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SURVEY REVIEW

THE MANY *LIVES* OF MARIE CURIE

Marilyn Bailey Ogilvie, *Marie Curie: A Biography*. Westport, Connecticut, and London: Greenwood Press, 2004. Pp. xiv + 155. US\$29.95 HB.

Barbara Goldsmith, *Obsessive Genius: The Inner World of Marie Curie*. New York and London: W. W. Norton, 2005. Pp. 255. US\$23.95 HB.

*By Naomi Pasachoff*

Spencer Weart, Director of the Center for the History of Physics of the American Institute of Physics, recently informed me that even in this centenary year of Einstein's *annus mirabilis*, "of search terms that bring people to any place on AIP's Website, 'Marie Curie' is on top, beating out 'Albert Einstein.'"

Other scientists born around the same time as Curie (1867), including Einstein himself (1879) and Bohr (1885), led fascinating lives in which science mingled with politics during wars both hot and cold. But none seems to have the general romantic appeal of Curie. In part that may be because her science is easier to understand, in part because the battles she fought are still relevant – as the flap about Harvard President Larry Summers's remark questioning women's innate aptitude for science shows. The women's issue, however, cannot entirely account for the public's apparent inability to overindulge on lives of Marie Curie. Among women scientists who might also serve as role models, readers have not ignored biographies of Lise Meitner (1878–1968), with her own dramatic wartime story, or the younger Barbara McClintock (1902–1992) and Rosalind Franklin (1920–1958), who faced humiliation and disparagement at the hands of young James Watson and his ilk. But none of them has maintained the same long-lasting grip on the public's attention.

It would seem that enduring public interest in Curie's life is primarily due to the deeply dramatic narrative arc of her life. Her life,

if it were a novel, might seem to suffer from a surfeit of plot lines: the motherless child, the Polish patriot, the self-abnegating daughter and sister, the driven expatriate student, the reluctant bride, and the single mother, with a juicy adultery scandal thrown in for good measure. The public appears to like its science seasoned with lots of spice. All these themes, however, and more, really do play out in Curie's life.

Publishers have been far from insensitive to the public's enduring infatuation with history's most famous woman scientist. From the 1920s, when Curie wrote her own "autobiography" as a shameless fundraising tool, to the 1930s, when her daughter wrote the first biography of her mother – to make sure she got the spin the way she wanted it before someone else had a chance to slant things differently – readers young and old have gobbled up new biographies of Curie.

And new ones appear all the time. Every decade since the 1970s at least one biography of Curie has appeared in English (sometimes in English translation) on the general trade market. Probably several titles appear annually for the young-adult market. The publishers' credo seems to be, "Publish it, and they will read."

So even in Einstein's *annus mirabilis* celebration year, we have at least one new biography of Curie for each of these markets. Although the boundaries separating the markets are somewhat fluid – many university libraries stock volumes of Oxford University Press's Portraits in Science series, for example, and nothing stops teenage readers from choosing appealing books for older audiences – Greenwood, the publisher of Ogilvie's book, calls attention to its particular suitability for the school market. According to the Series Foreword, "In response to high school and public library needs, Greenwood developed this distinguished series of full-length biographies specifically for student use. Prepared by field experts and professionals, these engaging biographies are tailored for high school students who need challenging yet accessible biographies. Ideal for secondary school assignments, the length, format, and subject areas are designed to meet educators' requirements and students' interests... While the emphasis is on fact, not glorification, the books are meant to be fun to read."

As it turns out, if I were a teenager offered the choice of one of these two biographies, for a number of reasons I would choose the Goldsmith. But if I were that same teenager and given a choice of reading one, and only one, of the 'adult' biographies of Curie

published in English since the 1970s, I might very well choose Robert Reid's *Marie Curie* (1974), if a good but short read were my concern, or Susan Quinn's *Marie Curie: A Life* (1995), if I wanted to read a book resulting from access to recently released documents. Each of these books effectively exploded many of the myths underlying the Curie legend spun both by Curie herself and by her daughter. Although each of these earlier books has shortcomings of its own, I find them both superior to the two books under primary consideration in this review, although each of those, in turn, has strengths worth noting.

