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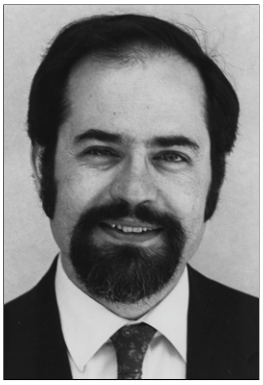
Cold Fusion: Fire from Water



The tenth anniversary of the cold fusion announcement, March 23, 1999, came and went. Researchers, who years ago helped open a new frontier in science, suffered the predictable slings and arrows from the naysayers and many pseudo-science journalists. Under duress, the work of these scientists and technologists continues.

These are the basic facts of life about cold fusion today, as we see them: A) No increase in the number or quality of peer-reviewed or non-peer-reviewed cold fusion papers will significantly change the forces arrayed against us, and B) The arrival of dozens of widely available commercial prototype units or demonstration devices will quickly turn everything around; this would end the crushing reality of "A," possibly within months of the demonstration units being made available.

We are working to bring about a demonstration kit; one could come at any time, likely from a surprising source. In the meantime, the next best thing we can do is bring "power to the people" by clearing up the false propaganda of the negativists with a concise and portable message that is accessible to hundreds of thousands of people, and then perhaps to millions.

Good news! That message is here. We have completed our landmark science video documentary, *Cold Fusion: Fire from Water*. We could not have done it without the encouragement and support of a benefactor (an *IE* reader) who came to us over a year ago with an urgent request to help make such a documentary. Without his help, this video would not have seen the light of day. The home video version of the VHS tape is about 70-minutes long and it is now available for purchase by consumers worldwide in both NTSC and PAL formats.

Approaches to broadcasting outlets are now underway. We expect to have the broadcast-hour (56 minute) version of *Cold Fusion: Fire from Water* shown nationwide and world wide on select cable networks. We will have more information on broadcasts and showings as it becomes available. (As this issue goes to press, we are excited about the May 26, 1999 Boston-area premier showing of both *Cold Fusion: Fire from Water* and MIT Professor Keith Johnson's cold fusion techno-thriller, *Breaking Symmetry,* in the Grand Ballroom of the Cambridge Marriott Hotel—adjacent to MIT.)

There have been other documentaries about cold fusion before, though not by people associated with the field. Independent journalist Jerry Thompson of the Canadian Broadcasting System (CBC) produced the half-hour program, "The Secret Life of Cold Fusion" in 1993, which never made it beyond the borders of Canada. Then in 1994, Jerry and the CBC teamed up with the BBC to make the 50-minute "Too Close to the Sun," which introduced cold fusion to large audiences in Europe and Canada.

This beautiful production brought the story of cold fusion up to date as of the spring of 1994. Sadly, this documentary was never broadcast in the United States, though it was offered to many broadcast outlets. NOVA, which could have shown it under an existing agreement with the BBC, inexplicably declined to do so. This, even in the face of statements by a senior NOVA staffer to me as early as 1991 that NOVA needed to do an updated cold fusion documentary. (Perhaps they wished to make amends for the disastrous, negative "Confusion in a Jar" program that NOVA broadcast in 1990. NOVA declined to rebroadcast "Confusion" in 1991 after I told its top science advisor that the video was nothing but disinformation.)

I think it is so important that *Cold Fusion: Fire from Water* be shown to family, friends, neighbors, schools, and local journalists, that I make no apologies for our effort to sell the virtues of this video in this editorial space.

No cold fusion video could begin to tell the whole story of cold fusion history and science in 70 minutes. We did not even try; that task may be carried out at some future date. We present the basics of the history. We contrast the scientific attitudes and accomplishments of those who have continued to carry on cold fusion research with the hit-and-run artists, four of whom make their appearance in the program. Above all, we try to explain the basic scientific issues for lay audiences, in a way that has never been done before. We pull no punches: the data overwhelmingly support the existence of profound energy production and nuclear changes in a variety of systems.

Cold Fusion: Fire from Water features twenty-two cold fusion scientists and technologists. Sir Arthur C. Clarke makes three appearances and states, "I've become convinced, from my original skepticism, to 99% certainty that cold fusion is for real. The evidence now is really overwhelming." He makes comparisons with earlier denials of emerging technologies, such as the Wright brothers' flyer from 1903 to 1908.

Star Trek's "Scotty," actor James Doohan, narrates the video, sans his well-known accent. (In the next issue of *Infinite Energy* we will offer some comments by Scotty, er. . .James Doohan, who reflects on his impression of cold fusion before and after his work on this documentary.) Above all, *Cold Fusion: Fire from Water* cites the latest experimental findings and commercial activities, overturning the bogus claim by some journalists and "true-believer" science skeptics that cold fusion is dead.

