

Comprehension

Genre

An **Autobiography** tells the story of a person's life written by that person.



Evaluate

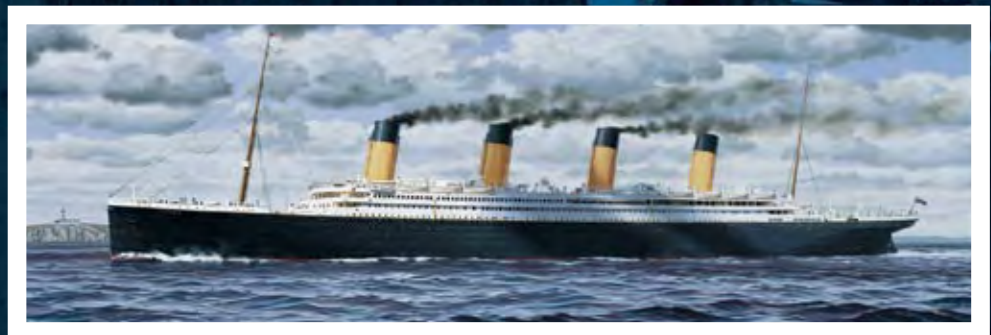
Fact and Opinion

As you read, use your Fact and Opinion Chart.

Fact	Opinion

Read to Find Out

What is so fascinating about Robert D. Ballard's life?



The ocean liner R.M.S. *Titanic* was built in 1911 and deemed “virtually unsinkable.” However, on its maiden voyage in 1912, the ship struck an iceberg in the North Atlantic and sank, killing 1,500 of the 2,200 passengers aboard. In 1985, Robert D. Ballard and his team discovered the remains of the *Titanic* on the ocean floor. A year later, the team returned to explore the ship in their submarine *Alvin*, with the help of *Jason Jr.*, or *JJ*, their robot.



EXPLORING THE

TITANIC

by Robert D. Ballard

Our second view of the *Titanic* was breathtaking. As we glided soundlessly across the ocean bottom, the razor's edge of the bow loomed out of the darkness. The great ship towered above us. Suddenly it seemed to be coming right at us, about to run us over. My first reaction was that we had to get out of the way. But the *Titanic* wasn't going anywhere. As we gently brought our sub closer, we could see the bow more clearly. Both of her huge anchors were still in place. But the bow was buried more than sixty feet in mud, far too deep for anyone to pull her out of the ooze.



bow of the *Titanic*

It looked as though the metal hull was slowly melting away. What seemed like frozen rivers of rust covered the ship's side and spread out over the ocean bottom. It was almost as if the blood of the great ship lay in pools on the ocean floor.

As *Alvin* rose in slow motion up the ghostly side of the ship, I could see our lights reflecting off the still-unbroken glass of the *Titanic*'s portholes. They made me think of cats' eyes gleaming in the dark. In places the rust **formations** over the portholes looked

like eyelashes with tears, as though the *Titanic* were crying. I could also see a lot of reddish-brown stalactites of rust over the wreck, like long icicles. I decided to call them "rusticles." This rust turned out to be very fragile. If touched by our sub, it disappeared like a cloud of smoke.

As we rose further and began to move across the mighty forward deck, I was amazed at the sheer size of everything: giant bollards and shiny bronze capstans that were used for winding ropes and cables; the huge links of the anchor chains. When you were there on the spot, the ship was truly titanic.



starboard railing



Fact and Opinion

Is the first sentence on this page fact or opinion? Explain.

