



## A visit with one of the last “Radium Girls”



Left: Mae Keane (top) during the “Radium Girl” years and (bottom) at her Middlebury, Conn., home, shortly before her death at age 107. Right: Women at work in the dial painting studio in Orange, N.J., in the early 1920s. Credit: National Archives, Chicago.

When I was very young, a windup clock sat on my grandmother’s nightstand. It was oval, metal, and pale green. It didn’t look like much. But, one day my grandmother showed me why it was so special. When she closed the curtains, the numbers glowed. Every time I visited my grandmother, I recreated this marvel by covering the clock’s face with my small hands. Decades later, I would find out that the glowing paint contained radium.

At the start of the 20th century, radium made its way into everyday items, from cosmetics to medicines to toys. However, the most popular use for radium was in the making of clocks. These glowing clocks were painted by young girls in a studio located in Orange, N.J., a city that was not far from my grandmother’s home. Inside the studio, these young women made their paintbrushes sharp using the corners of their mouths. As a result, many succumbed to radium poisoning and would later become known as the Radium Girls.

When I was a little girl, I heard about the Radium Girls, but I didn’t know if this story was true, because my New Jersey childhood was full of chemistry and myth. There were whispers in the school playgrounds in the 1970s that the combination of Pop Rocks and soda was deadly. Additionally, bad chemistry enveloped me, as foul fumes along the New Jersey Turnpike assaulted my young nose, particularly on journeys to my grandmother’s house. With such toxic tales and noxious odors mixing in my chemical youth, a story about a radioactive paint seemed just another part of New Jersey life. When I left the Garden State, my memories of the Radium Girls quickly faded away.

Decades later, as a materials scientist living in Connecticut, I stumbled onto a news story about the Radium Girls. This time, my interest was piqued because this news story confirmed an old

childhood rumor. The article stated that Radium Girls were also in Connecticut, working at the Waterbury Clock Company. The article went on to say that all of them had died except for one: Mae Keane, a 107-year-old Radium Girl, who lived 30 minutes from my home. When I read this, I was intrigued because this woman combined things I loved—a unique element, the history of an old clock that once fascinated me, and my beloved grandmother. Now I wanted to meet a Radium Girl, and this opportunity was my last chance.

Finding Mae Keane wasn’t that tricky. On the web, I found an image of her with a Connecticut high-school student who had written a history report on her. I contacted the school’s history teacher, and she told me that this young man was related to Mae, and that she lived with him and his parents. I was then connected to the student’s mother, who graciously invited me to her home.

On an April afternoon in 2013, I drove to a large home tucked away behind a pond where George Washington once camped. I found myself sitting with a very friendly group consisting of a mom, a dad, a son, a history teacher, and a small overzealous dog. Everyone had something to share with me about radium, sometimes speaking over each other. About 20 minutes later, Mae joined us walking up from her downstairs bedroom, full of life and energy. I examined this little woman intently: the transparency of her skin, the depletion of color in her hair, and the effervescence of her smile. For 107 years of age, she looked magnificent. I sat there dumbstruck listening to Mae retell stories about her time in the radium painting studio.

What I learned is that Mae, at 18, worked at the Waterbury Clock Company in Connecticut for a total of four weeks. A friend



Left: Ad from *Cosmopolitan Magazine*, April 1915. Credit: Google Books. Right: Women working at the Ingersoll factory in January 1932. Credit: Getty Images.

of hers told her about the job, since it paid better and was cleaner work than the brass mill. Mae's first three weeks were a training period, where she learned the ins-and-outs of the paint, such as how to mix it and how to keep the paint's particles floating. She also learned how to make a fine point with her brush using the corner of her mouth



Aïnissa Ramirez with Mae Keane during her visit in April 2013.

before applying paint to make numbers. Mae was paid by how many pieces she completed. At the studio, most girls finished 50 to 60 dials a day. Some were so fast that they finished 250 pieces. Mae only finished a few. She hated the grittiness of the paint in her mouth, which reminded her of sand inadvertently swallowed when eating oysters. She wasn't a fast worker, so after her official first week of work, she received a paycheck—and a pink slip. Mae was fired.

Despite her short time at the clock shop, she did not leave unscathed. By the time she was in her 30s, she lost her teeth. "I really loved my teeth, it was heartbreaking to lose them," said Mae. Her doctor told her that the radium had eaten the roots, since radium substituted for calcium, which made her teeth brittle. Her radium exposure also gave her three forms of cancer later in life. Despite all this, she reached the age of 107 years old.

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The other young women were not as fortunate. Every one of her coworkers from the Waterbury Clock Company died terrible and protracted deaths from rare forms of cancer and bone sarcomas. Some had softball-sized growths on their chins or knees. All of them suffered tremendous pain. One of Mae's friends from the studio, Josephine P., was bedridden for 40 years and broke bones when turning over on her mattress. She cracked a rib sleeping on her side. Josephine lost her sight from working with radium before giving birth to her son, and never saw his face. "I really wish I could have thanked my boss," said Mae.

In 1927, five Radium Girls from Orange, N.J., who were then sick and disfigured, sued their employer, the United States Radium Company. The case eventually was settled out of court in 1929. When I relayed this fact to Mae, I asked her why she did not share her story more often. She feared that her long life would give the wrong message about the danger of radium. We know better now.

When I left this extraordinary woman, I came away with a strong affection for her. She was warm and kind. She was funny and smiled readily. She was generous and friendly. She shared much grandmotherly advice with me, too. I told her about how my journey in meeting her began with an old clock on my grandmother's nightstand decades ago. As I left, I was pulled aside by my host, the mother at the table, who told me that Mae would have been a wonderful grandmother, too, if it weren't for her exposure to radium.

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### References

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**Erratum:** In the September issue of *MRS Bulletin* [44(9), 735–736], there is a clarification for the text that states, "In the 20 years since his passing in 2010, I have often contemplated why Dr. Lagow was willing to take a chance on an often-misunderstood biochemistry student." Dr. Lagow passed away nine years ago in 2010. The author was referring to the fact that this fall will mark 20 years since she was in his class as his laboratory student.