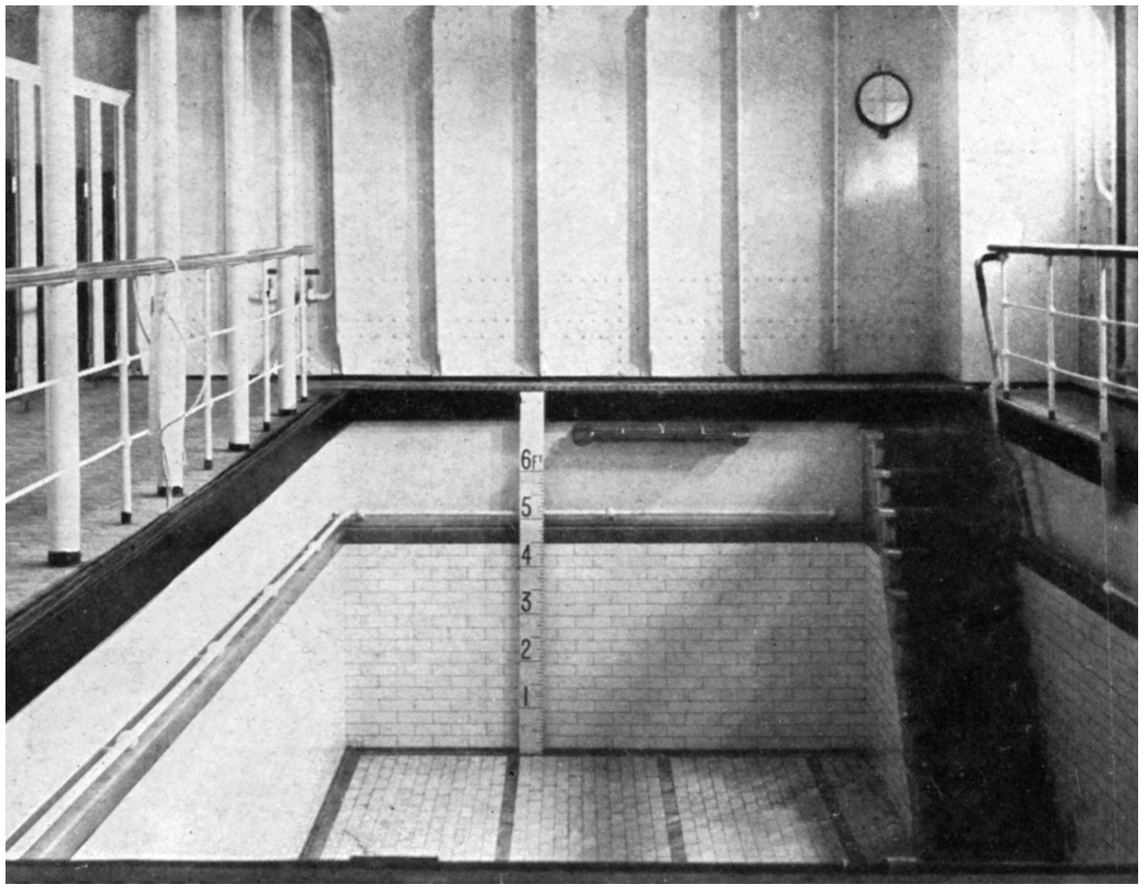


Right: *This plan shows the location of the Swimming Bath (purple, with lower level indicating the pool itself) in relation to the two burning bunkers portrayed in the show. (Plan by Bruce Beveridge)*





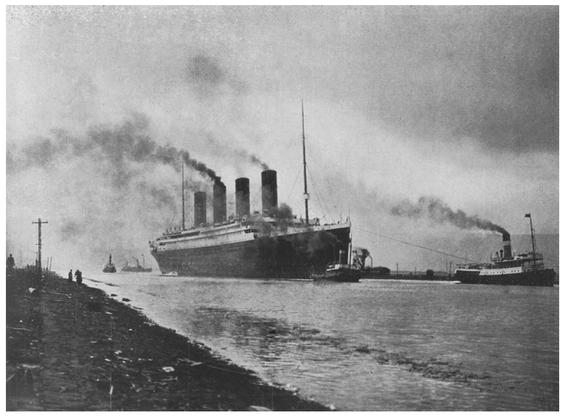
Above left: *An overhead plan showing how the pool itself (in purple) and the room it was located in (green) was located directly above the bunker we know contained the fire (Plan by Bruce Beveridge).* Above right: *Colonel Archibald Gracie used the Swimming Bath Sunday morning. (Authors' Collection)* Below: *A photograph of* Titanic*'s Swimming Bath, including the empty pool, which was normally filled only while at sea. This view was taken shortly before the ship departed Southampton; it looks forward, and the steel wall shown at the far end of the pool is actually WTB E. There is no evidence of damage, a super-heated bulkhead, smoke, or anything else that could have caused a deformation in the outer hull, which is just visible at right, with a porthole in it allowing sunlight to stream in. (Authors' Collection)*



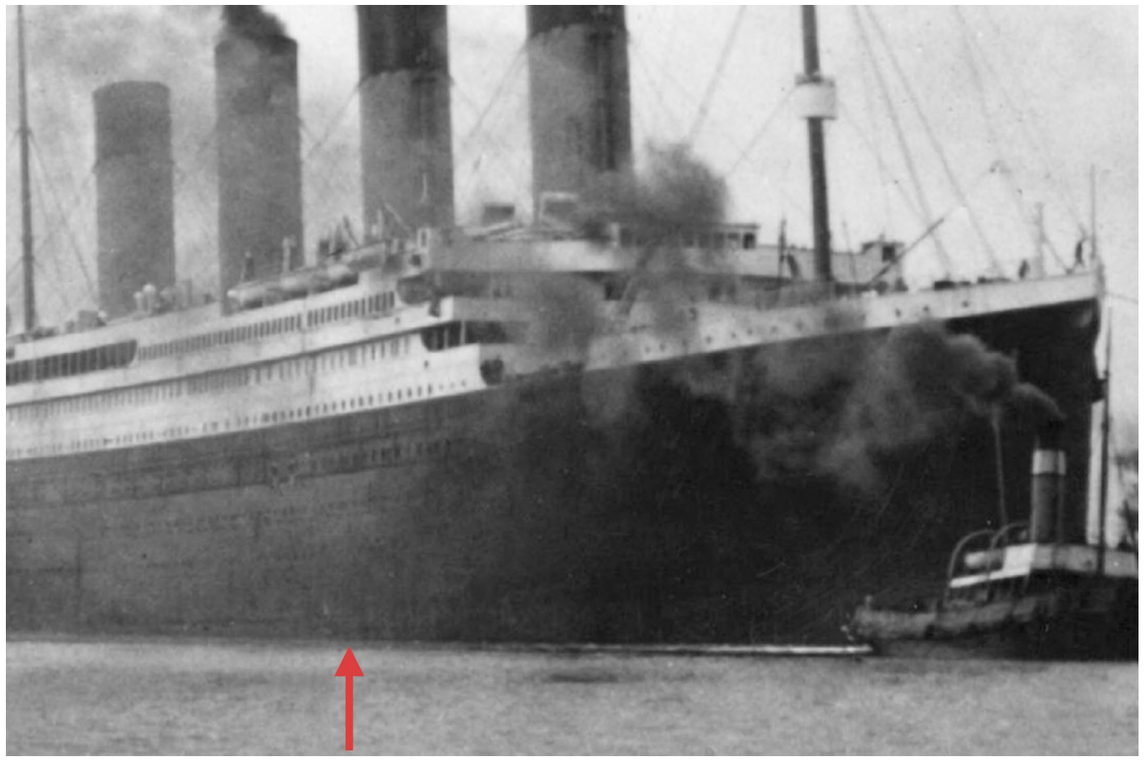
Furthermore, there is another reason why we should conclude that the smudge was not evidence of deformation or damage to the hull: it does not appear in all photographs taken on 2 April – not even all of the photographs that appear in the Kempster album. While Kempster photographs K12 and K14, which show the smudge, were prominently featured in the programme, others from the album were not shown. One in particular, K11[14] – another starboard-bow view also taken as the liner was departing for her trials – shows no smudge, and no indication of damage in that area. Yet it was not presented in the programme in context, even though it would have undermined the premise of the whole show.

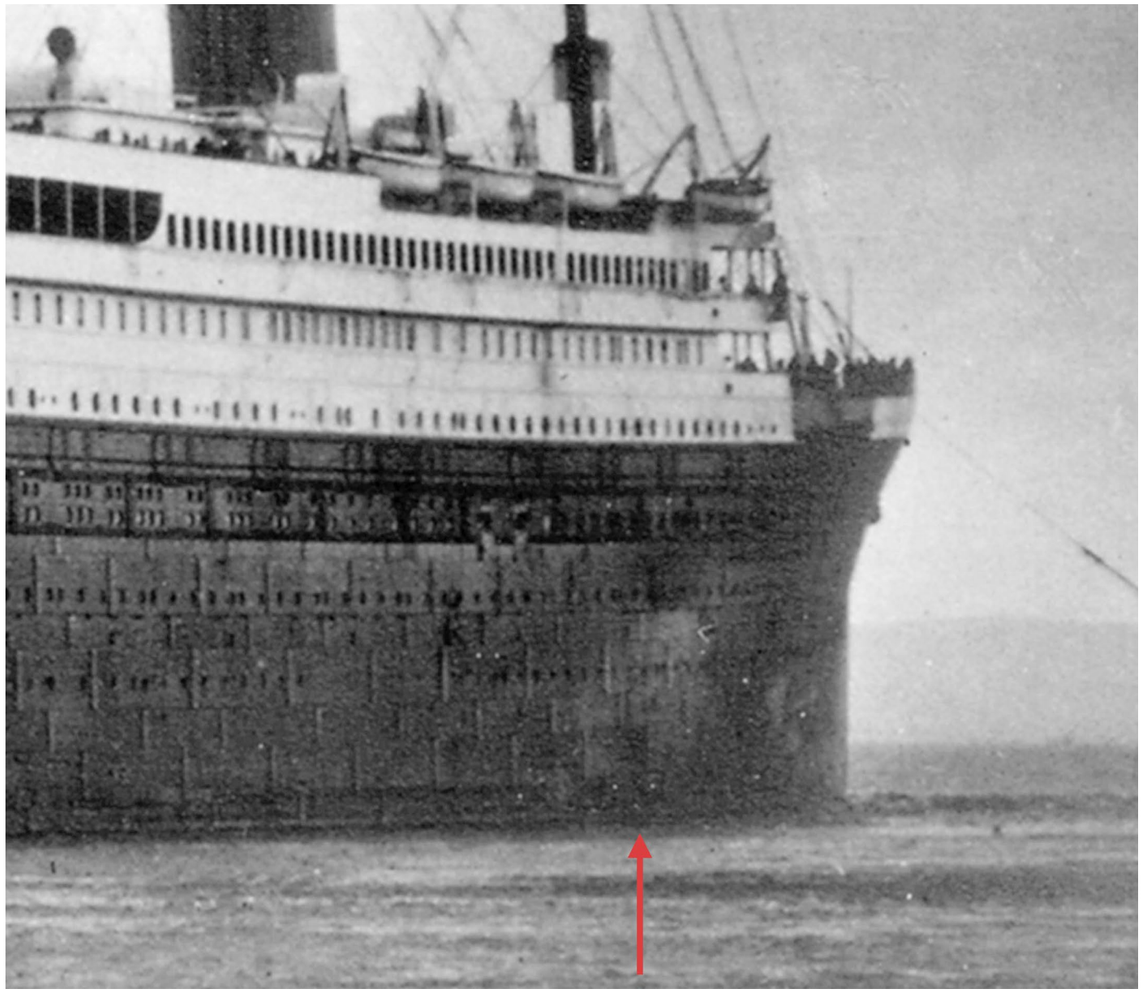
No other photographs showing the starboard bow of the liner ever presented in the programme, either. This includes one taken just a few minutes after K11, K12, and K14 in the Kempster album, and is presented on this page. The photo has been shown in many books over the years, and like Kempster photo K11, it also shows no smudge.

Another photograph, seen on the opposite page, was also taken on 2 April, and from a completely different stern angle. Despite a dramatic change of angle, it shows the area

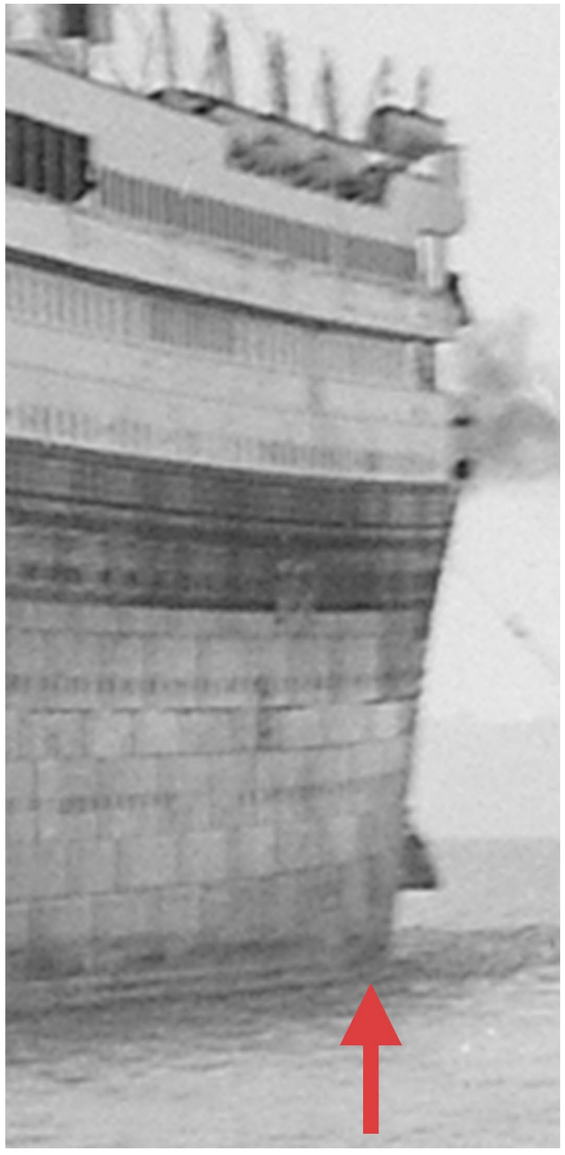


Left: *This photograph, taken on 2 April, just a few minutes after Kempster photos K12, K14 and K11, shows no sign of the smudge beneath the well deck, only ordinary shadowing from the shape of the curving hull beneath the Well Deck.* Below: *An enlargement of the photograph at left. The red arrow indicates the actual location of WTB E, the bulkhead against which the fire was located. There is no evidence of hull deformation or damage visible there. (Both photos Authors' Collection)*





Above: *This photograph also shows the* Titanic *as she departed Belfast on her trials, on 2 April. The angle from which the photo is taken is very different from that of the Kempster photos and the photo on the opposite page. The red arrow again shows the location of WTB E, yet there is no evidence of any hull deformation, only variations in tone from the patchwork paint job done to the ship's hull as she prepared for her maiden voyage and which was never perfectly completed. (Authors' Collection)*



