Mr. Eads' Bridge

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CHAPTER THREE

Caissons in the Mississippi

"Sure," Becky said, "I'd like to know more. But first, what exactly is a diving bell?"

Laura thought. "Have you ever turned an empty glass upside-down and then pushed it under water? It traps a bubble of air in the glass that keeps the water out. If you make the glass big enough and heavy enough, you can put a person inside the air bubble and sink all the way to the bottom of the river."

"Wow! So then the diver could just walk around on the riverbed inside the diving bell?"

"That's right. They also pump air into the bell."

"More air? Doesn't the air bubble keep the water out?" Becky said.

"It does. But the deeper you go under the water, the greater the water pressure becomes. You must add more air under pressure to keep the water from pushing in. The diver also needs fresh oxygen to breathe."

"Okay, I understand the diving bell. How did Mr. Eads use that to build the piers?"

"Mr. Eads had a fleet of boats that could lower and raise diving bells into the river to salvage cargo that sank in shipwrecks," Laura said. "The bridge foundation needed something more permanent. While traveling in Europe, Mr. Eads saw a new technology for underwater construction called a caisson."

"A kay-son?" Becky said.

"A caisson is a large diving bell or often several bells close together. Ships tow it to where the pier will be. You pile limestone blocks onto the top to sink it and use long wooden beams to guide it to the bottom. By leaving open shafts in the middle, workers can descend a stairway to the underwater air chambers which they then enter through airlocks."

Becky's eyes grew round. "They just walk down to the bottom of the river?"

"I've been there myself. Mr. Eads gave tours, taking people down to the air chambers when they started building. I was fortunate enough to accompany him one time. Because of the higher air pressure, our voices sounded thin and nasal, and you couldn't blow out a candle — it seemed to magically relight itself."

"That must have been something!" Becky said.

"It smelled terrible, but it worked. You can imagine what accumulates on the bottom of the Mississippi River."

"Not really. Yuck! So when they got to the bottom, they were finished?"

"They were just getting started! The river bottom is silt and mud, not at all suitable for anchoring a pier. Workers had to dig out the silt beneath them and let the caisson sink deeper and deeper until they reached bedrock."

"Engineers pioneered a new device called a sand pump to suck the mud and silt to the surface and dump it back into the river."

"Can I go down into the caisson?" Becky asked.

"I'm afraid not. Once the pier was complete, they filled the air chamber and stairwell with concrete to anchor it for all time."

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about working on the bottom of a river.