



Plutonium: A History of the World's Most Dangerous Element

By Jeremy Bernstein



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When plutonium was first manufactured at Berkeley in the spring of 1941, there was so little of it that it was not visible to the naked eye. It took a year to accumulate enough so that one could actually see it. Now so much has been produced that we don't know what to do to get rid of it. We have created a monster.

The history of plutonium is as strange as the element itself. When scientists began looking for it, they did so simply in the spirit of inquiry, not certain whether there were still spots to fill on the periodic table. But the discovery of fission made it clear that this still-hypothetical element would be more than just a scientific curiosity?it could be the main ingredient of a powerful nuclear weapon. As it turned out, it is good for almost nothing else. Plutonium's nuclear potential put it at the heart of the World War II arms race?the Russians found out about it through espionage, the Germans through independent research, and everybody wanted some. Now it is warehoused around the world?the United States alone possesses about forty-seven metric tons?but it has almost no practical use outside its role in nuclear weaponry. How did the product of scientific curiosity become such a dangerous burden?

In his history of this complex and dangerous element, noted physicist Jeremy Bernstein describes the steps that were taken to transform plutonium from a laboratory novelty into the nuclear weapon that destroyed Nagasaki. This is the first book to weave together the many strands of plutonium's story, explaining not only the science but also the people involved.

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Editorial Review

From Publishers Weekly

Physicist and former *New Yorker* staff writer Bernstein presents a scientifically rigorous (equations and all) but clearly written explanation of the recondite reasons why plutonium is supremely suited for bomb-making material—and little else. From the discovery of uranium in 1789 to the Manhattan Project, Nazi attempts at a nuclear bomb and the post-WWII efforts of the U.S.S.R. to become a nuclear power, Bernstein reviews the element's storied past. Although the discovery of the atom's structure has been covered before, Bernstein spins an accessible, insightful description of how the great scientists Curie, Bohr, Rutherford and Fermi, among others, deconstructed the atom through a combination of individual brilliance, a spirit of collaboration and serendipity. He also brings his acquaintance with several Los Alamos scientists (he interned at the laboratory in 1957) to the less canonical subject of the scientific and engineering problems inherent to building a working nuclear bomb. Here the search for the elusive element comes to center stage in this challenging but rewarding account (after 2005's *Secrets of the Old One: Einstein 1905*). (Apr.)

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From [Booklist](#)

Physicist Bernstein has written books about Einstein, Oppenheimer, and the German nuclear program. Here he tells the complicated story of plutonium, a chemical that appears in minute amounts in nature but which scientists working feverishly during World War II learned to manufacture in quantity. Plutonium's physics and chemistry are exceptionally complex, inspiring Glenn Seaborg, the nuclear chemist who "finally identified" the elusive element in 1941, to observe, "Plutonium is so unusual as to approach the unbelievable." It is also "fiendishly toxic." Bernstein, an intern at Los Alamos in 1957, analyzes plutonium via a mix of science and biography, the former tough going for nonscientists, the latter, in the form of thumbnail portraits of nuclear scientists from Marie Curie to Enrico Fermi and beyond, vivid and affecting. Irony and drama shape Bernstein's accounts of amazing feats of scientific deduction and world-endangering secrets, which give way to a sobering overview of the environmental damage caused by plutonium-producing reactors and the enormous threats embodied in today's global plutonium inventory. Although convoluted, Bernstein's unique history of the diabolical element is invaluable. *Donna Seaman*

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Review

"In *Plutonium*, Jeremy Bernstein acknowledges that everything connected with the element is complicated, and that includes plutonium itself and its history. Its discovery in 1941 by Glenn Seaborg and Arthur Wahl is part of a much bigger story in which each part becomes a story in itself." *Nature*

"Plutonium is a strong candidate for the weirdest, most fascinating, and most frightening element in the periodic table. For it to be the subject of a book by the acclaimed physicist turned science writer Jeremy Bernstein promises a great deal. *Plutonium* does not disappoint, even for those who think they are already familiar with the evolution of nuclear science during the twentieth century." *Physics World*

"Bernstein spins an accessible, insightful description of how the great scientists Curie, Bohr, Rutherford, and Fermi, among others, deconstructed the atom through a combination of individual brilliance, a spirit of collaboration, and serendipity."?Publishers Weekly

"Bernstein's book should play a useful role by helping demystify plutonium and by encouraging interested members of the public and Congress to start constructing a more rational policy to deal with the dangers posed by this man-made element."?American Scientist

"Irony and drama shape Bernstein's accounts of amazing feats of scientific deduction and world-endangering secrets, which give way to a sobering overview of the environmental damage caused by plutonium-producing reactors and the enormous threats embodied in today's global plutonium inventory."?Booklist

"Running through a spectrum of Nobel Prize winners, Bernstein grippingly portrays the race to develop the first nuclear weapon during World War II as well as the interplay among the global personalities involved. Readers learn that this hazardous element, good for nothing but nuclear weapon production, continues to hold us hostage with the threat of nuclear terrorism."?Library Journal

"None of Jeremy Bernstein's devoted *New Yorker* readers were surprised that he brought J. Robert Oppenheimer to life in his compelling biography, *Oppenheimer: Portrait of an Enigma*. But bringing plutonium to life?making the 94th element as interesting as 'the father of the atomic bomb'?is science writing that borders on literary magic."?Martin J. Sherwin, coauthor of *American Prometheus: The Triumph and Tragedy of J. Robert Oppenheimer*, winner of the 2006 Pulitzer Prize for Biography

Users Review

From reader reviews:

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Regina Hash:

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