Left: *Another photograph of the* Titanic *departing Belfast on 2 April. Although greatly fore-shortened, the location of WTB E is again marked, and there is no obvious distortion of the hull plating above the arrow, only variations in shading from the non-uniform painting done along the side. (Authors' Collection)*

Opposite top: *This Willsteed post card view of the* Titanic *was taken on 4 April, while she was coaling in Southampton. After the programme initially aired in Britain, CNN ran a copy of this card, and Molony was claiming that it showed further proof of damage to the hull of the* Titanic. *A closer examination of the photograph, however, reveals that the "damage" was actually only the angled front of a coal barge tied up alongside the ship. Notice the other coal barges all along the length of the ship, with similarly angled bows. (Günter Bäbler Collection)*

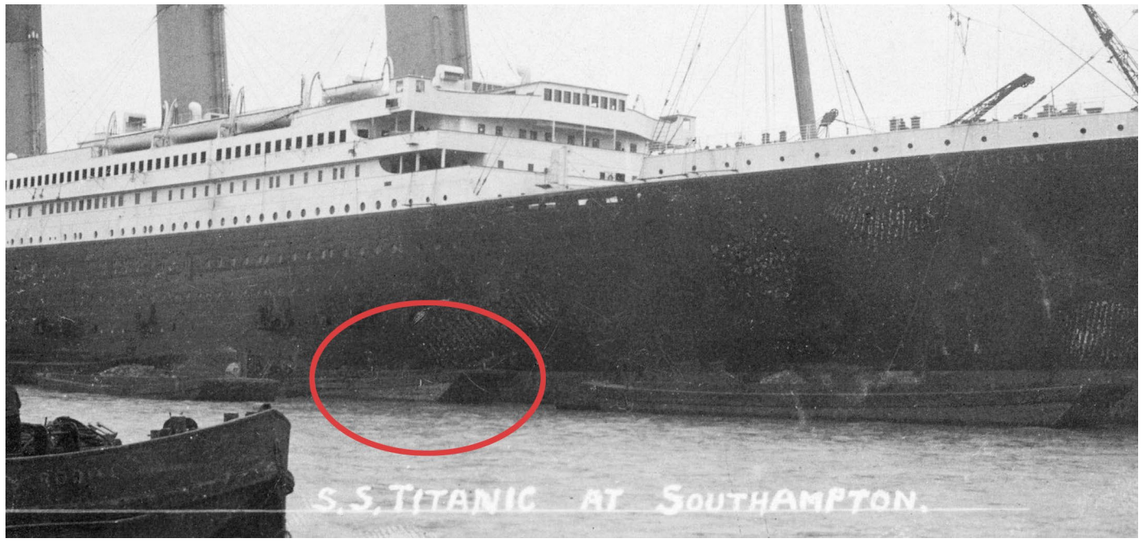
Opposite bottom: *The purported area of damage that was highlighted in the CNN piece. (Günter Bäbler Collection)*

in question as the *Titanic* was departing Belfast, shows no deformation, only the normal curvature of the hull.

Nor does the smudge appear on any photographs of the *Titanic* taken after 2 April. Shortly after the documentary aired, a piece ran on CNN, where Molony claimed to have found additional evidence of damage to the hull in a photograph taken on 4 April. In reality, a careful examination of the photograph shows that it is not a deformation of the hull; it is a coal barge still tied up alongside the ship, not a hull deformation. Photo after photo are available to us of the *Titanic*'s forward-starboard hull, taken between 2 and 11 April, and none show deformations in the plating. Whatever the smudge seen in Kempster photos K12 and K14 was, it was not evidence of a hull deformation from a fire, or any other cause.

The smudge is not visible on the wreck today. However, that is because this area of the hull tore open, apparently as the bow collided with the sea floor and collapsed, creating clear flex points in this area. The forces imposed on the bow's structure as it buried its prow retained a downward angle and its after portion collapsed flat to the sea floor are nearly unimaginable. This is the hull break found and explored in 1987, but it is not evidence of an internal explosion of weakness in the hull.

2. The fire. When did the fire start? The show claims that it started long before the trials on 2 April, and that the bunkers had been filled three weeks before that date. This seems to be based on the assumption that a coal fire would only have been discovered after it had been smoldering for a long time, or had gotten hot enough to damage the ship's structure. It is possible that spontaneous combustion occurred when the coal was loaded in the bunker, but one way or another, any fire in any bunker that had grown hot enough to deform the hull would have left significant evidence that would have been obvious to passengers and crew alike. Thus, how long it burned is not as important as



the point that the spaces above or adjacent to the coal bunkers were undamaged.

Even more important is the old saying, 'Where there's smoke, there's fire.' No one reported seeing or smelling smoke anywhere aboard the ship, or outside the ship, during the stay in Southampton and the subsequent crossing. Not a whiff. No raging fire like that described or depicted in the programme could possibly have caused so much damage to the hull without leaving a trace of smoke anywhere. The only smell anyone referred to was that of fresh paint – and no amount of fresh paint could mask the smell of smoke in those quantities, let alone hide the smoke from being visible to observers anywhere.

On its face Dilley's story, as shown in the programme, is very convincing. However it is important, where possible, to consider accounts from multiple eyewitnesses on any given point. So let's also take a look at what others said on the subject.

The British Inquiry gives us our only testimonies, where we can be sure that the witnesses actually said what is recorded. Newspaper accounts must be examined very carefully, to see if a reporter, looking to 'heighten the drama', could have exaggerated a witness's words, or even made up details the witness did not say.

Fireman Frederick Barrett was put in charge of between eight and twelve men,[15] who were to empty out the burning coal. These men would have been working in shifts, around the clock, on this task. Up to a dozen men may seem like a lot, but when you split them into the shifts they were working, it's not so many. We know that when the fire was extinguished on Saturday, 13

April, Hendrickson and 'three or four men' were working on it at the time.[16] Interestingly, not only was the coal taken out of the bunker, but Barrett said it was also constantly kept wet with a hose.[17] This makes sense, as it would have been also difficult for the men to work with the hot coal. We know that Barrett and Dillon worked together in one watch (8-12 watch) while Hendrickson and Dilley together in another watch (4-8 watch).

Fireman Charles Hendrickson said he was told the fire in the coal bunker was allegedly discovered in Belfast, although that was second-hand, and we still do not know *precisely* when it started. He was ordered to help get the coal out of the bunker, as of the first watch out of Southampton.

Both officers Lightoller and Pitman claimed never to have heard of this fire,[18] and wouldn't expect to, if the fire was minor. Ship surveyor Maurice Clarke said that he was not notified of a fire, that 'it is not an uncommon thing to have these small fires in the bunkers', and that he should have been notified if the fire was serious.[19] These statements, taken together, would lead us to believe that the fire was not thought to be very serious by the engineering crew, and that they did not believe it was a danger to the ship.

Regardless of how long the coal fire was going, if it was 'raging' as long as is now claimed, it doesn't make any sense that they wouldn't have completely emptied the bunker in Belfast, or simply opened the coaling chute to the bunker and drowned it out. The 'raging fire for three weeks' claim contrasts with what Thomas Andrews said in the private letters to his wife on 2 April, where he wrote that 'we got away in fine style and have had a satisfactory trial.' This makes no sense if there was an uncontained blaze below. Indeed, in his other letters, contained in Shan Bullock's 1912 book, Andrews talks about the ship doing 'the old firm credit,' and the like.[20] Andrews was also hard at work with all sorts of other details during the stay in Southampton, and had plenty of time to write about issues with the hot press in the galley, the color of the stain on furniture, and similar details. These are hardly signs of apprehension or uneasiness due to leaving port with a problem, nor would he have had time to deal with these if there were a raging conflagration aboard. A smoldering fire would not have aroused any concern, on the other hand.

The coal in Belfast was supplied by John Kelly & Company, with the final delivery made on 25 March 1912. 200 tons of Scottish steam coal was placed in stokehold No. 2 (or Boiler Room No. 2). In all she had 3,000 tons of coal aboard for the sea trials and voyage to Southampton.

By 25 March 1912 the delivery trip crew started to sign the Articles of Agreement in the ship's log. The log was called 'Half Year Agreement and Account of Voyages of a Crew of a Ship Engaged in the Home Trade Only', which means that this was not valid for the Maiden Voyage over the Atlantic. The black gang for the trials and the trip from Southampton was 184 large. Of the 107 Firemen only 5 would sail on the maiden voyage; of the 13 greasers only 2 stayed on; and of the 53 Trimmers only 1 continued with the ship for the maiden voyage. None of the 11 leading firemen who were signed on for the delivery trip signed on again. In this respect, the programme's claims are correct, in that only a total of 8 from the 184 engaged in this department for the delivery trip signed on again on 6 April for the maiden voyage. Of the three of this number who survived (Firemen Graham, Haggan and Murdock) not one is known to have mentioned the fire after the sinking.

However, what is totally unclear – unlike the show's claims – is ***why*** the other 176 people did not sign on for the maiden voyage. Firemen Morgan is known to have gone back to Belfast.[21] Years later, Firemen Joe Mullholland said that he left because there was something he did not like, so he left the ship – as did, he claimed, his mates Hughie Fitzpatrick (Assistant Boilermaker, sailed and lost his life), Pancake (no such name on the Belfast list) and Baker (fireman). However, Mullholland did not mention any fire either, and newspaper tales from fifty years later – which clearly contain at least one factual error – are not much for the programme to build a case on for the reason why 176 crewmen did not stay on for the maiden voyage.[22]

As co-author Bruce Beveridge pointed out when he first was made aware of this claim from the show, the majority of these were Belfast men who were not interested in continuing on for a trans-Atlantic voyage. Many of them might have been frequently engaged in crewing short trips from Harland & Wolff's shipyards to nearby ports, working a ship back to their main terminus, and looking to take the next short "hop" out of Belfast. For example, this theory may be supported by the fact that many of these men also reported that their last ship was the *Olympic*. How so? If they had worked the *Olympic* when she left Belfast on 7 March 1912, after she finished repairs and a minor refit, they might have then travelled back to Belfast from Southampton, and were thus available to take *Titanic* to Southampton on 2-3 April.[23]

Crew members working in Boiler Room Nos. 6 and No. 5 during the maiden voyage, like Barrett and Hendrickson, did mention the fire – understandable, since

they were involved to clear the bunker. Interestingly other people known to be in those two boiler rooms, such as Kemish and Beauchamp, did not mention it – another indication of a minor coal bunker fire rather than a raging conflagration that made all the stokers fearful for their lives. The crew who was involved in cleaning the bunker out consist more likely of members from the black gang who had nothing else to do. Patrick Dillon, for example, was assigned to Boiler Room No. 1, but these boilers do not seem to have been lit (see endnote 25). Thus, he was among the group cleaning out the bunker, as most likely was Dilley.

Another account is a letter written to Walter Lord by George Kemish. Despite the passage of 43 years since the disaster, Kemish's account is very detailed. Yet he mentions nothing about a fire.[24] Thomas Threlfall, in his press accounts, mentions nothing about a fire either, although he was most likely responsible for Boiler Room No. 3. So far, however, we haven't found any mention of the fire from other surviving firemen, although a serious fire would surely have been a subject of discussion in the black gang's quarters – nothing from Oliver, Haggan, Hurst, Judd, Nutbean, Podesta, Murdock, White, Thompson, Senior, Dymond, McGann, Pelham, or Priest.

It is very noteworthy that we are unable to locate, up to the time of writing, any statements – reliable or questionable – by other firemen on this fire. This is important since even those working astern in Boiler Rooms Nos. 2-4[25] would have had to pass by the bunker where the coal fire was located as they began and finished each shift, every day of the crossing. If there was a raging fire, open flames, severe smoke, superheated bunker walls, or if they could hear the commotion from panicked fellow men and engineers trying to stem the fire as a near-disaster played out around them, they would have noticed. They would have said something – if not immediately, then later on as they shared their stories with others – and we would have many accounts of a terrifying situation playing out readily available to us today.

3. Financial pressures and substandard ships. The programme asserted: 'On several occasions, J. Bruce Ismay responded to budgetary pressures by amending their [Harland & Wolff's] plans'. What these pressures allegedly were was never made clear, nor was any evidence cited. Writer Brad Matsen also stated: 'There were reductions in the scantlings [the size of the structural elements of the hull, such as the hull plating] and dimensions of the steel'.

Despite the claims, there is no credible evidence that the ship's design and scantlings were insufficient, or had been reduced from what the shipbuilder thought was required. The structural strength of *Olympic* and *Titanic*, when compared alongside that of other large liners of the period, is well documented. Generally speaking, shipbuilders of the period sought to keep stresses to a figure of about 10 tons per square inch or less for mild steel vessels.

For the purposes of their calculations, the ship's hull was treated as if it were a beam, or girder. Then they formed an estimate of what the stress would be on the ship's sheer strake (the upper strake of shell plating forming the topmost side of the hull), in conditions where the ship was subjected to a bending moment (tendency to bend) equal to its displacement multiplied by 1/30th of her length between perpendiculars. This calculation therefore took into account the ship's size by including elements such as her length and displacement (weight).

We can compare *Titanic* directly with other large liners of the period:

Vessel	Displacement (tons)	Stress on sheer strake (tons per square inch)
Deustchland (1900)	22,850	10.6
***Imperator* (1913)**	**60,610**	**10.2**
Lusitania* (1907)	**44,060**	**10.1**
Campania (1893)	21,000	9.94
Ivernia (1900)	24,790	9.93
***Olympic / Titanic* (1911-12)**	**52,310**	**9.9**
Oceanic (1899)	30,100	8.83
***Aquitania* (1914)**	**51,700**	**8.5**

* The figure for *Lusitania* was calculated by a Board of Trade official on a mild steel basis to aid comparison with other vessels. In fact, her design allowed for higher stresses because she was constructed with high-tensile steel in her upper hull structure. The Cunarders' use of high-tensile steel is discussed further on.

A lower stress figure, in general, indicated a ship was stronger. This comparison clearly shows that these large vessels were all built to a similar standard of overall strength. If anything, with the exception of *Aquitania*, *Olympic* and *Titanic* were somewhat stronger than their nearest peers, such as *Imperator*.[26] Different shipbuilders, in different countries, working to different national regulatory standards and a variety of classification societies, all produced designs that were very similar: that fact alone is telling.

