

## Oppenheimer Portrait Of An Enigma

With his knack for translating science into understandable, anecdotal prose and his trademark dry humor, award-winning science writer Charles Seife presents the first narrative account of the history of fusion for general readers in more than a decade. Tracing the story from its beginning into the twenty-first century, *Sun in a Bottle* reveals fusion's explosive role in some of the biggest scientific scandals of all time. Throughout this journey, he introduces us to the daring geniuses, villains, and victims of fusion science. With the giant international fusion project ITER (International Thermonuclear Experimental Reactor) now under construction, it's clear that the science of wishful thinking is as strong as ever. This book is our key to understanding why. Drawing on the latest research on the atomic bomb and its history, the contributors to this provocative collection of eighteen essays set out to answer two key questions: First, how did the atomic bomb, a product of unprecedented technological innovation, rapid industrial-scale manufacturing, and unparalleled military deployment shape U.S. foreign policy, the communities of workers who produced it, and society as a whole? And second, how has American society's perception that the the bomb is a means of military deterrence in the Cold War era evolve under the influence of mass media, scientists, public intellectuals, and even the entertainment industry? In answering these questions, *The Atomic Bomb and American Society* sheds light on the collaboration of science and the military in creating the bomb; the role of women working at Los Alamos; the transformation of nuclear physicists into public intellectuals as the reality of the bomb came into widespread consciousness; the revolutionary change in military strategy following the invention of the bomb and the development of Cold War ideology; the image of the bomb that was conveyed in the popular media; and the connection of the bomb to the commemoration of World War II. As it illuminates the cultural, social, political, environmental, and historical effects of the creation of the atomic bomb, this volume contributes to our understanding of how democratic institutions can coexist with a technology that affects everyone, even if only a few are empowered to manage it. Rosemary B. Mariner is formerly Joint Chiefs of Staff Chair and Professor of Military Studies for the National War College. She is currently a lecturer in history at the University of Tennessee, Knoxville. G. Kurt Piehler is associate professor of history and former director of the Center for the Study of War and Society at the University of Tennessee, Knoxville, which hosted the conference that formed the basis of this volume. He is the author of *Remembering War the American Way* and *World War II in the American Soldiers' Lives Series* as well as the coeditor, with John Whiteclay Chambers II, of *Major Problems in American Military History*.

*A Life in Twilight* reveals the least-known and most enigmatic period of J. Robert Oppenheimer's life, from the public humiliation he endured after the 1954 Atomic Energy Commission's investigation into his alleged communist leanings and connections to his death in 1967. It covers Oppenheimer's continued work as a scientist and philosopher and head of the Institute for Advanced Study in Princeton, his often controversial public appearances, as well as parts of his private life. What emerges is a portrait of a man who was toppled from the highest echelons of politics and society, had to see his honor and name blackened, but succeeded in maintaining his dignity and rebuilding a shattered life, although he never truly recovered from the McCarthy-inspired persecution he suffered. Previously unpublished FBI files round out the picture and cast a sinister cloud over Oppenheimer's final years, during which he remained under occasional surveillance. Mark Wolverton has succeeded in presenting an evenhanded and very well-researched account of a life that ended in twilight. It reads like a written version of the acclaimed film *Good Night, and Good Luck*, and indeed Murrow's interview with Oppenheimer is one of the central elements of the story. *A Life in Twilight* is an important exploration, not only of a prominent scientist and philosopher, but also of an unforgettable era in American history.

On the seventy-fifth anniversary of the first atomic bomb, discover new reflections on the Manhattan Project from President Barack Obama, hibakusha (survivors), and the modern-day mayors of Hiroshima and Nagasaki. The creation of the atomic bomb during World War II, codenamed the Manhattan Project, was one of the most significant and clandestine scientific undertakings of the 20th century. It forever changed the nature of war and cast a shadow over civilization. Born out of a small research program that began in 1939, the Manhattan Project would eventually employ nearly 600,000 people and cost about \$2 billion (\$28.5 billion in 2020) -- all while operating under a shroud of complete secrecy. On the 75th anniversary of this profoundly crucial moment in history, this newest edition of *The Manhattan Project* is updated with writings and reflections from the past decade and a half. This groundbreaking collection of essays, articles, documents, and excerpts from histories, biographies, plays, novels, letters, and oral histories remains the most comprehensive collection of primary source material of the atomic bomb.

