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SURVEY REVIEW

THE MANY FACETS OF J. ROBERT OPPENHEIMER

Jeremy Bernstein, *Oppenheimer: Portrait of an Enigma*. Chicago: Ivan R. Dee, 2004. Pp. xi + 223. US$25.00 HB.

Kai Bird and Martin Sherwin, *American Prometheus: The Triumph and Tragedy of J. Robert Oppenheimer*. New York: Alfred A. Knopf, 2005. Pp. xiii + 721. US$35.00 HB.

David C. Cassidy, *J. Robert Oppenheimer and the American Century*, New York: Pi Press, 2005. Pp. ix + 462. US$27.95 HB.

Jennet Conant, *109 East Palace: Robert Oppenheimer and the Secret City of Los Alamos*. New York: Simon & Schuster, 2005. Pp. xviii + 425. US$26.95 HB.

Priscilla J. McMillan, *The Ruin of J. Robert Oppenheimer and the Birth of the Arms Race*. New York: Viking, 2005. Pp. viii + 373. US$25.95 HB.

By Naomi Pasachoff

The future director of the secret laboratory that produced the first atomic weapons became interested in physical science at the age of seven. In the summer of 1911, the wealthy Oppenheimer family of New York City took Robert on a trip to visit his grandfather Benjamin in Germany. The mineral collection Benjamin gave Robert captured his interest. Robert's fascination with the physical and chemical, rather than geological, properties of his specimens paved the way to his first scientific talk. How amazed were the members of the New York Mineralogical Club to discover that their invited guest needed a wooden box to stand on so that they could see more than his head above the podium!

As the spate of new books published about Oppenheimer in 2004–2005 indicates, young Robert's intense interest in analysing his minerals is matched by the intense interest scholars have shown

in analysing the complicated man he grew up to be. Like jewellers searching for flaws in the facets of a cut jewel, Oppenheimer's biographers hold him up to the light, as it were, examining him this way and that. Oppenheimer died at the age of 62 in 1967, a tragic figure in the true Greek sense. The great man's fatal flaws led him to participate in his own downfall: the rescinding of his security clearance in 1954.

I am happy to report that each of the five books under consideration here has its virtues. Often they complement, and occasionally contradict, one another. Only one, *American Prometheus*, aims to be a "definitive" biography. Physicist and science writer Jeremy Bernstein offers his book in lieu of *The New Yorker* profile of Oppenheimer that he never wrote, the reasons for which he gives in his preface. Historian of physics David Cassidy notes that his intention is "not to extract new and tantalizing details about his life, his sexual affairs, or his complicated psychology" (p. xviii), but rather to explore the role that Oppenheimer unwittingly played in the co-opting of science and scientists by what would soon be called the military–industrial complex. Jennet Conant makes use of family history (her grandfather, James B. Conant, Harvard President and chemist, played a significant role in the story of the bomb and suffered his own, if lesser, professional loss in 1950) and of the unpublished memoir of Dorothy McKibbin, the woman who staffed the Santa Fe office that was the portal to the secret city of Los Alamos. Historian Priscilla J. McMillan, focusing on the period from 1945 to 1954, tells a cautionary tale of the secret dealings of a government determined to rid itself of a gadfly – a tale whose relevance to today she underscores.

American Prometheus, the longest of the books in the making (a quarter-century of interviews and careful archival research) and in number of pages, has also received the most press coverage. More than one reviewer has mentioned in passing that the authors, both professional historians, are clearly not scientists. As a non-scientist writer of scientific biographies myself, I do not blame the authors for the scientific lapses, which are quite jarring, but the publisher, for not providing a final vetting of the manuscript by a physicist. The authors acknowledge the assistance of Jeremy Bernstein, who "carefully read early versions of our manuscript" (p. 595). If Bernstein or another scientist had seen the final manuscript, however, the book would not claim that the Pauli exclusion

