



Article:

Mysteries - The Iceberg Damage

Immediately following the collision, the first question everyone wanted to know was: how much damage had been done to the ship? Some of it was obvious, but by the time Thomas Andrews and Captain Smith went down to inspect it for themselves, much of the actual damage was submerged in the ever-rising water and was hence invisible.

To begin with, the general feeling was that the damage was not very great; the blow had seemed so slight, so glancing. Thomas Andrews discovered that the first impression was deceptive; in reality, the damage was much worse. In all, six watertight compartments - the Forepeak, Cargo Holds Nos. 1, 2, and 3, Boiler Room No. 6 and Boiler Room No. 5 - had been vented to the sea. The pumps were able to contain the water in No. 5, but the other five compartments were flooding uncontrollably.

With the realization that the ship was sinking, suddenly the pendulum of thinking swung in the opposite direction: to sink such a large and safe ship, it was believed that the damage had to be horrific.

Harland & Wolff's Edward Wilding, who was Thomas Andrews' assistant and thus knew the *Titanic* better than anyone else living at that time, testified on the matter at the British Inquiry. After going over eyewitness testimony, he decided that the damage must have run for 249 feet from the bow to a point two feet into Boiler Room No. 5. With flooding and timing estimates, he was also able to discern that the damage was only twelve square feet in total size. Working backwards, he came to the conclusion that with such a small area of total damage, it must have been intermittent, not continuous.

However, Wilding's findings were largely ignored, and the public continued to suffer under the misimpression that the ship was virtually disemboweled by the impact. When the ship was discovered in 1985, it was hoped that information on the true nature of the damage would follow quickly. However, much of the damaged area was under the mud. When Ballard explored what small area of the hull where the iceberg damage should have been that protruded from the mud - namely in the area of Cargo Hold No. 3 and Boiler Rooms Nos. 6 and 5 - he found something very interesting.

Instead of seeing the hull plates ripped open as had been expected, he found plates that had come apart at the seams, and had popped their rivets. Apparently the plates had not been cut through, but rather bumped into hard enough that the joints between plates had buckled.

With this remarkable discovery, much could be ascertained about what had happened. However, the full truth about the exact nature of the damage done to the ship by the collision had yet to be told, for much of the affected area was still buried and invisible.

That revelation had to wait another ten years, until the summer of 1996. . .

During RMS Titanic, Inc.'s fourth expedition to the wreck, they brought with them Paul Matthias, who had built a specialized low-frequency sonar device with him. This device would allow him to probe through the mud around the *Titanic's* bow and "see" the actual damage done to the liner that night so long before. His efforts were successful, and the truth can finally be revealed.

As Wilding had concluded back in 1912, the iceberg damage that stretched across 249 feet of the hull was intermittent, not continuous; in fact, only six small deformations caused by popped rivets and burst seams had sealed the ship's fate.

When the iceberg was first spotted and the evasive action was taken, the ship bore down on the berg without turning for what seemed an eternity. Then, slowly, the helm answered and the bow began to turn to port. Unfortunately, it didn't turn enough - probably by as little as 5-15 feet - and the very bow smashed into the berg. The impact caused a rupture described as a "trace" in length, which penetrated the Forepeak. The ship continued on for some time before the berg ruptured the hull again. Then came two quick blows in rapid succession; the second and third deformations, five feet and four feet long, respectively, penetrated Cargo Hold No. 1. As the hull of the ship began to widen, and she continued to turn at the same rate, however, the side of the ship was exposed more dangerously. The fourth rupture, at fifteen feet long, damaged Cargo Hold No. 2. Next, the berg created a 32-foot long rupture - more than twice the length of the previous one - that started in Cargo Hold No. 2 and continued past the transverse bulkhead into Cargo Hold No. 3. One last time, the hull was forced into contact with the berg. This sixth rupture was the coup de gras which sealed the *Titanic's* fate and the fates of 1,500 people aboard her. This fatal blow tore open the forward coal bunker of Boiler Room No. 6, past the retaining wall and into the Boiler Room itself, all across the entire length of the compartment, through No. 6's aft coal bunker, past the watertight bulkhead, and ended between 2 and 5 feet inside Boiler Room No. 5's forward coal bunker. This wound was by far the longest of all six, being some 45 feet in length.

None of these ruptures by themselves posed any threat to the *Titanic's* safety. Even the first four or even five of them wouldn't have sunk the ship. But all six were enough. . . The ship, designed to float with her forward two, three, or even four compartments flooded, had the first five compartments begin to flood uncontrollably, with a sixth compartment compromised.

With the seams between the hull plates knocked apart twenty feet below the surface, the outside water pressure forced the torrent into the hull at the astonishing rate of seven tons per second. By midnight, over 8,000 tons of water had collected in her forward compartments, beginning to pull the bow lower in the sea.

And yet, with this clear picture, there is still another enigma: the flooding in Boiler Room No. 4 that had no apparent connection with the other, and more visible damage to the ship. This flooding was apparently seeping up through the double-bottom of the ship. It had to have been damaged during the collision, but how is another question, and there is no easy way of figuring it out, either.

Despite this mystery damage in Boiler Room No. 4, we have finally been able to ascertain the exact iceberg damage which sunk the ship. This damage was enough to sink the vessel, but not by too large a margin. It was only because the damage was spread out over such a great percentage of the hull that it caused her to sink; if the same amount of damage had been done in even forward four consecutive compart-

ments, there would have been no problem. In fact, the amount of hull damage done to the *Olympic* by the *Hawke* collision was greater than that done to the *Titanic*. The damage itself was minor, but affected too many compartments. Ironically, the *Titanic*, as originally designed, was a very safe vessel. Her sister ship, the *Olympic*, plied the Atlantic for almost a quarter-century without ever being damaged so badly that she would sink. In fact, if the *Titanic* had taken the torpedo that the *Lusitania* had taken in May of 1915, she almost certainly would have shrugged off the resulting flooding without the least danger of her sinking.

Unfortunately, the way the damage was inflicted doomed the *Titanic* and 1,502 of her passengers and crew. On the other hand, at least the damage was not enormous enough to have sent the ship to the bottom any faster than it did.

Interestingly, the 1996 expedition added up the size of all the damage done to the ship by the iceberg, and discovered it to be approximately 12 square feet, the same figure that Edward Wilding reached in 1912 after piecing the evidence together - without his ever having seen the damage himself.

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