On the surface, Ogilvie would seem perhaps most qualified of all the authors to write a biography of Curie. Co-editor of *The Biographical Dictionary of Women in Science* (New York: Routledge, 2000) and author of *Women in Science: An Annotated Bibliography* (New York: Garland, 1996), she is also Curator of the History of Science Collections, Professor of Bibliography, and Professor of the History of Science at the University of Oklahoma. While her book, weighing in at 155 pages, qualifies as "full-length," whether or not it is "engaging" or "fun to read" is debatable. And for a volume in a series that touts its "emphasis on fact," Ogilvie's book is also riddled with errors.

But let us start with what is praiseworthy. Not surprisingly, given Ogilvie's field of expertise, one of her book's strengths is its coverage of women's scientific contributions. In Chapter 4 she notes that when Curie began her work most women involved in scientific enterprises "were engaged in data-gathering rather than idea creation." She singles out astronomy as "one of the few fields that offered women the possibility of jobs outside of the home," but points out how new technologies like cameras and spectrographs led to the exploitation of women "computers" both at the Harvard College Observatory and the Royal Observatory at Greenwich (pp. 37–38). Ogilvie pays homage to other, less well known, couples engaged in scientific inquiry when Pierre and Marie began their collaboration, including "British astronomers Annie and Walter Maunder [of the Maunder minimum] and Margaret and William Huggins; American naturalists Anna Botsford Comstock and John Henry Comstock; French neurologists Cecile Mugnier Vogt and Oskar Vogt; and British physicists Hertha Marks Ayrton and W. E. Ayrton." (p. 38). Ogilvie might have adumbrated, however, the role that Hertha Ayrton would later play in helping Curie recover from her illness and depression in her *annus horribilis* of 1911–1912, following the media frenzy over the

revelation of her affair with the married Paul Langevin. Ogilvie also misses an opportunity to honor another significant woman scientific pioneer when she mentions the creation of domestic science – “a woman interested in chemistry could get a degree in home economics and get a prestigious job in a university or industry because her subject did not interest men” (p. 38) – without identifying Ellen Swallow Richards – MIT’s first female graduate (1873) – as the field’s founder.

In Chapter 11 Ogilvie also introduces us to a number of women who worked in Curie’s laboratory. I was sorry to learn that Curie was not necessarily a better employer of women than the male institute heads whose exploitation of female assistants Ogilvie deplores. How different was Curie, who assigned to many women in her lab “repetitive” work, requiring “precision and attention to detail” without demanding “a high degree of creativity” (p. 126), from Edward Pickering, whose practice of hiring female assistants “to classify as cheaply as possible the thousands of photographic plates his equipment was generating” (p. 38) at the Harvard College Observatory Ogilvie laments? Nonetheless, Ogilvie identifies several women who did significant science while working for Curie. These include Marguerite Perey, discoverer of the element francium; Ellen Gleditsch, who helped refute the inaccurate claims British chemist William Ramsay was making about uranium and other radioactive elements; May Sybil Leslie, who investigated thorium and its decay products; and Eva Julia Augusta Ramstedt, who did important work on radon. Sadly, even this useful coverage is marred by the intrusion of foolish errors, some of which a careful proofreader should have detected. The dates of chemist Antoine Laurent Lavoisier, whose biography, we are told, Ellen Gleditsch wrote, are not 1743–1794, but rather 1743–1794, when Lavoisier was guillotined in Paris during the Reign of Terror. And presumably among the “other accomplishments” of Eva Julia Augusta Ramstedt was not the coauthoring of papers with herself (p. 127).