principle explains "why each 'orbital' in an atom may be occupied by only two electrons at a time" (p. 75). A final reading by a scientist would also have corrected the errors in Bird and Sherwin's coverage of the Oppenheimer–Snyder paper (1939), "On Continued Gravitational Contraction", where they confuse singularities with event-horizons and the mass of a white dwarf with that of a neutron star (p. 89). Of less importance, a physicist's reading would surely have seen to the insertion of the article "the" before each mention of "Cavendish Laboratory", and would probably have added that Marvin Goldberger was to become not only president of Caltech but also a successor to Oppenheimer as Director of the Institute for Advanced Study (p. 410). I was also frustrated by Bird and Sherwin's seeming inability to decide whether Oppenheimer was "The most famous physicist in the United States" (p. 374), or "After Einstein, ... undoubtedly the most renowned scientist in the country" (p. 390), or "surely the best known physicist of his generation, the founder of the most prominent school of theoretical physics in America – and the 'father of the atomic bomb'"(p. 391), or "The nation's most famous nuclear scientist" (p. 465).

These reservations notwithstanding, readers of this monumental biography will surely learn many things. For example, among Kai Bird's previous books is a dual biography of McGeorge and William Bundy. As a result, readers of *American Prometheus* have the opportunity to discover how McGeorge Bundy interacted with Oppenheimer three times following the latter's loss of his security clearance in 1954: (1) In 1957 Bundy, then Dean of Harvard's faculty, invited Oppenheimer to give the six prestigious William James Lectures on behalf of the philosophy and psychology departments. Arguing that liars should not be invited to lecture at an institution whose motto is "*Veritas*", and threatening to stop their donations to the institution, an influential group of Harvard alumni objected. Bundy refused to cave in to their demands, however, and attended the 8 April lecture himself (p. 561). (2) In April, 1962, Bundy – now National Security Adviser to President Kennedy – included Oppenheimer in the guest list to a White House dinner in honour of 49 Nobel laureates (p. 574). (Although Oppenheimer was not a laureate himself, he had been nominated for the prize at least three times, according to Cassidy, and both Bernstein and Cassidy suggest that had he lived long enough, he might have won the prize for his theoretical work on black holes.) According to Bird and

Sherwin, following the dinner Oppenheimer's friend Glenn Seaborg, the 1951 chemistry laureate, asked Oppenheimer whether he would willingly undergo another hearing in order to have his security clearance reissued; Oppenheimer sharply responded, "Not on your life" (p. 3). In April 1963, Oppenheimer learned that President Kennedy planned to award him the Enrico Fermi Prize for public service. Bundy, however, would not give the green light for JFK personally to bestow the award on Oppenheimer in a White House ceremony until he had assessed the Republican reaction. In the event, Kennedy was assassinated ten days before the 2 December ceremony, and it fell to LBJ to carry out this act of public rehabilitation (pp. 575–576).

Bird and Sherwin, incidentally, report what for me is the most damaging fact about Oppenheimer in any of these books. The revelation had nothing to do with his loyalty to the United States but rather with his credentials as a member of the "cultural elite". The authors report that when, in 1947, the Oppenheimers moved to Princeton, New Jersey, into Olden Manor, home to the directors of the Institute for Advanced Study (Oppenheimer's position from 1947 to 1966), "they found nearly every room in the house lined with bookshelves. Robert had most of them torn out, leaving only one wall in the library covered with floor-to-ceiling bookcases" (p. 370). What sort of intellectual rips out built-in bookcases?

