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Judging Edward Teller: A Closer Look at One of the Most Influential Scientists of the Twentieth Century

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Judging Edward Teller

A Closer Look at One of the Most Influential Scientists of the Twentieth Century

Istvan Hargittai

Prometheus Books, New York, 2010. \$32.00 (575 pp.). ISBN 978-1-61614-221-6

Much has been written about Edward Teller, but little of it is objective. Given, on the one hand, his position as one of the most inventive theoretical physicists of the 20th century, and on the other, his central role in the development and advocacy of thermonuclear weapons, one might imagine it impossible at this point in history to write a scholarly, impartial account of Teller's life and his impact.

Now, however, Istvan Hargittai, a prominent Hungarian physical chemist and historian of science, has written a balanced, thoughtful, and beautifully researched biography that comes closest, *Judging Edward Teller: A Closer Look at One of the Most Influential Scientists of the Twentieth Century*. Hargittai is uniquely qualified for this difficult task. Coming a generation and a half later from a similar Hungarian-Jewish background, Hargittai understands well the influences and terrible events that shaped Teller. The advent of virulent, political anti-Semitism, first in Hungary and then in Germany, made Teller twice a refugee. Both Teller and Hargittai lost close family in the Holocaust; Hargittai was himself liberated from a Nazi concentration camp as a child. And, while Teller was in the US by then, his and Hargittai's surviving family members in Hungary suffered mistreatment at the hands of the postwar Hungarian Communist dictatorship. Hargittai's informed Eastern European perspective also provides a fresh viewpoint to the cold war context of the second half of Teller's career.

Furthermore, Hargittai's own scientific work in molecular structure clearly makes him appreciative of Teller's breakthroughs in that field in the 1930s.

Building on the fascinating interwoven personal portraits of Teller, Theodore von Kármán, John von Neumann, Leo Szilard, and Eugene Wigner presented in his earlier book, *The Martians of Science: Five Physicists who Changed the Twentieth Century*, (Oxford University Press, 2006), Hargittai now focuses more deeply on Teller. *Judging Edward Teller* is documented and annotated with more than 1200 references and notes, much of it new material from a range of sources, including the Hoover Institution Archives at Stanford University, the Special Collections Research Center of the University of Chicago Library, and the recently opened Historical Archives of the Hungarian State Security Services. Furthermore, Hargittai's portrait of Teller is well documented by hundreds of informative interviews he and his wife Magdolna Hargittai conducted in recent years with leading scientists whose paths intersected Teller's in diverse ways over many decades—those include Harold Agnew, Freeman Dyson, Richard Garwin, Vitaly Ginzburg, George Keyworth, Peter Lax, John Nuckolls, Laszlo Tisza, and John Wheeler.

Among the many gems that add warmth and dimension to this new biography are excerpts from Teller's touching, long correspondence with his close friend and collaborator, Maria Mayer; George Gamow's 1954 cartoon illustrating Teller's unpublished idea for the protein coding mechanism of DNA; Teller's principled 1950 defense of his former student Stephen Brunauer in the face of Senator Joseph McCarthy's accusations (surely ironic, given Teller's later testimony against Robert Oppenheimer); and Teller's prize-winning performance in the Hungarian National Physics and Mathematics Examinations.

Indeed, Teller's life and impact was quite remarkable, from his early, big successes applying the new quantum theory first to molecular systems and then more broadly to nuclear, solid state, and plasma physics, to his work in the Manhattan project, his post-war entry into public debate and his strong yet often stubborn and unpopular advocacy of nuclear weapons, the Teller-Ulam breakthrough thermonuclear invention, his disastrous testimony in the Oppenheimer hearings, co-founding the Lawrence Livermore laboratory, his prescient interest in and ideas for nuclear reactor safety, his strong opposition to secrecy, his impact on scientific education, and his role in the Strategic Defense Initiative.

Befitting his "judging" theme, Hargittai doesn't just simply trace those watershed events, which spanned nearly the entire twentieth century. He also interleaves comparative illustrations of how Teller's peers in Hungary, Germany, the US, and the USSR responded to political and scientific challenges similar to those Teller confronted. Key scientists discussed include the interviewees already mentioned, Teller's fellow "Martians," Hans Bethe, Werner Heisenberg, Lev Landau, Oppenheimer, Ernest Lawrence, Luis Alvarez, I. I. Rabi, Enrico Fermi, Gamow, Linus Pauling, Stanislaw Ulam, Yuli Khariton, and Andrei Sakharov. The descriptions of the parallel careers and historical viewpoints of Teller's mentors, friendly scientific peers, collaborators, and adversaries sheds new light on his life and successfully gives context to some of the enigmatic and ultimately tragic aspects of his career.

This book will be a significant resource for historians—it ably sets Teller's life in its broader, multiple contexts of pre-World War I Budapest, the leading role of German science in the 1920s, the crucial contributions of émigrés to the rapid rise of American science and technology, the development of nuclear weapons and

the cold war, and the ultimate dissolution of the Soviet Union. In this regard, Hargittai's book complements excellent scientific émigré biographies such as William Lanouette's biography of Szilard, *Genius in the Shadows* (Charles Scribner's, 1992), Ruth Lewin Sime's *Lise Meitner: A Life in Physics* (University of California Press, 1996), and Hargittai's *The Martians of Science*.

Beyond that, *Judging Edward Teller* will be of great interest to anyone who wants to understand more about the impact on history of the twentieth-century revolution in physics, and in particular about Teller, who was, in Hargittai's words, "an extraordinarily gifted physicist cutting a tragic figure."*

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