Also on the theme of women in science, Ogilvie makes the questionable assertion that among “the many benefits from Curie’s trip” in 1921 to raise funds for her Radium Institute was “publicizing the idea that women could be scientists” (p. 122). Ogilvie notes Curie’s visit to Vassar, where Curie addressed both students and faculty (p. 119). According, however, to Margaret Rossiter, author of the acclaimed *Women Scientists in America: Struggles and Strategies to 1940* (Baltimore and London: The Johns Hopkins

University Press, 1982), if one of the goals of Curie's trip was to inspire women students and scientists, "suspiciously few American women scientists were involved in her schedule, and hardly any visits with students were included in her trips to the women's colleges" (p. 126).

Rossiter also argues that Curie's visit did not "have any lasting favorable impact on how women scientists were regarded and what work they did" (p. 100). In fact, Rossiter convincingly argues that Curie's visit actually *worsened* the situation for aspiring women scientists in the States: the "impact of Curie's visit...came to mean less an 'opening of doors' for women in science... and more... a 'raising of thresholds' to almost unattainable heights" (p. 127). Curie's American tour seems to have resulted in new grounds for discrimination: "to deserve a place in science [women] had to be not only better than the men... but, preferably, 'Mme Curies'" (p. 130). Rossiter calls this new discriminatory twist "the Madame Curie strategy" (p. 130). Curie's achievement level was now held up as "the minimum acceptable" (p. 191): "before long most professors and department chairmen were...expecting that *every* female aspirant for a faculty position *must* be a budding Marie Curie. They routinely compared American women scientists of all ages to Curie and, finding them wanting, justified not hiring them on the unreasonable grounds that they were not as good as she, twice a Nobel Laureate!" (p. 127).

For a historian of science Ogilvie seems confused about some basics. She errs in claiming that Ernest Marsden's experiment that suggested to Rutherford the existence of a nucleus as a "fly in the cathedral" took place while Rutherford was still at McGill (p. 69). In fact it was during Rutherford's Manchester years that the experiment was designed and its implications deciphered. Ogilvie gives a garbled view of the history of science when she states, "By 1913, a picture of the atom was conceived that resembled the one that is accepted today with a nucleus composed of protons and neutrons surrounded by electrons"(p. 70). In fact, Rutherford's younger colleague James Chadwick did not discover the neutron until 1932, though Rutherford had predicted its existence over a decade earlier.

Ogilvie is also wrong in suggesting (p. 119) that Harvard's failure to bestow an honorary degree on Curie in 1921 had something to do with negative input from Rutherford's American colleague Bertram Boltwood, whom Lawrence Badash, editor of *Rutherford*

and Boltwood: *Letters on Radioactivity* (New Haven and London: Yale University Press, 1969), calls “the foremost authority on radioactivity in the United States” (p. 18). Boltwood spent his academic career at Yale, not its archrival, Harvard. Perhaps Ogilvie copied this error from Françoise Giroud’s *Marie Curie: A Life* (New York and London: Holmes & Meier, 1986), where one finds (pp. 242 – 243) the claim that the “entire physics department” at Harvard, “the oldest and most arrogant” of American universities, opposed conferring an honorary degree on Curie, and that “Marie’s old enemy, Beltram [*sic* – at least Ogilvie got the name right!] Boltwood, who had never hidden the fact that he found her worthless as a scientist and personally unbearable, also had a part in this opposition.” While it is one thing for Giroud, a columnist for *Le Nouvel Observateur*, editor in chief of *Elle*, and France’s Secretary of State for the Condition of Women, to make such an error, it is quite another thing for a professional historian of science.

Chapter 10, where Ogilvie misidentifies Boltwood’s academic institution, is marred by another sloppy error, which a careful proof-reader should have easily detected. Ogilvie states that as plans were being laid in 1921 for Curie’s forthcoming visit, “[e]ven the president of the United States, Herbert Hoover, endorsed the movement to present a gram of radium to Curie” (p. 116). Ogilvie clearly knows that it was “President Warren Harding” who “presented Mme. Curie with her gram of radium” (p. 120). (Hoover, who *was* president during Curie’s second fundraising visit to the U.S., in 1929, did, as Reid notes on p. 292, lend his name to “the letterhead of the Marie Curie Radium Fund of 1921.”)