Bernstein's book, the first of those under consideration to be published, challenges a number of the assertions later found in Bird and Sherwin's. For example, Bird and Sherwin (p. 46) include as a verified fact the story that in late autumn 1925, as a recent Harvard graduate and new arrival at Cambridge University, a psychologically unhinged Oppenheimer "poisoned" an apple with chemicals from the laboratory and left it on the desk of his tutor, Patrick Blackett. To keep the incident from culminating in their son's expulsion, Oppenheimer's parents agreed to pay for sessions with a Harley Street psychiatrist. Bernstein, however, dismisses the story as myth: "I find it very unlikely that it was anything more than the mythmaking Oppenheimer indulged in for most of his life, sometimes with disastrous consequences for himself and others" (p. 21). Bernstein is also suspicious of reports of an affair between Oppenheimer and Ruth Tolman, which Bird and Sherwin recount with authority. Oppenheimer was a close friend of both Ruth and her husband, Richard Tolman, a colleague of his at Caltech in the

1930s. Bernstein concludes: ''Of one thing one can be sure: if there was an affair, it was very private and hardly one that would be common knowledge at cocktail parties'' (p. 141).

Bird and Sherwin, in turn, set Bernstein straight on at least one matter. Bernstein concludes his book with an account of how, to his pleasure, he had unraveled the mystery of why choreographer George Balanchine had been asked to select the music for Oppenheimer's February 1967 memorial service. One of the things I love about Bernstein's profiles is the legitimate role he plays in the story, since he was the colleague of so many of the scientists about whom he has written. Physical science is one thing, but I was unprepared to learn so much in this book about Bernstein's involvement in physical activity! Having never even heard of Pilates until fairly recently, I was certainly amazed to learn that Bernstein and Balanchine took classes in the 1960s at the same Pilates gym in New York (p. 200). There, the Monday after the funeral service, Bernstein told Balanchine he had been unaware of his friendship with Oppenheimer. The ballet master then told him that he had never met Oppenheimer and had himself been astonished when invited to choose the music for the event. Only decades later, when writing this book, did Bernstein figure out what must have happened. In the 1950s, Oppenheimer was a member of the Congress of Cultural Freedom, which espoused what Bird and Sherwin call a ''liberal anticommunist message'' (563). Another member of the Congress was composer Nicolas Nabokov, a cousin of novelist Vladimir Nabokov. The composer had homes in both Paris and Princeton, and became a close friend of Oppenheimer, also a Princeton resident. According to Bernstein, in 1967 Balanchine was collaborating on a ballet with Nicolas Nabokov, and the composer must have asked the choreographer to choose the music for the service. All this sounds perfectly plausible. But the final sentences of Bernstein's book are in fact undercut by Bird and Sherwin. Bernstein asserts; ''Neither Oppenheimer, Nabokov, or Balanchine knew that the Congress of Cultural Freedom had been secretly funded by the CIA. What would Oppenheimer and his enemies have made of that?'' (p. 201). According to Bird and Sherwin (p. 564), however, the story of CIA backing for the Congress had been broken by *The New York Times* the previous spring. Oppenheimer, George Kennan, John Kenneth Galbraith, and Arthur Schlesinger, Jr, then sent a letter to the editor, praising

the Congress for its independence and the "integrity of its officials", without denying its link to the CIA. Bird and Sherwin quote a CIA officer's comment that the CIA's funding for the congress "was a pretty open secret."

Bernstein's discussion of sports also enlivens his book. He recounts that when he arrived as a temporary visitor at the Institute for Advanced Study in autumn 1957, "it was at the beginning of the football season. There were signs of all sorts hanging from the various Princeton eating clubs, exhorting the football team to beat whatever Ivy League school was on the schedule that weekend. I tried to promote the idea of having a sign made that would read 'Beat Copenhagen' – a reference to the Bohr Institute – which I planned to display on Fuld Hall at the Institute, but I got no takers" (p. 176). (Fuld Hall at the time housed what Bird and Sherwin call "modest offices for scores of scholars, a wood-paneled library and a formal common room lined with overstuffed brown leather couches" [p. 370].) Bernstein was more successful, however, in organising touch football at the Institute (p. 191).

