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on the Manhattan Project; in 1943 he was appointed chief of the theoretical physics division of the newly established Los Alamos Lab by its first director, J. Robert Oppenheimer. After the war, he returned to Cornell and began theoretical studies of the quantum theory of electromagnetic interactions. In 1947 he was the first to apply the concept of mass renormalization, which had been proposed earlier by Hendrik A. Kramers, to the 2s and 2p Lamb shifts in hydrogen that had just been measured by Willis Lamb and R. C. Retherford. Interpreting the displacement as a result of the electron's interaction with the radiation field, Bethe calculated (nonrelativistically) the self-energy of an electron bound in an atom. Relativistic calculations of these energy shifts were later made by Julian Schwinger, Richard Feynman and others. In 1955, Bethe turned his attention to the nuclear many-body problem and to the saturation of nuclear forces. Since his retire-

ment in 1975, he has focused on problems in stellar evolution, in particular, on the nature of supernovae.

Bethe served on the President's Scientific Advisory Committee from 1956 to 1959. As a proponent of the peaceful uses of atomic power, he served as a technical adviser to the US delegation to the International Conference on Peaceful Uses of Atomic Energy in Geneva in 1955. He was much involved in the negotiations that finally led to the 1963 test ban treaty. His concern over the oil crisis has led to his appointment as chairman of Americans for Energy Independence, a non-profit corporation that seeks to educate the public on all energy sources. Bethe has written *Elementary Nuclear Theory* (1947); *Quantum Mechanics of One- and Two-Electron Atoms*, with E. E. Salpeter (1957); *Splitting of Terms in Crystals* (1958); and *Intermediate Quantum Mechanics* (1964). His main work, however, is contained in over 200 papers in scientific journals.

obituaries

Robert Ta-pang Poe

Robert Ta-pang Poe died in Taipei, Republic of China, on 15 December 1984 while attending a project review meeting on the Synchrotron Radiation Source Facility being planned in Taiwan.

Poe was born on 25 April 1935 in Beijing, China. He came to the US in 1953 and earned his PhD in theoretical atomic physics at Berkeley in 1963. He started his postdoctoral career at the Lawrence Berkeley Laboratory, working in experimental high-energy physics in Wilson Powell's group. In 1964, he joined the physics department at the University of California in Riverside. He served as chairman of the department from 1976 to 1981, and at the time of his death was the director of the University's energy sciences program. Poe was a born teacher—his presentations were always lucid, well organized and lively. For years he taught the graduate-level classes in quantum mechanics and classical mechanics and gave the incoming graduates a solid grounding not only in theoretical physics, but also in basic research procedures. Poe took much interest in physics students at all levels; his enthusiasm in research, and his guidance and advice, influenced the careers of many young physicists.

Poe's research interests were extremely broad. He was one of the pioneers in the application of the dia-



POE

grammatic many-body perturbation method to the study of atomic systems. He made significant contributions to the knowledge of electron-atom scattering, the hyperfine structure, single and double photoionization, the fine structure of Rydberg atoms, and the multiphoton process. In addition, he conducted studies of vibrational and rotational excitations in electron-molecular scattering, helped develop the three-dimensional T-matrix approach for reactive scattering, and investigated, both experimentally and theoretically, electron scattering from laser-selected excited atoms. In particle physics, Poe was involved with pioneering works on spin-parity analysis of

resonances. He correctly attributed the observed "H meson" to a kinematic effect. His works included the study of branching ratios of rare decays of K mesons and coherent production of the ρ meson. Poe and his Riverside group adapted the streamer chamber for nucleus-nucleus collision studies at the Berkeley heavy-ion accelerator, Bevalac. He pioneered a major experimental program in relativistic heavy-ion physics, one that focuses on two-pion correlations in heavy-ion collisions. The space-time structure of the pion-emitting source was determined with the Hanbury Brown-Twiss technique. His most recent activity was the investigation of uranium-uranium collisions at Bevalac energies.

Poe was very interested in improving relations between the scientific community and other sectors of society. In 1980-81 he spent a sabbatical year in Washington, D.C., serving as senior science adviser to Congressman George Brown and the Congressional subcommittee on science and technology. Through his efforts, Poe successfully established a direct link between the scientific community and the policy-making Congressional committee, which contributed significantly to the quality of scientific decisions made by Congress. Poe continued to serve as an adviser for Congressman Brown after his return to Riverside.

Poe was extremely active in local community affairs. In appreciation of his contributions as a member of the Riverside Public Utilities Board, the city recently renamed its central utilities control center the Dr. Robert T. Poe Utilities Operations Center. Poe was one of the leaders in community efforts to launch an archaeological excavation in the local Chinatown.

In the last five years, Poe devoted much of his attention to promotion of science in the Republic of China. He was appointed research consultant for the National Science Council from 1976 to 1978. In 1979 he initiated and organized the first symposium on atomic and molecular science in Taiwan. He was instrumental in the establishment of the Institute of Atomic and Molecular Physics at Academia Sinica, and it was his determination and continuous effort that led to the proposed Synchrotron Radiation Facility in Taiwan. The Institute is now established and the accelerator project is well underway; at the time of his death, Poe was directing and coordinating the training of users for the new facility.

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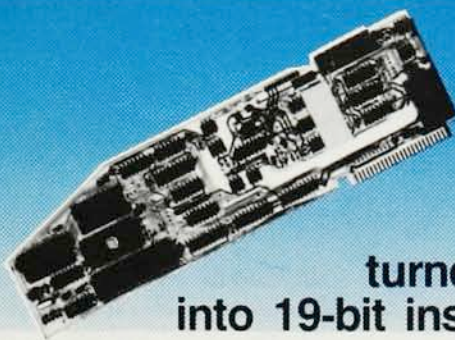
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