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The Atlantic Daily Bulletin

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J. Bruce Ismay, the manager of White Star Line, played a crucial role in the design and building of your vessel. A hands-on manager, he made key decisions to ensure your comfort.

Thomas Andrews, your ship's designer, is onboard this first voyage to ensure that all systems are go for your worry-free trans-Atlantic journey.

THE BIRTH OF ELEGANCE

J. Bruce Ismay, your host on this voyage, has been a critical voice in the design of this vessel. Sparing no expense when it comes to the luxury of this vessel, Ismay is very proud of White Star's latest addition to the trans-Atlantic trade.

This Royal Mail Steamer will continue to transport passengers between Europe and America as it transports mail and goods between the continents.

Thomas Andrews, your ship's designer, represents the Harland & Wolff Shipbuilders, whose yard in Belfast has been working to perfect the vessel for the past two years. With an eye for detail, Mr. Andrews know this ship like no other can. He will gladly answer your questions about the unsurpassed beauty and mechanical finesse with is the *RMS Titanic*.

The ship's triple-screw construction is an advanced design, offering power and stability available on no other ship of its class.

Specifications

As you enjoy your day at sea, consider these details.

- Gross tonnage 46,328
- Draught 34 feet
- Displacement 66,000 tons of water
- Anchors 3, combined weight 31 tons
- Length 882 ½ feet
- Beam 92 ½ feet
- Total Height 175 feet (keel to top of stacks)
- Propellers 23 feet in diameter
- Rudder 78 feet, 101 tons
- Engines Two four-cylinder high-efficiency steam-reciprocating engines and one low-pressure turbine engine
- Horsepower 51,000 hp
- Boilers 29
- Furnaces 159 coal-fired
- Bulkheads 15 water-tight bulkheads create 16 water-tight compartments
- Decks 9
- Speed 22.5 knots
- Capacity 2.603 passengers
- Crew 944

The daily newspaper of the *RMS Titanic*

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Raise the Titanic?

Many people propose that the *Titanic* should be raised from the ocean's depths. Its current resting place is approximately 370 miles south-southeast of Newfoundland, and it is at a depth of 12,600 feet (2.2 miles) below the surface. The bow and stern sections lie about 2,000 feet apart on the ocean floor.

Can the *Titanic* be raised. Dr. Robert Ballard's answer is a firm, "No." The century beneath the waves has not been kind to the old lady. While the rust has run unchecked, continuing to oxidize the steel, a new discovery has come to light. The icy depths of the North Atlantic is the habitat of a rust-eating bacteria, *Halomonas titanicae*. The by-product of this consumption is the formation of "rusticles." The ship is to fragile to be salvaged in many sizeable pieces. The largest piece recovered to date weighs about 30,000 pounds and measures 26 by 12 feet.

Follow this link to read more about "The Big Piece" on display at "The Titanic Artifact Expedition," an exhibit at the Luxor in Las Vegas, Nevada.

PARENTS

More information about our activities is available from our website:

Some may be concerned that our topic is too gloomy, but the fascination with the technology, the design, and the decisions leading to the tragedy inspires our study. Ask your camper about the first-person perspective and the daily journal we've generated.

A fascination with the *Titanic* isn't about death. It's about the lives of real people in the face of real challenges.

How did the design improvements create problems?

- Triple propellers gave more forward momentum and made it slower to turn
- Rudder orders vs. Tiller Orders (see page 3)
- Watertight bulkheads were not high enough and were without roof sections
- Hand-riveted seams in the bow since the riveting machine could not physically fit into the curved bow section
- Thinner steel to reduce construction costs, overall weight and, therefore, fuel costs
- Belief in watertight compartments and invincibility of the ship reduced the number of lifeboats

PRIDE GOES BEFORE THE FALL.

New Discoveries about the *Titanic*

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Rudder Orders vs. Tiller Orders

Innovation without proper training can spell disaster. The highest ranking officer to survive the sinking of the *Titanic*, Charles Lightoller (pictured above) shared concerns with his family after the tragedy.

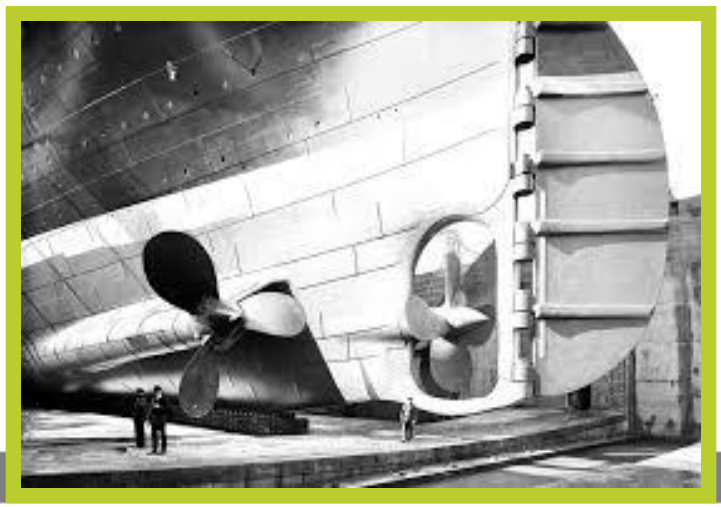
His granddaughter, who protected his good name until after his death, shares the story.

