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Destruction of the *Maine* (1898)

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On February 15, 1898, the American battleship *Maine* exploded while sitting in the Havana harbor, killing two officers and 250 enlisted men. Fourteen of the injured later died, bringing the death toll to 266. A naval board of inquiry concluded that the blast was caused by a mine placed outside the ship. Release of the board's report led many to accuse Spain of sabotage, helping to build public support for war. Subsequent studies, including one published in 1976 and later reissued in 1995, determined that the ship was destroyed from the inside, when burning coal in a bunker triggered an explosion in an adjacent space that contained ammunition.

1898 Investigation. The McKinley Administration created a naval board of inquiry to study the cause of the blast. On March 21 the board concluded unanimously that the destruction of the ship was caused "only by the explosion of a mine situated under the bottom of the ship at about frame 18, and somewhat on the port side of the ship." The board said it had been "unable to obtain evidence fixing the responsibility for the destruction of the MAINE upon any person or persons." As to the possibility that the ship had been destroyed from an internal explosion in a magazine containing ammunition, the board said "there had never been a case of spontaneous combustion of coal on board the MAINE."¹ The board did not acknowledge that other U.S. ships had experienced spontaneous combustion of coal in bunkers.

In concluding that the ship was destroyed by an external mine, the court of inquiry was impressed that a massive upheaval had thrust a piece of bottom plating (still attached to the ship) upward so that it appeared four feet above the surface of the water. This part of the keel had the shape of a V, but was inverted with the acute angle at the top. The court decided that the best explanation for the inverted V was an underwater mine that detonated the magazines.

Moving Toward War. On April 11, President William McKinley reported to Congress on the board's results, pointing out that the board "did not assume to place the

¹ <http://www.spanamwar.com/mainerpt.htm>

responsibility. That remains to be fixed.”² Because of the war fever in the United States, many newspapers, citizens, and members of Congress assumed that the mine was placed by Spain or by agents of Spain. Newspapers published by William Randolph Hearst and Joseph Pulitzer blamed Spain for the wreckage. Hearst’s *New York Journal* on February 17 reported: “The Warship *Maine* was Split in Two by an Enemy’s Infernal Machine.” A drawing in the newspaper showed the ship anchored over a mine, with wires connecting the mine to a Spanish fort. Newspapers helped promote the battle cry: “Remember the *Maine*. To Hell With Spain!”³

Destruction of the *Maine* and the board’s report were among several factors that prompted Congress on April 20 to pass a joint resolution demanding the withdrawal of Spanish armed forces from Cuba and directing the President to use military force to carry out the legislative policy. The joint resolution stated that “abhorrent conditions” in Cuba were part of the events “culminating, as they have, in the destruction of a United States battle ship.”⁴ On April 25, Congress passed legislation announcing that “war exists” between the United States and Spain, as of April 21.⁵ A protocol of agreement between the two countries, dated August 12, embodied the terms for establishing peace.⁶ The Treaty of Peace, signed on December 10, transferred Puerto Rico, Guam, and the Philippines to the United States. Spain also relinquished control over Cuba.⁷

Evaluating the 1898 Report. The board of inquiry did not make use of many technically qualified experts. George W. Melville, the Navy’s Chief Engineer, doubted that a mine caused the explosion but was not asked for his views. He suspected that the cause of the disaster was a magazine explosion.⁸ Philip R. Alger, the Navy’s leading ordnance expert, told the *Washington Evening Star* a few days after the blast that the damage appeared to come from a magazine explosion.⁹

Many ships, including the *Maine*, had coal bunkers located next to magazines that stored ammunition, gun shells, and gunpowder. Only a bulkhead separated the bunkers from the magazines. If the coal, by spontaneous combustion, overheated, the magazines were at risk of exploding. An investigative board on January 27, 1898, warned the Secretary of the Navy about spontaneous coal fires that could detonate nearby magazines.¹⁰

² 13 A COMPILATION OF THE MESSAGES AND PAPERS OF THE PRESIDENTS 6290 (James D. Richardson, ed., New York: Bureau of National Literature, 1895-1925)

³ Thomas B. Allen, *Remember the Maine?*, NATIONAL GEOGRAPHIC, Vol. 193, No. 2, February 1998, at 108.