Many similar claims, that the ship's scantlings were insufficient for her size, have been made by different people in recent years. Co-author Mark Chirnside discussed the key claims in detail in his article '*Titanic*: Allegations & Evidence'.[27] In a more specific allegation than he made in the new programme, Brad Matsen previously claimed that when J. Bruce Ismay visited Belfast at the end of July 1908 to review the builder's design concept, he 'asked [Thomas] Andrews if the ships would be strong enough with the 1 inch plating … instead of the thicker plating and rivets. … Andrews knew that if an owner wanted his ship made out of papier mache and the Board of Trade approved the specifications, the owner would get a papier mache ship. Andrews had no choice but to agree'. Unfortunately no documentation of any such discussion was produced, nor does it seem credible that such a conversation even took place. Why? Harland & Wolff's structural design had already proposed using hull plating that was generally an inch thick a month prior to Ismay's visit![28]

A ship's hull is a complex structure, and hull plating is merely one of many structural elements. It varied in thickness throughout the hull; generally speaking, however, *Olympic* and *Titanic*'s was one inch thick amidships, and doubled for extra strength at areas, such as the turn of the bilge and the sheer strake. In some areas the hull was several inches thick. Moreover, a simple comparison of the general thickness of hull plates amidships makes it clear that *Olympic* and *Titanic* were constructed very similarly to other large vessels of the period:

Ship	Gross tonnage (approximate)	General thickness of hull plating amidships (inches)
France (1912)	25,000	0.8
Homeric (1922)	35,000	0.94
Titanic (1912)	46,000	1.0
Majestic (ex. *Bismarck*) (1922)	56,000	1.02
Lusitania (1907)	31,000	1.1
Aquitania (1914)	45,000	1.1

Edward Wilding, discussing *Olympic*'s early years of service up to World War One, said: 'We have had less repairs to the *Olympic* than to any large ship we have ever built, due to external causes, of course'. In 1925, the Board of Trade's Principal Ship Surveyor said that '*Olympic* has, I think, proved to be a successful ship in the matter of strength'. In fact at that time, various proposals for different repairs and modifications were being discussed to strengthen another large liner of the period, HAPAG's *Bismarck* (which entered service as White Star's *Majestic* in 1922). *Olympic* was used as a benchmark of a strong ship. One official, in discussing one proposal, said that *Majestic* 'would [still, even after the proposed strengthening measures were implemented] however, be some ***20 percent weaker*** [authors' emphasis] than *Olympic*'.

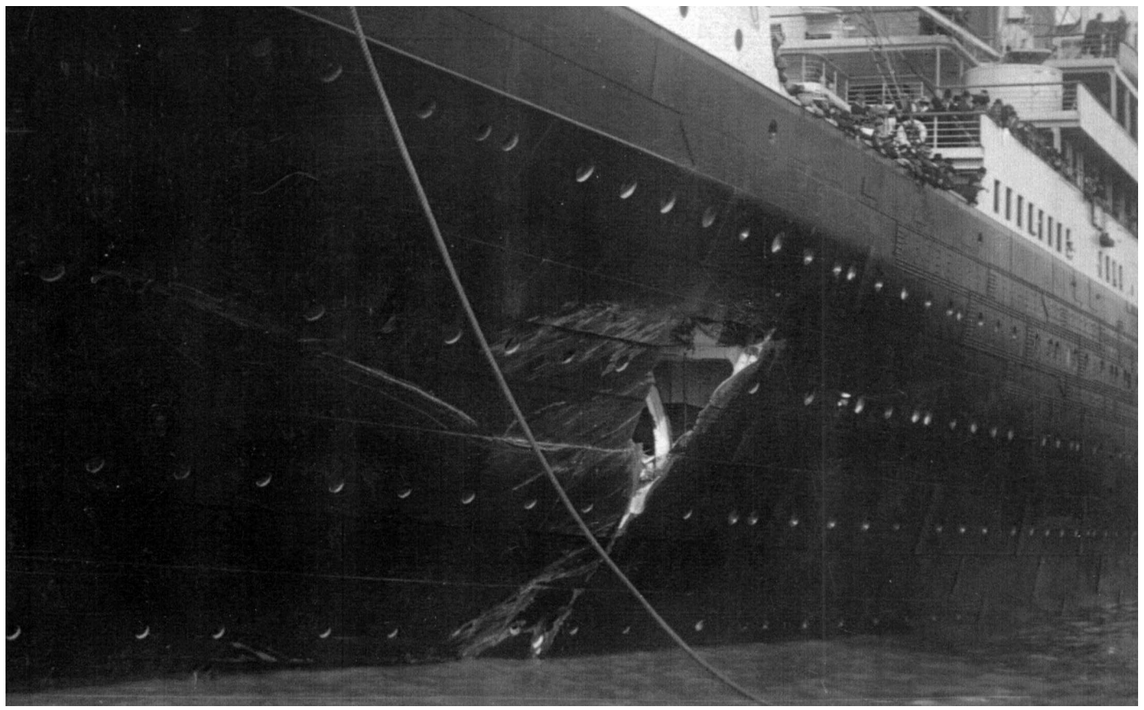
Moreover, Harland & Wolff were always proactive in applying the practical lessons they learned from each ship's operation, in order to make continuous improvements in their designs. Practical experience supplemented theoretical knowledge. An example comes from *Olympic*'s crossing in January 1912, when she was faced with one of the worst North Atlantic storms Captain Smith had experienced in his decades at sea. The seas were strong enough to rip off her No. 1 hatch cover, which weighed several tons, damaging deck fittings and railings. Press reports also indicated portholes had been broken. Such storms were the worst sea conditions ships faced. She stood up to it well, but there was always room for improvement.

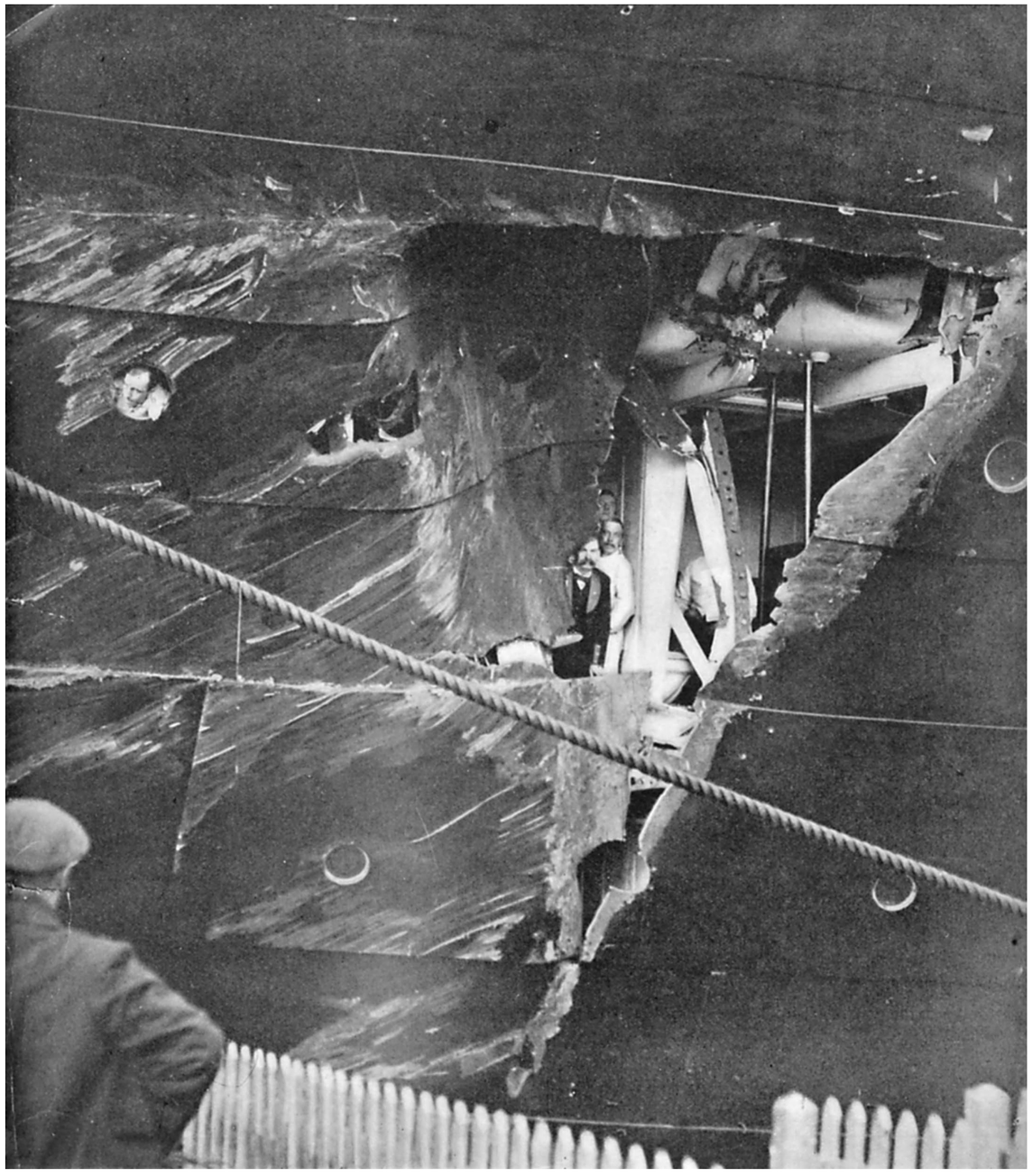
The shipbuilder made some refinements to the design of the two ships, based on observations made during that stormy crossing. They fitted a one-inch-thick steel 'strap' over the landings at the upper turn of the bilge, along the side of Boiler Room No. 6 and further ahead; they did the same along the side of the Turbine Engine Room and into the Reciprocating Engine Room, drilling additional rivet holes to make it a quadruple riveted joint. Her great length – about 100 feet greater than any preceding passenger liner – meant that the stresses at these points (about a quarter of her length ahead of the stern and abaft the bow) required some additional reinforcement beyond what previous experience had suggested was necessary, in order to prevent rivets in these areas from becoming gradually slack in severe weather conditions. The changes were intended to remedy what would have been merely a maintenance nuisance; in fact similar design features – such as additional riveting in these areas – were then seen on subsequent liners, such as Cunard's *Aquitania* (1914) and HAPAG's *Bismarck*/White Star's *Majestic* (1922). On *Olympic*, a relatively small number of slack rivets had needed caulking or renewal before the modifications, but the hull showed 'no further signs of stress', in the words of an independent ship surveyor. Other large vessels of the period, encountering such seas, did not fare so well.[29]

What of the claims made in the show that photographs of the damage done to the *Olympic* after the collision with the *Hawke* proved that her steel was weak? This, too, is significantly overblown – and is not a new claim, either; again, it's been recycled for this programme. Why do we say it is overblown? For starters, the cruiser *Hawke* had a reinforced concrete bow, designed specifically for sinking other ships by ramming them. No matter what steel *Olympic*'s hull employed, she was going to suffer significant damage from being assaulted by such an instrument of destruction. Even a *Dreadnought*-class warship would likely have suffered severe damage from such a blow. Yet we know that *Olympic* withstood the blow, and that her system of watertight subdivision prevented a catastrophe, even though some of her most vital, largest compartments had been penetrated. The general results from the encounter demonstrate beyond doubt that the *Olympic* and *Titanic* were well-designed, well-built ships.[30]

Further pressing the point of weak steel, the programme indicated that an 'extraordinary letter suggests there were concerns about the steel at the time' and that a senior Board of Trade official was 'asking that the *Titanic* should be using what's called a "special quality" of steel', and of a 'pretty testy' response from Harland & Wolff to the effect that 'steel to ordinary requirements' was used, rather than the 'special steel'. This was cited as proof of cutting corners and costs.

This photograph shows the damage to Olympic *after she collided with the* Hawke*. It is alleged in the programme that such photographs prove that* Olympic*'s steel was sub-par. If her hull was so delicate and sub-par, though, one is forced to wonder how she survived a career of nearly twenty-five years at sea? As an aside, notice the variations in shading along the stern quarter throughout this region that look suspiciously like the smudge seen in Kempster photos K12 and K14. This is a hint that, unless there were on-board infernos melting and distorting the hull plates of the* Olympic*'s stern quarter on the day of this collision, the smudge in the two Kempster photos could be caused by something else. (R. Terrell-Wright Collection)*





This photograph gives an even better view of the actual damage sustained by the Olympic *during the* Hawke *collision. Yes, the* Hawke*'s prow tore through the hull plates, creating horrendous-looking damage, but do not forget that the* Hawke*'s concrete-reinforced bow was designed to sink ships by ramming them. Additionally, all of the mild steel used in the* Olympic *and* Titanic *was not only standard quality of the period, used on many other liners before and after the two White Star giants, but the steel itself was tested and certified by Lloyds inspectors. Metallurgy has come a long way since the first decade of the twentieth century, but the type of steel employed was actually a standard of the period. The damage seen in photos like these certainly is not evidence of an attempt by the White Star Line or Harland & Wolff to 'cut corners' and save a few quid. (Georgiou / Klistorner / Chirnside / Layton Collection)*

The string of correspondence in question has been known to technical researchers for a long time. Mark Chirnside was aware of it well over a decade ago, and used information from it in *Olympic Titanic Britannic: An Illustrated History of the 'Olympic' Class Ships*.[31] It pertained principally to calculating the freeboard of the *Olympic*, and would thus have an effect on the freeboard calculations for her nearly-identical sister *Titanic*. The correspondence began in May 1910, and continued until May 1911, just days before *Olympic* began her maiden voyage. During the course of early correspondence, various plans of the ship's designs and scantlings were submitted by Harland & Wolff for review and approval by the Board of Trade, along with various computations on stresses and bending moment that the hulls would likely encounter.

The Board of Trade's Principal Ship Surveyor, William David Archer, made ongoing requests for further information from the Board of Trade's principal on-site surveyor, Francis Carruthers, in Belfast. Carruthers and his fellow on-site surveyors inspected *Olympic* and *Titanic* during the construction process, examining all aspects of their completion. The Board itself was responsible for overseeing construction of these ships, approving details of the ship's structural designs and ensuring that they were constructed according to the plans submitted, and according to government regulations. Archer requested of Carruthers and the other on-site surveyors on 6 July 1910:

> Please report whether the steel plates, &c., used in the construction of the hull have been tested either at the steel works or the builder's yard. I shall be glad of any information you can obtain as to the ultimate tensile strength and elongation per cent. of the material used for shell plating, deck plating, &c. In the case of *Lusitania* and *Mauretania* a special quality of steel was used for the upper works.[32]

Carruthers replied three days later, 9 July. He reported he had asked Thomas Andrews for the information: '[Andrews] told me that steel to Lloyd's ordinary requirements and tests was used throughout the vessel. He said that the stability of these vessels would be so much greater than that of the *Lusitania* and *Mauretania* that lightness in the upper works was not a vital necessity with them [*Olympic* and *Titanic*] as it had been in the case of these two ships'.[33]