Factual errors are unfortunate in any book, but in one justifying itself as a contribution to students’ educational needs, they are especially deplorable. Similarly, for a volume in a series promoting itself as “fun to read,” Ogilvie’s book falls short. Rather than capitalizing on the inherent drama in Curie’s story, the writing seems to sap all the suspense out of the tale. Ogilvie omits nothing important, but the story never catches fire. Authors of books for this market are often advised by their editors to capture the reader’s attention at the outset with a ‘hook’ – an interesting vignette, not necessarily from the beginning of the subject’s life. Ogilvie’s tale, however, opens with a cumbersome paragraph that, as the reader soon learns, typifies the book’s style. The writing throughout is studded with banalities, including “A biography is the story of an individual’s life. No life is lived in a vacuum, and Marie Curie’s life

is no exception” (p. x). Visuals are also important in books for the school market, and here too the Ogilvie volume is lacking. The photographs themselves are perfectly well chosen, but sandwiched together between pages 83 and 85, they are poorly reproduced and lack interesting captions that could include additional information that didn’t find its way into the text.

Goldsmith’s biography of Curie, aimed at the general adult trade market, has its own virtues and failings. It is the fourth volume in W. W. Norton’s Great Discoveries Series, which the publisher’s Website describes as “bringing together renowned writers from diverse backgrounds to tell the stories of crucial scientific breakthroughs – the great discoveries that have gone on to transform our view of the world.” The predecessors to Goldsmith’s *Obsessive Genius: The Inner World of Marie Curie* in the series include a study of infinity by David Foster Wallace, author of *Infinite Jest*; a history of a nineteenth century Hungarian doctor’s discovery that physicians’ unwashed hands spread disease by noted surgeon and writer Sherwin B. Nuland; and a tour of Einstein’s universe by Michio Kaku, a cofounder of a version of superstring theory known as string field theory and author of popular books on these branches of physics. Despite this impressive company, serious readers might be excused for being wary of Goldsmith’s book after noting, opposite the title page, that her previous books include *Little Gloria...Happy At Last*, described elsewhere as “the definitive biography of Gloria Vanderbilt,” and *Johnson v. Johnson*, described elsewhere as “the decade’s biggest, most sensational courtroom battle: a struggle over money (half a billion dollars) and love....” A Google search reveals the somewhat reassuring fact that Goldsmith, a serious social historian, was selected in 1998 to serve on President Clinton’s Commission on the Celebration of Women in American History.

Whatever one’s worries about Goldsmith’s authority as a scientific biographer, however, one immediately recognizes the author as a gifted storyteller. Compared with Ogilvie’s humdrum opener, set at what should be the gripping scene of Curie’s mother’s deathbed, Goldsmith’s vivid depiction of the 1995 reinterment of the Curies in the Panthéon (pp. 13–15) is sure to ensnare even the most reluctant reader. In fact, Goldsmith has not one but two opening “hooks.” If the first doesn’t convince a young adult to read on, the second will surely do so:

As a teenager, I tacked up, among the detritus on my bulletin board, between a reproduction of Van Gogh's *Starry Night* and my Friday night bowling card, a photograph of Marie Curie sitting under an elm tree, her arms stretched out to encircle the waists of her daughters... I don't know why I was drawn to this photograph, but it wasn't about science... Perhaps I found comfort in what I took to be Marie's protective embrace since, at the time, my own mother was far away in a hospital, having been critically injured in an automobile accident. Who knows?

Goldsmith brings her story full circle when, at the book's conclusion, she describes visiting the house where the widowed Marie moved with her father-in-law and daughters the summer after Pierre's death in 1906. The guest of Marie's granddaughter H el ene Langevin-Joliot (who married the grandson of Curie's erstwhile lover, Paul Langevin), Goldsmith identifies in the garden the very tree where "Marie once sat – one arm thrust around toddler Eve, the other around Ir ene's waist. I think this is the photograph that, as a young girl, I tacked up on my bulletin board" (pp. 231–232).

