# Marie Curie's Relations with the United States

*by George B. Kauffman*

**In a magnificent gesture of magnanimity Marie and Pierre Curie had decided not to patent their most famous discovery—radium—or its medical applications. According to Marie:**

> "The price of radium is very high since it is found in minerals in very small quantities, and the profits of its manufacture have been great, as this substance is used to cure a number of diseases. So it is a fortune which we have sacrificed in renouncing the exploitation of our discovery, a fortune that could, after us, have gone to our children. But what is even more to be considered is the objective of our many friends, who have argued, not without reason, that if we had guaranteed our rights, we could have had the financial means of founding a satisfactory Institute of Radium, without experiencing any of the difficulties that have been such a handicap to both of us, and are still a handicap to me. Yet, I still believe that we have done right." (National Bureau of Standards 1921)

The Curies' decision to forego a patent would ultimately lead Marie to visit the United States twice—once in 1921 and again in 1929, both times in search of funds for her work. In the spring of 1920, Marie Mattingly Meloney a small, dynamic, trailblazing journalist and editor, known to all as "Missy," finally succeeded in obtaining an interview with Marie in her Paris laboratory. Despite Marie's disdain for the media and their differences in temperament, the two women became close friends for the rest of their lives (Meloney 1921).

*Marie Curie (left) with President Warren G. Harding at the White House, 20 May 1921 (U.S. Library of Congress).*

When Missy asked Marie how she could help her, Marie told her that she had no radium for research. The Radium Institute had no money for equipment, and the entire supply of radium (1 gram) was used in the institute's biological section to provide radon tubes for cancer therapy. The United States had the world's most plentiful supply—50 grams.

Instead of merely getting a story for her magazine Missy decided to use her influence, contacts, and clout to give a gram of radium, which cost about USD 120 000, to Marie. She became chair of the Marie Curie Radium Fund and asked prominent New York doctors to join the fund's board. Marie was highly respected among them because during the war she had educated numerous American physicians at her Radium Institute. One of the prime movers behind the fundraising was Robert Abbe, M.D., who had visited the Curies in Paris as early as 1902 and was the first American doctor to use radium to treat cancer and other diseases. Prominent women who joined the board included Mrs. John D. Rockefeller and Mrs. Calvin Coolidge. The advisory committee of scientists included the president of the American Medical Association and leading representatives from the Rockefeller Foundation and Harvard, Cornell, and Columbia Universities.

Missy employed the pages of *The Delineator* ("A Journal of Fashion, Culture, and Fine Arts"), the foremost women's magazine in the United States, which she edited, to solicit small donations from many American women to contribute to the fund. American physicians also made sure that the money for the radium was raised, but also generated additional funds to provide Marie with a modern and well-equipped laboratory.

On 3 May 1921 the Marie Curie Radium Fund Committee awarded a contract to the Standard Chemical Company of Pittsburgh, Pennsylvania, USA, for the gram of radium, with the price reduced to

*Marie Curie (center) at the Radium Refining Plant of the Standard Chemical Company, Pittsburgh, Pennsylvania, USA (National Bureau of Standards, 1921).*

USD 100 000 in her honor. The radium was later presented to Marie at the White House in Washington, D.C., on 20 May 1921. According to *The New York Times* ("To Supply Curie Radium," 4 May 1921), three other firms bid on the contract.

Missy had convinced Marie to travel to the United States on a whirlwind tour which involved numerous receptions and long receiving lines to accept the gift. Accompanied by her daughters, Irène (Adloff and Kauffman 2006) and Eve (Kauffman and Adloff 2009), Marie arrived in New York City aboard the Olympia on 11 May 1921, her first trans-Atlantic trip.

A large crowd, including 26 photographers, met the Curies at the dock, which was decorated with the flags of the United States, Poland, and France. Missy had publicized the event by writing about Marie and her work in *The Delineator* and providing advance information to her newspaper colleagues (Quinn 1995). She protected Marie, who was in fragile health, from the press' excessive inquisitiveness. Irène and Eve took over many of the functions expected of their mother. It was not until this trip that Irène (age 23) and Eve (age 16) realized their mother's global fame (E. Curie 1937).