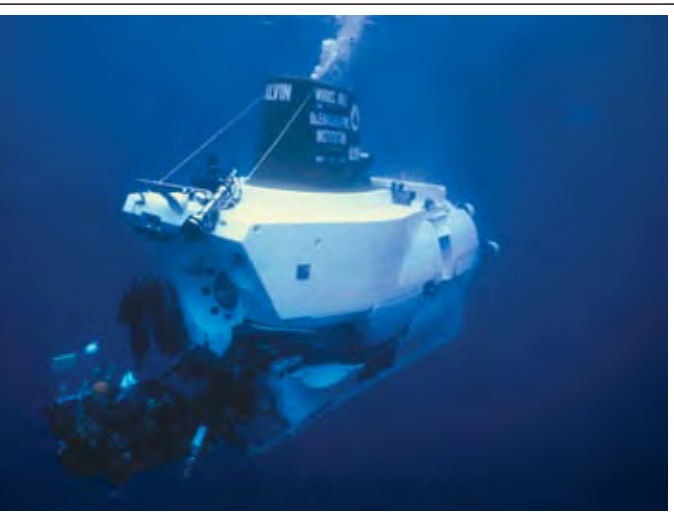
I strained to get a good look at the deck's wood planking, just four feet below us. Then my heart dropped to my stomach. "It's gone!" I muttered. Most of the *Titanic's* wooden deck had been eaten away. Millions of little wood-eating worms had done more damage than the iceberg and the salt water. I began to wonder whether the metal deck below the destroyed wood planking would support our weight when *Alvin* landed.

We would soon find out. Slowly we moved into position to make our first landing test on the forward deck just next to the fallen mast. As we made our approach, our hearts beat quickly. We knew there was a real risk of crashing through the deck. The sub settled down, making a muffled crunching noise. If the deck gave way, we'd be trapped in collapsing **wreckage**. But it held, and we settled firmly. That meant there was a good chance that the *Titanic's* decks would support us at other landing sites.

We carefully lifted off and turned toward the stern. The dim outline of the ship's superstructure came into view: first B Deck, then A, finally the Boat Deck—the top deck where the bridge was located. It was here that the captain and his officers had guided the ship across the Atlantic. The wooden wheelhouse was gone, probably knocked away in the sinking. But the bronze telemotor control to which the ship's wheel had once been attached stood **intact**, polished to a shine by the current. We then safely tested this second landing site.

This scale drawing shows the enormous distance between Ballard's search ship *Knorr* and the *Titanic* wreck.



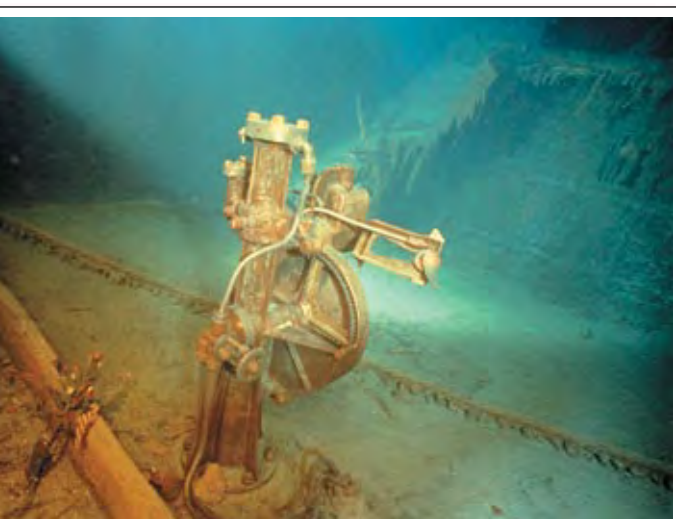


the submarine *Alvin*

I had an eerie feeling as we glided along exploring the wreck. As I peered through my porthole, I could easily imagine people walking along the deck and looking out the windows of the ship that I was looking into. Here I was at the bottom of the ocean looking at a kind of time capsule from history.

Suddenly, as we rose up the port side of the ship, the sub shuddered and made a clanging noise. A waterfall of rust covered our portholes. “We’ve hit something!” I exclaimed. “What is it?”

“I don’t know,” our pilot replied. “I’m backing off.” Unseen overhangs are the nightmare of the deep-sub pilot. Carefully, the pilot backed away from the hull and brought us slowly upward. Then, directly in front of our forward porthole, a big lifeboat davit slid by. We had hit one of the metal arms that held the lifeboats as they were lowered. This davit was one of the two that had held boat No. 8, the boat Mrs. Straus had refused to enter that night. She was the wife of the owner of Macy’s department store in New York. When she had been offered a chance to save herself in one of the lifeboats, she had turned to her husband and said, “We have been living together for many years. Where you go, I go.” Calmly, the two of them had sat down on a pile of deck chairs to wait for the end.



steering motor on the bridge of the *Titanic*

Now, as we peered out our portholes, it seemed as if the Boat Deck were crowded with passengers. I could almost hear the cry, “Women and children first!”