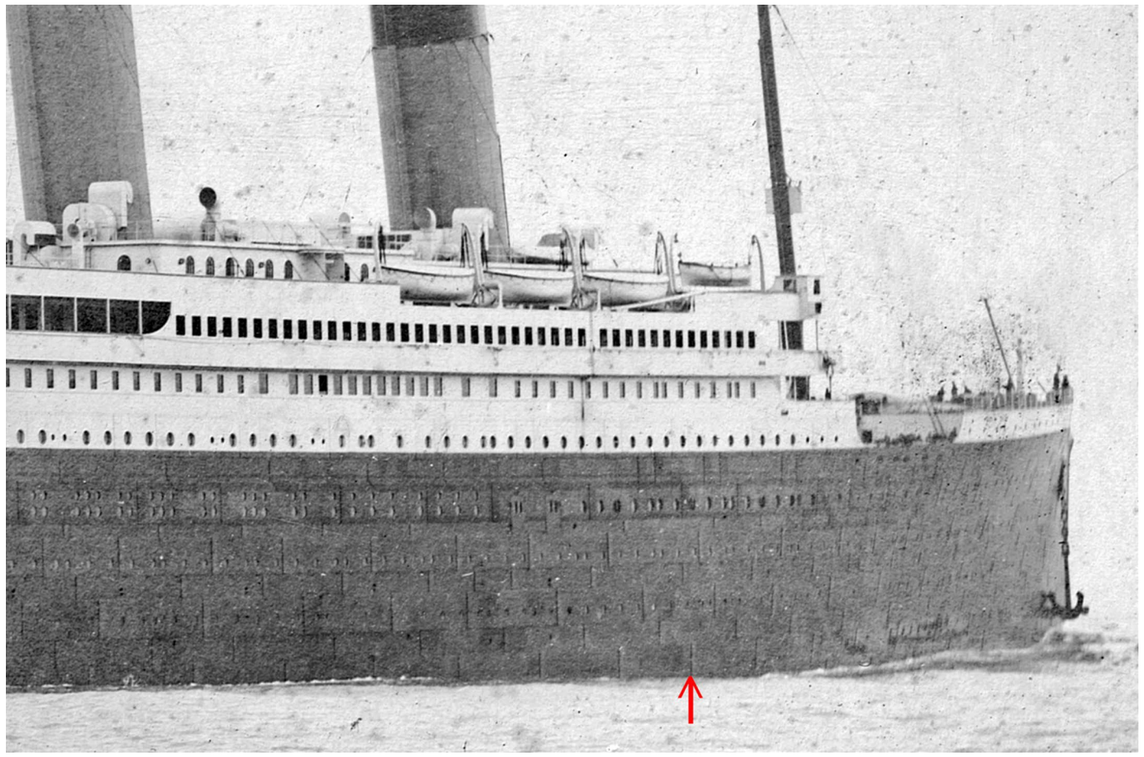
Harland & Wolff's own letter of 8 July 1910 does not read as being 'testy' at all, but was instead a short and businesslike response:

> Dear Sirs,
> In reply to yours of 7th instant; the steel material used in the construction of the hull of this vessel has been tested and passed by Lloyds at the maker's works, and the usual certificates furnished stamped by Lloyds' surveyor, such certificates, of course, being a guarantee that the tests prescribed in the society's rules have been carried out to the satisfaction of the surveyor, and that the results are within the limits laid down in the said rules.
> We are, dear sirs,
> Yours faithfully,
> For Harland & Wolff, Ltd.[34]

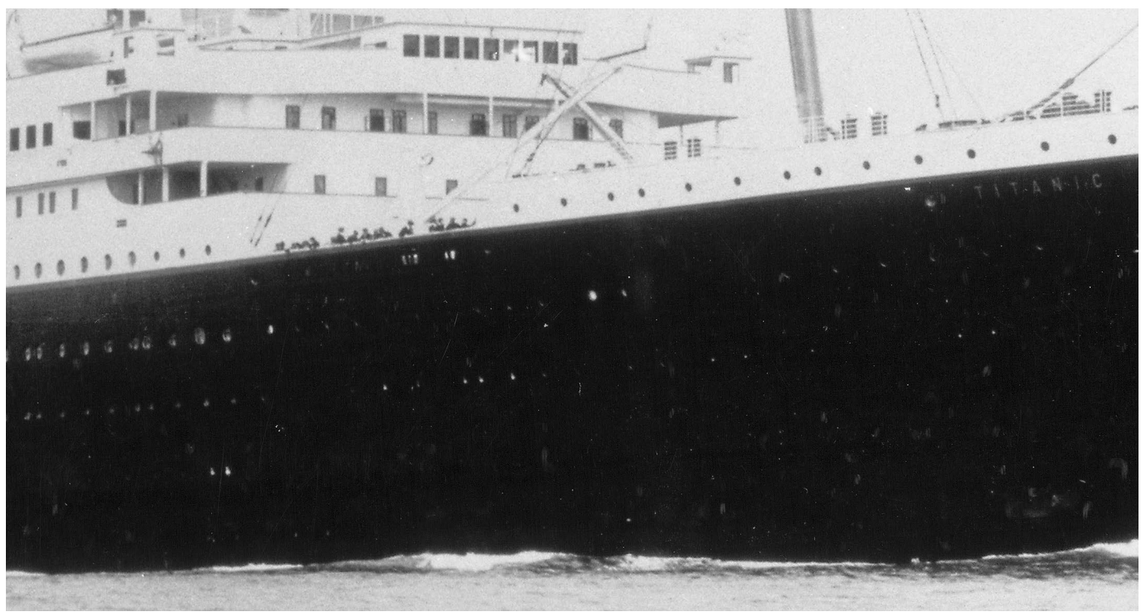
It is important to remember that ordinary mild steel construction was typical for large passenger liners of the time. *Olympic* and *Titanic*'s steel met the standards of the Lloyds classification society. Cunard's *Lusitania* and *Mauretania* were built for speed and with the assistance of a low interest government loan and ongoing subsidy. In a number of ways, they were unusual compared to other liners of the period. And, as Thomas Andrews correctly pointed out, they were inferior in stability to *Olympic* and *Titanic* – a fact that aided in the *Lusitania*'s eventual demise, and nearly cut short the *Mauretania*'s career on at least one occasion.

When *Lusitania* and *Mauretania* were being designed, it was found that high-tensile steel (the 'special steel' referred to in these letters) was some 36% stronger than ordinary mild steel, which was typically used in liners of the time. The extra strength allowed the designers to reduce the Cunarders' scantlings in the areas that employed this high-tensile steel by a conservative 10%.[35] This had two benefits: first, reducing top weight in these Cunard ships improved their stability, which was rather tenuous at best; secondly, a general reduction in weight meant they were lighter, which helped from a speed standpoint. Moreover, high-tensile steel was used so that less steel could be put into these ships: less steel meant higher stresses on the structure and high-tensile steel was able to bear this stress. Even with the use of high-tensile steel, the Cunarders employed mild steel rivets to join the high-tensile steel plating.

This string of correspondence continued until the following May. Higher Board of Trade officials such as William Archer kept asking for more information, data, plans and computations from Harland & Wolff and their on-site surveyors, and the information was always dutifully and respectfully returned in a prompt manner. Instead of being 'testy' as the months dragged on, Harland & Wolff's tone was always professional, even polite. In another response on 2 November 1910,



Above: *This splendid photograph shows the starboard bow of the* Titanic *as she steams down Southampton water on 10 April 1912. The red arrow indicates the location of WTB E, against which the coal fire is said to have been raging for so long, and at such high temperatures, that it created a distortion of the hull as far forward as below the Well Deck. Yet not only is the smudge from Kempster photos K12 and K14 invisible in this photograph, but there is also no indication of hull damage or distortion near WTB E, in the actual vicinity of the coal fire. Clearly the coal bunker fire did not cause significant hull damage visible outside the ship right through 10 April. Since the coal bunker fire was far less serious than is implied in the programme, even if the fire was discovered before the ship cast off, or even as far back as when she was at Belfast, it also makes sense that the ship's officers would have decided to proceed with the maiden voyage. (Günter Bäbler Collection)* Below: *Another view of* Titanic*'s departure on 10 April. (Authors' Collection)*



they wrote that 'we have now pleasure in enclosing herewith a statement giving approximately the particulars desired, which we trust will be sufficient for your purpose, and we shall be glad to receive the assignment of freeboard for the 34' 6" draft in due course.' Hardly a testy tone, even after months of ongoing questioning![36]

This is a key point: the correspondence referred to in the programme was no bombshell proof of a conspiracy to cut corners. The Board of Trade officials were not therein expressing any concern over the quality of the steel used; they were merely asking for information about the material being used, so that they could make calculations regarding stresses imposed on the hull under various load conditions, for the sake of calculating the two ships' freeboard. Indeed, since Carruthers reported on 9 July that the *Olympic* was 'completely plated, all the bulkheads completed and steel decks completed', that she was expected to be ready for launch in October, and that *Titanic* was then 'about three parts plated',[37] it would have been a daft time for Board of Trade officials to be expressing concern over the quality of the steel used!

Indeed, this correspondence is actually proof that Harland & Wolff was working closely with Board of Trade officials in order to obtain certification of freeboard for the *Olympic*'s intended load draft; it is further proof that Board of Trade officials were not 'yes men', rubber stamping whatever Harland & Wolff wanted as has sometimes been alleged over the years. Rather, these officials were diligently ensuring that the new ships were safe despite their great advance in size over predecessor vessels. And when the Board of Trade officials asked for more particulars so they could do that, Harland & Wolff supplied them data without hesitation.

Importantly, there are also no contemporary reports of defective steel in *Olympic*, whereas there is for at least one other large liner of the period, HAPAG's *Bismarck*, built in Germany, and later White Star's *Majestic*. Some of her steel was tested and found to be 'poor material': 14 to 25 percent weaker than Lloyd's and Board of Trade requirements.[38] Given that the 'poor' steel in another vessel was observed by ship surveyors, only two years after that ship had entered service, there is every reason to think any poor quality steel in *Olympic* would have been noticed and documented during construction.

And what of other vessels or liners that were comparable to *Olympic* and *Titanic*? When Cunard were designing a competitor to them, they also opted for mild steel construction. *Aquitania* was laid down in June 1911 and completed in May 1914: she was similar in size to *Olympic* and *Titanic*, more stable than *Lusitania* and *Mauretania*, and constructed for comfort and luxury as opposed to speed. Like *Olympic* and *Titanic*, *Aquitania* was built on commercial terms as Cunard did not have government assistance with her construction.

The next generation of superliners learned from experience with *Olympic* and *Titanic*'s generation of ships. However, Cunard's *Queen Mary* [1936] utilised very similar types of steel as that used in the *Olympic* and *Titanic*; although she was some 137 feet longer than the White Star ships, and thus her hull was likely to be exposed to greater stresses in rough seas, her scantlings and frame-spacing was very similar to that of the *Olympic* and *Titanic*: 36" amidships narrowing to 24" fore and aft. She still exists today, 81 years after her maiden voyage, and despite hard wear during World War II, and widespread accusations of neglect during recent decades, she is still afloat at her permanent mooring in Long Beach, California.

Anecdotally, perhaps the best proof that *Titanic* was not built of sub-par materials is the fact that the *Olympic* – built using the same structural design, materials and construction methods – was in service for twenty-four years. She experienced significant storms, suffered numerous collisions, and the wear-and-tear of her wartime service. Undoubtedly, were it not for an extraordinary encounter with an iceberg, *Titanic* was capable of doing exactly the same.[39]

Also, there is the tender *Nomadic*, which was built to service the *Olympic*-class liners at Cherbourg, France. She was built simultaneously to those two ships, and was built of the same quality steel as the *Olympic* class liners, and by the very same workmen. She would never need to combat the stresses of trans-Atlantic travel and high seas, but rather was intended for use only as a light ferry. Yet, despite decades of neglect, as it sat on the River Seine as a floating restaurant, today, 106 years after she first saw use, little *Nomadic* remains, happily serving as a tourist attraction.

In the programme, the discussion of "cutting corners" led to another, supposedly related topic. Brad Matsen opined: 'I think their finances [White Star's] were so fragile they [*Olympic* and *Titanic*] could have brought White Star down'. He did not cite any financial data, nor was any scrap of evidence produced to quantify or verify the claim. Furthermore, this allegation is dead wrong.

In point of fact, the company reported a record profit of £1,073,752 in 1911, followed by £885,332 in 1912 and a new high mark of £1,080,918 in 1913. The company still had a modern, profitable and successful fleet of over twenty ships including *Oceanic*, *Celtic*, *Cedric*,

Baltic, *Adriatic* and *Olympic* on their North Atlantic services from Southampton and Liverpool. By way of comparison, Cunard had only made a profit of £791,011 in 1911, about 26 percent lower – and their profits were lower than the White Star Line's in 1912 and 1913 as well.

In 1911, the reported profit of £1,074,752 was supplemented by £27,961 interest on investments and £42(!) in transfer fees, for a total of £1,102,755 carried to the profit and loss account. Of this, the White Star Line spent £56,250 (5.1 percent) on debt interest payments for the money they had borrowed to finance *Olympic* and *Titanic*;[40] £68,650 on general debt interest (6.2 percent); directors' fees and income tax took up £12,679 (1.1 percent); and the company set aside £414,140 (37.6 percent) for depreciation, carrying £551,035 (50 percent) to their balance sheet.

Altogether, White Star's profits covered its debt interest payments 8.8 times over in 1911. They were able to set aside a considerable sum to cover depreciation: shipping companies are particularly capital-intensive as the company's prime assets – their ships – depreciate steadily, at a rate reckoned at 4 percent a year, and require replacement. Even so, White Star still had half their profits available to carry forward.

They chose to pay a dividend of £450,000, amounting to almost 41 percent of their profits: and this for the year ending 31 December 1911, when the accountants only signed off the relevant financial submissions on 23 May 1912. In other words, White Star chose to declare a dividend even after the *Titanic* disaster. They paid out a substantial proportion of their profits, rather than keep the money. Nor did the White Star Line have any trouble financing ongoing investment in their fleet: they raised £1,500,000 in corporate bonds in July 1914 and had the option to issue even more if they felt needed to.[41]

4. Withholding information, and the decision to hold to the schedule. The programme claimed that the fire in the bunker had started long before it was discovered, and since the coal had been loaded aboard 'three weeks' prior to the trials on 2 April, it could have been burning right from the time it was loaded. As we discussed earlier, the ship carried some 3,000 tons of coal for the trials, with the final delivery made on 25 March, or one week before the trials took place.[42] At this remove, we have found no documentation on when the bunker in question was actually filled, so it is impossible to say with certainty the fire had started one week before the trials, longer, or afterward.

The supposition in the show seems to be that a coal fire must have been burning for a very long time, perhaps weeks, before it could reach temperatures high enough to damage the hull and create the smudge seen in Kempster photos K12 and K14. But since we have seen that the smudge in the show is not actually evidence of hull damage, and that there was no hull damage at all, the reasoning and conclusions seem to be based on a 'house of cards'. One can not necessarily fault the experts consulted in the show – they may merely have been drawing conclusions with whatever information they were presented with, i.e., something along the lines of: 'There was hull damage from a coal fire here, tell us about what must have been going on to produce that'.

