

Memoirs: A Twentieth-Century Journey in Science and Politics

BY FREEMAN J. DYSON

The book review by Freeman J. Dyson, Institute for Advanced Study, Princeton, NJ, Memoirs: A Twentieth-Century Journey in Science and Politics by Edward Teller, and Judith Shoology.

FEATURE

Reprinted as a tribute to the late Edward Teller (1908–2003).

This book is a pleasure to read and is also a unique historical document. Teller is intensely interested in people. The story of his life is a portrait gallery of people he has known, each of them brought to life and portrayed as an individual, all of them swept along by the tides of war and revolution and political passion in which Teller's life was lived. Teller observes and records the personal qualities of these people, their follies and their kindnesses and their often tragic fates, beginning with friends of his childhood in Hungary 80 years ago and ending with the death of his wife, Mici, who loved and sustained him through more than 70 years of joys and sorrows.

Teller is also intensely interested in science. The high point of his life, as he describes it, was the brief golden age of German science, the seven years that he spent in Germany from 1926 to 1933, between the discovery of quantum mechanics and the advent of Hitler. During those years he worked on the boundary between physics and chemistry, understanding the implications of quantum mechanics for the structure and spectroscopy of molecules. He describes himself as a problem-solver rather than a deep thinker. After the deep thinking had been done by Bohr, Heisenberg, and Schrödinger, the road was open for problem-solvers, such as Teller and his friends Bethe, Landau, Gamow, and Fermi, to apply the new ideas to practical problems. Using the new ideas, the problem-solvers rebuilt physics and chemistry from the bottom up. Those seven years were indeed a golden age, when every young physicist could find important problems to solve, and when the number of physicists was so small that everyone knew everyone. Teller enjoyed the intense intellectual excitement of those years, and enjoyed even more the intense intellectual friendships. Like his friend Bethe, Teller was something of a poet. For a birthday party of Max Born in Göttingen, Teller composed a splendid song in German, with the rhythm and melody of the "Mack the Knife" tune from Brecht's Threepenny Opera. As a child, Teller was bilingual in Hungarian and German. Unfortunately, he says, he was eight years old before he began learning English, already too old to acquire the intimacy with words that a poet needs. After he moved to America and had to live his life in English, he stopped writing poems.

He sailed to America in 1935, on the same ship as Bethe, and taught physics at George Washington University (GWU) while

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Bethe taught at Cornell. At GWU, he was among old friends from Europe, including Gamow, Placzek, and Maria Mayer. The first three years in America, from 1936 to 1938, were peaceful. Teller maintained his old friendships and made many new ones. The atmosphere of the golden age of German physics was almost recreated in America. Then, in December 1938, fission was discovered in Germany, and Teller's life was irreversibly changed. With Leo Szilard, another old friend from Hungary, he went to Einstein and persuaded Einstein to sign the famous letter that warned President Roosevelt of the possible military importance of fission. And from that time until today, Teller's life has been dominated by nuclear weapons. His experiences in Germany had burned into his soul the lesson that it was a fatal error for academic people to be unconcerned with the defense of freedom.

The second half of this book contains a detailed account of Teller's involvement with weaponry, first at Columbia, then in turn at Chicago, Los Alamos and Livermore, and finally at Stanford. One might expect the narrative in this part of the book to become more political and less personal. But here too, even when Teller is most heavily engaged in political battles, he portrays his opponents as human beings and describes their concerns

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Edward Teller (far left), Maria Goeppert-Mayer (second from left), Joseph Edward Mayer, and James Franck (far right).

Photograph by Francis Simon, courtesy AIP Emilio Segré Visual Archives.

fairly. There is sadness in his account but no bitterness. The greatest sadness is the personal sadness, when three of his close friends and allies, Enrico Fermi, John von Neumann, and Ernest Lawrence, die untimely deaths before their work is done. Throughout his struggles he maintains his talent for friendship. Leo Szilard, who disagreed violently with Teller about almost everything, remained one of his closest friends.

The worst period of Teller's life began in 1954 when he testified against Oppenheimer in the hearing conducted by the Atomic Energy Commission to decide whether Oppenheimer was a security risk. The full transcript of Teller's testimony is included in the book. One result of Teller's testimony was that a large number of his friends ceased to be friends. The community of physicists that Teller loved was split apart. The hearing had been instigated by Oppenheimer's enemies in order to demonize him and destroy his political influence. After the hearing, it was Teller's turn to be demonized. Oppenheimer and Teller both suffered grievously from the quarrel, but the damage to Teller was greater. The reviewer remembers meeting Bethe in Washington while the hearing was in progress, shortly before Teller testified. Bethe was looking grimmer than I had ever seen him. He said, "I have just now had the most unpleasant conversation of my whole life. With Edward Teller." Bethe had tried to persuade Teller not to testify and had failed. That was the end of a 20-year friendship. Bethe and Teller are now the last survivors of the golden age. I was happy to read in *Physics Today* a review of this book by Bethe, a generous review, emphasizing the warmth of Teller's character and letting old quarrels sleep.