⁴ 30 Stat. 738 (1898).

⁵ Id. at 364.

⁶ Id. at 1742

⁷ Id. at 1754.

⁸ H. G. RICKOVER, HOW THE BATTLESHIP *MAINE* WAS DESTROYED ix, xvii, 46 (Annapolis, MD.: Naval Institute Press, 1995 ed.; originally published in 1976).

⁹ Id. at 46.

¹⁰ Allen, *Remember the Maine?*, at 108.

The *Maine* took on bituminous coal, which was more subject to spontaneous combustion than anthracite coal.¹¹ Fresh surfaces of newly broken coal oxidize as part of a chemical reaction that produces heat. If not dissipated, the heat accelerates the reaction. A higher moisture content in the coal will increase the tendency to heat up. The ship had spent most of the last three months anchored at Key West, Florida or nearby. The tropical climate in that region and in Cuba would ensure that the coal was moist.¹² Ships installed alarms in the coal bunker to detect overheating, but often fires from spontaneous combustion smoldered deep below the coal without raising the temperature near the alarm.¹³ Fires from coal bunkers were frequent occurrences. From 1894 to 1908, more than 20 coal bunker fires were reported on U.S. naval ships.¹⁴

1911 Study. In 1910, President William Howard Taft ordered the Army Corps of Engineers to complete a new study of the *Maine* wreckage. The Corps built a cofferdam around the ship, pumped out the water, and was able to examine the exposed hull. Many photographs were taken. By cutting away some damaged parts, the Corps was able to refloat the remainder. A new board of inquiry in 1911 reaffirmed the conclusion that an exterior mine destroyed the ship, producing the inverted V. However, the new board changed the location of where it believed the exterior mine was placed.

Rickover Study. In 1974, Admiral Hyman G. Rickover asked naval historians to take another look at the sinking of the *Maine*. He was particularly interested in the cause: was it an external mine or an internal explosion? A team of experts reviewed government records, archival sources, personal papers, contemporary newspapers and periodicals, and other sources. Rickover encouraged them to contact the Spanish naval attaché to see what materials were available from archives in Spain and to seek help from other countries, including France and Great Britain, to learn what their navies had experienced with ship explosions. The scholars turned to professional engineers to interpret photographs of the wreck and study the ship's structure. Their study determined that the explosion was, "without a doubt," internal.¹⁵

The Rickover team analyzed the V shape of the keel. Instead of suggesting an external mine, it indicated that the source of the explosion was solely within the ship.¹⁶ This new study observed that the board of inquiry in 1898 did not find it easy to place blame either on the design or construction of the ship (even though bunker fires were well known) or on the commanding officer and his crew. There was a "natural tendency to look for reasons for the loss that did not reflect upon the Navy."¹⁷ The testimony of the commanding officer, Captain Charles D. Sigsbee, revealed someone "unfamiliar with

¹¹ RICKOVER, HOW THE BATTLESHIP *MAINE* WAS DESTROYED, at 27.

¹² Thomas B. Allen, *A Special Report: What Really Sank the Maine?*, NAVAL HISTORY, Vol. 12, March/April 1998), available at <http://proquest.umi.com/pqdweb?index=2&did=83179245&SrchMode=3&sid=1&Fmt=3&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1249051089&clientid=45714>, at 3.

¹³ RICKOVER, HOW THE BATTLESHIP *MAINE* WAS DESTROYED, at 91.

¹⁴ Id. at 125.

¹⁵ Id.

¹⁶ Id. at 114-15.