When did survivors say the fire was discovered? The available evidence does indicate that the fire likely began before the ship left Belfast, but not precisely when. Clearly it happened at some point after the coal was loaded into the bunker. Furthermore, the evidence on the point seems to be secondhand; for example, Hendrickson reported hearing it had started at Belfast, but he only joined the ship at Southampton.[43] Yet Hendrickson and Barrett agreed that no attempt had been made to start clearing out the bunker until after the ship departed Southampton. White Star's Harold Sanderson reported that he hadn't even been informed of the fire until he heard about it at the British Inquiry; once he heard, he called back to the Southampton offices and it was confirmed that there had been a 'small fire' – but he did not specify whether they knew about the fire at the time of sailing, or only found out about it later on.[44]

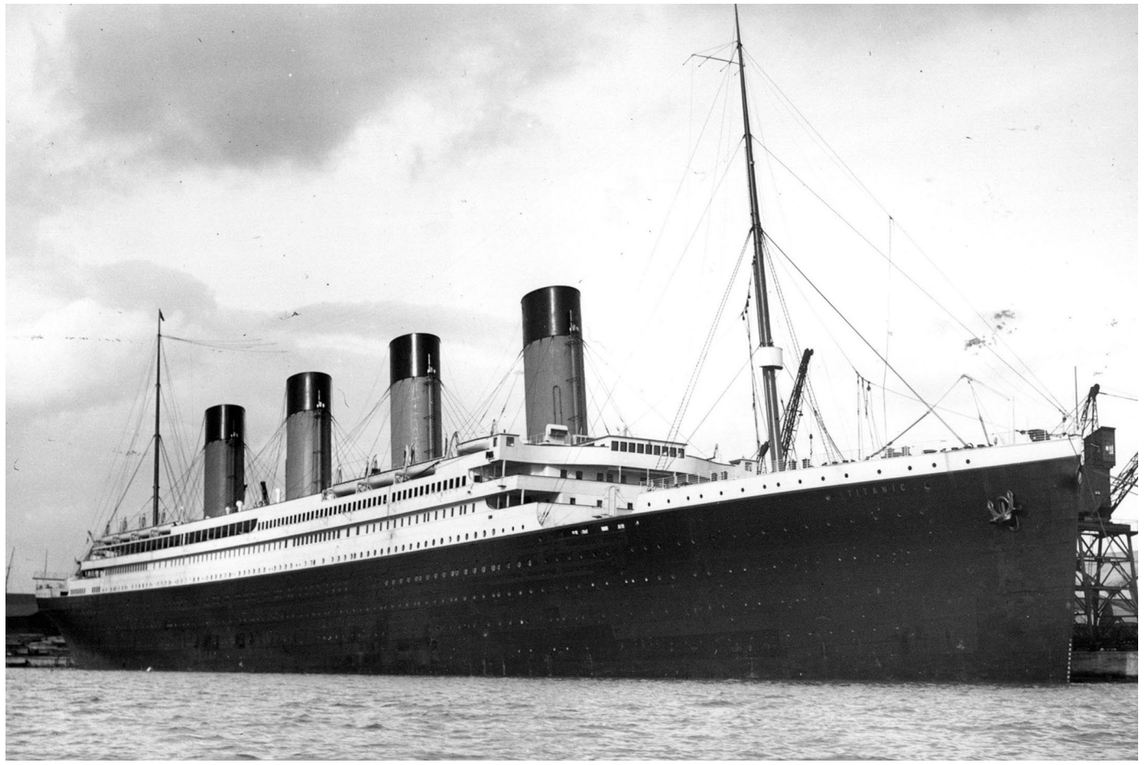
Was it 'madness' to send a ship to sea with a coal bunker fire? From today's perspective, it might seem so. However, there is evidence that coal bunker fires at sea were not unusual at the time, and that the remedial procedure followed during the maiden voyage of the *Titanic* was in harmony with the practices of the time. Barrett said that coal bunker fires were 'not an uncommon thing.'[45] As mentioned earlier, Board of Trade Surveyor Maurice Clarke, who inspected the ship at Southampton, also said that it was 'not an uncommon thing to have these small fires in the bunkers', and was not surprised at all that it had not been reported to him before the ship sailed. Indeed, he felt it should only have been reported 'if it was a serious fire'.[46]

Hendrickson, on the other hand, said that coal bunker fires were not a common occurrence during the five years he had been working White Star liners.[47] But in this judgement, he seems to have been in the minority. Indeed, coal fires were common enough to merit a regulation in the 'Ship Rules and Uniform Regulations' in force for IMM (the parent company of the White Star Line) at the time. Regulation 248 was that at the end of each watch, the senior on duty engineers were to 'go through the coal bunkers, and note their condition on the log-slate, and should there be any sign of spontaneous combustion taking place, they are at once to report same to the Chief Engineer, who is immediately to notify the Commander. All coal should, as often as possible, be worked out of the bunkers.'[48]

Even if it was known about before sailing from Southampton, it must have seemed very minor, indeed, for Chief Engineer Bell had only given direct orders to Barrett to empty the bunker '***[n]ot very long after the ship left Southampton***' [authors' emphasis] to empty the bunker as quickly as possible, because the builder's men wanted to inspect the bulkhead.[49] Hendrickson also said that the effort to extinguish the fire did not begin until 'the first watch we did from Southampton'.[50]

Indeed, since we know the smudge had nothing to do with the fire, and that without the smudge there seems to be no proof of a raging conflagration on 2 April, let us explore another possibility: what if the fire was only discovered around the time of sailing from Southampton, or slightly before? The engineers and men discussing it might have mentioned in Hendrickson's presence that it "must have started back in Belfast", based on what they were seeing and their knowledge of when and where the bunker in question was loaded.

Although supposition, this might make sense because, according to IMM Regulation 248, a careful check inspection for fires should have been made at the end of each watch, and an immediate report made to the engineers and Captain if any was found. Certainly, everyone involved would have wanted to begin working as soon as it was discovered, rather than letting it fester. Yet the engineers were in charge of the ship from the time White Star officially took possession of her at the end of the trials on 2 April. What is more,



Above: *This photograph shows the* Titanic *at White Star Dock during her stay in Southampton. No smudge or hull damage is visible. This photograph shows that even if* Titanic *had been docked with her port side to the quay to hide the damage from the raging coal bunker fire which had allegedly caused the smudge, that damage would have been easily viewed from the other side of the dock, from passing river and harbor traffic, or even from the opposite shore of the River Test. (Authors' Collection)*

the majority of the ship's crew had signed on 6 April, and some had stayed aboard to keep the fires going to supply power to the ship up to sailing time. Most of the men reported aboard as of 6:00 a.m. on 10 April, sailing day, some six hours and change before sailing time. So why would Chief Engineer Bell have given orders to start fighting the fire and emptying the bunker only at the start of the first shift after casting off to start to empty the bunker? If it had been discovered earlier, surely the attempt to empty the bunker would have also begun earlier.

We do know that by the time Bell talked to Barrett, the members of the Guarantee Group wanted to inspect the bulkhead, but it might not have taken much time to convey the discovery of the fire to them, and for them to respond by asking to have access to the bunker as early as possible.

Since the programme in question has aired, Molony has made claims that he has found more accounts of a raging fire in Belfast. However, we are unaware of these as of the time of this writing. Solid evidence of such a nature would, of course, negate this supposition that the fire was discovered nearer the time of sailing, but we must reserve judgment until we see further evidence on the point. Here we are merely exploring a theory that might explain the facts as they are currently known to us, once the smudge has been removed from the equation.

At the very least, if it was felt that the coal fire was a minor situation at the time of sailing, which is what the evidence we have indicates, it certainly does not seem to have been 'madness' to send *Titanic* to sea despite the bunker fire.

This leads into another claim made by Molony, which was made after the programme aired, when Molony was speaking with the press: he said that the reason the ship was docked with its port side to the quay in Southampton was actually an attempt to hide the obvious damage visible on the outer starboard hull. Whether this was intended for inclusion in the show, but was left on the cutting room floor, or if it was something that Molony added to the list of claims after it aired is difficult for us to determine; nevertheless, it is a serious charge. However, as we have already seen, the bunker fire seems to have been considered minor, attempts were only made to extinguish it after sailing, and the smudge seen in photographs K12 and K14 from the Kempster album are not evidence of a hull deformation. So there was no reason to hide the nonexistent damage.

Beyond that, turning the ship so that her port side was against the quay does not mean that her starboard side would be hidden from view. In fact, it would have exposed her starboard side to all passing harbour traffic, of which there was a lot, and anyone on the opposite shore. Anyone on the other side of the dock would also have been able to see such obvious damage. Beyond that, anyone on the coal barges that were tied up alongside her starboard hull would have easily seen such damage. In fact, any number of photographs were taken from the harbour or opposite shore which showed the liner's starboard bow very clearly. There would have been no way to hide such a significant hull deformation.

So why was *Titanic* docked with her port side to the quay in Southampton, if not to hide fire damage? We know that *Olympic* was docked with her starboard side to the quay before her maiden voyage in June 1911. Having the ship in the pier bow-first seemed to complicate the departure, as it took Pilot George Bowyer an hour to get the ship into the main channel. It seems that there were other complications, as well. As a consequence of these Thomas Andrews recommended: 'The vessel should always be berthed in Southampton with the port side towards the quay thus providing direct communication through special (^shipside) engine door. Thus eliminating passing all material etc. through the present 2nd class entrance on "E" deck'. Undoubtedly, lessons learned from all aspects of operating *Olympic* were useful both for her own service but also for *Titanic*'s debut less than a year later in April 1912.[51]

During the 1920s and 1930s, after the liners had converted to oil and the dock was used by more ships, they were docked either way. But by then equipment was very different, some aspects of the ships' layout had changed, and both officers and tug crews were far more familiar with bringing enormous liners of that ilk in and out.

Finally, why were passengers not informed of the fire? Far from being a conspiracy to keep passengers aboard despite grave dangers, it only makes sense that *Titanic*'s officers and crew would not spread news of the smouldering fire in the coal bunker. Many passengers were nervous about traveling on ocean liners, just as people fear taking passage by sea or airplane today. Word of a coal bunker fire could have made them even more nervous, and no shipping company or airline today would feel compelled to terrify their passengers over what was really only a minor problem, since coal bunker fires were not altogether uncommon on coal-powered ships of the period.

As a general rule, stokers and passengers did not see and talk to each other. Stokers were either below while on watch, or in their quarters forward. In order to get from one spot to the other, they went down an interior, circular staircase and through the Firemen's Tunnel that ran along the Tank Top. Encountering passengers would have been rare, and thus the passage in Dilley's account about how he and the other men were told to 'keep [their] mouths shut' doesn't make much sense.

What's interesting, however, is that ships are small ecosystems where gossip travels quickly. We do know that at least one passenger heard rumors of a fire. Second Class passenger Elizabeth Brown later recalled:

> The first day at sea passengers heard reports that the *Titanic* was afire. The officers denied it, but I was told on good authority that there was a fire in one of the coal bunkers and a separate crew of men were kept at work day and night to keep it under. I believe this to be true.[52]

Yet not all passengers heard the rumor. For example, First Class passenger Major Arthur Peuchen was asked about the possibility of a fire in the hold at the American Inquiry. He replied:

> Everything seemed to be running very smoothly on the steamer, and there was nothing that occurred. There was no mention of fire in any way. In fact, it was a very pleasant voyage up to Sunday evening.[53]

Certainly, if the fire had grown more serious as the voyage progressed and began spreading to other areas within the ship from where it had started, word of this would have spread quickly; more surviving passengers and crew would have heard rumours, or later reported seeing evidence of the fire's progression – smoke, red-hot bulkheads, areas of the ship that they suddenly couldn't access any more, or boiling hot water in the Swimming Bath directly above the fire. Yet very few ever heard any such rumours and reported them.

A conspiracy of this magnitude would be impossible to cover up, since the surviving passengers were not always happy with the White Star Line, some of them later sued the company for damages, and they certainly would have used the fire as evidence against them. Disgruntled crewmen, including the stokers supposedly on the 'front lines' of the battle against the conflagration had union representatives, and could at any time have lodged a formal protest with the unions over unsafe working conditions, endangerment of their lives, or the like. Yet nothing ever surfaced beyond a few sensational reports in the press at the time.

5. Covering up the fire at the British Inquiry. Lord Mersey conducted more than one investigation for the British Board of Trade into a liner disaster. In 1914, he would conduct one for the loss of the SS *Empress of Ireland*, and in 1915, he would conduct another – and even more delicate – one on the loss of the Cunard liner *Lusitania*. Mersey has often been accused of coverups in the course of these famous investigations. Even Charles Lightoller later made a quip about keeping a hand on the whitewash brush at the inquiries.

However, as one reads through page after page of testimony from these inquiries, it becomes clear that Mersey and the others who worked with him in these courts clearly did not always understand all pertinent details on matters of navigation, ship design, and similar subjects. What is more, one gets the impression that Mersey was a man with very little patience. Basically, whenever he thought that someone was getting off track or wasting time, or his interest was waning, he was quick to cut the line off whenever he could. And once his mind was made up on a point, it was often very difficult – though not entirely impossible – to 'unconvince' him with contrary facts. He often seemed abrupt and dismissive. This is often frustrating for modern-day researchers and historians, since just when a witness is getting to some important detail, the questioning is stopped.

But is this evidence of a coverup, as claimed in the show? Not on its own. Mersey was in charge of large, complex investigations in each of these three famous cases. He was no doubt keenly aware of how easily the inquiry could be dragged out far too long – especially if what he deemed unnecessary lines of questioning went on without a 'tight leash'. And there were always lawyers and union representatives at the ready to aid their cause and stir the pot, even if it was over useless or – to Mersey's mind – trivial matters.

Certainly, Mersey was interested in preserving the reputation of the British Board of Trade; but he was also interested in improving regulations for future safety of life at sea under Board of Trade oversight. What particular moments during the inquiry were a deliberate attempt to 'whitewash' a mistake, or what were simply Lord Mersey getting impatient, or keeping course in a complex investigation, is difficult to tell. It is foolish to claim a conspiracy to cover up evidence where there is no hard evidence of such. Sadly, Mersey's methods and demeanor are fodder for many a conspiracy theorist looking to bolster their claims, simply because they can sometimes be read that way, particularly if taken out of context.

However, the show was very much mistaken on some matters here. It was claimed that nothing was said about

the fire for eleven days of the inquiry, and that the fire was only mentioned when Firemen's Union representative Lewis won the right to question his men. It was said that the first of these to testify was Charles Hendrickson. This is all factually wrong. The fire first came up in testimony given by Frederick Barrett – not Hendrickson – on Day 4 of the Inquiry, Wednesday, 8 May. ***Not Day 11***, Monday, 20 May. … ***Day 4***. Hendrickson's testimony was given on Day 5, Thursday, 9 May.

In the show, portions of both the inquiry of and Hendrickson's answers to Questions 5240, 5243, 5246, 5248 are read aloud. Hendrickson's reply to 5249 is summarised, using the word 'warped', and his answer to Question 5250 was also read. All of these were made on Day 5, not Day 11. Shortly thereafter, it is mentioned that Mersey kept trying to close down discussion of the fire. Molony dramatically reads Mersey's statement: 'Do let us confine ourselves to the real serious issues of this Enquiry. That fire in the bunker has nothing to do with it.' However, that statement was not made during Hendrickson's testimony. Lewis was never cut off as he questioned Hendrickson.

Indeed, Mersey's statement was taken out of context, and was actually made shortly after Question 19634, on Day 18, 6 June 1912, during Harold Sanderson's testimony. In the intervening days of testimony, the fire had come up numerous times, and Mersey had heard testimony, which we have quoted above, that coal bunker fires were not unusual. He was impatient on the point at that time, clearly. Yet he would allow continued discussion of the fire as the inquiry moved forward, even on the possibility that the fire had weakened the bulkhead and had repercussions on the speed of the sinking. In fact, Harland & Wolff's Edward Wilding gave evidence on this subject on both Days 19 (Friday, 7 June) and 20 (Monday, 10 June), and was never shut down by Mersey.[54]

Indeed, ***the Board of Trade's own counsel***, Sidney Rowlatt, was posing questions of Wilding on Day 19 – this is a far cry from the implication in the show of a cover-up! Surely, if Mersey was trying to cover up the fire, he would have done so during Barrett's testimony, on Day 4, and never have allowed the subject to come up again. On Day 20 Wilding was again asked several questions by Mr. Lewis, and again he was not cut off or interrupted by Mersey.[55]

The show claimed that Lord Mersey, a 'patron of the Shipbuilders' Guild',[56] called primarily 'company bigwigs' as witnesses, did not call firemen as witnesses, apparently to brush over evidence of the coal fire. Again, these claims disintegrate under the slightest scrutiny. A

Stokers feed the furnaces on a coal-powered steamship, ca. 1898. (Library of Congress, Prints & Photographs Division)

simple tally shows this is wrong. Who were these 'bigwigs'? We do see Bruce Ismay and Harold Sanderson from White Star. However, unless the phrase 'bigwigs' is supposed to include the four officers of the *Titanic* (Lightoller, Pitman, Boxhall and Lowe), or Wilding and Carlisle from Harland & Wolff, the numbers don't add up. Indeed, no less than ten individuals who were firemen or trimmers were called to give testimony in the proceedings, and many other crewmen from the Engineering Department were also called to testify. Indeed, nearly ***fifty*** crew members from ***all*** classes of workers on the ship were put on the stand! Clearly, this show's claim is entirely false on this point.