Where plodding writing characterizes Ogilvie's book, Goldsmith's is enlivened by attractive passages like the one explaining why the scientific community paid little attention to Curie's assertion that radioactivity was an atomic property: "In any case, Marie Curie's discoveries were met with indifference. Who was this person? She was a scientist manqu e who had not yet completed her doctoral thesis. She was a Polish  migr e who had worked as a governess. She was married to an industrial teacher. She was a woman" (p. 79). Aside from the leaden phrase "an industrial teacher" – Pierre was working at the time at the School of Industrial Physics and Chemistry in Paris – this is an engagingly written passage.

Among the traits I find irksome in Goldsmith's book is the self-serving implication that hers is the first to shatter the Curie myth to reveal the hidden person. Her Introduction concludes, "There is no doubt that over the last century Madame Curie's life has evolved into an image of towering perfection. But behind this image there was a real woman. It was this person that I wished to pursue" (p. 18). This is a worthy motive for undertaking a biography, but as Goldsmith surely discovered when she began her research, BBC science advisor Robert Reid's *Marie Curie* (London: Collins, 1974), was – as described in a review in *The New York Times* (June 19, 1974) – "the first searching into the life of the Polish-born French scientist." Reid, not Goldsmith, was the pioneer who rooted behind the "hyperbole" and "bathos" in which Curie's



autobiography and Eve Curie's biography indulged (and which the 1943 film *Madame Curie* brought to screens everywhere). As the reviewer of Reid's book remarked, "To penetrate the façade could not have been simple, since Mme. Curie kept her private feelings so sternly under control and since she destroyed so many of her personal papers." Though Reid made extensive use of documents made available to him by the Laboratoire Curie in Paris and other institutions, he did not have access to other material, notably the journal that Curie kept during the year after Pierre's death. When the embargo on the journal was lifted in 1990, Susan Quinn, Karen Horney's biographer, made fine use of it to write a much longer, magisterial biography, *Marie Curie: A Life* (New York: Simon & Schuster, 1995). Although Quinn's research did not really uncover anything startling about Curie that we had not known at least something about thanks to Reid, her book, in my opinion, remains the definitive biography to date.

In an article published by the American Sunday newspaper supplement *Parade* on November 28, 2004, shortly before *Obsessive Genius* appeared, Goldsmith writes that she, like Quinn, had access to newly released material: "About three years ago, I heard that Madame Curie's workbooks, letters and personal diary – which had been banned for more than half a century – were being released." But the original aspects of Goldsmith's book, it seems to me, depend less on astonishing new revelations from these documents than on her emphasis on matters and individuals not stressed in the earlier biographies. For example, whereas Ogilvie and others, like Curie herself, focus on the independence of Marie's work from Pierre's, Goldsmith understands that there is nothing shameful in admitting that a spouse or other mentor provided useful assistance. It is interesting to learn, for example (p. 71), that when Curie began her work on Becquerel rays, her initial results,

... were no better than those of her predecessors. Then Pierre stepped in and worked intensely for fifteen days, modifying the electrometer, which he and [his brother] Jacques had designed, to make it more sensitive to weak currents. Pierre added another of his discoveries to Marie's equipment, a piezoelectric quartz... This addition was crucial... Finally, Pierre stabilized the system. Under her husband's tutelage she then spent 20 days learning how to use his equipment to measure the tiny currents generated by Becquerel rays. Without Pierre's equipment and instructions, this would have been impossible, a fact which has been largely overlooked.

Goldsmith also informs us that the decision to hire a fulltime assistant, André Debierne, was Pierre's. Though funds were tight, Pierre couldn't bear Marie's "obsessive activity and increasingly fragile condition" while waging her battle to isolate radium. Worried that "the goal his wife had set for herself would be impossible to achieve... Pierre, understanding his wife's fixation, turned this impossible task into one that was only brutally difficult" (pp. 92–93).

