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Martin Fleischmann, Seeker of Cold Fusion, Dies at 85

By DOUGLAS MARTIN

Martin Fleischmann made the greatest discovery since fire: replicating the furnace of the sun at room temperature in a jar of water, essentially solving the world's energy needs forever.

That is how Dr. Fleischmann might have liked his obituary to read. On March 23, 1989, when he and a colleague announced that they had achieved nuclear fusion in their laboratory, it even seemed possible. News reports heralded the scientists' "star in a jar."

But when Dr. Fleischmann died at age 85 on Aug. 3 at his home in Tisbury, England, what had once seemed the peak achievement of a highly honored electrochemist had long been discredited. His dream of generating more energy from an enclosed space than was put into it is still being pursued.

His friend Steven B. Krivit, who confirmed the death, edits an online newsletter, New Energy Times, to report on developments in the field. He said that Dr. Fleischmann suffered from heart ailments, Parkinson's disease and diabetes.

What Dr. Fleischmann and B. Stanley Pons did at the University of Utah sounds like a high-school science project. The ingredients were a jar of water, an electrical current and a cathode made of palladium, a rare metal. The theory was that a continuous stream of electrical current would release hydrogen atoms from the water, and that they would be absorbed by the palladium. They believed that when squeezed into the palladium, the hydrogen atoms would fuse together, releasing a burst of energy, just as the fusion of hydrogen atoms in the sun produces heat and light.

The scientists reported that in some experiments the temperature rose sharply with no increase in the electrical energy put into the jar. They said that the change was too steep to be caused by a chemical reaction, and that therefore a nuclear reaction had to be responsible. But it was not fission — that word refers to the splitting of atoms — or the type of fusion previously known, which required temperatures of millions of degrees. The scientists called their discovery "cold fusion."

The implications were staggering: unlimited energy made from seawater with no deleterious effect on the world's climate. Dr. Fleischmann unleashed his

penchant for large statements: he said the first practical cold-fusion device would be worth $300 trillion.

The news made the front page of The Wall Street Journal and within a week was on the cover of Time, Newsweek and Business Week. The scientists received a rousing ovation at the 1989 meeting of the American Chemical Society.

One of the first hints that the news was too good to be true, skeptics said, was that both scientists were alive. Had there been as significant a nuclear reaction as they claimed, critics argued, they would have been killed by the radiation. Scientists around the world then tried, without success, to replicate the experiment. Panels for the American Physical Society and the federal Energy Department soon discredited their findings.

“I was convinced for a while it was absolute fraud,” Richard D. Petrasso, a fusion scientist at the Massachusetts Institute of Technology, said in an interview with The New York Times in 1991. “Now I’ve softened. They probably believed in what they were doing.”

Curiously, the chase for what cold fusion represented has refused to die, as 200 corporate, university and governmental experimenters around the world are currently seeking ways to produce net energy gains in multifarious ways, Mr. Krivit said. This February, the University of Missouri received a $5.5 million gift to study the subject.

But the term “cold fusion” is very dead. Even Dr. Fleischmann rejected it in favor of “nuclear effect.” Mr. Krivit said researchers are now focusing on a fundamental force of nature called the “weak nuclear force” as an explanation for the net energy increases encountered in many experiments. This force involves the movement and state of atomic particles, as well as radioactive decay.

Martin Fleischmann was born on March 19, 1927, in Carlsbad in what was then Czechoslovakia. His father died at the hands of occupying Nazis. The family fled to England, where Martin, then 11, was taken in for a while by foster parents.

He earned a Ph.D. from Imperial College, then part of the University of London, in 1950, and progressed through several teaching jobs to the University of Southampton, where he took over the chemistry department in 1967. His discoveries on molecular changes in metals helped the department garner an international reputation. But, Science magazine said, he became known as a researcher who liked to come up with ideas, test them “quick and dirty” to see if they led anywhere and then let others refine them.

“Ninety percent of the ideas are crazy, and the rest excellent,” Alan Bewick, a Southampton chemistry professor, told The New York Times in a biographical

article on Dr. Fleischmann in 1989. He called Dr. Fleischmann “more innovative than any other electrochemist in the world.”

Dr. Fleischmann was president of the International Society of Electrochemistry and a fellow of the Royal Society, Britain’s equivalent of the Academy of Sciences. He wrote more than 240 articles and won major awards from scientific organizations in Britain and the United States.

B. Stanley Pons, a North Carolina native, arrived at Southampton to complete his Ph.D. in chemistry in 1975, and came under Dr. Fleischmann’s wing. The two went on to publish dozens of papers together. Dr. Fleischmann fell into the habit of visiting Dr. Pons once or twice a year after Dr. Pons became chairman of the chemistry department at the University of Utah.

In the early 1980s, the two were hiking in Mill Creek Canyon in Utah when their conversation turned to experimental results from the late 1960s that still puzzled them. They began to conceive a follow-up experiment and fleshed out details at Dr. Pons’s kitchen table while sipping whiskey.

“Sometimes we like to talk about the impossible just for fun,” Dr. Fleischmann told The Los Angeles Times in 1989.

The two put up $100,000 of their own money for the research (Dr. Pons’s contribution was larger) because they feared others would think the enterprise “stupid.” Around 1983, they began to see promising data. Six years later, when they found out that another researcher was approaching cold fusion in a different manner, they made plans to publish their separate findings in the same journal.

University of Utah administrators overruled joint publication, apparently to protect possible patents. They had the scientists hold a news conference, something Dr. Fleischmann two decades later said he regretted, telling the CBS News program “60 Minutes” that he should have published the results in an obscure journal as the start of an orderly discussion.

The two men left Utah as scientific pariahs and continued their research in France for a subsidiary of Toyota. This work ended in the mid-1990s after Dr. Fleischmann and Dr. Pons had a falling out, Mr. Krivit said.

Dr. Fleischmann is survived by his wife, the former Sheila Flinn; his children, Nicholas and Vanessa; and eight grandchildren.

Dr. Fleischmann ultimately acknowledged that his data was slippery and his secrecy counterproductive. But he still believed that fusion, or something like it, remained mankind’s best hope.

“I think unless we get fusion to work in some fashion,” he said in 2009, “we are doomed, aren’t we?”

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