¹⁷ Id. at 95.

his ship,” vague and speculative with his remarks to the board, and a line officer who appeared to “look down upon engineering” and assumed that “giving an order was tantamount to its execution.”¹⁸

Other Studies. A book by Lewis Gould in 1982 concluded that inadequate ventilation within the *Maine* led to a fire in the coal bunkers that set off nearby gunpowder.¹⁹ John L. Offner did his doctoral dissertation on the Spanish-American War. His book published in 1992 noted that from 1895 to 1898, 13 other American ships had fires associated with spontaneous combustion in coal bunkers.²⁰

Computer Analysis. In 1998 the National Geographic Society commissioned a study by Advanced Marine Enterprises (AME) to prepare a computer model to explore the cause of the *Maine*'s destruction. Studies of heat transfer indicated that within four hours a fire in the *Maine*'s coal bunker “could have raised the temperature of the nearest canister of gunpowder (a mere four inches away on the other side of a quarter-inch-thick steel plate) to more than 645° — hot enough to ignite the powder, triggering a chain reaction in the adjacent magazines.”²¹

AME examined whether the *Maine*'s destruction could be traced to a mine, as concluded by the 1898 and 1911 investigations. It suggested that a simple mine of a wooden keg filled with 100 pounds of black powder, if ignited either by contact or by a wire from shore, “could have sunk the *Maine*. If so, the mine must have been perfectly placed, which under the circumstances would have been as much a matter of luck as skill.”²²

There was no evidence of a mine or wires from shore, but the AME analysis made a number of assumptions to decide whether a mine was a possible cause. It assumed the initial temperature of the ship was 80 degrees and the temperature within the coal bunker 100 degrees. It assumed that the black powder in the magazine was “properly stowed.” It assumed that the fire within the bunker would have to be burning close to the bulkhead.²³ A coal fire burning close to the bulkhead could have raised the temperature of powder stored in the magazine, close to the bulkhead, “to the point of being hazardous in only a few hours.”²⁴ AME acknowledged that the results of this analysis “cannot be considered conclusive, as there is no direct evidence supporting several assumptions included in the analysis.”²⁵ Still, its analysis “indicates that a coal fire could have been the first step in the *Maine*'s destruction.”²⁶ If a coal fire was a possible “first step” in

¹⁸ Id. at 55, 95.

¹⁹ LEWIS L. GOULD, *THE SPANISH-AMERICAN WAR AND PRESIDENT MCKINLEY* 35 (1982).

²⁰ JOHN L. OFFNER, *AN UNWANTED WAR: THE DIPLOMACY OF THE UNITED STATES AND SPAIN OVER CUBA, 1895-1898*, at 123 (1992).

²¹ Allen, *Remember the Maine?*, at 105.

²² Id. at 106

²³ Allen, *A Special Report: What Really Sank the Maine?*, NAVAL HISTORY, at 4 (using ProQuest link).

²⁴ Id. at 5.

²⁵ Id.

²⁶ Id.

igniting other magazines, one would conclude that the ship could have been destroyed without any trigger from an external mine.

AME assumed that if a mine had exploded beneath the ship at the right location, it could have been the first step leading to explosions within the magazines. By examining the bottom plating of the ship and how it bent and folded, AME concluded that the destruction could have been caused by a mine. Its analysis stated: “We conclude that while a spontaneous combustion in a coal bunker can create ignition-level temperatures in adjacent magazines, this is not likely to have occurred on the *Maine*, because the bottom plating identified as Section 1 would have blown outward, not inward.”²⁷ It was “plausible” that a mine caused the explosion.²⁸

AME noted that the size and location of the soil depression beneath the *Maine* “is more readily explained by a mine explosion than by magazine explosion alone. While it is possible that the depression was independent of the explosions, it cannot be ignored. The sum of these findings is not definitive in proving that a mine was the cause of sinking of the *Maine*, but it does strengthen the case in favor of a mine as the cause.”²⁹ The experts who worked on the Rickover study and some analysts within AME did not accept the conclusions of the AME computer model.³⁰

²⁷ Id. at 12.

²⁸ Id. at 13.

²⁹ Id.

³⁰ Id. at 3.