"*Larger than Life*" offers eleven essays that touch on New Mexico's history through its people, places, and events.

Traces the early twentieth century journey of nine prominent men from Budapest who fled fascism to seek sanctuary in America, where they made pivotal contributions to science, film, and photojournalism.

*Nuclear Weapons* is a history of nuclear weapons. From their initial theoretical development at the start of the twentieth century to the recent tests in North Korea, the author seeks to, at each point in the narrative, describe the basic science of nuclear weaponry. At the same time, he offers accounts and anecdotes of the personalities involved, many of whom he has known firsthand. Dr. Bernstein writes in response to what he sees as a widespread misunderstanding throughout the media of the basic workings and potential impact of nuclear weaponry.

How-- and how pervasively-- quantum mechanics has entered the general culture is the subject of this book, an engaging, eclectic, and thought-provoking look at the curious, boundlessly fertile intersection of scientific thought and everyday life.

The term "culture wars" refers to the political and sociological polarisation that has characterised American society the past several decades. This new edition provides an enlightening and comprehensive A-to-Z ready reference, now with supporting primary documents, on major topics of contemporary importance for students, teachers, and the general reader. It aims to promote understanding and clarification on pertinent topics that too often are not adequately explained or discussed in a balanced context. With approximately 640 entries plus more than 120 primary documents supporting both sides of key issues, this is a unique and defining work, indispensable to informed discussions of the most timely and critical issues facing America today.

*Atomic Age America* looks at the broad influence of atomic energy, focusing particularly on nuclear weapons and nuclear power, on the lives of Americans within a world context. The text examines the social, political, diplomatic, environmental, and technical impacts of atomic energy on the 20th and 21st centuries, with a look back to the origins of atomic theory.

Ferenc Morton Szasz was a lifelong student who became a professor of history at the University of New Mexico. As a one-year appointment at the Albuquerque campus evolved into a forty-year career, Szasz glimpsed the predictable unpredictability that he would eventually discern as one of history's most enduring and elusive traits. The connections and consequences along the way forged a truly exceptional life and career. Szasz's interests, he insisted, were the "ideas of the people ... and how they shift over time." In an era when historical scholarship became increasingly specialized, he pursued an eclectic array of research interests and challenged his doctoral students to do the same. The ten selections of Szasz's writings that are the primary content of this volume balance insights into history's great moments with attention to events and details often overlooked by more conventional historians.

In 1922, the teenage son of a Jewish immigrant ventured from Manhattan to New Mexico for his health. It was the first of many trips to the Sangre de Cristo Mountains, a western retreat where J. Robert Oppenheimer would eventually hold pathbreaking discussions with world-renowned scientists about atomic physics. Oppenheimer came to feel at home in the American West, and while extensive studies have been made of the man, this is the first book to explicitly link him with the region. J. Robert Oppenheimer, the Cold War, and the Atomic West explores how the West influenced Oppenheimer as a scientist and as a person—and the role he played in influencing it. Jon Hunner's concise account of Oppenheimer's life and the emergence of an Atomic West distills a vast literature for students and general readers. In this brisk, engaging biography, the author recounts how Oppenheimer helped locate the atomic weapons research lab at Los Alamos, New Mexico, and helped establish leading physics departments at the University of California—Berkeley and Caltech. By taking part in moving atomic physics west of the Mississippi, Oppenheimer bolstered the establishment of research labs, uranium mines, nuclear reactors, and more, bringing talented people—and billions of dollars in federal contracts—to the region. Interwoven into this atomic tale are insights into the physicist's troubled growing-up years, his marriage and family life, the bombing of Hiroshima and Nagasaki, and Oppenheimer's eventual downfall. After the first atomic bomb burst over the New Mexican desert in 1945 and as the Cold War developed, the American myth of the Wild West expanded to encompass atomic sheriffs saving the world for democracy—even as powerful opponents began questioning Oppenheimer's place in that story. Against the backdrop of the physicist's life twining with the region's history, Hunner explores the promise and peril of the Atomic Age.