Lady Louise Patten reveals her grandfather's harrowing secret in "The Truth about the Sinking of the *Titanic*," an article resulting from a 2010 interview by Peter Stanford.

Her grandfather was not on the bridge when the ship struck the iceberg, and he stoically refused to board a lifeboat though given a direct order to do so. He plunged into the icy depths, but an underwater explosion pushed him back to the surface, and he was pulled into a passing lifeboat.

During the inquiry, Lightoller was asked if he had any discussions with First Officer William Murdoch who had command at the time of the collision. Despite lying to the committee, Lightoller admitted to family that Murdoch reported that the steersman, Robert Hitchman had steered the ship the wrong way during the panic of the impending collision.

How could such a mistake occur? Sailing ships used "tiller orders," but steam ships used "rudder orders." Tiller orders require the turn of the rudder in the opposite of the desired direction, while rudder orders will turn in the same direction as the desired adjustment.



CHARLES LIGHTOLLER, Second Officer

CONFUSION DURING PANIC

Despite the fact that the *Titanic* was a steam-powered ship, the 1912 custom in the North Atlantic was to operate under tiller orders. Murdoch shared with Lightoller in the minutes after the impact that he had given tiller orders, but Hitchens, in a panic, had reverted to the rudder orders method of his training.

The iceberg was spotted at a distance of only 37 seconds at the ship's speed, but a course correction would take a full four minutes. By the time Murdoch realized that Hitchens had erred, it was too late to change course.

In the immediate aftermath, the full stop order was given, and *Titanic's* engines went silent.

While Hitchens made a critical error, the next events would determine the fate of the vessel. Ismay rushed to the bridge and ordered that the engines were to be restarted to continue forward movement toward New York. He refused to allow his glorious ship to be towed into port. It would be an embarrassment to the line.

The bow wake continued to put pressure against the damaged hull and allowed the sea water to continue flooding the forward watertight compartments.

While Hitchens made a critical error, Ismay's pride was the bigger problem. His order to go ahead slow increased the volume of water in the holds below the water line, changing the buoyancy and the survival of the vessel.

HUMAN ARROGANCE LEADS TO FAILURE.

EXPERIMENT WITH THE IDEA

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Materials List

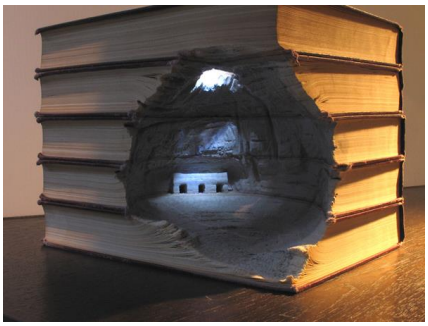
- Styrofoam suitable for cutting (adult supervision for cutting safely, please)
- Serrated knife (adult supervision, please)
- Sandpaper for medium or fine grain
- Kebab stick (as used for grilling)
- One sheet of card stock (or cut an old greeting card)
- 3” long nail
- Square of thick plastic (check the recycling bin for a detergent bottle!)
- Sticky tape (like shipping tape)

What does a rudder do?

Cut the Styrofoam using a serrated knife (under adult supervision). Create a rounded triangle with sides of about six inches. Smooth the edges using the sandpaper. Carefully pierce the Styrofoam (using a rotating motion to avoid cracking or crumbling the styrofoam) with the kebab stick to serve as a mast, just aft of center. Cut a triangular sail from the card stock. Use the sticky tape to secure the sail to the mast so that it points toward the bow. Insert the nail aft of the mast using the rotating motion. Using the sticky tape, secure the thick plastic so that it extends aft of the nail.

Launch your boat in a tub or sink. Adjust your rudder, the thick piece of plastic, into different positions. Use your breath to blow the sail and note differences in direction (your dependent variable) when you manipulate the independent variable of your rudder position.

Read All About It! To learn more about *Titanic,* consider these resources.



Take a dive into reading!

Ballard, Dr. Robert. (1988). *Exploring the Titanic*. Toronto, Ontario: Madison Publishing, Inc.

Wilkinson, Phillip. (2011). Titanic: Disaster at Sea. New York: Scholastic.

Brewster, Hugh; Laurie Coulter, and Ken Marschall (1998). *882 1/2 Amazing Answers to Your Questions about the Titanic*. Reprint. New York: Scholastic, 2013.

For historical fiction, consider these.

Korman, Gordon. (2011). *Titanic Series*. New York: Scholastic.

Morpurgo, Michael, and Foreman, Michael. (2012). *Kasper: The Titanic Cat*. New York: HarperCollins.

White, Ellen E. (1998). *Voyage on the Great Titanic: The Diary of Margaret Ann Brady*. New York: Scholastic.