On 12 May, *The New York Times* described the Curies' arrival in a front-page article, "Mme. Curie Plans to End All Cancers," which it retracted the next day, "Radium Not a Cure for Every Cancer," stating that radium was a specific therapy for many but not all cancers. Both articles detailed Marie's itinerary for the rest of her trip.

On 17 May, Marie was honored at New York City's American Museum of Natural History. On 18 May at Carnegie Hall, 3500 representatives of almost every major women's college on the Eastern seaboard, the largest meeting of American college women, honored Marie with the Ellen Richards Memorial Prize of USD 2000. This event was also the launch of a movement to advance disarmament and prevent war.

Marie and her daughters visited numerous women's colleges, among them Smith, Vassar, Bryn Mawr, Radcliffe, Wellesley, Simmons, and the Women's Medical College in Philadelphia. She received honorary degrees from the Universities of Pennsylvania, Pittsburgh, and Chicago as well as Columbia, Northwestern, and Yale Universities. She spent considerable time in Pittsburgh, conversing with scientists and engineers at the Standard Chemical Company, the American manufacturer of radium. The Curies visited the Grand Canyon and Colorado, where carnotite, $K_2(UO_2)_2(VO_4)_2.3H_2O$, the ore that was the source of American radium, was mined. They visited Niagara Falls, where university women from Toronto, Canada, honored her. In nearby Buffalo, New York, she was made an honorary member of the Buffalo Society of Natural Sciences and visited the Gratwick Cancer Center (now Roswell Park).

The highlight of Marie's trip took place on the afternoon of 20 May, when she was received in the East Room of the White House in the presence of more than 100 eminent scientists and diplomats from Poland and France. She is said to have worn the same black dress that she wore when she received both her Nobel Prizes.

President Warren G. Harding presented her with a deed inscribed on a scroll tied with red, white, and blue ribbons and gave her a small, elaborate golden key to open the polished, lead-lined, ribbon-draped, steel box within a mahogany box containing the gram

*From left: Marie Mattingly ("Missy") Meloney with Irène, Marie, and Eve Curie as they arrive in New York City on 12 May 1921 (U.S. Library of Congress).*

of radium, in 10 small tubes, weighing a total of 125 pounds. The radium had been kept at the Bureau of Standards where it had been tested and where it remained until just before Marie's departure from New York City. President Harding is said to have also given her a "Certificate for Radioactive Material" submitted for measurement and certification to the National Bureau of Standards signed by National Bureau of Standards Director Samuel W. Stratton. A facsimile key, which was given as a souvenir to Mrs. Harding, had been prepared in case the radium might not be ready in time for the presentation. The mahogany box is on display at the museum of the Institut du Radium (Mould 1998). A plaque attached to the container reads:

> "Presented by the President of the United States on behalf of the women of America to Madame Marie Skłodowska Curie in recognition of her transcendent service to science and to humanity in the discovery of radium." (Mould 1998)

President Harding welcomed Marie on behalf of the American people, calling her the "adopted daughter of France" and the "native-born daughter of Poland":

> "I have been commissioned to present to you this little phial of radium. To you we owe our knowledge and possession of it, and so to you we give it, confident that in your possession it will be the means further to unveil the fascinating secrets of nature, to widen the field of useful knowledge, to alleviate suffering among the children of man. Take it to use as your wisdom shall direct and your purpose of service shall incline you. Be sure that we esteem it but a small earnest of the sentiments for which it stands. It betokens the affection of one great people for another. It will remind you of the love of a grateful people for yourself; and it will testify in the useful work to which you devote it, the reverence of mankind for one of its foremost benefactors and most beloved of women" (Harding, papers of, 1888–1923).