We knew from the previous year’s pictures that the stern had broken off the ship, so we continued back to search for the **severed** end of the intact bow section. Just beyond the gaping hole where the second funnel had been, the deck began to plunge down at a dangerous angle. The graceful lines of the ship disappeared in a twisted mess of torn steel plating, upturned potholes, and

jumbled wreckage. We saw enough to know that the decks of the ship had collapsed in on one another like a giant accordion. With an unexpectedly strong current pushing us toward this twisted wreckage, we veered away and headed for the surface.

The next day we landed on the deck next to the very edge of the Grand Staircase, which had once been covered by an elegant glass dome. The dome hadn't survived the plunge, but the staircase shaft had, and to me it still represented the fabulous luxury of the ship. *Alvin* now rested quietly on the top deck of the R.M.S. *Titanic* directly above the place where three elevators had carried first-class passengers who did not wish to use the splendid Grand Staircase.

We, however, would take the stairs with *JJ* the robot, our R2D2 of the deep. This would be the first deep-water test for our remote-controlled swimming eyeball, and we were very nervous about it. No one knew whether *JJ*'s motors could stand up to the enormous ocean pressure of more than 6,000 pounds per square inch.

Using a control box with a joystick that operated like a video game, the operator cautiously steered *JJ* out of his garage attached to the front of *Alvin*. Slowly *JJ* went inching down into the yawning blackness of the Grand Staircase. More and more cable was let out as he dropped deeper and deeper.

We could see what *JJ* was seeing on our video in the sub. But at first *JJ* could see nothing. Then, as he dropped deeper, a room appeared off the portside foyer on A Deck. *JJ* swung around and our co-pilot saw something in the distance. "Look at that," he said softly. "Look at that chandelier."



portside deck of the *Titanic*



the Grand Staircase in 1912



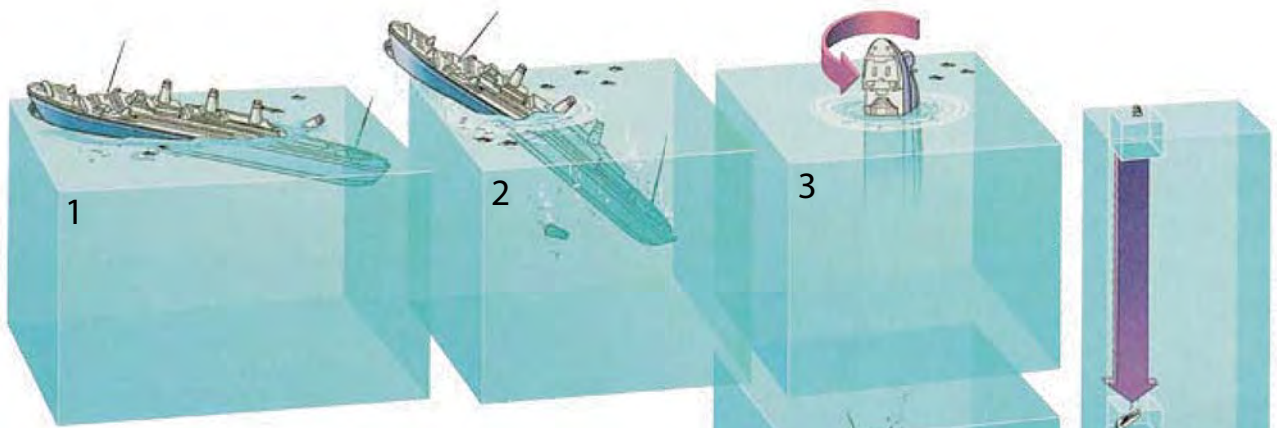
Now I could see it, too. “No, it can’t be a chandelier,” I said. “It couldn’t possibly have survived.”