6. The fire began to spread – a deteriorating situation. The programme then claimed that as the maiden voyage progressed, the fire began to spread to previously unaffected areas, to more than just the first bunker where the fire had started, and that the situation was deteriorating. Actually, nothing could be further from the truth. The *New York Press* of 21 April 1912 also carried the story of stoker Dilley about the fire. However in the same article, another unnamed firemen was quoted as saying: "'While the fire was raging in bunker No. 6," he said, "it was deemed best to get the coal out of the bunker adjoining and transfer it to other bunkers so that the heat from the fire might not dry the coal in the adjoining bunkers and set it on fire.'"

When he was asked whether it took 'much time to get the fire down', Hendrickson replied that he worked on it 'right up to the Saturday to get it out.' At that time, he and three or four men finished getting the coal out of the bunker, and the fire was put out.[57] Barrett agreed that the fire was extinguished by Saturday.[58] The unnamed officer whose story ran in the *New York Tribune* on 20 April also specifically said that the fire was extinguished 'Saturday afternoon'.[59]

On the other hand, Dilley's press account, given so much prominence in the show, said that the fire was never extinguished. If that was the case, how was it that Hendrickson and Barrett were able to gain access to the coal bunker while it was still aflame – a raging conflagration of molten steel and burning coal, if the programme's claims were to be believed – and were able to inspect for damage and even begin covering the bulkhead with black oil to restore its appearance?

Indeed, Hendrickson testified that he could see where the bulkhead had been red hot,[60] and the bulkhead was now 'dented a bit'.[61] Barrett agreed the bulkhead was damaged, and said that 'the bottom of the watertight compartment was dinged aft and the other part was dinged forward'.[62] However, Barrett also testified that the iceberg damage extended from Boiler Room No. 6 into Boiler Room No. 5. In other words, regardless of any damage the heat from the fire had caused to the bulkhead, it had also been in just the right position to be damaged by the iceberg strike, and likely it was far more damaged by the strike than by the fire.

It's also important to note that the accounts of Barrett, Hendrickson and even Dilley place the fire at the bottom of the bunker. None of them ever mentioned that the fire was located was directly against the hull of the ship – and up high in the bunker close to or above the waterline, where the smudge was observed, at that. While a hellish conflagration of the sort described in the show would have boiled the water in the Swimming Bath directly above, since we know the Bath was open and not a simmering stew on Sunday, 14 April, the fire must have been much less in intensity than is implied, and the damage must also have been restricted to the bottom of the bulkhead.

Since the fire was extinguished on Saturday, there is no way that the coal fire could have been forcing the ship's officers to speed up on Sunday and steam directly into a known ice field, either because the coal needed to be consumed by the boilers, or because of the programme's next claim: that the *Titanic* was short of coal.

7. *Titanic* was short of coal. Is this true? Quite simply: no. The claim is not new, and again is a recycled theory that has long since been addressed.

Co-author Mark Chirnside examined this question in detail, working with Sam Halpern, in an Appendix for his revised and expanded edition of *The 'Olympic' Class Ships: Olympic, Titanic & Britannic* (History Press; 2011). It included significant data on *Olympic*'s coal consumption at different speeds and in different loading conditions; this was then used to develop a mathematical model of *Titanic*'s fuel consumption on her maiden voyage. The model was tested against *Olympic*'s maiden voyage consumption, and came out within one percent accuracy.

Allowing for all of *Titanic*'s distance runs from Southampton – out to Cherbourg, then to Queenstown, and then through to the collision site – and using the known data of her performance, they modelled how the remainder of her maiden voyage might have played out, if she had not had to slow down for any reason. They assumed a speed of about 23 knots for the remainder of the crossing (which entailed consuming about 32 percent more coal than if she had been driven at about 20.5 knots). This resulted in a final full day's run of 570 miles (seven miles higher than 563 miles logged by *Olympic* in February 1912), and an overall crossing time of 5 days 11 hours 46 minutes at an average speed of 21.93 knots. This would have been an average speed about one-tenth of a knot faster than any of *Olympic's* first four westbound crossings.

On this basis, they estimated *Titanic* would still have had a useable reserve of somewhat under 1,100 tons of coal remaining on completion of her crossing. This is more than twice as much as the coal remaining after *Olympic*'s last voyage to New York with Captain Smith. At that time he estimated *Olympic* had 'not more [than] 500 tons' left. J. Bruce Ismay had said *Titanic* had 'sufficient coal to enable her to reach New York, with about two days' spare consumption'. Indeed, the reserve calculated in this performance model was sufficient for 1.8 days' steaming at a speed of 21 knots, or powering the ship for 3.4 days at a speed of only 16 knots (or a range of 1,305 miles – equivalent to half the entire crossing!).[63] This was a very close match to Ismay's statement.

This means that there is no way that the coal fire, which had been extinguished on Saturday, 13 April, could have backed Captain Smith, Bruce Ismay, or anyone else into a corner, forcing them to make a decision to either race through an icefield to New York or make an embarrassing call for more fuel or a tow. In short, the claims made in the show on this point are just wrong.

8. Thomas Andrews believed the ship would survive. Another erroneous claim made in the programme is that Thomas Andrews, unaware that one of the important bulkheads had been badly damaged by the coal fire, initially believed that *Titanic* would remain afloat. Allegedly, this led to him giving Captain

Smith false hope that the bulkheads would hold, only to reverse himself when Boiler Room No. 5 flooded.

This claim is easily disproven. We know that members of the Guarantee Group were keen to inspect the bulkhead in the bunker where the fire was.[64] We have no firm evidence that Andrews and the other members of the guarantee group ever got a chance to make this inspection. However it is nearly impossible to believe that they did not make their inspection, once the fire was extinguished and the bunker had cooled. Indeed, Thomas Andrews' steward noticed that Andrews would frequently don a blue surveyor's suit during his trips to the working spaces of the ship, which he would then cast onto the bed in his room upon his return. It is difficult to imagine Andrews not personally surveying the damage, considering the interest his team expressed in doing so, and considering Andrews' indomitable attention to detail. Andrews thus may very well have known the full extent of the damage to the bulkhead by Sunday night, although we can not be dogmatic either way.[65]

Additionally, nowhere does surviving evidence or testimony suggest that Thomas Andrews gave false hope to Captain Smith regarding the ship's survival. The closest statement to this, based on Bruce Ismay's testimony, was when Chief Engineer Bell – not Andrews – told Smith he believed that the ship was seriously damaged, but 'was quite satisfied the pumps would keep her afloat.'[66] However, this was just a few minutes after the collision, and before a complete and thorough inspection had been conducted.

In fact, the evidence suggests that Thomas Andrews had pronounced that *Titanic* was doomed long before the damaged bulkhead came into play. During their joint inspection of damage below deck, which witness testimony places at around 12:10 am, Captain Smith and Thomas Andrews were seen near the Mail Room, which was then flooding. Andrews was overheard to say that 'three have gone already,' undoubtedly a reference to the forward three cargo holds.[67] Andrews and Smith then separated, with Andrews continuing his inspection. Smith was seen heading back up the stairs by himself at 12:15 am.

After the men parted, as he continued his inspection, Andrews presumably discovered that five, and not three, of the watertight compartments were flooding. This would immediately have told him that the ship was doomed. At a time she estimated to be 12:25 am, First Class passenger Mrs. Frank Warren witnessed Andrews racing up the Grand Staircase at D Deck, 'with a look of terror' on his face.[68] Immediately afterwards First Class passenger William Sloper saw him on A Deck, still heading up, taking 'three stairs at a time,' and 'presumably on his way to the captain's bridge.'[69] The evidence indicates that Andrews quickly caught up with Captain Smith; it was then that Andrews informed the Captain that the ship was doomed. How long did he believe she had left at that point? Captain Smith soon encountered Fourth Officer Boxhall, and told him that Andrews had given the ship 'from an hour to an hour and a half' to live. So Andrews knew at 12:25 a.m. that the ship was sinking fast.[70]

Contrasting with this, Frederick Barrett's testimony about the inrush of water in the pass between boilers in Boiler Room No. 5, indicates this event occurred at 1:10 am, long after Andrews' report to the captain.[71] In the programme, it is alleged that this rush of water was the result of the damaged bulkhead giving way, and they claim that it is only at this point when Andrews became aware of the impending sinking. This claim flies in the face of all evidence on the matter; it has no support in the historical record.

9. The fire played one final, deadly role in the disaster: the fire-damaged bulkhead gave way, causing the ship to sink, and the enormous loss of life.

This claim is absurd. For starters, the programme is wrong when it states that the bulkhead collapsed 'two hours' after the collision. It was only about one-and-a-half hours afterward, at 1:10 am.

Andrews knew about three-quarters of an hour before that rush of water in Boiler Room No. 5 that the ship was doomed. Once the forward compartments had filled, the ship's bow would have been so low in the water that the flooding of the next compartment aft, Boiler Room No. 5, would have been a certainty. Whether or not the bulkhead held was of no major consequence in the eventual sinking, or how quickly the ship sank.

It is also important to point out that the programme initially indicates that the fire was 'directly behind' the location of the smudge. However, the graphics used in the show never show the coal bunker directly behind WTB D on fire. Instead, the graphics always depict the coal bunkers on either side of WTB E afire. Yet they never show those fires in relation to the location of the smudge on the outer hull. This can easily lead viewers to conclude that one is proof of the other, when in reality over fifty feet separated the fire from the smudge. Yet, the question remains: could the fire have so badly damaged WTB E that it caused it to fail, and caused the sinking? No. We have already shown in this article that areas that would have been damaged by the fire, if it were as bad as claimed in the show, bear no evidence of damage whatsoever.

Again, this claim of damage to the bulkhead causing it to fail is a recycled allegation from recent years. No matter how often it is repeated, however, it doesn't actually make sense. If the bulkhead itself had failed, it is unlikely that Barrett would have made it out alive, so much water would have rushed into the space. Although the rush of water he saw coming through the pass between the boilers was significant and deadly, researcher Sam Halpern has calculated that it could easily have been attributed to a failure of the bunker door, which was not intended to be watertight.

It should also be noted that Barrett did not say that the primary bulkhead, WTB E, had actually collapsed, causing the flooding of the compartment. When asked about that on the witness stand, he admitted he didn't know what had caused it. However, he did say that 'the bunker … was holding the water back', and that he had personally 'dropped [shut] the bunker door' at some point after the collision and before the rush of water.[72] Since the bunker was filling with water, but was not designed to serve as a watertight bulkhead, its watertight integrity was bound to fail, fire or not, unless the primary section of Boiler Room No. 5 had flooded enough to equalize the pressure against the bulkhead.

It is also important to note that not all experts are agreed that a coal bunker fire would have damaged WTB E to the extent claimed in the show. Those calculations might easily have been thrown off by supposition that the fire had been burning for a certain amount of time, and must have reached a certain temperature, before Sunday. A different study discussed this same subject for a book, *What Really Sank the Titanic?* Therein, authors Jennifer Hooper McCarty & Tim Foecke said:

> From our metallurgical analysis it is apparent that:
>
> - The bulkheads were formed of mild steel with 0.2 percent carbon, 0.5-1.0 percent manganese, and a small amount of impurities, namely, sulfur and phosphorus. This is similar to modern 1018 steel, which has been studied extensively in the scientific literature.
> - The bulkhead steel has a yield strength of 30,000 psi, has a UTS of 58,000 psi, and is tough at room temperature, as has been measured.
>
> **The Suppositions**
> Supposedly, the bulkhead steel became red hot, although it is not actually clear if Hendrickson saw this or not. He explained during his testimony that he wiped off the region and rubbed black oil on the warped area, which implies that it probably was not exceptionally hot. Red-hot steel would correspond to approximately 900°F. We know that thermodynamically, coal will burn at a constant temperature with a fixed oxygen supply. Assuming that there was no draft in the bunker, this correlates to about 750°F.
>
> … [For] the sake of a conservative argument, we will assume that the fire was hot enough to heat the steel to a glowing red-hot temperature, 900°F.
>
> **The Metallurgical Picture**
> In addition to thinking about how the bulkhead mechanically deformed, it is important to consider what may have happened to the microstructure to weaken the steel after cooling. When this type of steel is heated to a red-hot temperature, the grains within it grow very, very slowly over time. As a result, the steel becomes softer and tougher. If the bulkhead steel simply increased in temperature and then gradually cooled over the period of nine days, there is no scientific reason to believe that its structure was weakened. In fact, very little would have changed at all.
>
> However, if the bulkhead heated up to red hot and then it was hit with cold seawater, either during the collision or even by a stream of water from a hose, it would quench at some rate. If it cooled fast enough, a phase could form in the structure, known as martensite. Martensitic steel is extremely brittle and will fracture catastrophically under stress. But quenching from even our maximum estimate of 900°F would produce very little martensite. Therefore, under the circumstances, even if any martensite was formed, it is highly unlikely that it would have affected the low-temperature strength properties of the bulkhead. Bottom line, the coal fire probably had no effect on the sinking whatsoever.[73]

This separate analysis makes it clear that under a different scenario than the one considered in the programme, which we know contained historical errors, it is unlikely that the fire would have damaged the steel in of WTB E. At the very least, this alternative expert analysis should give pause before wild claims are made on the point.

This agrees with what Edward Wilding already stated back in 1912: '[I]t would have to be a much more alarming fire than anything that has been described to destroy the watertightness of the bulkhead.'[74]

10. There was a culture of coverup at the White Star Line, and the whole matter was buried.

In the programme, Molony declares that the ship's

owners hid the truth, and that there was a 'culture of coverup' within the White Star Line. This allegation is not a new one, as many people have accused the company of improprieties or outright conspiracies over the years. Examples range from the infamous *Olympic-Titanic* switch conspiracy, to alleged gross negligence and even drunkenness on the part of Captain Smith, accusations that Bruce Ismay caused the disaster by exerting undue pressure on Captain Smith to drive the ship at top speed, or to resume course after the collision, all the way the to repeated claims of *Titanic* being built from sub-par materials to save money. In all of the years since the sinking, no evidence proving any of these accusations has emerged. The assertions in this programme are just the latest in a long trend of attempts at revisionism, and while cleverly presented, they do not match the historical record.

