

NOT BY DESIGN

THE ORIGIN OF THE UNIVERSE
VICTOR J. STENGER

Not by Design The Origin of the Universe

Victor J. Stenger

A strong, confident case supporting the hypothesis that the universe originated because of a series of spontaneous, random events, devoid of plan or design. Using the laws of physics, Stenger shows that order can and does happen every day—by chance.

Victor J. Stenger is professor of physics at the University of Hawaii. He has been a visiting professor at Oxford University, Heidelberg University, and the National Institute for Nuclear Physics in Italy.

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rectification developed just prior to World War II. One has the feeling that if he had not engaged in the particular series of experiments that led to the transistor, he would have been involved in another series that would have been successful not much later.

Brattain often expressed the view that the transistor radio might help bring the peoples of the world closer together: "All people can listen to what they wish independent of what dictatorial leaders might want them to hear and I feel that this will eventually benefit society."

Brattain was a member of the Commission on Semiconductors of the International Union of Pure and Applied Physics, and he served as its chairman in 1966. He was also a member of the Defense Science Board and of various advisory committees.

While history will remember Walter Brattain for his achievements, I will remember him as a close personal friend, golf and bridge partner, and colleague.

JOHN BARDEEN

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Urbana, Illinois

Arthur H. Cooke

Arthur Hafford Cooke, born 13 December 1912, died in Oxford, England, on 30 July 1987. He had recently retired as warden of New College, Oxford, a position he had held since 1976. Prior to this, he had been associated with the Clarendon Laboratory, Oxford, for more than 40 years as an undergraduate, graduate student, university demonstrator and lecturer, and finally as a reader in physics.

His early work before World War II, under Frederick A. Lindemann (later Lord Cherwell) and Francis Simon, was concerned with the production of low temperatures, and he helped to establish Oxford as one of the early centers of cryogenic research. Most of his later work was also devoted to low-temperature physics and, in particular, to the magnetic and thermal properties of rare earth and transition metal salts. His work on paramagnetic relaxation and hyperfine effects led in 1953 to the discovery of cerium magnesium nitrate, which soon became the accepted standard for the production and measurement of temperatures in the millikelvin range. His insight also led to the discovery of the first Ising-like material, cerium ethyl sulfate, in 1951, and in 1959 to the recognition of the first

dipolar ferromagnet, dysprosium ethyl sulfate. In 1970, Cooke and his associates found another prototypical material, dysprosium vanadate—the first example of a crystal with a magnetically controllable Jahn-Teller distortion.

All of these studies stemmed from the same common thread: a detailed understanding of the macroscopic properties in terms of microscopic interactions as revealed by microwave paramagnetic experiments then being developed in the Clarendon Laboratory. Cooke's contact with microwaves started during the Second World War, when he worked on radar for the Admiralty team at Oxford. He designed the "transmit-receive" cell, which played an important part in the battle against U-boats. For his wartime services, he received a royal award: He was made a Member of the Order of the British Empire.

Cooke was an inspiring teacher. His enthusiasm for physics was infectious and he was unusually effective in persuading the student to think for himself, constantly checking the reasonableness of each idea. Cooke had a clear and intuitive feel for physics that never led him astray. Where others became bogged down in formalism he proceeded by common sense. He used the backs of many envelopes to explain observed effects.

This same common sense also made him an outstanding administrator. He served from 1969 to 1983 as a member of the Hebdomadal Council of Oxford University and for ten years on the General Board of Faculties, including a period as *de facto* chairman. His thoughtful and fair approach to all matters and his tactful and witty manner earned the respect of all who knew him.

Cooke was by nature a shy man, but he had many friends. Everyone around him appreciated his engaging sense of humor and his even temperament. There must be some with whom he battled, but they would be hard to find. He cared for people and they cared for him. His terminal illness was diagnosed three months before the end, and during this time a constant stream of friends and colleagues came to see him, some traveling from far away. His unfailing courtesy and his personal interest in each visitor continued up to the end, and his ex-students, now well on in their own professional lives, found they could still learn from this witty, wise and gentle man.

WERNER P. WOLF

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