A Physics World Top Ten Book of 2010 Steven Weinberg, considered by many to be the preeminent theoretical physicist alive today, continues the wide-ranging reflections that have also earned him a reputation as, in the words of New York Times reporter James Glanz, "a powerful writer of prose that can illuminate—and sting."

The fields they examine span the modern physical sciences, ranging from theoretical physics to electrical engineering and from nuclear weapons science to quantum chemistry."--Jacket.

A chilling tale of McCarthy-era machinations, this groundbreaking page-turner rewrites the history of the Cold War.

In this first in-depth study of how historic scientists and inventors have been portrayed on screen, A Biographical Encyclopedia of Scientists and Inventors in American Film and TV since 1930 catalogs nearly 300 separate performances and includes essays on the screen images of more than 80 historic scientists, inventors, engineers, and medical researchers.

A portrait of the brother of famed physicist Robert Oppenheimer describes his own scientific contributions to the atomic bomb, his reemergence after the Red Scare, and his triumphant creation of the influential Exploratorium museum.

This invaluable resource offers students a comprehensive overview of the Manhattan Project and the decision to drop the atomic bomb, with more than 80 in-depth articles on a variety of topics and dozens of key primary source documents. Provides an important resource for understanding the decision-making process and programs that led to the successful development of the atomic bomb Offers readers the critical material to understand the controversial decision by President Harry Truman to drop atomic bombs on Hiroshima and Nagasaki Provides an A through Z review of all the key reference content needed to form the complete picture of the Manhattan Project Introduces readers to many of the key primary source documents related to the Manhattan Project and the atomic bomb

The development of nuclear weapons during the Manhattan Project is one of the most significant scientific events of the twentieth century. This book, prepared by a gifted teacher of physics, explores the challenges that faced the members of the Manhattan project. In doing so it gives a clear introduction to fission weapons at the level of an upper-level undergraduate physics student. Details of nuclear reactions, their energy release, the fission process, how critical masses can be estimated, how fissile materials are produced, and what factors complicate bomb design are covered. An extensive list of references and a number of problems for self-study are included. Links are given to several spreadsheets with which users can run many of the calculations for themselves.

This succinct book is timely reading for anyone who wishes to understand the maze of science and secrecy at the heart of Iran's nuclear ambitions. Writing for the general reader, Jeremy Bernstein draws on his knowledge as a physicist to elucidate the scientific principles and technical hurdles involved in creating nuclear reactors and bombs.

Traces the life and works of nuclear physicist J. Robert Oppenheimer, discussing his role in the creation of the atomic bomb.

In 1902, Professor Woodrow Wilson took the helm of Princeton University, then a small denominational college with few academic pretensions. But Wilson had a blueprint for remaking the too-cozy college into an intellectual powerhouse. The Making of Princeton University tells, for the first time, the story of how the University adapted and updated Wilson's vision to transform itself into the prestigious institution it is today. James Axtell brings the methods and insights from his extensive work in ethnohistory to the collegiate realm, focusing especially on one of Princeton's most distinguished features: its unrivaled reputation for undergraduate education. Addressing admissions, the curriculum, extracurricular activities, and the changing landscape of student culture, the book devotes four full chapters to undergraduate life inside and outside the classroom. The book is a lively warts-and-all rendering of Princeton's rise, addressing such themes as discriminatory admission policies, the academic underperformance of many varsity athletes, and the controversial "bicker" system through which students have been selected for the University's private eating clubs. Written in a delightful and elegant style, The Making of Princeton University offers a detailed picture of how the University has dealt with these issues to secure a distinguished position in both higher education and American society. For anyone interested in or associated with Princeton, past or present, this is a book to savor.

2004 marked the centennial of the birth of J Robert Oppenheimer, and brought historians and scholars, former students, nuclear physicists, and politicians together to celebrate this event. Oppenheimer's life and work became central to 20th century history as he spearheaded the development of the atomic bomb that ended World War II. This book provides a spectrum of interpretations of Oppenheimer's life and scientific achievements. It approaches the extraordinary scientist and teacher from many perspectives, chronicling the years from his boyhood through his role as director of the Los Alamos National Laboratory and afterwards. The book also discusses Oppenheimer's connection to New Mexico, which hosted two of the Manhattan Project's most crucial sites, and addresses his lasting impact on contemporary science, international politics, and the postwar age.