If one examines the two inquiries held in the immediate aftermath of the sinking, it is easy to see why some individuals see clouds of conspiracy. Surviving crewmembers sometimes appeared evasive in their answers under questioning, and often did not volunteer information unless directly asked by the examiners. Second Officer Lightoller's own latter-day quip about always needing to 'keep one's hand on the whitewash brush' during the inquiry does not look good[75] However this is much more likely to be evidence of the company engaging in damage control, in order to minimize blame and liability for the loss of life, rather than of covering up conspiracies. One must remember that survivors and relatives of those who died were sure to bring lawsuits for damages against the company, and it was important not to give clever lawyers looking to make a killing any unnecessary fodder to use against them.

In the programme, Molony claims that Bruce Ismay's telegrams from the *Carpathia*, sent under the 'code' YAMSI, are proof that White Star's chairman was attempting to start a coverup of evidence, even before the survivors reached New York. One example of this is the following telegram:

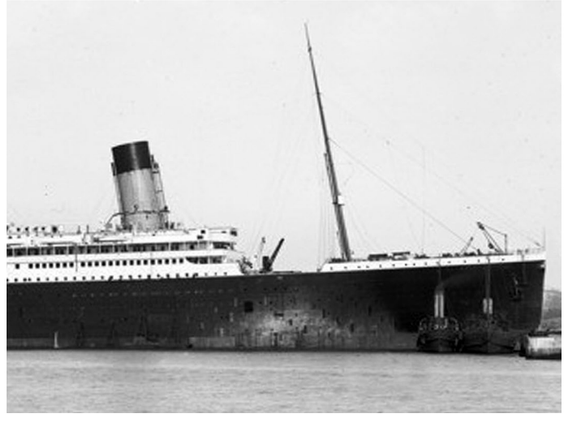
> Most desirable *Titanic* crew aboard *Carpathia* should be returned home earliest moment possible. Suggest you hold *Cedric*, sailing her daylight Friday unless you see any reason contrary. Propose returning in her myself. Please send outfit of clothes, including shoes, for me to *Cedric*. Have nothing of my own. Please reply. YAMSI.[76]

Several similar messages followed, and together they document Ismay's efforts, while the *Carpathia* was still at sea, to organize a quick return of *Titanic*'s surviving crewmembers to England. However, they do not document his motivation or reasons for doing so.

Molony's comments in the programme hint at this being a nefarious attempt at spiriting the crewmen away from the American Government, so that they could not testify in the congressional investigation that was to follow. It is important to note that Ismay was emotionally strained while aboard the *Carpathia*, and was said to be in a state of shock. His motivations could have been as simple as getting the distressed survivors, himself included, home to their families in England as soon as possible.

In fact, there is no proof that Ismay was even aware that an American investigation was being readied at the point in which the telegrams in question were sent. Even though *Titanic* was American owned, it was under British registry, so a Congressional investigation was not a certainty. On the other hand,he would have known with certainty that the British Board of Trade would launch an inquiry in England, considering that they were responsible for British maritime laws and safety regulations. Indeed, as the American Inquiry dragged on, there is some evidence that British officials were anxious to have their citizens who had survived

This photograph shows the Olympic*'s starboard bow from a nearly perpendicular angle, or a full broadside. With the sunlight or photographer at certain angles, this photograph demonstrates that the curve of the hull in this region on the* Olympic*-class ships could create strange shadows and reflections like those found in the Kempster photos K12 and K14. (Authors' Collection)*



returned so that they could begin their own inquiry in good time.

If Ismay had been attempting to whisk witnesses away from American authorities for nefarious reasons, the use of a code name on these telegraphs would be understandable. However, not only is 'YAMSI' transparently recognizable as Ismay's name spelled backwards, but he also used this pseudonym in messages which could not in any way be interpreted as conspiratorial, such as the following example, in which he confirmed the loss of *Titanic*:

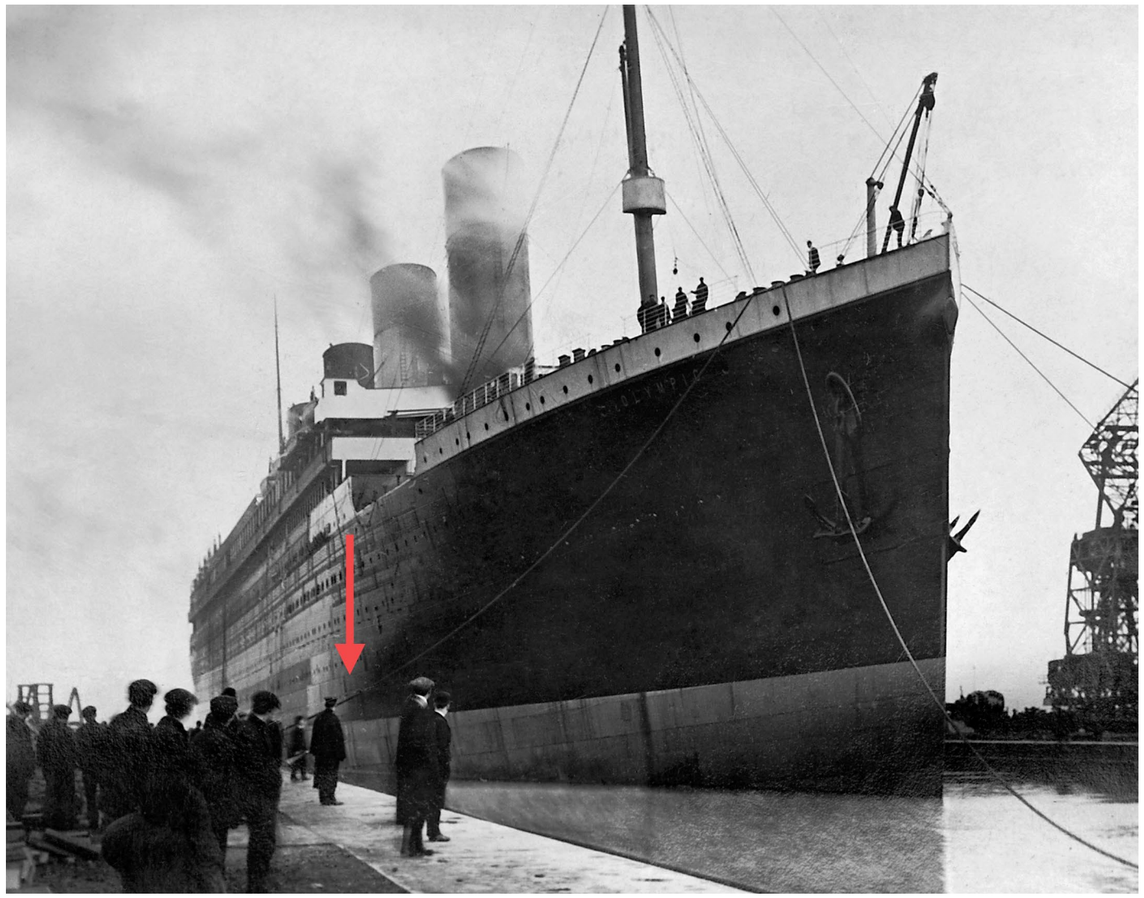
> Inexpressible sorrow. Am proceeding straight on voyage. *Carpathia* informs me no hope in searching. Will send names survivors as obtainable. Yamsi on *Carpathia*.[77]

In the inquiries that followed, both Ismay and Phillip A.S. Franklin freely admitted that Ismay authored the YAMSI telegrams, and turned over the telegrams to be entered into evidence. They never attempted to deny the telegrams or the use of the 'YAMSI' signature.

Claims that Ismay was using the pseudonym YAMSI to engage in a cover up completely fall apart under closer scrutiny. In fact, White Star Line's offices routinely used various code words, which were registered with cable and telegraph companies, in order to aide in the routing of messages to the proper offices.

Telegrams 'between offices, for cables and long distance messages' were addressed using the signature 'Ismay'. Messages to or from J. Bruce Ismay were addressed using the registered signature 'YAMSI'. Another example was the code word 'Islefrank', indicating a message to or from Phillip Franklin. Other examples of company code words mentioned in the Senate Inquiry include 'Isnak' and 'Joyam', although the meanings of these were not explained.[78]

This photograph of the Olympic *entering the Graving Dock in Belfast, taken by yard photographer William A. Green, shows an optical effect similar to the smudge seen in the Kempster photos, which is picked out by the red arrow. (Authors' Collection)*



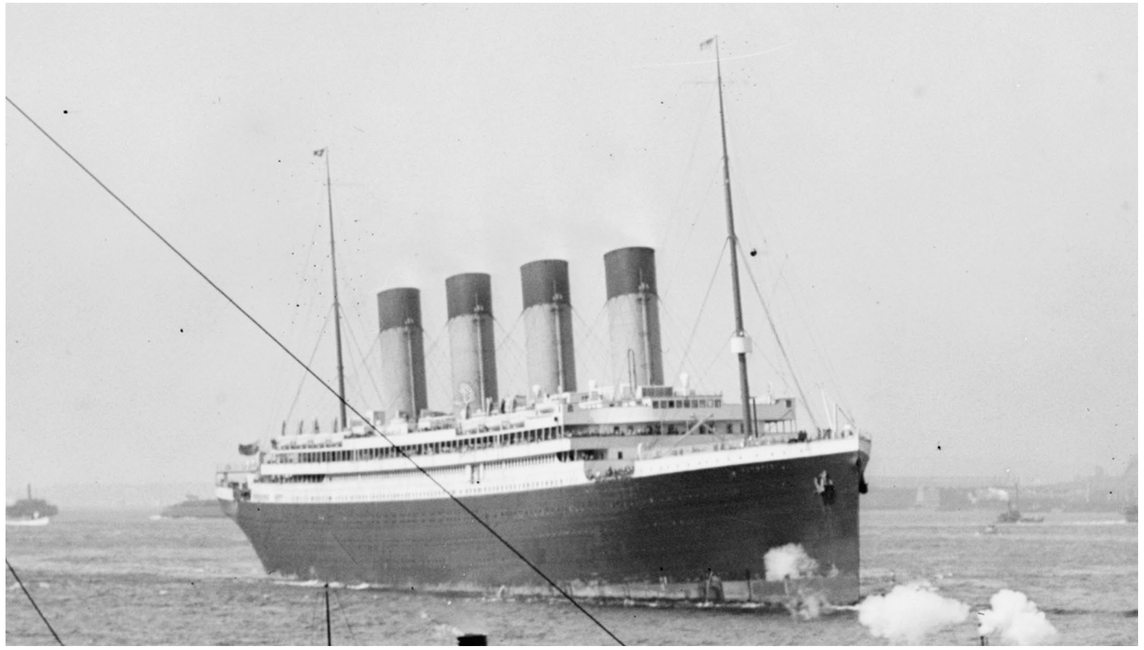
A second photograph by Harland & Wolff photographer William A. Greene shows a similar mark on the Olympic*'s forward hull, and from a slightly different angle to the last photo. Clearly, the complex curvature of the hull plating here could cast reflections, shadows, and play tricks with the eyes of modern researchers. (Authors' Collection)*

Clearly, despite Molony's broad accusations, Ismay's use of the signature 'YAMSI' was far from nefarious, or even the slightest indication of the start of a coverup.

It is also alleged in the programme that the White Star Line told the Senate Inquiry that no firemen had survived the sinking. Nowhere in the Senate Inquiry transcripts did the White Star company's officials claim any such thing. The closest statement to this was Bruce Ismay's testimony, when talking about the ship's ***engineers***, and ***not firemen***, that 'I do not think a single engineer officer survived.'[79] Even if White Star had attempted to make such a claim about the firemen, it would have been patently absurd. Leading Fireman Frederick Barrett not only survived the sinking and remained in White Star's employ, but also testified extensively at ***both*** inquiries. Fireman William Henry Taylor also testified in the Senate Inquiry.

It becomes very clear that the claims made in the programme were either made from genuine mistakes, or through deliberate attempts to twist the truth in order to support the idea of a coverup.

Then what was the smudge seen in two photographs in the Kempster album? Photographs of the *Olympic*, taken at a similar angle to Kempster photos K12 and K14, also show a similar smudge in the same area of the hull. Indeed, there are photos that show a similar 'smudge' on the after hull of the *Olympic*-class liners, where the hull curved back in toward its after extremity. Are such smudges an indication of damage from a coal bunker fire? No.



This photograph, taken from a long distance on 21 June 1911, as Olympic *was arriving in New York Harbour. The way the light plays off the curve in the hull below the Well Deck and above the waterline is plainly visible.*

The fact that other photographs taken of the *Titanic* – even taken the same day, by the same or other photographers – show no smudge should have been a clue that the smudge in K12 and K14 was no evidence of significant damage. Yet Molony and the others who made these claims were silent on that point. Photos taken between 2 April and 11 April, showing undamaged, unsmudged hull plating on the *Titanic*, were never compared in the programme, easily leading viewers – and perhaps even some of the experts interviewed – to draw faulty conclusions.

There was actually a large curve of the plating in the area of the smudge in K12 and K14, as the *Titanic*'s beam flared from the narrow prow to the full width amidships. It is quite possible that it is, after all, a reflection seen from certain angles. Indeed, while the angles between K12 and K14 are somewhat different, they are not extraordinarily different.

At the very least, as the 'now-you-see-me, now-you-don't' smudge is nowhere close to the actual location of the fire, whatever it is, it is ***not evidence of damage***. The lack of a similar smudge in Kempster photo K11, not compared in the programme, should have been a clue that what they saw in K12 and K14 was not evidence of a significant deformation in the hull of the *Titanic*.

Whatever press account Molony or others might dig up in the future regarding raging infernos aboard the *Titanic* in Belfast or on the North Atlantic will also have to be compared against reality. For starters, the press was not always trustworthy in their reporting, and we know that some survivors concocted stories to sell, or mis-remembered their stories when talking to reporters. Furthermore, it has long been known that there was an attempt by news magnate William Randolph Hearst to excoriate J. Bruce Ismay and the White Star Line after the disaster. This behind-the-scenes struggle might further tend to 'taint' the contents of articles printed at the time.

The simple fact is: Press accounts are useful tools for modern *Titanic* historians. However, they should only be relied upon when primary source material is absent, or when they do not conflict – but rather supplement and agree with – other evidence.

A unique twist on the subject: In an interesting twist, there is another theory that the coal bunker theory actually helped to save the *Titanic* and the people who were aboard her. In the *Centennial Reappraisal* book, Sam Halpern and that team noted that Barrett consistently referred to a single bunker divided by WTB E,

This 1931 photograph shows another example of how light plays on the hull of the Olympic*-class ships. (Authors' Collection)*

rather than one bunker on the aft side of it, and another on the forward side of it.

Parks Stephenson also picked up on this stretch of testimony, and he believed that it may offer a possibility for explaining something that had previously been a mystery. In a detailed computer-modeled scenario of the sinking, the *Titanic* kept 'lolling' over to starboard and capsizing before it did in reality; the computer modelers literally had to 'lock' the model upright so it wouldn't roll over. If the entirety of the starboard bunkers on both the fore and aft side of WTB E had been emptied, this would certainly account for the slight observed list to port that the *Titanic* had all through the day on Sunday. A slight list to port at the time of the collision, Parks theorised, might also help to account for why the *Titanic* did not capsize to starboard earlier in the sinking. This, he postulated, might actually have saved lives as it allowed for an orderly evacuation of the ship by the lifeboats.[80]

At this time, we do not have the technical data at our disposal to either confirm or deny this theory. However, it is worth noting as a polar opposite to the poorly-researched theories presented in the programme in question.