Teller's account of his testimony has been challenged by the historian Gregg Herken in a less-generous review of this book in *Science*. Herken emphasizes some details in Teller's account that disagree with historical documents. But a historian should be familiar with the fact that all human memories of past events are unreliable. Memoirs are not history. They are the raw material of history. Memoirs written by generals and politicians are notoriously inaccurate. When I wrote my own memoirs some years ago, I was amazed to discover how many things I remembered that never happened. Memory not only distorts but also invents. A writer of memoirs should make an honest effort to set down the course of events as they are recorded in memory. This Teller has done. If some of the details are wrong, that detracts little from the value of this book as a panorama of a historical epoch in which Teller played a leading role. His account of his testimony in the Oppenheimer hearing ends with the statement, "I proved not only that stupidity is a general human property but that I possessed a full share of it." When Oppenheimer was asked by his interrogator during the hearing why he had lied to security officers, he replied, "Because I was an idiot." Teller is saying that he was an idiot too, when he voluntarily agreed to take part in a dirty business. That is Teller's conclusion, and it is a fair summary of his role in the affair.

Teller was not only the main inventor of the hydrogen bomb but also the main driving force pushing its development. For this he makes no apology. He believes that the United States' posses-

sion of the hydrogen bomb was essential to the peaceful resolution of the Cold War. But he also writes admiringly of Andrei Sakharov, who pushed the development of hydrogen bombs in the Soviet Union for similar reasons. Hydrogen bombs on both sides of the Cold War were essential to keeping it cold. One evening during the 1960s, I was drinking beer in Germany with a German friend who had spent most of the Second World War as an infantry officer in Russia. He talked eloquently of the joys of the Russian campaign, how civilian life was petty and boring compared with the heroism he had witnessed in Russia, and how his years as a soldier in Russia were the best years of his life. Then he pointed a finger at me and said, "If it were not for your damned hydrogen bombs, we would be back in Russia today." At that moment I was thinking, "Thank God for Edward Teller and his bombs."

Some of the most illuminating passages in the book are extracts from letters written by Teller to Maria Mayer. Mayer was a first-rate physicist and also the friend to whom Teller confided his feelings at moments of maximum stress. Here is a passage written in early 1950, when Teller was engaged at Los Alamos in his lonely struggle to build a hydrogen bomb, a year before the crucial invention that made the bomb possible: "Whatever help and whatever advice I can get from you—I need it. Not because I feel subjectively that I must have help, but because I know objectively that we are in a situation in which any sane person must and does throw up his hands and only the crazy ones keep going."

Another illuminating passage is a quote from a letter written in 1939 by Merle Tuve, a senior physicist who knew Teller during his years at GWU. Somebody at the University of Chicago had asked Tuve for an appraisal of Teller. Tuve replied, "If you want a genius for your staff, don't take Teller, get Gamow. But geniuses are a dime a dozen. Teller is something much better. He helps everybody. He works on everybody's problem. He never gets into controversies or has trouble with anyone. He is by far your best choice." That was the Teller I knew when I worked with him for three months in 1956 on the design of a safe nuclear reactor. It was easy to disagree fiercely about the details of the reactor, as we often did, and remain friends. He helped everybody and worked on everybody's problem. There was of course another Teller, the Teller who worked crazily for unpopular causes such as hydrogen bombs and missile defense and who fought furiously for the causes that he believed in. This book gives us a fair portrait of both Tellers, the Teller who gave generous help to young scientists and the Teller who quarreled vehemently with older scientists. Those who disagreed with him did him a grave injustice when they tried to turn him into a demon.

*Freeman Dyson is a physicist and writer who has known Teller for 50 years, worked with him as a scientist, and shared some of his unpopular opinions. The most recent collaboration of Dyson with Teller occurred when they went together to confront General Abrahamson, the boss of President Reagan's Star Wars enterprise, and told the general that the only way to make Star Wars technically honest was to declassify it. Dyson published a profile of Teller with the title "Prelude in E-Flat Minor" as a chapter in his book *Disturbing the Universe*, Harper and Row, 1979. ♦*