who were marginalized by age or economic circumstance.

Greisen combined his unfailing attention to the needs of those around him with a career in experimental physics at the top of his field. Cosmic-ray physics continues to be shaped by his accomplishments and those of his younger colleagues.

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Chauncey Starr

Chauncey Starr, veteran of the Manhattan Project, champion of the peaceful uses of atomic energy, originator of the academic discipline of risk analysis, and founder of the Electric Power Research Institute, died on 17 April 2007. The previous day, at his 95th birthday celebration held at EPRI, Chauncey held forth on his life experiences and lessons learned. He was in fine fettle. The following morning before leaving for his office at EPRI, as he had been doing ever since his "official" retirement 30 years previously, he took his usual short nap after breakfast. But on this day he didn't wake up. It is hard to conceive of a more graceful, indeed elegant, departure after a long and fulfilling career of service and contributions to his country and the welfare of its people. During my 11 years at EPRI, I was honored and privileged to have Chauncey as my mentor, collaborator, and dear friend.

The second son of Russian Jewish immigrants, Chauncey was born 14 April 1912 in Newark, New Jersey. It is family legend that at birth his parents named him after a relative in Russia, but the attending officials at the hospital "translated" the Yiddish into "Chauncey" and it stuck. Educated in the local public-school system, he earned a BS in electrical engineering at Rensselaer Polytechnic Institute. His 1935 PhD thesis in physics at RPI was on the thermal and electrical properties of rectifying copper oxide junctions. I used to kid him that if he had accidentally gotten some calcium impurities into his samples, he might have discovered today's family of high-temperature cuprate superconductors.

After RPI he joined Percy Bridgman's group at Harvard University as a research associate to work on the thermal transport properties of metals at high pressure, one of the most difficult condensed-matter experiments to carry out given the confounding background

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Chauncey Starr

of containment vessels and thermometry. Chauncey devised a differential method capable of much more accurate determination of the thermal diffusivity (the ratio of thermal conductivity to specific heat) of metals in the presence of such addenda. This was an especially important advance at the time, inasmuch as Bridgman had published work suggesting that the Wiedemann–Franz law may not hold in metals under pressure; Chauncey was able to show with his new technique that Bridgman's conclusion resulted from systematic errors in the previous experiments. To claim that Chauncey saved Bridgman from not receiving his future Nobel Prize may be a stretch, but he certainly rescued his boss from major embarrassment. In one of those inexplicable coincidences of life, 25 years later in 1962, I undertook my doctoral work in that same high-pressure group at Harvard, and several of my fellow students were still employing the measurement methods Chauncey had designed.

From Harvard, Chauncey went on to a similar postgraduate position at the MIT Magnet Laboratory; there he added cryogenics and magnetic measurements to his portfolio of experimental skills. His publications between 1938 and 1941 dealt principally with the low-temperature magnetic properties of transition-metal halides. He still kept in contact with Harvard, and John Van Vleck's influence on his work is clear.

Word of Chauncey's technical and leadership skills spread throughout the then-small community of American physicists. In 1942, while at the Bureau of Ships heading a group of engineers working on electronic detection of mines, he was invited to join Ernest Lawrence's staff at the University of California Radiation Laboratory. Lawrence's intention, largely unknown to Chauncey at the time, was to "train" him in the principles of cyclotron resonance for eventual reassignment to the calutron, or "racetrack," uranium-235 separation effort in Oak Ridge, Tennessee, which was having great difficulty reaching its production goals. Chauncey was subsequently transferred to Oak Ridge to serve as Lawrence's liaison and directed a group of several hundred engineers that made crucial improvements to the yields of the beta calutrons; by the spring of 1945 Oak Ridge had produced enough ^{235}U to arm the Little Boy weapon used against Hiroshima.

After the war Chauncey transferred to Clinton Laboratories at Oak Ridge to participate in the nuclear power reactor design efforts led by Eugene Wigner and Alvin Weinberg. In 1946 he joined North American Aviation, and in 1955 he formed and became president of a new division, Atomics International, to pursue commercialization of the generation of electricity from nuclear power. In collaboration with Walter Zinn at Argonne National Laboratory, Chauncey explored the peaceful application of atomic energy to the generation of electricity, an effort he considered his most important contribution. In 1966 he left Atomics International to become dean of engineering at UCLA; six years later he founded the Electric Power Research Institute.

Chauncey also made substantial contributions to the discipline of risk analysis while at UCLA and established an environmental division at EPRI over the vigorous opposition of several utility CEOs. At heart, though, he remained always a physicist.

For his accomplishments, Chauncey received the American Physical Society's 2000 George E. Pake Prize and numerous other awards and recognition, including honorary degrees, membership in national and international academies, medals from heads of state, and fellow status in professional societies. But I know his most personally satisfying recognition came near the end. Secretary of War Edwin Stanton said about Abraham Lincoln after his assassination, "Now he belongs to the ages." For Chauncey, in a sense, the ages returned to him: He was able to witness the rebirth of interest in nuclear power in the US, the fruit of his younger days, which had lain abandoned for so many years.

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