

CHAPTER
26**Section 4****HISTORYMAKERS** **Marie and Pierre Curie**
Dedicated to Science

"Whatever happens, even if one were to be like a body without a soul, one must work just the same."—Pierre Curie to his wife, Marie

Marie and Pierre Curie were dedicated and brilliant scientists. They shared with another scientist the Nobel Prize for Physics in 1903, and Marie won the Nobel Prize for Chemistry in 1911. The Curies won these and other awards because their work helped shape modern physics.

Marie Curie was born Maria Sklodowska in Poland in 1867. Her parents were intellectuals who, for political reasons, had difficulty finding jobs suitable to their training. Despite their struggles, they managed to pass their interest in education to their daughter, who proved herself a highly intelligent student. The family's poverty, though, forced young Marie to work to help send an older sister to college. Marie took a job as a governess for a wealthy family. Each day when she finished her work, she taught the poor peasants on the family's estate.

In 1891, Marie moved to Paris to continue her own education. She lived in an attic apartment and ate only bread and butter and tea. Studying hard, she finished first in a licensing exam in physics in 1893 and second in the mathematics exam in 1894. That year, she met Pierre Curie, a scientist from Paris who was eight years her senior and had done some important work in magnetism. He proposed to her in a few months, and the next year they wed.

The marriage came as modern physics was just beginning, and the two scientists were excited by new discoveries. Wilhelm Roentgen discovered x-rays in 1895. Henri Becquerel found that uranium radiated similar rays in 1896. Marie began experiments aimed at finding other materials that emitted this radiation.

Marie began using a piece of equipment that Pierre and his brother had made in order to measure weak electrical current. She learned that thorium was, like uranium, radioactive—a term that she coined. Soon, Pierre left his own research and joined his wife in this work. In 1898, they discovered a new radioactive element, which they named polonium after Marie's native country. That year they also discovered the element radium. They identified both elements from the radiation they gave off. While Pierre continued to study that radi-

ation, Marie focused on trying to isolate pure samples of the two elements. Working with a chemist, she was finally able to obtain a small sample of radium in 1902. She won two French science prizes for this work. The next year brought more rewards. Marie was granted her doctorate in science, and both Curies won an award from the British Royal Society and the Nobel Prize for Physics.

The Curies found fame unwelcome. They were generous with their time and knowledge for both scientists and business owners who hoped to find uses for radioactive substances. However, they complained about the "burden of fame" and reluctantly began to take shorter vacations and fewer bicycle rides, a favorite recreation. In 1906, tragedy struck when Pierre was killed by a cart on a Paris street. The next month, the faculty of the Sorbonne University voted to give Marie the professorship that Pierre had held. She became the first woman in the history of that school to teach classes.

Marie taught and worked in the laboratory for almost 30 more years. She also continued winning awards and was always generous. She used the money that came with her 1911 Nobel Prize for Chemistry for research or gave it to friends. During World War I she worked closely with the French army, teaching doctors how to use x-rays to help wounded soldiers.

After the war, Marie labored to build a supply of radioactive material. Some was used for medicine while other samples were taken for further research. In 1934, she died of leukemia, a disease caused by lifelong contact with radioactive elements.

Questions

1. **Determining Main Ideas** Give two examples of actions Marie Curie took that showed she was a humanitarian.
2. **Summarizing** How did Pierre's efforts contribute to the scientific success of the couple?
3. **Following Chronological Order** Outline the sequence of Marie Curie's career as a scientist.