The video was produced and directed by award-winning Christopher Toussaint of Free Spirit Productions, who offered much well-received editorial advice to scriptwriters and technical advisors Gene Mallove and Jed Rothwell. Unlike Chris's earlier video production, "Free Energy: The Race to Zero Point," *Cold Fusion: Fire from Water* deals exclusively with energy and nuclear phenomena associated with the cold fusion field.

On the video's colorful jacket, we offer a challenge, a message we hope will eventually make its way into many video stores:

> By exploring the history of the discovery and witnessing people working in the field today in laboratories and companies, decide for yourself whether Cold Fusion is one of the greatest discoveries of all time—really a "miracle" in water—or, as the skeptics would have you believe, just a "big mistake."

With the help of our loyal and patient subscribers, the message of this video *will* travel around the world. Many of our

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dedicated readers may have wondered what these cold fusion scientists and their detractors sounded like in person. Now the opportunity has arrived to see and hear. Go to it!

The cover stories for this issue are a little off the beaten track from our usual fare, although *Infinite Energy* readers have heard before from one of the authors, physicist Dr. Peter Graneau. The commonality of Graneau's article and Dr. Mario Rabinowitz's piece is the power of lightning. Rabinowitz believes that the highly anomalous form of "lightning," known as "ball lightning," is really a manifestation of cosmic "little black holes" that are emitting Hawking radiation as the little black holes "evaporate" their mass through quantum mechanical phenomena. Graneau's contention is that a major part of the energy of thunder, associated with normal discharge lightning, comes from chemical bond energy released in the lightning strike. He also suggests that a heretofore unsuspected magnetohydrodynamic (MHD) power-augmenting effect occurs in this kind of lightning.

Rabinowitz suggests that if we could capture the little black holes responsible for ball lightning we'd have a ready-made genuine "infinite energy" source, though it is difficult to imagine how this could be done. Ball lightning is an exceedingly rare phenomenon. Perhaps we could get some help from science fiction writers who surely have contemplated extracting energy from both big and little black holes.

In the next issue of *Infinite Energy* we'll report on the "Conference on Future Energy" (COFE), which was to be held April 28-May 1, 1999 at the Holiday Inn in Bethesda, Maryland—a little late for coverage in this issue. However, in a related story we do report the sad antics of several pseudoscientists, who mocked cold fusion at the American Physical Society's Centennial Meeting in Atlanta, Georgia in March (see pp. 23-25). Their call for an anti-cold fusion *jihad* occurred at the same time serious cold fusion experiments and data were being discussed by cold fusion scientists down the hall at that same meeting!

One of these bad actors, Dr. Peter Zimmerman, boasted about how he had forced the removal of the COFE meeting from the State Department, where it was originally to have been held. The conference migrated to the Commerce Department after being banned from State, but Zimmerman boasted that he would use his influence to have it banned there as well, and within a few days the meeting was called off at Commerce. It was moved to a Holiday Inn hotel in Bethesda, Maryland, beyond Zimmerman's reach. An investigation of this highly inappropriate activity by Federal employee Zimmerman is now underway, with the help of a sympathetic United States Senator, Bob Smith of New Hampshire.

While ethnic cleansing was apparently underway in Kosovo in the Balkans, pseudoscientists in the U.S. with ties to the U.S. State Department were perpetrating "scientific cleansing" in Washington, DC. These lethal science bigots are trying to do to science what others are doing to human beings—attempting to kill all vestiges of what they consider to be unacceptable. Suppressing "unacceptable" ideas is first cousin to killing "unacceptable" people.

We are comfortable with this comparison of lethality, because in a very real sense by holding back the open and honest consideration of cold fusion science,

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simple calorimetric tests which would reveal that their devices are "really producing power" and other simple tests such as autoradiographs, which confirm that the effect really is nuclear.

Scientists should cooperate. While manufacturing radar sets and other electronics during World War II, AT&T learned the value of close cooperation between theoreticians, experimentalists, and production line workers. The economic boom and postwar office space crunch helped to prolong this cooperation. Bell Labs rushed to hire many new scientists while it completed a new laboratory. When Bardeen joined Bell Labs in 1945 "office space was extremely scarce . . . So employees were being asked to double up . . . Bardeen didn't mind; he liked the company of experimentalists. Here was an opportunity to glance over their shoulders and talk about the data as they collected it."[15] This spirit of cooperation was essential to the rapid development of transistors.

Success Was an Accident

Success in research is often the unlikely result of a series of accidents. Consider some of history's might-have-beens. Gordon Teal worked at night on his "bootleg" crystal-growing experiments and during the day on his regular assignment. His wife grew upset at this overwork, and asked him to cut back. She might have prevailed, or he might have grown discouraged and burned out on his own. Or he might have missed the opportunity to show the chemist his single crystal sample. Shockley might have remained characteristically obstinate, continuing to ignore Teal's research. This one oversight by Shockley might have held back the development of transistors for years. Thousands of technical decisions and choices must be made in the course of developing a commercial product, and each might be a wrong turn or a dead end. That is why research must be done by many different independent laboratories, at different corporations and universities. One person or one funding agency committee cannot be placed in charge. One person, no matter how brilliant, may guess wrongly and lead the whole project into a dead-end. Competing ideas must be tested, even ideas the experts consider crazy.