Much as I admire Bernstein's work in general, and this book in particular, I have a few minor editorial comments. Bernstein comments that both Harvard and Göttingen "turned out to be a transforming experience" (pp. 15, 22) for young Robert Oppenheimer; this experienced writer could have varied his vocabulary a little. When he introduces Oppenheimer's future wife, Kitty, he correctly says they met in August 1939, but a few lines down says, "When Oppenheimer met her in 1940..." (p. 55). Bernstein is also guilty of fuzzy writing when he uses, on at least three occasions (pp. 99, 101, 103), the words "people like". Since the people mentioned run the gamut from "Vannevar Bush and James Byrnes" to "James Conant and General Groves" to "Einstein and Marilyn Monroe", one wishes Bernstein had specified more precisely just what linked the individuals in each instance.

Turning to Cassidy's book, it is interesting to note his inadvertent allusions to the titles of both Bernstein's and Bird and Sherwin's biographies, endorsing the one and dismissing the other. In his Introduction, Cassidy notes that "the enigma of Oppenheimer remains" (p. xi). In one of the book's final pages, Cassidy states of his subject: "In no event was he going to play – as some writers would have it – ... the 'American Prometheus', the scientist who stole fire from the gods and suffered eternal torment for his act" (p. 350). Even though

Janet Maslin, in reviewing two of these books for *The New York Times* of 21 April, 2005, credits Bird and Sherwin with "having the best title" of all the Oppenheimer biographies, I am afraid I have to take issue both with her and – though I agree with Cassidy that their title is not apt – also with him. According to *The New Century Classical Handbook* (1962, pp. 934–935), Prometheus was not exactly a scientist – *pace* Cassidy – but rather the strongest intercessor for mankind among the Titans. But – *pace* Maslin – Bird and Sherwin's title is inapt because, as the *Classical Handbook*'s entry on Prometheus notes, the mythological story ends with Prometheus's reutrn to Olympus, where he "resumed his role as adviser to the gods". Cassidy notes that post-1954 Oppenheimer may have harboured hopes that he would be restored to his influential advisory role, but these hopes were never fulfilled.

Among the many interesting things I learned from Cassidy's extensive use of documentary evidence is that Oppenheimer was not, strictly speaking, actually a Jew (p. 10). According to Jewish law, Jewish descent is conveyed matrilineally. Although Oppenheimer's German-born father, Julius Oppenheimer, was the son of two Jewish parents, Oppenheimer's American-born mother, née Ella Friedman, was the daughter of a German–Jewish father and a non-Jewish American-born mother. Julius and Ella were married in a non-Jewish ceremony (p. 11), and no evidence points to J. Robert Oppenheimer's ever identifying with Jewish culture or religion (p. 14). Nonetheless, Hitler would have counted Oppenheimer as a Jew, and he was certainly viewed as Jewish by others. Bird and Sherwin note, for example, that Harvard physicist Percy Bridgman closed his letter to Ernest Rutherford at the Cavendish on behalf of young Robert by remarking on the applicant's religious background: "As appears from his name, Oppenheimer is a Jew, but entirely without the usual qualifications of his race" (p. 39). Cassidy also notes several ways in which anti-Semitism affected Oppenheimer throughout his life, only some of which he was aware, For example, when Robert A. Millikan, President of Caltech, was deliberating whether to have Oppenheimer back at his institution following the completion of the Manhattan Project, Millikan hesitated to add another Jew to the faculty "because of the large percentage of his fellow racists [*sic*] who are already appearing at the Institute" (p. 121). Whether or not Oppenheimer felt Jewish intrinsically or only because of society's perceptions of him, he

certainly didn't turn his back on his Jewish relatives in Germany, and together with his brother, Frank, he helped bring his father's younger sister and her son and his family to the United States in 1937.