I couldn’t believe my eyes. The ship had fallen two and a half miles, hitting the bottom with the force of a train running into a mountain, and here was an almost perfectly preserved light fixture! JJ left the stairwell and started to enter the room, managing to get within a foot of the fixture. To our astonishment, we saw a feathery piece of coral sprouting from it. We could even see the sockets where the light bulbs had been fitted! “This is fantastic,” I exulted.



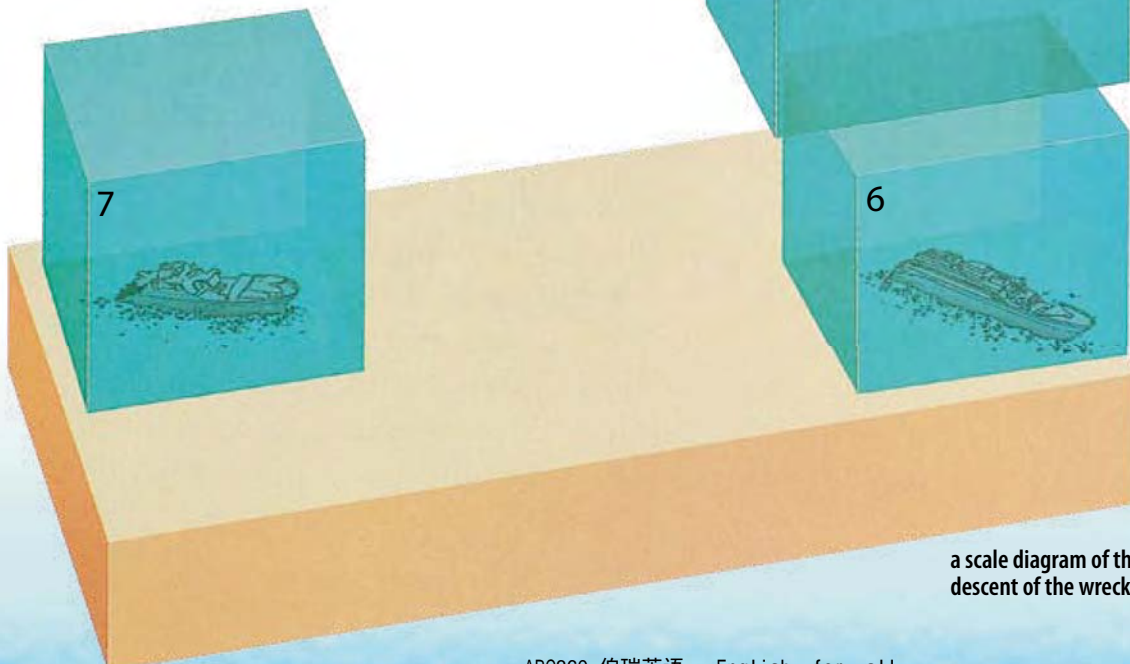
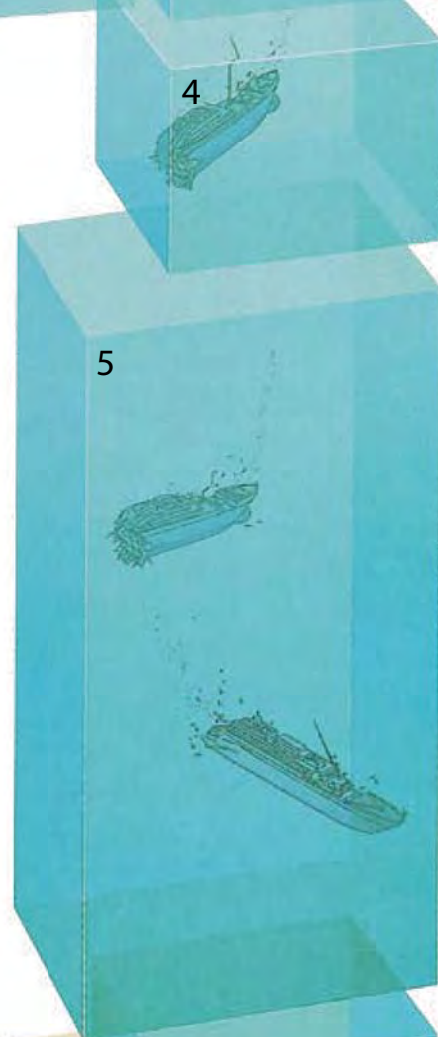
Fact and Opinion

What facts and what opinions are stated in this second paragraph?