In the next day's issue of the *Washington Post*, Constance Drexel reported the event in a front-page article (Drexel 1921) and quoted from President Harding's remarks:

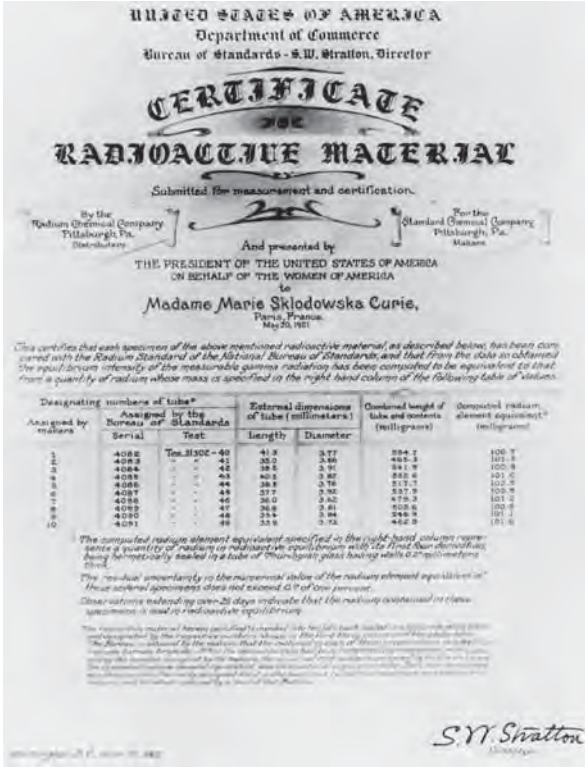
> "The zeal, ambition, and unswerving purpose of a lofty career could not bar you from splendidly doing all the plain but worthy tasks which fall to every woman's lot."

On the day before the presentation, when the deed for the radium was given to Marie to review, she objected that it made her the sole owner of the radium, with her daughters as heirs. She insisted that the deed be changed so that the radium would pass from her to the laboratory rather than to her family so that it would be available to other researchers. On the afternoon before the presentation a lawyer rewrote the deed (E. Curie 1937). On June 25 Marie and her daughters left New York with the radium, mesothorium, and thousands of dollars to finance the Radium Institute.

Marie visited the United States for her second and last time in 1929, but compared with her 1921 visit, it was short and not well publicized. During the 1920s she and her older sister Bronislawa ("Bronya"), a physician, were responsible for building the Radium Institute (now the Marie Skłodowska Curie Institute of Oncology) in her hometown of Warsaw, which was similar to the institute in Paris. The financial situation in post-World War I Poland was even more acute than in France. Poland had just attained its independence as the Second Polish Republic in 1918, and Marie not only

called upon the population to donate funds for the founding of the institute but also contributed some of the money from her first trip to America to "rent" radium for Warsaw scientists.

In 1928 in Paris, Marie asked Missy Meloney if the American people could provide funds for another gram of radium for the Polish Radium Institute. Missy, who was now editor of the *Sunday Magazine* of the *New York Herald Tribune*, began to organize a second trip, but cautioned Marie that since her last visit Americans had become politically "small-minded," "isolationist," and less magnanimous. Newly elected President Herbert Hoover, who had been a member of the Marie Curie Radium Fund Committee of 1921 and had met Marie during her first visit, invited Marie, at Missy's behest, to stay at the White House, an unprecedented "first" (No foreigner had ever been so privileged).



UNITED STATES OF AMERICA
Department of Commerce
Bureau of Standards - S. W. Stratton, Director

CERTIFICATE
FOR
RADIOACTIVE MATERIAL

Submitted for measurement and certification.

By the Radium Chemical Company, Pittsburgh, Pa., Distributors

For the Standard Chemical Company, Pittsburgh, Pa., Makers

And presented by
THE PRESIDENT OF THE UNITED STATES OF AMERICA
ON BEHALF OF THE WOMEN OF AMERICA
to
Madame Marie Sklodowska Curie,
Paris, France.
May 20, 1921

This certifies that each specimen of the above mentioned radioactive material, as described below, has been compared with the Radium Standard of the National Bureau of Standards, and that from the data so obtained the equilibrium intensity of the measurable gamma radiation has been computed to be equivalent to that from a quantity of radium whose mass is specified in the right hand column of the following table of values.