Only in Cassidy's book, too, did I learn that among the numerous factors playing into the hatred that Lewis Strauss, Oppenheimer's nemesis, harboured for him was the difference between their upbringings as descendants of German Jews. As Chairman of the Atomic Energy Commission from 1953 to 1958, Strauss engineered the 1954 hearings on Oppenheimer's security clearance so that the physicist had no chance of prevailing. In studying a 1984 biography of Strauss, Cassidy learned that the Oppenheimer family's involvement in the Ethical Cultural movement "reinforced [Strauss's] sense that Oppenheimer lacked moral principles" (p. 307). The New York Society for Ethical Culture, established in 1876 by Felix Adler, son of prominent Reform rabbi Samuel Adler, was primarily an offshoot of German Reform Judaism,. The movement's humanist ideology of "Deed, not Creed" also attracted non-Jewish adherents, mainly liberal Protestants. Strauss, by contrast, raised to be a fully assimilated American Jew, had been President of the premier New York Reform synagogue where Samuel Adler had officiated, and from which Felix Adler had seceded. Because of Strauss's belief that morality had to be rooted in belief in a supreme being, he was convinced that the product of a secular humanist background like Oppenheimer had to lack a moral core. On the other hand, McMillan points out that Strauss, who met Teller for the first time in 1948 at an unspecified New York City synagogue, "was distressed by the fact that Teller was nonpracticing"; but nonetheless "the two became friends" ... (p. 115).

Of the books under consideration here, Cassidy's alone suggests that perhaps Oppenheimer's fear of being 'outed' as a former card-carrying Communist underlay his self-defeating behaviour – his willingness, for example, to testify altogether, which neither Einstein nor many of his personal friends understood. Cassidy considers it irrelevant whether or not Oppenheimer was an official member of the Communist Party, but he argues: "[a]lthough the possibility remains that Oppenheimer's later failings and behaviour arose entirely from his internal psychological problems, this makes a much weaker explanation of his behaviour than the argument that he was indeed a man with something in his past that he desperately needed to hide" (p. 200).

As author of a young–adult biography of Linus Pauling, I found myself disappointed by Bird and Sherwin's cursory treatment of the relationship between Oppenheimer and Pauling and gratified by Cassidy's much more probing account. Bird and Sherwin call Pauling, whom he first met when they were young faculty members at Caltech in the 1930s, simply "his friend" (p. 83). Cassidy's understanding of the Oppenheimer–Pauling "friendship" is enhanced both by his references to Thomas Hager's biography of Pauling and by his own impressive archival sleuthing (pp. 151–152). Oppenheimer, misreading the flirtatious ways of Pauling's wife, was rebuffed when she declined his invitation to join him on an assignation in Mexico. Cassidy also reports Ava Helen's perception that Oppenheimer really had more romantic interest in Linus than in her. Cassidy's research substantiates her claim. While on a National Research Council fellowship at Caltech in 1928, Oppenheimer presented to Pauling a gift of eleven of his own poems. Oppenheimer, who admittedly often bestowed extravagant gifts on people he liked, gave Pauling not only an expensive ring but also his beloved mineral collection. Pauling, who was the first to introduce quantum mechanics into chemistry, had originally planned to collaborate with Oppenheimer on the quantum theory of the chemical bond. His discomfort with Oppenheimer's unwanted attentions led him to cancel the joint project. The fruits of his independent labour led to his Nobel Prize for chemistry in 1954. If, as Cassidy notes, the collaboration had gone forth and Oppenheimer had shared in that prize, it "would surely have been a welcome reassurance to the defeated physicist", who was publicly humiliated in the security clearance hearings earlier that year. Pauling also declined Oppenheimer's invitation to participate in the Manhattan Project.

Neither Cassidy nor Bird and Sherwin mention a parallel between Pauling and Oppenheimer: their questionable parenting skills. Both books recount how in 1941 Kitty and Oppie left their 2-month-old son, Peter, with Haakon Chevalier and his wife while they spent a restful month on their own in Oppenheimer's New Mexico retreat, *Perro Caliente*. (Oppenheimer's bungled handling of an encounter with Chevalier in the winter of 1943–1944 would ultimately be a decisive factor leading to the loss of his security clearance a decade later.) The Oppenheimers failed to match the standards set by the Paulings, however, who in 1926 left their not-

yet 1-year-old son, Linus, Jr, for over a year and a half with Ava Helen, Pauling's mother, while Pauling took a postdoctoral fellowship in Munich.