How the *Titanic* Sank

1. At approximately 2:17 A.M. as flooding fills its forward compartments, the *Titanic* lurches downwards and the Number 1 funnel collapses.
2. The ship cannot bear the stress of having its stern in the air and breaks in two between the third and fourth funnels.
3. After the bow section has broken away, the stern section swings around. It remains perpendicular for a few moments before disappearing from sight.
4. As the stern section sinks, much debris falls out and the Poop Deck is peeled over backwards.
5. The stern section falls more or less straight down as the bow section planes off downward below.
6. The two pieces of the ship land 1,970 feet apart, facing in different directions.
7. The stern slams into the bottom with great force. For several hours afterwards, debris continues to drift down and settle around the wreck.



a scale diagram of the descent of the wreck

“Bob, we’re running short of time. We have to return to the surface.” Our pilot’s words cut like a knife through my excitement. Here we were deep inside the *Titanic*, actually going down the Grand Staircase, but we had used up all the time that we had to stay safely on the bottom. I knew our pilot was just following orders, but I still wanted to shout in protest.

Our little robot soldier emerged from the black hole and shone his lights toward us, bathing the **interior** of the sub in an unearthly glow. For a moment it felt as if an alien spaceship were **hovering** nearby. But that feeling quickly gave way to one of victory, thanks to our little friend. *JJ* had been a complete success.

On our next day’s dive, we crossed over what had once been Captain Smith’s cabin. Its outer wall now lay collapsed on the deck, as though a giant had brought his fist down on it. We passed within inches of one of the cabin’s windows. Was this, I wondered, a window that Captain Smith had cranked open to let a little fresh air into his cabin before going to bed?

Suddenly a large piece of broken railing loomed out of the darkness. It seemed to be heading right for my viewport. I immediately warned the pilot who quickly turned *Alvin*’s stern around, rotating us free of the obstacle.

Now we began to drop onto the starboard Boat Deck. As we glided along, I felt as though I were visiting a ghost town where suddenly one day everyone had closed up shop and left.

An empty lifeboat davit stood nearby. Ahead I could see where the *Titanic*’s lifeboats had rested. It was on this very deck that the crowds of passengers had stood waiting to get into the boats.



the dining room in 1912; the dining room today

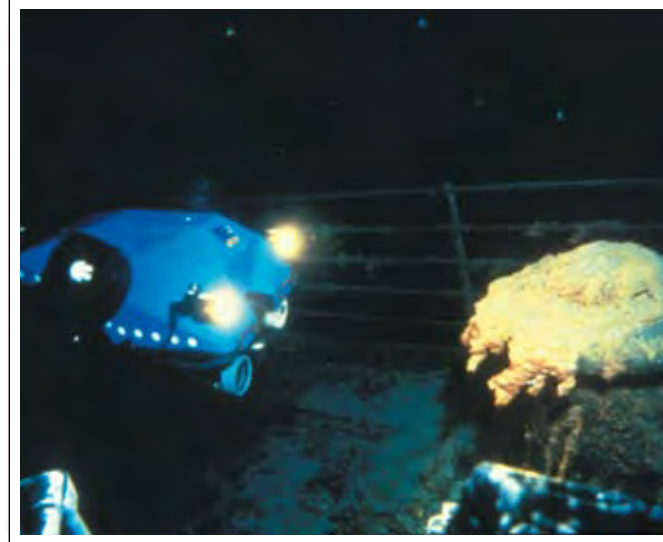
They had not known until the last moments that there were not enough lifeboats for everyone. It was also from this deck that you could have heard the *Titanic*'s brave band playing cheerful music to boost the crowd's spirit as the slope of the deck grew steeper and steeper.

