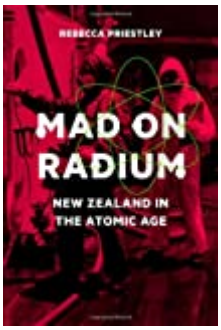
H-Net Reviews
in the Humanities & Social Sciences



Rebecca Priestley. *Mad on Radium: New Zealand in the Atomic Age.* Auckland: Auckland University Press, 2012. Illustrations, graphs. xii + 284 pp. $34.95 (paper), ISBN 978-1-86940-727-8.

Reviewed by Maria Rentetzi (National Technical University of Athens)

Published on H-PhysicalSciences (September, 2014)

Commissioned by Marta Jordi Taltavull (Max Planck Institute for the History of Science)

Uncovering New Zealand's nuclearity

Historians of the modern physical sciences have a knack for picking up topics that are closely intertwined with the United States: the atomic bomb, the Cold War, and the development of large-scale scientific research in major U.S. laboratories. Rebecca Priestley, historian of science, science writer, and author of *Mad on Radium*, goes in a different and somewhat unexpected direction. She focuses on the nuclearity of New Zealand, a country that is synonymous worldwide with a nuclear-free stance. In a reference to her PhD thesis, on which the book is based, Priestley writes that âthe most common response for telling people I was doing a PhD thesis on New Zealandâs nuclear history was surprised laughter and the comment that it âmust be a very short thesisââ (p. vii). Against that background, Priestley has produced a well-documented account of the countryâs debates over the adoption of nuclear power, the development of nuclear medicine, and uranium mining. Her overall argument is tempting and persuasive. According to Priestley, economic considerations were always the decisive factor dominating public and official discussions on the use of nuclear power to meet New Zealandâs growing electricity needs, or in uranium mining in order to supply the international nuclear power and weapons industry. Overall, her account undermines the belief that there has been something inherently courageous and moral in the New Zealander identity or that the country was quick to realize the radiation hazards and to demand a nuclear free country. In fact, the Disarmament and Arms Control Act of 1987 came as a result of a conscious antinuclear movement against pronuclear and well-established groups of scientists and officials. Pragmatism prevailed. As Priestley writes, âpeople of decision-making power made practical decisions based on economics and national interest when it came to deciding whether or not to adopt a certain piece of technology or whether or not to participate in projects or ventures with international agenciesâ (p. 248).

The story begins with what Lawrence Badash calls âthe radium craze.â[1] The discovery of x-rays and later of radium set off a number of fascinating popular and scientific accounts of their use in the United States. But

Priestley shows us that this was not specifically a U.S. or even a European phenomenon. By the 1920s, diagnostic and therapeutic x-rays were in widespread use in New Zealand. Newspapers carried reports on cancer patients treated with x-rays and medical journals advertised x-ray equipment that was âperfectly simpleâsimply perfectâ (p. 9). Following closely the developments of radium therapy in the United Kingdom, physicians in New Zealand adopted radium therapy in their practices. Hospitals, such as Dunedin and later Christchurch and Auckland, hastened to establish radium therapy departments and institutes. Interestingly, as Priestley reveals, radium supplies were personally selected by Ernest Rutherford and arrived at Wellington with an authentication certificate signed by Marie Curie.

The effectiveness of radium and its spectacular properties also captivated the public mind. People rushed to bathe in water impregnated with radium and to drink radium water, convinced that both could cure a long list of common ailments. Such doctors as Arthur Wohlmann, in charge of the state-owned radium spas in Rotorua, recognized early on that indeed âthe public are mad on radiumâ (p. 1). He aggressively promoted radium bathing and drinking. But while the âradium girlsâ scandal in the United States had revealed the hazardous effects of radium as early as the mid-1920s, New Zealanders continued to visit radium baths and to soak into radioactive water at least until 1936. Despite warnings issued by the countryâs Department of Health, mishaps and carelessness were not infrequent among radiologists, users of x-ray techniques, and practitioners of radium therapy. It was only in the 1940s that radiologists took action on safety issues, which led to the countryâs first regulations in using radiological equipment in 1943.

Moving from the public cultural sphere to the scientific one, in chapter 2 Priestley focuses on the role of New Zealandâs scientists during the Second World War. Here the spotlight falls on a group of New Zealanders who secretly worked on the construction of the atomic bomb and especially on Ernest Marsden, a physicist who orchestrated New Zealandâs participation in the Manhattan Project. Priestley reminds us that Rutherford was also a New Zealander and as a result had a strong say in the countryâs scientific developments. In fact, it was under his recommendations that Marsden moved from Great Britain to New Zealand to assume the post of professor of physics at Victoria University College in Wellington in 1915. Marsden had previously worked under Rutherfordâs supervision while Rutherford was at the University of Manchester. Together with Hans Geiger, Marsden developed the Geiger counter and contributed to Rutherfordâs series of alpha particles experiments. From 1926 to 1947, he headed the Department of Scientific and Industrial Research (DSIR), the countryâs foremost state science organization. With the outbreak of the Second World War, New Zealand joined Britain against Germany in 1939 and immediately mobilized its scientists to support the war effort. In Priestleyâs account, Marsden, then scientific advisor to the Defense Department, became a key player in that context. Given his close connections to the scientific community in Britain, he was able to involve New Zealand in the bomb program and push five of his scientists to join the British nuclear research team in Canada. Through a detailed narrative, Priestley traces the solid political and scientific network that Marsden put together in order to personally keep up with developments in nuclear physics and also boost New Zealandâs role in the international scientific community. He gets credit for the development of the secret radar project, New Zealandâs involvement in the Manhattan Project, and the first attempts to locate uranium sources in the country. It was just after the war that Marsden advocated atomic energy and promoted the construction of an atomic pile in New Zealand. As Priestley claims, âif he could not be part of the big science taking place in Europe and America, he would make it happen at homeâ (p. 57).