| Designating numbers of tube* | | External dimensions of tube (millimeters) | | Combined weight of tube and contents (milligrams) | Computed radium element equivalent* (milligrams) |
|---|---|---|---|---|---|
| Assigned by makers | Assigned by the Bureau of Standards | | | | |
| | Serial | Test | Length | Diameter | |
| 1 | 4082 | Tes.31302-40 | 41.3 | 3.77 | 384.1 | 100.1 |
| 2 | 4083 | " " 41 | 35.0 | 3.66 | 485.3 | 101.1 |
| 3 | 4084 | " " 42 | 38.5 | 3.91 | 541.9 | 100.9 |
| 4 | 4085 | " " 43 | 40.1 | 3.87 | 552.6 | 101.5 |
| 5 | 4086 | " " 44 | 38.5 | 3.76 | 517.7 | 102.9 |
| 6 | 4087 | " " 45 | 37.7 | 3.92 | 537.9 | 100.9 |
| 7 | 4088 | " " 46 | 36.0 | 3.82 | 476.3 | 101.2 |
| 8 | 4089 | " " 47 | 36.8 | 3.81 | 505.6 | 100.9 |
| 9 | 4090 | " " 48 | 35.4 | 3.94 | 546.9 | 101.1 |
| 10 | 4091 | " " 49 | 33.6 | 3.72 | 462.8 | 101.6 |

The computed radium element equivalent specified in the right hand column represents a quantity of radium in radioactive equilibrium with the first four disintegrations, being hermetically sealed in a tube of thin-walled glass having walls 0.2 millimeters thick.

The residual uncertainty in the numerical value of the radium element equivalent of these several specimens does not exceed 0.7 of one percent.

Observations extending over 21 days indicate that the radium contained in these specimens is in radioactive equilibrium.

S. W. Stratton

*The "Certificate for Radioactive Material" submitted for measurement and certification to the National Bureau of Standards and signed by Director Samuel W. Stratton.*

On 15 October 1929, Marie, whose sight was failing, arrived in New York City, where she was the guest of honor at the American Society for the Control of Cancer (now the American Cancer Society). Her remarks were broadcast on the radio. On 21 October she was honored at the 50th anniversary celebration of Thomas Edison's invention of the electric light bulb in Dearborn, Michigan; President Hoover spoke at the event. On 23 October she visited the General Electric Company in Schenectady, New York; the plant was closed in honor of her visit. On 25–26 October she visited St. Lawrence University, in Canton, New York, where she dedicated the Hepburn Science Building and received an honorary D.Sc. Degree, on which occasion Charles Chelsea Gaines, the oldest faculty member, composed and recited a sonnet in her honor.

On 30 October, at the building of the National Academy of Sciences and National Research Council, President Hoover presented Marie with a USD 500 000 bank draft. Nations had been permitted to enter bids, and Belgium won with the bid (half the price of a gram of radium in 1921) based on reduced costs of commercial production from ore deposits in Katanga, Belgian Congo. The event was overshadowed by the stock market crash ("Black Thursday," 24 October, followed by "Black Tuesday," 29 October), reports of which filled the newspapers and ushered in the Great Depression.

Responding to President Hoover, Marie declared:

> "In accepting this precious gift, which will hasten the opening of the Radium institute in Warsaw, I offer you, and all my American friends, my most profound thanks. My laboratory in Paris will keep in close relation to the Warsaw Institute, and I will like to remember the American gifts of radium to me as a symbol of endearing friendship bridging your country to France and Poland." (Ham 2002)

**George B. Kauffman, professor of chemistry emeritus at California State University, Fresno and Guggenheim Fellow, is a frequent contributor to the scientific and historical literature and the recipient of numerous national and international awards. He was a research student of Marguerite Perey, who was an assistant of Marie Curie and the discoverer of francium. He succeeded Perey as the chair of nuclear chemistry, was a member of the IUPAC Commission on Radiochemistry and Nuclear Techniques, and acted as an expert in radiochemistry for the IAEA.**