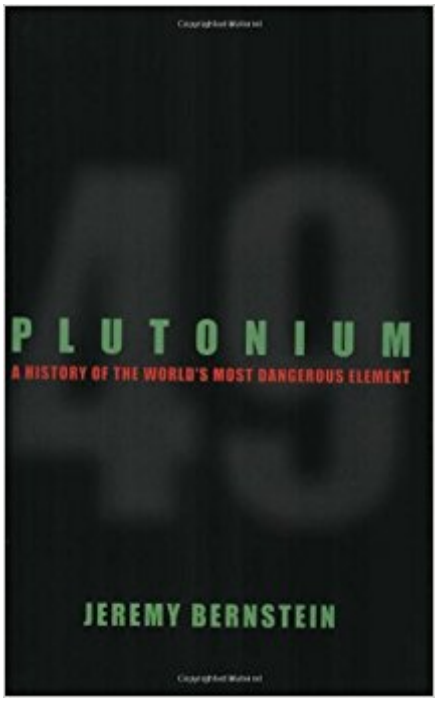
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Plutonium: A History Of The World's Most Dangerous Element



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Synopsis

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 curiosityÃ¢â ¬â ¢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 raceÃ¢â ¬â ¢the Russians found out about it through espionage, the Germans through independent research, and everybody wanted some. Now it is warehoused around the worldÃ¢â ¬â ¢the United States alone possesses about forty-seven metric tonsÃ¢â ¬â ¢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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Customer Reviews

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 materialÃ¢â ¬â •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.) Copyright Ã Â© Reed Business Information, a division of Reed Elsevier Inc. All rights reserved. --This text refers to an out of print or unavailable edition of this title.

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 SeamanCopyright Ã Â© American Library Association. All rights reserved --This text refers to an out of print or unavailable edition of this title.

While the author gives an excellent history on the chemistry leading up to the discovery of plutonium and elements of atomic theory, he falls short of what a "History of..." book should be. Once we get past discovery (over 50% of the book) and Los Alamos, apparently plutonium has little history at all.

He alludes to several accidents at Rocky Mountain Flats, but no detail. He tells us how toxic it is, again, with no information. In fact, he contradicts that by giving us examples of scientists who inhaled it or had it injected into their skin and lived beyond the normal expected life span. He mentions some possible problems of long-term storage of the "pits" but fails to go into it. He admits in the beginning to knowing little about plutonium, and while he has researched the book well in what he covered, he showed his overall knowledge is not deep.

After reading the Kindle sample, I was intrigued but did not mean to purchase this book. (I object on principle, with rare exceptions, to charging more than $10 for a digital book.) However, I did not return the book for a refund but chose to read it. This is an interesting and educational book on the history and characteristics of plutonium and those involved in its discovery and utilization in both wartime and peace. The author does a good job of attempting to explain the physics and chemistry for the lay person, although parts of the book are still somewhat technical. One surprising omission in a work entitled "A History of the Worlds's Most Dangerous Element" is the lack of any information on specific instances of its inadvertent, accidental harm to humans, or details of the strict precautions workers must take when working with it. (Why is it the most dangerous?) Not even the slightest mention of the "demon core" or the Kelley fatality at Los Alamos. Other books have done a good job recounting plutonium accidents, but a book titled "history of the world's most dangerous" should give at a minimum a brief mention of such accidents, and the measures which must be taken to prevent them, if for no other reason that to support the justification for the title. ("Dangerous" and "effective weapon" are not really synonymous.) Despite this omission, I'm still giving it five stars as it brings together a lot of information on characteristics and development.

I recently read (and reviewed)Ã Â Uranium: War, Energy, and the Rock That Shaped the WorldÃ Â and felt that it was ... well not great. It gave some history of world events, not science. It lamented certain developments and predicted others (and granted, the jury is still out on those, even if they appear less likely). It focused on politics and neglected science. It was a decent read, just ... not great.This title on the other hand is different, it gives you a history of the science and some reasonably high level explanations. It doesn't go into great depth of the math, though there are some formulas and they are not well addressed. Similarly there are notations occasionally introduced that then are not used again for a third of the book or so. And really the worst part was that the figures are often ten pages or so from where they are (first) referenced in the text. That's why I dropped a star.However, make not mistake, this is a thin book that is packed with details. It

reads like a novel and you breeze through most of it. Towards the end there is a section which is rather technical, and Bernstein does preface it indicating 1) it’s complex, 2) he’s not the best person to explain it; and he is right on both counts, but because of that preface you are forewarned and he is too modest.This isn’t a textbook on the chemistry of plutonium or the physics of atomic bombs, it feels as though there is more to this element that was missed, but the book never feels that it missed opportunities, rather it feels like it aimed for a scope and nailed it perfectly. The author is very honest about what his aims are and what the individual chapters should achieve and despite this, which sounds like it would distract, the text draws you in, the language makes you feel entertained, and aside from one slip up that grated because he refers to the USA as "we", the book just never lets up.That this reference to us Americans is so grating should be taken as a positive. For the most part you don’t notice the language or tone, but this one instance stands out against the entire book, which should be a testament to the "smoothness". You are reading a history book, but it feels like a documentary made for TV.The text is a basic introduction to plutonium with a strong focus on the scientific progress of nuclear physics (predominantly) with some focus on chemistry and quantum mechanics, but the later is only called upon when necessary. All concepts are reasonably well explained, though there is more to this but that’s well beyond the scope of the book. Even if you have a background in chemistry (or physics) odds are if you don’t know much about the discovery of elements, research into radioactivity and uranium and beyond, this will be a good primer. There is much more that could be written on this subject, but again, within the scope that is set to be covered, one can not really complain. Keep in mind this is about 170 pages of text with further readings and so forth taking you up to the total the product description lists.The book is very accessible and readable for anyone from high school age to anything beyond that.

Wonderful and fun to read. The author starts a story then tells the reader he is going off on a tangent, tells the side story then tells us he is returning to his main story. I enjoyed the tangents and I enjoyed this different way of writing. The math was over my head but the history and style were so fascinating I read the book in two days and I am the type who goes back and rereads many paragraphs.

Bernstein did an effective job of making a complex subject relatively understandable. Even so, this book should be approached with the understanding that a decent background in chemistry and physics is valuable when reading this book!I gave this book only 3 stars because I was hoping Bernstein would focus more on the historical aspects than on the chemistry!

An authoritative book about the subject. I think Bernstein covers the subject completely and as a real physicist he knows what he is writing about.He focuses just on plutonium as an element not on the various actual weapons that can be made with it.My favorite subject is MAD, mutual assured destruction, that prevented the cold war from becoming hot. This is still in effect but existence of 'tactical nuclear weapons' that have much lower yield that the Hiroshima and Nagasaki bombs may upset the balance.The book was written before Putin became a very bad guy talking opening about using nuclear weapons. That has, of course, nothing to do with plutonium as a man-made element per se.Highly recommended book, four stars.

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