Jason Jr. now went for a stroll along the Boat Deck. As he slowly made his way along, he looked in the windows of several first-class cabins as well as into some passageways, including one that still bore the words, "First-Class Entrance." As JJ passed by the gymnasium windows, I could see bits and pieces of equipment amid the rubble, including some metal grillwork that had been part of the electric camel, an old-fashioned exercise machine. We could also see various wheel shapes and a control lever. Much of the gym's ceiling was covered with rust. This was where the gym instructor, dressed in white flannel trousers, had urged passengers to try the gym machines. And, on the last night, passengers had gathered here for warmth as the lifeboats were being lowered.

I could see JJ far off down the deck, turning this way and that to get a better view inside doorways and various windows. It was almost as though our little robot had a mind of his own.

But now we had to bring him home. We had been on the *Titanic* for hours. Once again it was time to head back to the surface.

The morning of July 18 was lovely and warm, but I felt **edgy** about the day's mission. We had decided to visit the *Titanic*'s debris field. Along the 1,970 feet that separated the broken-off bow and stern pieces of the wreck, there was a large scattering of all kinds of objects from the ship. Everything from lumps of coal to wrought-iron deck benches had fallen to the bottom as she broke in two and sank. But I was anxious about what we might find down there among the rubble. I had often been asked about the possibility of finding human bodies. It was a chilling thought. We had not seen any signs of human remains so far, but I knew that if we were to find any, it would most likely be during this dive.



JJ examines a bollard on the Forecastle Deck

As the first fragments of wreckage began to appear on the bottom, I felt like we were entering a bombed-out museum. Thousands upon thousands of objects littered the rolling fields of ocean bottom, many of them perfectly preserved. The guts of the *Titanic* lay spilled out across the ocean floor. Cups and saucers, silver serving trays, pots and pans, wine bottles, boots, chamber pots, space heaters, bathtubs, suitcases, and more.

Then, without warning, I found myself looking into the ghostly eyes of a small, white smiling face. For a split second I thought it was a skull—and it really scared me. Then I realized I was looking at a doll's head, its hair and clothes gone.

My shock turned to sadness as I began to wonder who had owned this toy. Had the girl survived in one of the lifeboats? Or had she clutched the doll tightly as she sank in the icy waters?



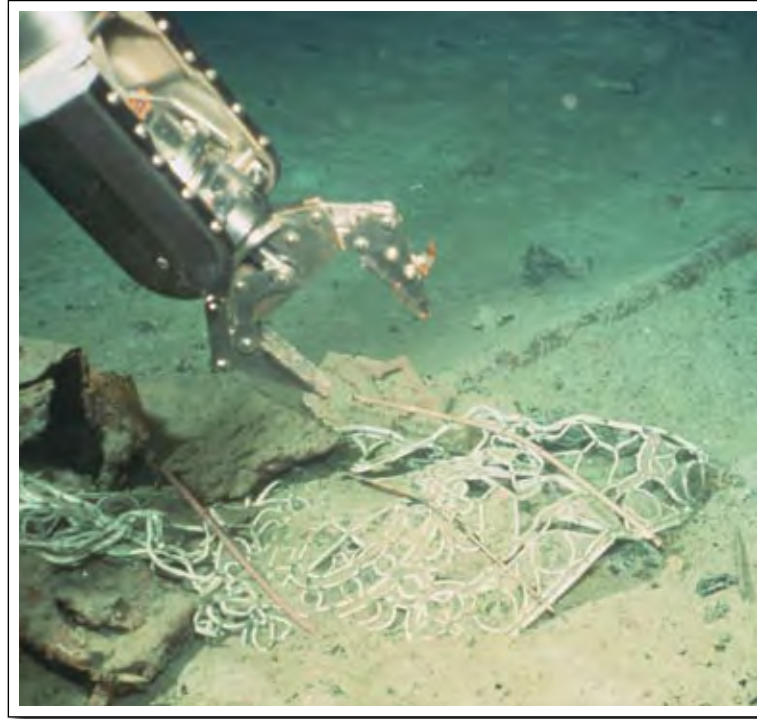
one of the ship's safes

We moved on through this amazing scenery. There were so many things scattered about that it became difficult to keep track of them. We came across one of the ship's boilers, and there on top of it sat an upright rusty metal cup like the ones the crew had used. It looked as though it had been placed there by a stoker moments before water had burst into the boiler room. It was astonishing to think that in fact this cup had just fluttered down that night to land right on top of a boiler.

