

HISTORICAL NOTES AND DISCUSSION GUIDE:

CURIE ME AWAY!

By Matheatre



IMPORTANT PEOPLE

MARIE CURIE (1867-1934)

Born Marya Salomea Sklodowska in Warsaw, Poland, known to family as “Manya.” The daughter of two schoolteachers, she lost her mother to tuberculosis at a very young age. Manya grew up under Russian occupation, where Polish culture was banned and the higher education of women was a punishable crime. As an extremely bright young woman, she firmly believed that the education of the individual would lead to building a better world for everyone. At the age of 24 she left Warsaw to study at the Sorbonne in Paris, France, where education was legal for women, but still not without obstacles. After the accomplishments depicted in this play--coining the term “Radioactivity,” discovering the elements Polonium and Radium, being the first woman to win the Nobel Prize (in Physics, in 1903) and the first female professor at the Sorbonne--she went on to win a second Nobel Prize (in Chemistry) in 1911 and founded the Institute of Radium in Paris and in Warsaw. Madame Curie also developed the “Petites Curies”--mobile X-ray units that she and her teenage daughter drove out, in a manner that this author likes to imagine as totally Wonder Woman-style, onto the French battlefields of WWI to aid medics with more efficient shrapnel removal techniques. Her personal life came under severe public condemnation in 1911 when, as a widow, she had a romantic relationship with a colleague--a damaging example of societal double standards that hold women to different expectations than men. Throughout her life she battled depression and suffered from poor physical health. An intensely private woman, she was described by Albert Einstein as “the only one whom fame has not corrupted.” Madame Curie died in 1934 from aplastic anemia, a result of cumulative radiation poisoning.

PIERRE CURIE (1859-1906)

Mostly homeschooled as a student, Pierre's early interests were in crystallography. Along with his older brother Jacques, he developed the piezoelectric quartz electrometer and the "Curie scale" to provide accurate measurements of the electric potential generated by compressed crystals. He abandoned this work to join Marie in her studies of Radioactivity. Scientific papers published by the duo rarely specified credit to one or the other of them for ideas, tests or conclusions--they worked as a team, and Pierre always championed his wife as an intellectual equal--though the public often presumed she was his "assistant." Unfortunately, it was not until his sudden and untimely death in 1906 that she was offered the opportunity to fill his professorship at the Sorbonne, and began to finally receive proper recognition as a scientist in her own right rather than a scientist's wife.

IRENE JOLIOT-CURIE (1897-1956)

The eldest daughter of Marie and Pierre Curie, Irene grew up to become her mother's lab partner and later the second woman to win the Nobel Prize--shared with her husband, Frederic Joliot--in Chemistry, for the discovery of artificial radioactivity in 1935. Her own daughter, Helene Langevin-Joliot (presently age 90), is a professor of nuclear physics.

EVE CURIE (1904-2007)

The younger daughter and only member of the family not to be a scientist, Eve was an accomplished musician and writer, serving as a correspondent during WWII and penning the biography of her mother upon which much of this play was based. Her husband, Henry Labouisse, was the director of UNICEF and she did humanitarian work with this organization for much of her long life.

GABRIEL LIPPMANN (1845-1921)

Professor of Physics at the Sorbonne, later became a mentor to Marie Curie and served as her doctoral adviser. He himself won a Nobel Prize in 1908 for inventing a method of color photography based on the interference phenomenon.

JOZEF WIERUSZ-KOWALSKI (1866-1927)

Polish physicist and family friend of the Sklodowskis, he was responsible for introducing Marie to Pierre Curie in 1894. He later went on to be an instrumental faculty member of the University of Warsaw when it re-opened as a Polish institution (after years of Russian occupation) in 1915.

HENRI BECQUEREL (1852-1908)

French physicist with whom the Curies shared the Nobel Prize in Physics in 1903. His study of phosphorescent substances led to the first inkling of the notion of radioactivity--elemental energy that radiates independently of any reaction. The Curies expanded upon this research.

ERNEST RUTHERFORD (1871-1937)

Known as the "father of nuclear physics," among his many accomplishments are discovering radioactive half-life, proving that radioactivity involved the transmutation of one element to another, theorizing the nucleus and discovering the proton. And much more. This work was concurrent with and complementary to the research being done by the Curies. The early 20th century was a truly thrilling time to be a scientist.

ALFRED NOBEL (1833-1896)

Swedish chemist best known for inventing dynamite, he endowed his fortune to one of the most enduringly prestigious prizes for Science, Literature and Peace--in part to serve as reparation for profiting from the sale of arms and explosives.

DISCUSSION QUESTIONS

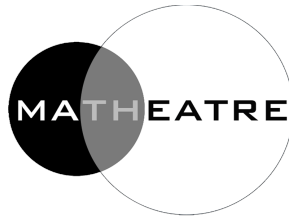
1. Young Marie ("Manya") participates in a clandestine organization known as the "Flying University," because it was illegal for women in Poland to attend college. How does access to education shape opportunities, and how does this access vary across gender, race, class, income and geography, in the present day?
2. In your opinion or experience, what has changed for women in STEM fields since Marie Curie's time, and what remains the same? Are there still obstacles that women and girls face in the scientific fields, and do they differ from the situations depicted in this play?
3. Pierre Curie treated Marie as a professional equal. Yet at home there was still an uneven expectation of responsibility for most household tasks. Does this dynamic reflect modern gender roles? In what ways was Pierre an ally to Marie, and in what ways could he have done better?
4. Though France became her permanent home, Marie's Polish identity remained an important part of her life. She named element 84 Polonium--as a political statement to bring the world's attention to oppression in her homeland. How do science and politics mix today, and are there consequences? Benefits?

5. Marie and Pierre conduct experiments with radioactivity that seem dangerous and cavalier today, and you may know that radiation poisoning eventually contributed to Marie's death. What are other scientific breakthroughs that came at great personal cost? Are we better equipped to prioritize personal safety now, and how does this affect our attitudes toward research?
6. Many people presumed that Marie was Pierre's assistant, rather than a fully equal colleague. Have you ever made a mistaken assumption about someone based on their gender, race, social status, or something else? Has anyone made a mistaken assumption about you? What can we do to challenge these biases?
7. Radioactivity is known today to be hazardous, but in Curie's time the public viewed it as a novel sensation. In your understanding, what are the dangers of radioactivity? What are the benefits?
8. The discovery and study of radioactivity led to the understanding that atoms can decay. Previous to this it was believed that the atom was the smallest basis of all matter, and unbreakable. How does a discovery of this magnitude change and shape the way we see the world?
9. Madame Curie was dedicated to pure science--study and experimentation for the purpose of gaining understanding, rather than working toward a particular applicable goal. What is the value of pure research? What are some notable breakthroughs that her work led to?
10. In the script, young Manya's father paraphrases a famous quote that is attributed to Marie Curie: "you cannot hope to build a better world without improving the individuals." What contributions did Marie Curie make as an individual that have improved our world today? And digging deeper, what do you think this quote is saying about the role of education to the individual and to society?

SUGGESTED READING

This 60-minute play only captures a portion of Madame Curie's astonishing life story. In many ways the second half of her life is even more interesting than the first half depicted in this play! To read more about this incredible woman, the details and scope of her work, and her amazing scientific family, we recommend the following books, all of which were used as sources in the writing of this play.

Madame Curie by Eve Curie
Marie Curie and Her Daughters by Shelley Emling
Obsessive Genius by Barbara Goldsmith



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