I learned for the first time in this book, too, the extent of Pierre's fundraising efforts to support their collaborative research. Not only did he manage to get Austria to donate uranium-free pitchblende from the sludge heap in St. Joachimsthal, by intervening with the president of the Academy of Sciences of Vienna, but he also hit up Baron Edmond de Rothschild. I had previously been aware only of Rothschild's philanthropic efforts on behalf of the early Zionist settlement in Palestine. Goldsmith reveals that the baron anonymously covered the costs of delivering pitchblende to the Curies over a 4-year period (p. 92).

Most biographers insist, as did Marie, on claiming that it was she who first suggested that radioactivity was an atomic property. Goldsmith's discussion, however, is more nuanced. She reveals that the Curies were, in fact, slow to follow that suggestion where it took others, most notably Rutherford, who understood it as a key to unlocking the secrets of matter and energy. She notes the couple's January 1902 paper, which "contained a thinly veiled attack on Rutherford (without mentioning his name) for being 'premature' in his belief that radioactivity came from within the atom" (p. 103), and points out that only in 1904, after Pierre "replicated the experiments of Rutherford and Soddy," did he "reluctantly accept their conclusions" about radioactive decay (p. 105). Goldsmith also illuminates the complexity of the Curies' attitudes about earning money from their discoveries and allowing other scientists access to their radioactive materials:

...as the popularity and price of radium escalated the Curies were not exempt from temptation. [Industrialist] Armet de Lisle persuaded Pierre to modify his instruments to sacrifice accuracy for portability, thus making them more salable. Pierre designed carrying cases and patented them as well as the instruments themselves. His royalties were considerable.

In the same passage Goldsmith indicates that when, perhaps influenced by de Lisle, the Austrian government placed an embargo on pitchblende residue, allowing only the Academy of Sciences of Vienna

to buy 20 tons and the Curies to buy 12.5 at a decent price, “the Curies in turn denied free samples to other scientists” (pp. 124–125).

Since the footnotes at the end of the book are not comprehensive, it is hard to know exactly what sources support Goldsmith’s arguments. It is clear, however, that her reading of Ruth Lewin Sime’s biography *Lise Meitner: A Life in Physics* (Berkeley: University of California Press, 1996), gave Goldsmith insights into aspects of Curie’s life. While it is disturbing to read that Curie’s lab made use of the *gratis* efforts of 20 volunteer women scientists – at least Pickering *paid* his ‘computers’ – it is interesting to discover that in 1907, “a Viennese scientist of twenty-nine, a woman who idolized Madame Curie, applied as a volunteer at her laboratory. She was rejected. Her name was Lise Meitner” (p. 157). We later learn that while Meitner, at the Kaiser Wilhelm Institute, “insulated her laboratory with lead and warned of the dangers of exposure to radioactive substances,” taking many precautions to protect both herself and her staff, Curie and Irène “installed many of these protections, but both... largely ignored them. They used their naked hands in experiments and shockingly often transferred radium and polonium from one vessel to another by sucking up these substances with a pipette. Over the years, even as they grew sicker they continued to work unprotected” (pp. 216–217).

Meitner, however, is one of the figures about whom Goldsmith makes exaggerated comments. It is hardly true that Meitner was a “forgotten scientist” until meitnerium was named in her honor in 1992 (p. 226). Among other accolades, Meitner was awarded the Max Planck Medal in 1949 and, along with Otto Hahn in 1966, the Enrico Fermi Prize by the Atomic Energy Commission.

As the author of a recently published young-adult biography of Rutherford (Berkeley Heights, NJ: Enslow Publishers, 2005), I am particularly sensitive to the numerous errors in Goldsmith’s coverage of the Father of Nuclear Science (the subtitle of my book). Her description of Rutherford’s early education (pp. 80–81), for example, is inaccurate in many ways. Far from determining while at Nelson College “to make science his life,” he was a fine all-around scholar, showing no special inclination toward a scientific career. Rather than model his work on Marconi’s, Rutherford wrote in 1910 in a history of the Cavendish Laboratory that his early experiments on wireless telegraphy there “were made before Marconi began his well-known investigations on signaling by electrical waves.”