Then in the light of *Alvin's* headlights, we spotted a safe ahead of us. I had heard about the story of fabulous treasure, including a leather-bound book covered with jewels, being locked in the ship's safes when she sank. Here was the chance of a lifetime, and I wanted to get a good look at it.

The safe sat there with its door face up. The handle looked as though it was made of gold, although I knew it had to be brass. Next to it, I could see a small circular gold dial, and above both a nice shiny gold crest.

Why not try to open it? I watched as *Alvin's* sample-gathering arm locked its metal fingers onto the handle. Its metal wrist began to rotate **clockwise**. To my surprise, the handle turned easily. Then it stopped. The door just wouldn't budge. It was rusted shut. I felt as if I'd been caught with my hand in the cookie jar. Oh, well, I thought, it was probably empty, anyway. In fact, when we later looked at the video footage we had taken, we could see that the bottom of the safe had rusted out. Any treasure should have been spread around nearby, but there was none to be seen. Fortunately, my promise to myself not to bring back anything from the *Titanic* was not put to the test.



robotic arm retrieves a leaded glass window

Two days passed before I went down to the *Titanic* again. After the rest, I was raring to go at it once more. This time we were going to explore the torn-off stern section that lay 1,970 feet away from the bow. It had been very badly damaged during the plunge to the bottom. Now it lay almost unrecognizable amidst badly twisted pieces of wreckage. We planned to land *Alvin* on the bottom directly behind the stern section and then send *JJ* in under the overhanging hull. Unless the *Titanic's* three huge propellers had fallen off when she sank, I figured they still ought to be there, along with her enormous 101-ton rudder.

We made a soft landing on the bottom and discovered that one of *JJ's* motors wouldn't work. Our dive looked like a washout. I sat glumly staring out of my viewport at the muddy bottom. Suddenly the mud started to move! Our pilot was slowly inching *Alvin* forward on its single ski right under the dangerous overhanging stern area. He was taking the sub itself to search for the huge propellers. Was he crazy? What if a piece of wreckage came crashing down? But our pilot was a professional, so I figured he must know exactly what he was doing.



In *Alvin* we explore under the overhanging deck of the *Titanic*'s severed stern section and photograph the buried rudder.

I could see an area ahead covered with rusticles that had fallen from the rim of the stern above. Until now we had had ocean above us. Crossing this point was like taking a dangerous dare. Once on the other side, there was no sure way of escaping if disaster struck. None of us spoke. The only sound in the sub was our breathing.

Slowly a massive black surface of steel plating seemed to inch down toward us overhead. The hull seemed to be coming at us from all sides. As we looked closely, we could see that like the bow, the stern section was buried deep in the mud—forty-five feet or so. Both the middle and the starboard propellers were under the mud. Only about sixteen feet of the massive rudder could be seen rising out of the ooze.

“Let’s get out of here,” I said. Ever so gently, *Alvin* retraced the path left by its ski. As we crossed over from the area covered with rusticles into the clear, we sighed with relief. We were out of danger. All of us were glad that this adventure was over.

Before we left the bottom this time, however, there was one mission that I wanted to complete. I wanted to place a memorial