Cassidy's treatment of the relationship between Einstein and Oppenheimer also differs in emphasis from Bird and Sherwin's. According to Cassidy, Oppenheimer "did little to hide his dislike of Einstein" (p. 346). In *American Prometheus*, by contrast, we learn of the thoughtful birthday present that Oppenheimer – ever the gift-giver – as Director of the Institute for Advanced Study, bestowed on its most famous faculty member around 1948 (p. 381). Aware that music-lover Einstein was unable to tune into radio broadcasts of Carnegie Hall concerts, Oppenheimer secretly arranged for an antenna to be installed on the roof of Einstein's Mercer Street house. I wish, however, that Bird and Sherwin had real documentary evidence to verify this anecdote. The footnote for the incident credits only an interview with Georgia Whidden, whom a Google search identifies as Communications Director for the Institute for Advanced Study. As a veteran biographer, I am all too aware of the unreliability of human memory. It would be nice to have a receipt for the radio antenna or for its installation to back up the story!

With regard to Einstein, I disagree with the spin that Cassidy puts on Einstein's 1921 visit to the United States. In the context of a discussion about how the need to bring American physics up to the standard of European physics was underscored in the post-World War I world, Cassidy describes Einstein's American tour as "a triumphal visit" (p. 59). In fact, the purpose of the trip was to raise funds for Zionism in general and the nascent Hebrew University in Jerusalem in particular. A July 1921 letter from Rutherford's American colleague, the Yale chemist Bertram Boltwood, reveals that Einstein's visit was not, as Cassidy would have it, an opportunity to renew "optimism for rational science and the human spirit". Instead, it provided an opportunity for polite anti-Zionism to assert itself. Boltwood crowed to Rutherford, "Thank heaven, Yale did not give Einstein a degree. We escaped that by a narrow margin. 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". Truly, there is nothing new under the sun.

Two points that Cassidy makes seem to me important to remember in any evaluation of Oppenheimer as a scientist and as a

participant in an important Cold War drama: (1) Unlike virtually all of his scientific colleagues at Los Alamos, for Oppenheimer physics was always "a career to 'try'" rather than "an irresistible calling" (p. 149). He was a lifelong dilettante in both of C. P. Snow's two cultures. (2) Cassidy argues convincingly that the Oppenheimer case "all but destroyed a meaningful role for the scientific adviser beyond offering technical possibilities; and it all but eliminated a place in government circles for the thoughtful dissenter from official policies" (p. 333). Throughout his book, Cassidy notes striking and unsettling parallels between America during the height of the Cold War and in the post-9/11 world. He follows this train of thought to the role that science advising plays in the administration of George W. Bush. He repeats a statement that Bush's science adviser John H. Marburger III made in spring 2004: "No one will know my personal positions on issues as long as I am in this job. I am here to make sure that the science input to policy making is sound, and that the executive branch functions properly with respect to its science and technology missions" (p. 336). Unwilling to leave the last word to an administration spokesman, however, Cassidy adds, "Nevertheless, influential scientists have complained that the Bush administration has imposed its own agenda on science advice, going so far as to take a decidedly political approach to the appointment of science advisers and even to the acceptance and publication of their advice on controversial issues, such as global warming" (p. 336). One might add stem-cell research and so-called Intelligent Design.