In their Epilogue, Riordan and Hoddeson describe the mix of personalities and institutions needed to bring about the transistor:[16]

> None of these men [Shockley, Bardeen and Brattain] could have invented the transistor alone. But their lives intersected at a unique American institution during a peculiar moment in history to make it possible, even likely. Nothing on the scientific landscape at the time compared with Bell Labs. It combined intellectual power equal to that of the nation's best science departments with technical resources and manpower that none of them could come close to matching. When these tremendous resources became focused on developing practical products based on wartime advances in semiconductor technology, something big had to happen . . .
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> Each man's shortcomings were compensated by the others in this multidisciplinary environment. With his single-minded focus on "trying simplest cases first," Shockley would never have conceived the unwieldy point-contact gadget that opened the door to the transistor . . .
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> . . . Almost as important as the transistor's invention are the techniques of crystal growing and zone refining, which allow one to fabricate large single crystals of ultrapure silicon and germanium. Without these crystals, the industry would not exist.

This is contradictory. The mix of personalities was unlikely, the postwar boom was a "unique moment in history" which we hope will never be repeated (if it takes a war to trigger such a moment), yet "something big had to happen." The invention was unlikely yet inevitable. Was the transistor truly inevitable? Where would we be without it? Is any innovation inevitable and unstoppable? I will examine these issues in Part 2.

References

1. M. Riordan, L. Hoddeson, *Crystal Fire: The Birth of the Information Age*, (Norton, 1997).
2. Riordan and Hoddeson, *ibid*., p. 130
3. Private communication, 1999.
4. L. Hoddeson, E, Braun, J. Teichmann, and S. Weart, *Out of the Crystal Maze*, (Oxford Univ. Press, 1992), p.121.
5. S. Lohr, "Suiting Up for America's High-Tech Future," *New York Times*, December 3, 1995.
6. Riordan and Hoddeson, *ibid*., p. 219.
7. A. De Ninno, "Material Science Studies Aimed at Improving the Reproducibility of the Heat Excess Experiments," *Proc. ICCF7*, p. 103.
8. M. Schreiber *et al.*, "Recent Measurement of Excess Energy Production in Electrochemical Cells Containing Heavy Water and Palladium," Proc. ICCF1, Table 1, 2 and 3, p. 54.
9. Riordan and Hoddeson, *ibid*., p.179.
10. Riordan and Hoddeson, *ibid*., p. 259.
11. Riordan and Hoddeson, *ibid*., p. 86.
12. Riordan and Hoddeson, *ibid*., quoting F. Seitz of AT&T, p. 92.
13. Riordan and Hoddeson, *ibid*., quote from Ohl, p. 96.
14. Riordan and Hoddeson, *ibid*., p. 140. Note, however, that an amplifier does not literally produce power. It transfers energy from the power supplies to the output, increasing or decreasing power depending on the control current. All energy originates in the electric power supplies. With cold fusion the energy originates in the cell. Cold fusion cells sometimes resemble amplifiers. When the cathode current density increases, deuterium loading usually increases, and after a while the cold fusion power may increase proportionally, assuming other control parameters remain the same.
15. Riordan and Hoddeson, *ibid*., p. 120
16. Riordan and Hoddeson, *ibid*., p. 280

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the bigots of the APS have caused the needless deaths and disabilities of those who would have benefitted from the earlier development of cold fusion technology. They have delayed cold fusion technology by many years, while pollution, cold, and ill health from inadequate energy and dirty energy sources have taken an enormous toll.

Scientific knowledge and the opinions of experts can have a direct impact on life or death. In the 1840s, Semmelweis and a few other doctors discovered the benefits of antisepsis. They found that by carefully washing their hands and wearing clean clothes, they could reduce mortality (of women in childbirth) from 18% to 1%. Instead of embracing this discovery, his superiors reacted with hostility, and eventually drove Semmelweis into exile. Most mainstream medical people ignored the discovery, even though news of it spread far and wide. The news reached Boston a few years later, and the Hungarian government ordered all hospitals to use his techniques, but most doctors inadvertently went on killing patients for forty more years. Posterity blames them, and it will blame the APS and other mainstream scientists who have blocked research on—and even discussion of—cold fusion.

Nobel laureate Julian Schwinger resigned from the APS to protest its policy against cold fusion. He said, "The pressure for conformity will be the death of science." At the APS pseudoscientist circus in Atlanta, Schwinger was mocked for having been "senile" or "insane" for having worked on cold fusion theories. Read our account of the APS farce and weep. We were not dreaming this. We wish that it *had* been a dream. ∞