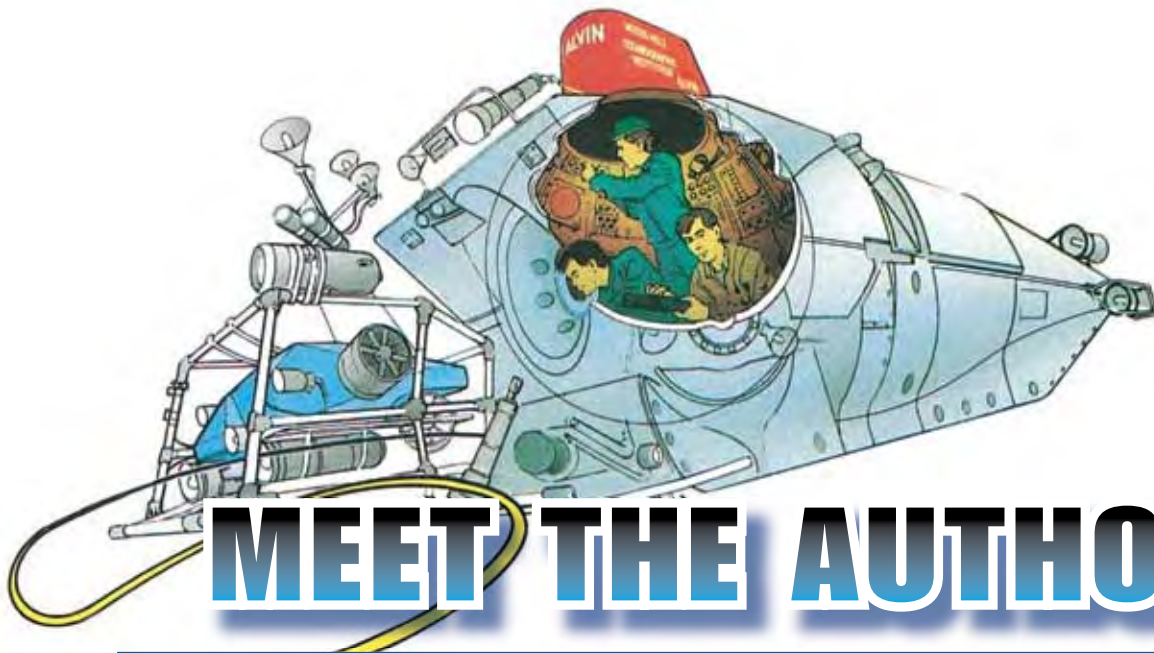


plaque on the twisted and tangled wreckage of the stern, in memory of all those lost on the *Titanic*. Those who had died had gathered on the stern as the ship had tilted bow first. This had been their final haven. So we rose up the wall of steel to the top of the stern. With great care, *Alvin's* mechanical arm plucked the plaque from where it had been strapped outside the sub, and gently released it. We watched as it sank quietly to the deck of the stern.

As we lifted off and began our climb to the surface, our camera kept the plaque in view as long as possible. As we rose, it grew smaller and smaller, until finally it was swallowed in the gloom.



the plaque we placed on the stern in memory of those who died on the *Titanic*



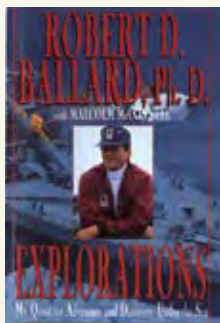
MEET THE AUTHOR

A doll's head and a man's patent leather shoe are usually not objects of wonder. But they were truly haunting images to explorer and oceanographer **Dr. Robert D. Ballard**, because of where they were found—among the wreckage of the *Titanic*. Ballard saw those objects through the eyes of a small robot operated from a three-man submarine. Searching a 150-square-mile area of the ocean floor for the *Titanic* “makes

finding a needle in a haystack seem trivial,” he says.

Ballard continues to be intrigued by technology and by what lies in the depths of the ocean.

Another book by Dr. Robert D. Ballard: *Explorations*



Find out more about
Dr. Robert D. Ballard at
www.macmillanmh.com

Author's Purpose

Why might a reader think that Dr. Robert D. Ballard is fascinated by the *Titanic*?

Identify text features and details from the selection that indicate the author's deep interest in the ship.





Comprehension Check



Summarize

Use your Fact and Opinion Chart to help you summarize *Exploring the Titanic*. Think about how the author's curiosity grew as he explored the *Titanic*.

Fact	Opinion

Think and Compare



1. Reread the first paragraph on page 394. What are the facts and what are the opinions? How do the facts help support the opinions? **Evaluate: Fact and Opinion**
2. According to the author, what are the advantages of using the *JJ* in the **interior** of the *Titanic's* remains? **Evaluate**
3. If you wanted to be an oceanographer, what would you study in school? What special equipment would you have to learn to use? **Synthesize**
4. Do you think it was important to explore the remains of the *Titanic*? Why or why not? What can we learn from exploring ruins from the past? **Apply**
5. Read "Waves" on pages 390–391. Why would the information in "Waves" be important to the author of *Exploring the Titanic*? **Reading/Writing Across Texts**