Among the new Oppenheimer books, only Conant's is not a scholarly work, but its human interest stories enrich our understanding of Oppenheimer's time at Los Alamos and beyond. I was interested to read about the attempt by the Republican sheriff of Sandoval County to disenfranchise the Los Alamos scientists in the 1944 election. Although the army promised to contest the Republican county's injunction against letting the liberal-leaning scientists register, it never did so. For security reasons, the scientists had to remain anonymous, and to register to vote, they would have to use their real names. If they wanted to vote, they had to request absentee ballots. Very few made those arrangements in a timely manner, and so most of the civilian population of Los Alamos was unable to vote. But in the event, their votes were not crucial to FDR's winning an unprecedented fourth term (p. 258).

Conant also describes how the need for security adversely affected marriages on the mesa. According to one physicist's wife, "really, the atmosphere was icy. There was very little conversation between husbands and wives. It was a very cold, lonely and difficult time" (p. 269). Another wife attributed the famous Los Alamos baby boom to the tension between highly educated wives and their suddenly secretive husbands: "It seemed to me that we were all striving to maintain the fiction that somehow life could be normal in that very abnormal setting. Perhaps that was a vain hope" (p. 262). Vain hope or not, the baby boom continued, and it is amusing to hear that "Groves all but ordered Oppenheimer to do something about it. The laboratory staff was reproducing at such a rate that the situation was straining the post's resources and threatening to turn his top-secret garrison into a glorified pediatric ward! Oppenheimer objected that population control was not one of his duties as scientific director, not that it would do any good. What he probably did not mention, however, was that he was the last person who could take a stand on the issue as his own wife was with child" (p. 215). Toni Oppenheimer was born on 7 December, 1944, the third anniversary of Pearl Harbor. Shortly after her 32nd birthday, in January 1977, Toni committed suicide.

Conant's use of the papers of Dorothy McKibbin, whose office at 109 East Palace in Santa Fe provides the title for her book, also provides insight into the character of Edward Teller, who played a significant role in Oppenheimer's undoing. Years after the 1954 hearings, an Albuquerque television interviewer asked McKibbin to compare the two physicists. McKibbin answered, "You can't compare their character any more than you can compare an orchid to a dandelion.... An orchid is more finely designed, and built, and delicate, and subtle, and aromatic. And a dandelion is something you kick up with the heel of your shoe if it's going to take over your grass" (p. 392).

The most recent of the new Oppenheimer titles is Priscilla McMillan's. Her book makes a point similar to Cassidy's – "the Oppenheimer hearing ... put an end to the unique partnership between scientists and the government" (p. 262) – but her portraits of participants in the story shed new light. I was fascinated to learn that Oppenheimer – though doubtful he could "make the omelet rise twice" – actually called his successor at Los Alamos, Norris Bradbury, to express interest in heading up the H-bomb project

(p. 123). She calls attention to Teller's virtues: "Teller at his best ... was very, very good," "had humor and charm and ... could be immensely generous", and (like Bohr after World War I) he attempted to reintegrate German scientists into the postwar scientific community (p. 92). She points out, however, that while the H-bomb was as much Stanislaw Ulam's "child" as Teller's, "Teller from the start tried to make Ulam an unperson" (p. 103), endeavouring "to erase his rival from the history books and make him a nonperson" (p. 250). McMillan also uses, to good effect, the diary of the wife of the only Atomic Energy Commisioner to vote to reinstate Oppenheimer's clearance for access to restricted data.

McMillan errs by asserting that Strauss was an Orthodox Jew who prayed twice a day (p. 115). Had Strauss been an Orthodox Jew, he would have prayed three times daily. But Cassidy informs us that Strauss, from 1938 to 1949, was President of Temple Emanu-El – one of the nation's most important Reform temples (p. 307). Observant Strauss may have been; Orthodox he was not. McMillan compounds her error by contrasting Oppenheimer with Strauss as "Agnostic bohemian versus dutiful elder of an Orthodox Jewish Congregation" (p. 186).

Engrossing and informative as these books are, they will not be the last to consider Oppenheimer's life and role in American history. Actual jewellers examining facets of real gems are more likely to reach definitive conclusions about the subjects of their scrutiny than we can ever hope to reach about ourselves and each other.

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