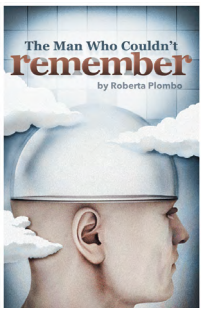
LEVEL 12, ACTIVITY 3

The Man Who Couldn't Remember

by Roberta Plombo



[1] Henry Molaison died in 2008 at the age of 82. He was famous, though few people knew his name. Until his death, Henry was known only by his initials, to protect his privacy. For decades, neuroscientists, who study the brain and nervous system, had been reporting about their research with "H.M."

[2] When Henry was ten years old, he began suffering from epilepsy. Epilepsy is a disorder that involves sudden bursts of electrical energy in the brain that cause seizures. For Henry, these seizures grew in strength over the years. When he was in high school, they were severe. At any time, he might lose consciousness, fall to the ground, and lie with muscles jerking. Doctors prescribed powerful medications, but the seizures continued.

[3] A neurosurgeon offered an experimental operation to treat the epilepsy. Henry was 27 when he decided to undergo the surgery. The surgeon drilled through Henry's skull. He carefully sliced away tissue from deep inside each half of the brain. The removed sections came from both temporal lobes. Each section included a structure called the hippocampus.

[4] As a result of the operation, Henry's seizures were reduced. But something essential had been taken from him. He lost the ability to form new memories. He still had some memories of his life before the operation. But he could not remember what he ate for breakfast or where he had gone the day before. No matter how many times he met someone, each meeting was new to him. He understood what was said to him, but he could not hold onto the information for more than a few seconds. When asked how long he had trouble remembering things, he said, "I can't tell you because I don't remember."

[5] Henry remained a gentle, friendly, intelligent person with a good sense of humor. He enjoyed doing crossword puzzles and watching movies. But without the ability to form memories, Henry could not learn new things or navigate his world. He needed care for the rest of his life.

[6] The general term for memory loss is *amnesia*. Amnesia may result from brain injury or disease. Sometimes amnesia is temporary. In Henry's case, it was permanent. And because it occurred after

removal of the hippocampus in both lobes, neuroscientists gained understanding of the work these structures perform. They discovered that the hippocampus and its neighboring regions enable the processes that change short-term memories into long-term ones. Without a hippocampus, the brain cannot hold onto a memory for more than thirty seconds.

[7] Henry's surgeon later called the operation "a tragic mistake." He warned other surgeons against removal of the hippocampal structures. Yet Henry understood that his case was valuable to science—even if that understanding came to him again and again and again. He said about doctors, "What they find out about me helps them to help other people. And that's more important." He agreed to donate his brain for scientific study. After his death, his brain tissues were carefully preserved. Through microscopic studies, scientists may expand their knowledge of how brain cells and pathways build memories in healthy brains.

[8] Neuroscientist Suzanne Corkin knew Henry well. She studied him for 46 years. In a book published in 2013, she wrote, "Henry's disability, a tremendous cost to him and his family, became science's gain." She called her famous subject "a collaborator—a prized partner in our larger quest to understand memory."