From April through December of 1945, ten of Nazi Germany's greatest nuclear physicists were detained by Allied military and intelligence services in a kind of gilded cage at Farm Hall, an English country manor near Cambridge. The physicists knew the Reich had failed to develop an atomic bomb, and they soon learned, from a BBC radio report on August 6, that the Allies had succeeded in their own efforts to create such a weapon. But what they did not know was that many of their meetings and private conversations were being monitored and recorded by British agents. This book contains the complete collection

of transcripts that were made from these secret recordings, providing an unprecedented view of how the German scientists, including two Nobel Laureates, thought and spoke about their roles during the war. In August 1945, two US Army Air Force B-29 bombers each dropped single "atomic bombs" on the Japanese cities of Hiroshima and Nagasaki. Little Boy and Fat Man each exploded with energies equivalent to more than 10,000 tons of conventional explosive. Just seven years later, in October 1952, the Ivy Mike test saw the detonation of America's first full-scale thermonuclear weapon that achieved a yield over 400 times as much as Little Boy and Fat Man. The invention of nuclear weapons was one of the most stunning scientific and technological developments of the 20th century. Carried out under the auspices of the United States Army's Manhattan Project, this development had profound immediate and long-term impacts: the bombings of Hiroshima and Nagasaki helped bring World War II to a close, but set the stage for the Cold War, nuclear proliferation, and fear of nuclear annihilation and terrorism. This volume, prepared by an acknowledged expert on the Manhattan Project, gives a concise, fast-paced account of all major aspects of the project at a level accessible to an undergraduate college or advanced high-school student familiar with some basic concepts of energy, atomic structure, and isotopes. The text describes the underlying scientific discoveries that made nuclear weapons possible, how the project was organized, the daunting challenges faced and overcome in obtaining fissile uranium and plutonium and in designing workable bombs, the dramatic Trinity test carried out in the desert of southern New Mexico in July 1945, and the bombings of Hiroshima and Nagasaki. The final chapter surveys current worldwide nuclear weapons deployments, and a bibliography lists sources of published and online information along with numerous links.

Studies J. Robert Oppenheimer's choice to accept leadership of the Manhattan Project.

Jeremy Bernstein guides readers through high-energy physics from early twentieth-century atomic models to leptons, mesons, quarks, and the newly discovered Higgs boson, drawing them into the excitement of a universe where 80 percent of all matter has never been identified. From molecules to galaxies, the more we discover, the less we seem to know.

Foreword by Peter Lax, Recipient of the National Medal of Science and the Abel Prize Afterword by Richard Garwin, Recipient of the National Medal of Science and the Enrico Fermi Award Many people know Edward Teller as the Father of the H-Bomb. His name tends to generate extreme views. To his supporters he was a hero of the Cold War. To his detractors he was evil personified. Between these extremes was the life of the real man. In this definitive and comprehensive biography, Hungarian scientist Istvan Hargittai, a personal acquaintance of Teller's, presents a balanced portrait of the multifaceted and enigmatic scientist against the backdrop of a turbulent period of history. Taking pains to avoid bias and preconceptions, Hargittai critically examines Teller's personality, family background, and the experiences that guided his actions—correcting many of the myths that others and Teller himself promulgated. Drawing for the first time on hitherto unknown archival material from Hungarian, American, and German sources, the author provides fresh insights that help the reader to understand Teller's motivations, his relationships with friends and foes, and his driven personality. In addition to this research and his own memories of Teller, Hargittai has interviewed for this book such prominent figures as Richard Garwin, Freeman Dyson, George A. Keyworth, and Wendy Teller (Edward Teller's daughter), among others. Hargittai reviews the significant facets of Teller's life: his Jewish-Hungarian origins, forced emigrations, brilliance in science, and devotion to the defense of the United States. He also discusses Teller's ruthless Machiavellism in achieving his goals, which included his pivotal role in the creation of the hydrogen bomb and the second weapons laboratory at Livermore, as well as his damaging testimony against physicist J. Robert Oppenheimer. Teller's peers viewed this testimony as a betrayal and, in effect, sent him into internal exile, which Hargittai describes as more tormenting to him than his previous emigrations. The author notes that Teller was sometimes called a monomaniac with many manias, such as his fierce opposition to nuclear test bans during the Cold War and, toward the end of his life, his role as propagandist for the Strategic Defense Initiative. Yet, his very excesses may have in fact contributed to the demise of the Soviet Union. Who was Edward Teller—the real Dr. Strangelove, the driven crusader for the H-Bomb, the villain who destroyed Oppenheimer, or the devoted husband, loyal friend, patriot, and strongly idealistic scientist? This monumental work will reveal the contradictory nature of this complex man in all his strengths, flaws, and brilliance. Istvan Hargittai, PhD, DSc (Budapest, Hungary), is the author of several acclaimed books including the six-volume *Candid Science* series of interviews with famous scientists; *The Road to Stockholm: Nobel Prizes, Science, and Scientists*; *The Martians of Science: Five Physicists Who Changed the Twentieth Century*; and *The DNA Doctor: Candid Conversations with James D. Watson*. Dr. Hargittai is professor of chemistry at the Budapest University of Technology and Economics and head of the George A. Olah PhD School of Chemistry and Chemical Engineering. He is a member of the Hungarian Academy of Sciences, a foreign member of the Norwegian Academy of Science and Letters, and a member of the Academia Europaea in London. His work on this book was assisted by a generous grant from the Alfred P. Sloan Foundation.