CONCLUSIONS

This paper has shown, from primary archival material and a technical discussion on a variety of subjects, that the theory presented in the show *Titanic: The New Evidence* is based on a bad starting point. Its contents are littered with historical inaccuracies. In short:

1. **The smudge and its location.** The inaccurate supposition that the smudge is evidence of damage to the *Titanic*'s hull led to the start of an investigation based on bad data. Other photographs do not show any kind of damage. While it is stated in the show that the coal bunker fire was 'directly behind' the smudge, its actual location was over fifty feet away from it. There is no damage visible near the actual location of the coal bunker fire.
2. **The fire.** One press account that has known errors is used in the programme to indicate that the fire was never extinguished. This disagrees with testimony given at the inquiries, which state the fire was out by Saturday, April 13 – the day before the iceberg was hit.
3. **Financial pressures and substandard ships.** This claim does not match the historical record. Examination of letters to and from Harland & Wolff officials and the Board of Trade representatives referred to in the programme show they are not evidence of substitution of lower-quality steel and cutting corners.
4. **Withholding information, and the decision to hold to the schedule.** The situation was not unusual, considering that coal bunker fires were not entirely unheard of on coal-powered ships. Eyewitness testimony indicates that while a bunker fire was the exception rather than the rule, it was handled in line with typical procedures of the day. Since the fire was not regarded as extremely serious, telling passengers would only have made them nervous. If the fire was serious, there would have been clear evidence available to all aboard.
5. **Covering up the fire at the British Inquiry.** There is no evidence of a coverup at the British Inquiry. Some of the 'facts' stated in this portion are inaccurate. Testimony read during the programme were taken out of context, and do not represent the full extent of the inquiry's questioning of various eyewitnesses on the matter over the course of multiple days.
6. **The fire began to spread – a deteriorating situation.** This is inaccurate. Multiple first-hand accounts by survivors said that it was extinguished on Saturday, and had cooled enough so that the bunker could be entered, and black oil rubbed on the 'dinged' bulkhead.
7. ***Titanic* was short of coal.** Inaccurate. *Titanic* had a reserve steaming time of up to 1.8 days at 21 knots, and even more at slower speeds.
8. **Thomas Andrews believed the ship would survive.** Inaccurate. Thomas Andrews told Captain Smith that *Titanic* was doomed 45 minutes before the rush of water Barrett saw, which the programme said was due to the collapse of the fire-damaged bulkhead.
9. **The fire played one final, deadly role in the disaster: the fire-damaged bulkhead gave way, causing the ship to sink, and the enormous loss of life.** Since the ship was doomed from the moment of the collision, whether or not the bulkhead collapsed was more or less immaterial to the timing of the disaster. Lives were not lost because it allegedly collapsed early.
10. **There was a culture of coverup at the White Star Line, and the whole matter was buried.** The claims made in the show on this point have nothing to do with reality. 'YAMSI' and other code words were routinely used to route traffic to the correct individuals or departments at White Star Line offices.

When hard evidence is factored in, there is only one viable conclusion: **the coal bunker fire aboard Titanic was not a primary factor in her contact with the iceberg, or in causing her to sink after the she struck the ice. It played no part in the significant loss of life.**

Although *Olympic* and *Titanic* were not perfect ships, and genuine mistakes were made in their operation and navigation that led to the disaster on 14-15 April 1912, the allegations made in the programme are not in harmony with the factual record.

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Endnotes & Acknowledgements

INTRODUCTION

1 *Conspiracies at Sea: Titanic and Lusitania*, J. Kent Layton, Amberley Books, 2016, pgs. 299-300.

PART ONE: THE CLAIMS

2 The official reference numbers for ordering the photographs were not mentioned in the programme, but can be found on the official site where the photographs are licensed: http://titanicphotographs.com/Kempster/indexkempster.html

3 Throughout this document, we will refer to this mark as a 'smudge' simply because it looks like one, and is easily identifiable as the mark on the hull referred to in the show.

4 *Stevens Point Journal* of 27 April 1912. Available online at: https://www.encyclopedia-titanica.org/hold-fire.html

5 There are some concerns about the overall accuracy of Dilley's press account, beyond the comments about the fire. First, he states that his previous ship was *Oceanic*, additionally, in an unedited version of the same account from the press that was included in Wreck and Sinking of the *Titanic* by Neil Harris (1912), he gave his address as 21 Milton Road. In the original crew Crew Signing-On Particulars of Engagement, (Public Record Office of Northern Ireland, 2A/45/381, A-H), Dilley listed his previous ship as *Olympic*, and his address as 44 Threefield Lane. These contradictions raise concern about possible transcriptions errors or creative editing by a reporter, or even of an imposter giving false statements using Dilley's name. These concerns with the account were originally raised in the article 'Coal Bunker Fire' by Cal Haines, available on the Titanic Research & Modeling Association's web site, http://titanic-model.com/db/db-03/CoalBunkerFire.htm

6 Although this article follows British spelling and punctuation, this quote comes from an American newspaper, and so retains American spelling and punctuation marks. The *New York Tribune*, 20 April 1912, pg. 6. Available online at http://chroniclingamerica.loc.gov

PART TWO: THE FACTS

7 http://titanicphotographs.com/Kempster/indexkempster.html

8 As an aside, early in the programme Kempster is incorrectly described as the *Titanic*'s Chief Electrical Engineer. This made it sound like he was a member of the ship's crew. He was actually a Managing Director of Harland & Wolff, the shipbuilder, in charge of their electrical works. Kempster was not an officer of the ship, and never took passage on the *Titanic*, even though he had originally been slated to be part of the builder's Guarantee Group. *Titanic*'s Chief Electrical Engineer was 31-year-old Peter Sloan. He joined the ship in Belfast and died in the disaster.

9 *Titanic*'s frames were marked in ascending order moving forward from midship, and in ascending order moving aft from the same point. The suffix 'forward' or 'aft' was added. However, as all of the locations mentioned regarding the coal fire are forward of amidship, the 'forward' or abbreviated 'F' typically used will be omitted.

10 The notion that during his testimony, Barrett seemed to be referring to the bunkers on either side of WTB E as a single bunker is not new. To our knowledge, it was first mentioned in *Centennial Reappraisal*, Chapter 6, section 'Fire Down Below' pgs. 123-124. Parks Stephenson also wrote another article that touched on this subject, which we will refer to toward the end of our article.

11 In this region of the ship, the frames were spaced 36" apart. From Frame 95 forward, the distance between frames began to narrow in order to increase hull strength in areas that were most likely to experience stresses as the ship pushed forward through rough seas, etc.

12 British Inquiry, Question 2339. ***Hereafter cited as 'Br.' followed by question number(s)***.

13 *The Truth About the Titanic*, Archibald Gracie, pgs. 5-6.

14 The photograph can be seen on the official site: http://titanicphotographs.com/Kempster/indexkempster.html

15 Barrett testified that he was in charge of 'between 8 and 10 men' or between 9 and 11, including Barrett. This is a slight variation from the '12' in Dilley's press account.

16 Br. 5245.

17 Br. 2340

18 Pitman, American Inquiry, Page 312 (***hereafter cited as 'Amer.', followed by page number***); Lightoller, Br. 14639-14641

19 Br. 24120, 24121

20 These letters were all included in the book *Titanic Hero,* by Shan Bullock.

21 *Belfast Newsletter*, 26 April 1912.

22 *Sunday Independent*, 15 April 1962.

23 Crew Signing-On Particulars of Engagement, Public Record Office of Northern Ireland (2A/45/381, A-H). Available online at: https://www.encyclopedia-titanica.org/pog/crew_belfast-soton_pog_2A-45-381C.php It is unlikely that they went with *Olympic* on her subsequent trans-Atlantic round-trip voyage, which ended in Southampton on 30 March, and that they subsequently took a fast trip up to Belfast to sign on aboard *Titanic* on 2 April, especially since *Titanic*'s trials were originally scheduled for 1 April.

24 This letter is available online at Paul Lee's web site. http://www.paullee.com/titanic/gkemish.html

25 Up to Sunday, 14 April, the five auxiliary boilers in Boiler Room No. 1 were never lit, providing the extra manpower to work the coal bunker fire. Of the surviving stokers, Dillon and Barrett both testified that the boilers in that compartment were never lit, while Fireman Alfred Shiers testified at the Limitation of Liability hearings in 1913 that they were lit. Whether they were ever lit or not, they were never applied to the engines.

26 Chirnside, Mark. '*Titanic*: Killing the Myths' Presented to the Scandinavian Titanic Society, May 2016.

27 Chirnside, Mark. '*Titanic*: Allegations & Evidence' 2015. www.markchirnside.co.uk/pdfs/TitanicAllegations&EvidenceBradMatsenFalseClaims2015-MarkChirnside.pdf (Accessed January 2017.) This paper was first published in the Titanic International Society's *Voyage* 94 December 2015: Pages 55-60. It covers a whole range of claims related to the ones in the programme, and is recommended reading for people interested in that wider discussion.

28 Chirnside, Mark. *Ibid*. Pages 11-12.

29 This information was first published in Mark Chirnside's '*Olympic* & *Titanic*: "Straps" and Other Changes' an online article for the Titanic Research & Modelling Association, www.titanic-model.com/articles/markchirnside2_2005. See also:

Chirnside, Mark. *The 'Olympic' Class Ships: Olympic, Titanic & Britannic*. (The History Press, 2011), page 226.

Chirnside, Mark. Titanic: Allegations & Evidence. Op Cit. Chirnside, Mark. *RMS Olympic: Titanic's Sister*. (The History Press, 2015), page 233.

30 There are claims that the *Olympic* was more badly damaged than is generally acknowledged. These have then been used to create a conspiracy theory to switch the two sisters. The claims are wild exaggerations, and we have primary-source evidence of what damage was done.

31 The History Press. Hardback edition, 2012; softcover, 2014.

32 National Archives, MT9-920E, pg. 331

33 National Archives, MT9-920E, pg. 331

34 National Archives, MT9-920E, pg. 332.

35 *Lusitania: An Illustrated Biography*, J. Kent Layton (Amberley, 2015), pg. 78.

36 National Archives, MT9-920E, pg. 334.

37 National Archives, MT9-920E, pg. 331.

38 Chirnside, Mark. 'RMS *Olympic*: The First and The Last' Presented at Belfast in Harland & Wolff's drawing offices, April 2015.

39 All large passenger liners of the period experienced a varying degree of structural and maintenance issues as they aged. However, two vessels – *Vaterland* / *Leviathan* (1914) and *Bismarck* / *Majestic* (1922) – stand out, as they were nearly lost at sea when their hulls fractured suddenly during storms, long before they had reached 'old age' Majestic suffered this problem only two years after entering service in 1922.

For further reading on this subject, see Layton, J. Kent. *The Edwardian Superliners: A Trio of Trios* (Amberley Books, 2013) chapters 9 and 10; Layton, J. Kent & Fitch, Tad, *The Unseen Aquitania*. (The History Press, 2016); Chirnside, Mark. '*Aquitania*: The "Grand Old Lady" Dossier' http://www.markchirnside.co.uk/Aquitania_OldLady_Dossier.htm 2008; Chirnside, Mark. *RMS Majestic: The 'Magic Stick'* (The History Press, 2006); Chirnside, Mark. *RMS Aquitania: The 'Ship Beautiful'* (The History Press; 2008); Chirnside, Mark. *RMS Olympic: Titanic's Sister* (The History Press, 2015).

40 It is often stated that J. P. Morgan and his IMM bankrolled construction of the two new sisters. This is incorrect. White Star financed the project by borrowing money and then securing the debt by mortgaging its entire fleet. See Chirnside, Mark. *The 'Olympic' Class Ships: Olympic, Titanic & Britannic* (The History Press, 2011), pages 328-39.

41 Chirnside, Mark. *Ibid*.

42 Of the original 3,000 tons, she still had 1,880 tons on board upon arrival at Southampton. She took on an additional 4,427 tons at Southampton, and burned 415 tons in port before departing.

43 Br. 4832.

44 Br. 19630-19634.

45 Br. 2332.

46 Br. 24119-24121.

47 Br. 24119-24121.

48 *Titanic: A Centennial Reappraisal*, Sam Halpern, et al., (The History Press, 2011), pgs. 122-126, 'Fire Down Below' (Excerpt available online at http://www.titanicology.com/Titanica/FireDownBelow.pdf

49 *ibid*

50 Br. 5240

51 Unfortunately, the several copies of Thomas Andrews' notes have been split up and are now thought to be scattered in various private collections. However, Mark Chirnside has been working to piece their contents together as far as possible and would like to thank Günter Bäbler for his assistance. Bill Sauder's input was valuable in reading Andrews' handwriting.

52 *The Seattle Post-Intelligencer*, April 27, 1912. Our thanks to Don Lynch for pointing out this account and its location to us.

53 Amer. 322

54 Br. 20409-204011; 20882-20885

55 Br. 20882-20885

56 This phrase, as used in the programme, seems to be a clever hint at a motive for conspiracy. John Charles Bigham, 1st Viscount Mersey was the son of a prosperous merchant. Mersey himself worked in various fields of the law, until he was eventually appointed to head this court of inquiry.

57 Br. 5243.

58 Br. 2301

59 *The New York Tribune*, 20 April 1912, pg. 6. Available online at http://chroniclingamerica.loc.gov/

60 It was during Wilding's testimony on Day 20 when the examiner, Mr. Lewis, said that Hendrickson stated that 'the fire

caused the bulkhead to be red hot' which was not exactly what Hendrickson said. Br. 20883.

61 Br. 4248

62 Br. 2305

63 Chirnside, Mark. *The 'Olympic' Class Ships: Olympic, Titanic & Britannic*. The History Press; 2011. Pages 337-41.

64 Br. 2302

65 Amer. 811-812.

66 Amer. 3

67 Shan Bullock, *Thomas Andrews, Shipbuilder*, 1912.

68 *Portland Oregonian*, 1912

69 William Sloper, *The Life and Times of Andrew Jackson Sloper*, 1949. Sloper's account of the sinking in this book is an expanded version of the account he wrote for the New Britain Herald Report in 1912.

70 Br. 15610

71 Br. 2348-2349. For complete details and documentation of the timing of Smith and Andrews' damage inspections, when it was discovered that the ship was sinking, the launch time of the first lifeboat, timing of the inrush of water, etc., see *On A Sea of Glass*, *Centennial Reappraisal* (referenced at the top of this article), and 'The Lifeboat Launch Sequence Re-examined', at http://www.wormstedt.com/Titanic/lifeboats/lifeboats.htm

72 Br. 2062, 2063, 2065.

73 *What Really Sank the Titanic?* Jennifer Hooper McCarty & Tim Foecke (Citadel Press, 2008) pgs. 175-180.

74 Br. 20410

75 Lightoller, *Titanic and Other Ships*

76 Amer. 191

77 Amer. 180

78 Amer. 192, 692, and 696

79 Amer. 957

80 '*Titanic*'s Guardian Angel' by Parks Stephenson. Originally published in *The Titanic Commutator*, 2015. Available online at http://marconigraph.com/titanic/fire/fire1.html

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