A further twist in the story emerges during the Cold War, as New Zealand faced the end of the British-American wartime cooperation on nuclear weapons and the development of nuclear energy. Priestleyâs engaging account focuses on New Zealandâs stand on the American-British race on nuclear tests in the Pacificâthe countryâs backyard. As Americans tested their atomic bombs in the Pacific islands, New Zealanders sided with the British, assisting them in the design of a heavy water plant at Wairakei. Once again Marsden, now a scientific liaison officer in London, pulled all the right strings. By 1953, the New Zealand cabinet had approved the construction of a joint New Zealand-United Kingdom heavy water plant, which was eventually abandoned due to financial issues. Despite the publicâs concerns about the effects of radioactive fallout, New Zealand continued to provide support to British nuclear testing in the Pacific even when Britain tested the first hydrogen bomb without advance notice to the countryâs officials. Changes in the countryâs political power during the 1958 elections and the rise of the Labor Party to government were no obstacle to nuclear testing. Interestingly, there were no protests even against uranium prospecting on the coun-

tryâs west coast throughout the 1950s.

When Dwight Eisenhower announced the Atoms for Peace project, New Zealand was among the first countries to sign a bilateral agreement with the United States on acquiring a research reactor. Priestley points out that âalthough opposition to Pacific nuclear bomb tests was growing, New Zealanders remained enthusiastic about what the United States promoted as âpeacefulâ uses of nuclear technologyâ (p. 156). During the same period, a heated scientific and political debate brought front and center the issue of establishing nuclear power plants to cover New Zealandâs electricity needs. Remarkably, the Labor Party, usually associated with the countryâs nuclear-free policy, was more pronuclear at that time than the National Party.

It was only due to the international fallout monitoring programs that New Zealand was eventually forced to adopt an official position against nuclear testing in the early 1960s. Measurements of concentration of fission products, such as strondium-90 and caesium-137, in rainwater and in the food chain revealed that New Zealanders had been exposed to high quantities of radioactive elements. Strontium levels peaked in 1965, forcing the government to dismantle the free milk program in schools. And it was only in the mid-1970s that public opposition to nuclear energy had grown to the point of forcing the government to establish a commission of inquiry of the environmental consequences of a nuclear power program. Although the antinuclear movement was growing, the National Party, which was openly pronuclear, remained in power until 1984. The rise of the Labor Party; the sinking of the *Rainbow Warrior* in 1985 by the French; and the withdrawal of New Zealand from the ANZUS security treaty (the military alliance of Australia, New Zealand, and the United States) finally led to the declaration of New Zealand as nuclear-free in 1986.

Clearly, *Mad on Radium* accomplishes its goal: it unravels the history of New Zealandâs nuclearity and deepens our understanding of the countryâs scientific and political debates on nuclear power. Moreover, it demolishes the myth of New Zealandâs steadfast opposition to nuclear energy. But Priestley succeeds in doing something even more important. She shifts the historical interest from contexts that have almost monopolized our attention to an issue that historians of science have overlooked. How often do we read about New Zealandâs nuclear research program or its early history of radium uses? Priestleyâs engaging and complex narrative enriches the history of the Cold War, underlines the connection between networking and a countryâs scientific prominence, and emphasizes the role of politics in the history of modern physical sciences. Yet, precisely because New Zealandâs history of modern science and especially its political history are not well known to historians of science, readers should have been provided with a better picture of the countryâs political scene, so important to Priestleyâs narrative.

Priestley draws her material from a stunning range of unexplored archives, published official records, and an array of newspapers and journals. Her research has yielded a number of fascinating stories, such as the use of x-rays on pregnant women in the early 1920s or Marsdenâs revealing discussion with James Chadwick and Mark Oliphant in an elevator at a Washington hotel at the peak of the Second World War. Her choice of photographs and informative graphs are not there for merely illustrative purposes but buttress the narrative in substantial ways. My only criticism is that the organization of the book is at times hard to follow as the author shifts between different time periods, with some facts repeated in different chapters. Moreover, Priestley fails to connect her New Zealand stories to the literature on the United States or Britain, which could strengthen her argument even more. One example here is the use of shoe fitting x-ray machines in New Zealand that immediately brings to mind Jacalyn Duffin and Charles Hayterâs fascinating article âBaring the Sole,â a glaring omission in the book.[2] Last, despite its catchiness, the bookâs title does not do justice to its content. New Zealanders have indeed been *Mad on Radium* much like almost everyone else in central Europe and the United States during the early twentieth century. But Priestleyâs book has little to do with radium. Instead, it sets forth to convey the unique history of a nation that has managed to erase its fascination with nuclearity from its historical record. This is where the bookâs main strength lies and it is in connection with this that Priestley has done admirable work.

Note

[1]. Lawrence Badash, *Radioactivity in America: Growth and Decay of a Science* (Baltimore: John Hopkins University Press, 1979), 24.

[2]. Jacalyn Duffin and Charles Hayter, âBaring the Sole: The Rise and Fall of the Show Fitting Fluoroscope,â *Isis* 91, no. 2 (2000): 260-282.

Citation: Maria Rentetzi. Review of Priestley, Rebecca, *Mad on Radium: New Zealand in the Atomic Age*. H-PhysicalSciences, H-Net Reviews. September, 2014.

URL: http://www.h-net.org/reviews/showrev.php?id=40293