Oppenheimer Portrait of an Enigma Ivan R. Dee

Barry Allen explores the concept of knowledge in Chinese thought over two millennia and compares the different philosophical imperatives that have driven Chinese and Western thought. Challenging the hyperspecialized epistemology of modern Western philosophy, he urges his readers toward an ethical appreciation of why knowledge is worth pursuing.

The development of nuclear weapons by the Manhattan Project during World War II was one of the most dramatic scientific/technological episodes in human history. This book, prepared by a recognized expert on the Manhattan Project, offers a concise survey of the essential physics concepts underlying fission weapons. The text describes the energetics and timescales of fast-neutron chain reactions, why only certain isotopes of uranium and plutonium are suitable for use in fission weapons, how critical mass and bomb yield can be estimated, how the efficiency of nuclear weapons can be enhanced, how the fissile forms of uranium and plutonium were obtained, some of the design details of the 'Little Boy' and 'Fat Man' bombs, and some of the thermal, shock, and radiation effects of nuclear weapons. Calculation exercises are provided, and a Bibliography lists authoritative print and online sources of information for readers who wish to pursue more detailed study of this fascinating topic.

The development of nuclear weapons during the Manhattan Project is one of the most significant scientific events of the twentieth century. This revised and updated 4th edition explores the challenges that faced the scientists and engineers of the Manhattan Project. It gives a clear introduction to fission weapons at the level of an upper-year undergraduate physics student by examining the details of nuclear reactions, their energy release, analytic and numerical models of the fission process, how critical masses can be estimated, how fissile materials are produced, and what factors complicate bomb design. An extensive list of references and a number of exercises for self-study are included. Revisions to this fourth edition include many upgrades and new sections. Improvements are made to, among other things, the analysis of the physics of the fission barrier, the time-dependent simulation of the explosion of a nuclear weapon, and the discussion of tamped bomb cores. New sections cover, for example, composite bomb cores, approximate methods for various of the calculations presented, and the physics of the polonium-beryllium "neutron initiators" used to trigger the bombs. The author delivers in this book an unparalleled, clear and comprehensive treatment of the physics behind the Manhattan project.

"Robert Oppenheimer was a complex human being. No biography yet written comes even close to this elegant skein of poems in capturing his life and character."—Richard Rhodes, author of the Pulitzer Prize-winning *The Making of the Atomic Bomb* Quartet for J. Robert Oppenheimer records in poetry the life and times of one of America's best-known scientists, the father of the atomic bomb who later lobbied for containment of nuclear weaponry. In brief, elegant stanzas, Kelly Cherry examines Oppenheimer's inspirations, dreams, and values, visiting the events, places, and people that inspired him or led him to despair. She finds his place among scientists of his own time, such as Alan Turing and Albert Einstein, as well as his connections with historical and mythological figures from John Donne to