Upon reading Goldsmith's attribution of Rutherford's partly critical comments about Curie's *Treatise on Radioactivity* (1910) in a letter to Boltwood to "barely concealed jealousy" (p. 163), I found myself becoming irate. Why should Rutherford, who had gotten to the bottom of the mysterious phenomenon of radioactivity, was working on his own *Radioactive Substances and Their Radiations* (Cambridge: Cambridge University Press, 1913), and would go on to develop the concept of the nuclear atom and the artificial transmutation of elements, be jealous of Curie? And it is not quite right to suggest that during World War I Rutherford "was lagging behind Langevin in his experiments" related to sonar (p. 189). Once Rutherford was selected to lead the official British scientific mission to the United States on anti-submarine and naval matters, that responsibility cut into his research time. Whatever time remained for private research during the war years he spent bombarding gases with alpha particles. By 1917 he had thus figured out that he was able to smash an atomic nucleus, thereby changing one element into another. At any rate, following the war, Rutherford was happy to let Langevin take credit for inventing sonar. To colleagues who urged Rutherford to put forth his own claim to the invention, Rutherford said, "If Langevin says he did it first, that's good enough..., let Langevin have the credit."

Goldsmith is also mistaken about Boltwood's role in Yale's 1921 honorary degree awards. She claims he not only "used the power of his position to prevent Yale from granting [Curie] an honorary doctorate" but "also blocked Einstein from receiving this honor because he was a Jew." In fact, Yale did bestow an honorary degree upon Curie on June 10, 1921, the sixth degree the university gave a woman. In a letter to Rutherford of July 14, 1921, Boltwood reveals that Yale failed to ask him about the advisability of granting her the honor; informed that the Yale Corporation had made the decision after the award was already scheduled to be given, he was miffed to have been thus marginalized: "One might have supposed that they would have consulted some of the people who were supposed to know something about the candidate! That is to say that someone who was ignorant of the ways of the administration... might have supposed so" (Badash, *Rutherford and Boltwood: Letters on Radioactivity*, p. 346).

Boltwood did play a role in keeping Einstein from getting a Yale honorary degree, but it is not accurate to say anti-Semitism inspired him to do so. In the same letter Boltwood confided in

Rutherford, "If he had been over here as a scientist and not as a Zionist it would have been entirely appropriate, but under the circumstances I think it would have been a mistake" (*ibid.*, p. 347). Had Boltwood been an anti-Semite, would he have expressed regret at his failure to be in New Haven when Chaim Weizmann, a chemist who later became the first president of the State of Israel, was visiting? "I remember him pleasantly," Boltwood wrote to Rutherford, "because of the Manchester associations." (Weizmann held a position at the University of Manchester from 1906 until the outbreak of World War I, when he moved to London to develop explosives for military use work for the War Office.)

Goldsmith also makes some confused statements about science in general. Her description of Roentgen's experimental apparatus makes no sense: "he set up an experiment in a Crookes tube using an anode and a cathode at each end" (p. 62). Her comments in this passage about Mendeleev and Moseley are baffling: "Henry G. J. Moseley, a young scientist, discovered that the number of electrons, not mass, determines an element's atomic number. In spite of this, all his life Mendeléev [sic] stubbornly refused to accept the discovery of the electron, maintaining against all evidence that it did not exist" (p. 76). Moseley didn't make his discovery about atomic number until 1913, while Mendeleev died in 1907.

The book's other shortcomings include the lack of both an index and a chronology of the most crucial events in Curie's life, and inadequate footnotes. Sources are not given, for example, for Rutherford's comments on pages 156 and 160. While the photographs are better reproduced than those in Ogilvie's volume, the captions do not shed the additional light on the story that they might have.

What will I tell the next teenagers who ask which biography of Curie to read? First I'll direct them to <http://www.aip.org/history/curie>, the American Institute of Physics's Web exhibit on Curie (thus adding to the competition with Einstein). (In the interest of full disclosure I should mention that I am that exhibit's author.) If I decide to recommend an 'adult' biography as a chaser, I'll suggest Quinn's.

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