Persephone. "Of course he had blood on his hands. Who did not?" says Cherry, in "The Nature of War." Again and again in the course of this remarkable poem, Cherry's narration of Oppenheimer's life compels her readers to contemplate the vagaries of science, guilt, and our responsibilities to each other. "Quartet for J. Robert Oppenheimer is a book length poem in which the architect of the atom bomb comes to embody America and the West's Faustian control of nature and the paradoxical helplessness and guilt which that control entailed. Oppenheim is marvelous, complicated, flawed and admirable character, and these poems read like chapters in a novel without in any way abandoning the intensities of feeling and image or delight in language we associate with lyric poetry. A terrific achievement and a compelling read."—Alan Shapiro, author of *Life Pig* and *Reel to Reel*

Explores the complex intellectual life of the innovator of the atomic bomb, providing coverage of such topics as his sympathy toward Communism, his lead over the Manhattan Project, and his Jewish faith. Communism was never a popular ideology in America, but the vehemence of American anticommunism varied from passive disdain in the 1920s to fervent hostility in the early years of the Cold War. Nothing so stimulated the white hot anticommunism of the late 1940s and 1950s more than a series of spy trials that revealed that American Communists had co-operated with Soviet espionage against the United States and had assisted in stealing the technical secrets of the atomic bomb as well as penetrating the US State Department, the Treasury Department, and the White House itself. This book, first published in 2006, reviews the major spy cases of the early Cold War (Hiss-Chambers, Rosenberg, Bentley, Gouzenko, Coplon, Amerasia and others) and the often-frustrating clashes between the exacting rules of the American criminal justice system and the requirements of effective counter-espionage.

A bouquet of numbers for Olivia -- Was Einstein smart? -- A love story -- Deuteronomy -- An unsolved mystery -- Einstein and his teacher -- Einstein versus Einstein -- Wien's law -- A quantum of education -- Sommerfeld's footnote -- Quantum mechanics -- A song for Molly -- A Schrödinger equation -- The life of a cell -- Who was Hall? -- An encore song for Molly -- Entropy -- A letter to my fellow quantum mechanics

This work provides an up-to-date biography of Rachel Carson, a writer and scientist who greatly influenced the modern environmental movement.

Incorporating elements from history, science, philosophy and international relations theory, this book takes a fresh look at the life and thought of Robert Oppenheimer. The author argues that not only are Oppenheimer's ideas important, engaging and relevant, but also more coherent than generally assumed. He makes a convincing case that Oppenheimer has much to say about 21st century issues, and his voice should be brought back into the public forum. The book recovers and reconstructs what Oppenheimer said and wrote during the 1940s, 50s and 60s (i.e., his hope and vision) with the goal of identifying what might be of general philosophical interest today. It considers not only Oppenheimer's thought, but also his life using philosophical ideas developed by contemporary philosophers. In addition, to deepen and broaden the discussion and demonstrate the relevance of Oppenheimer's vision for the present, the author analyzes his views using contemporary international relations theory with a special emphasis on nuclear nonproliferation and disarmament. This examination reveals ways in which Oppenheimer's reasoning was prescient of current work being carried out to control, and possibly move beyond, the nuclear revolution.

This Encyclopedia, in three volumes, cover a wide range of general thematic categories, issues and topics that address not only the geopolitical effects of war, but also show how the United States engagement in national and international conflicts has affected the social and cultural arena.

**WINNER OF THE PULITZER PRIZE FOR NONFICTION** • "The definitive biography" (Newsweek) of J. Robert Oppenheimer, one of the iconic figures of the twentieth century, a brilliant physicist who led the effort to build the atomic bomb for his country in a time of war, and who later found himself confronting the moral consequences of scientific progress. In this magisterial, acclaimed biography twenty-five years in the making, Kai Bird and Martin Sherwin capture Oppenheimer's life and times, from his early career to his central role in the Cold War. This is biography and history at its finest, riveting and deeply informative. "A masterful account of Oppenheimer's rise and fall, set in the context of the turbulent decades of America's own transformation. It is a tour de force." —Los Angeles Times Book Review

Albert Einstein and J. Robert Oppenheimer, two iconic scientists of the twentieth century, belonged to different generations, with the boundary marked by the advent of quantum mechanics. By exploring how these men differed—in their worldview, in their work, and in their day—this book provides powerful insights into the lives of two critical figures and into the scientific culture of their times.

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