

BREAKING THROUGH

Anomalies, “Infinite Oil,” and Cold Fusion



by Eugene F. Mallove, Sc.D.

On the last day of the conference, Dr. Francesco Scaramuzzi, of the official Italian cold fusion program run by ENEA, summarized the Eighth International Conference on Cold Fusion (ICCF8): “. . . Strong confirmation that we have the production of excess heat and helium and their correlation. Yes, there is excess heat and, yes, it is of nuclear origin.” He went further: The work on transmutation presented at the conference was an “indication of the nuclear character of the phenomenon.” Others followed with similar conclusions at the conference which was held in Lerici, Italy on May 21-26. For the first time at an international cold fusion meeting, a relatively conservative scientist stated publicly what has been obvious to most of us in the field since the early to mid-1990s: cold fusion is real. The anomalies of excess energy and nuclear changes in low-temperature systems confront modern science with a tough choice: Continue to ignore the evidence, or acknowledge what the general scientific community has bitterly disparaged for eleven years. For some time, the choice will be the latter.

Science progresses along diverse pathways. In one direction, it lumbers forward as it compiles and correlates vast quantities of information. When molecular biologists work for years to define the human genome, that is what they are doing. This is one form of so-called “normal science,” discussed by the late Thomas Kuhn in *The Structure of Scientific Revolutions*. Another example: astronomers employing advanced observing equipment to capture and assess torrents of multi-spectral electromagnetic images of the heavens. This is like “rock collecting,” so to speak—tak-

ing extended field trips to obtain data that can be studied for new patterns, as well as extending the catalog of information in a certain area, such that it has utility for other scientific work, e.g. determining the emission characteristics of hundreds of unstable isotopes. A frontier science, such as cold fusion, has benefited immensely from the availability of such impressive catalogs that originate in normal science.

Normal science also occurs when scientists define and carry out experiments that will incrementally add to an understanding within a well-defined area, such as when the biochemistry of a previously poorly understood genetic illness is revealed, or when a general mechanism within cell function is elaborated.

There is a role for the “pure” theorist too, who does not do experiments, but who tries to develop the functional and mathematical relationships that lie hidden within mountains of experimental data.

When an experimental or observational anomaly, such as low-energy nuclear reactions, appears to be completely orthogonal to the accepted theoretical framework, it often suffers a period of rejection until it can prove itself in combat. Vested intellectual interests and academic funding interests set up a minefield that the anomaly must pass through. If the phenomenon should have difficulty being scaled up or even in being made repeatable *on demand*, so much the worse for the anomaly. That has been the unfortunate fate of cold fusion so far.

Some anomalies get lucky and have striking, immediate effects on science, such as the serendipitous discovery of X-rays in 1895 and radioactivity in 1896. In geophysics, the anomalies noted by Alfred Wegener in 1912, which implied continental drift, were ridiculed and rejected until the 1960s, when new evidence and theory came together in modern plate tectonics. In the field of medicine, anomalies whose acceptance and life-giving has been held back are so numerous that they are more the rule than the exception. The fate of astronomer Halton Arp’s obser-

vations about quasars and red-shift are so threatening to Big Bang cosmology that Arp continues to be an outcast. This despite solid observational evidence (see the review of his book, *Seeing Red*, *IE* No. 31, p. 32). Attention to anomalies will play a very important role in the energy field, as cold fusion has already proved.

Everyone knows that we pay and suffer much because of growing needs for energy. In robust economies such as those of the United States, Japan, and many European countries, energy is a serious cost consideration, but not nearly as much as in less-developed nations. There seems no end to the interminable fossil fuel age and the threat that the consumption of fossil fuels may someday outpace the needs of the expanding human population. This perceived future shortfall “justifies” the price of fossil fuels being much higher than they should be. If the idea gained currency that the fossil fuel age might come to an end in less than a generation, as cold fusion and other new energy technologies promise, prices would surely fall.

Another possibility is that the supply of hydrocarbon fuels may be far greater than most experts have assumed. Respected physics professor Thomas Gold of Cornell University thinks that terrestrial oil resources are much larger than previously imagined; he says they are hundreds of times what conventional petroleum geologists accept. That’s not “infinite oil” on Earth, but far, far more oil than we thought we had. Gold believes that oil is generated within the Earth, *abiogenically*. It is generated chemically under the great internal pressures on the primordial methane gas that he believes permeates the interior. Such bacteria as are found within oil nearer the surface are living on the oil, he says! He provides copious evidence and compelling theory to support this view—see his book *The Deep, Hot Biosphere* (reviewed in *IE* No. 26, p. 51) and a recent interview with him in *Wired* magazine (“Fuels Paradise,” July 2000, pp. 160-172). He cites the presence of helium in oil as evidence that oil

sweeps up this noble gas from greater depths. In Gold's view, by far the greatest mass of life on Earth is deep underground at temperatures above 100°C, though the oil is produced much deeper. (Note also C. Warren Hunt's similar but even more spectacular theories, proposed in parallel, p. 60 of this issue.)

Gold's theories, and the anomalies on which they are based, do not sit well with establishment scientists, but Gold has been right before on many formerly controversial matters, such as neutron stars. What if he is proved right about oil? Enter the emerging fuel cell technologies that employ hydrogen scavenged from petroleum or natural gas. A recent *Science* article about these ("New Tigers in the Fuel Cell Tank," Vol. 288, June 16, 2000, pp. 1955-56) suggests that fuel cell technologies are accelerating toward the marketplace faster than expected. This may mean that fuel cells for transportation and electric power generation could begin to supplant existing power-generation infrastructure, particularly if these technologies have reduced CO₂ emissions, as many do, and are adaptable to distributed power-generation.

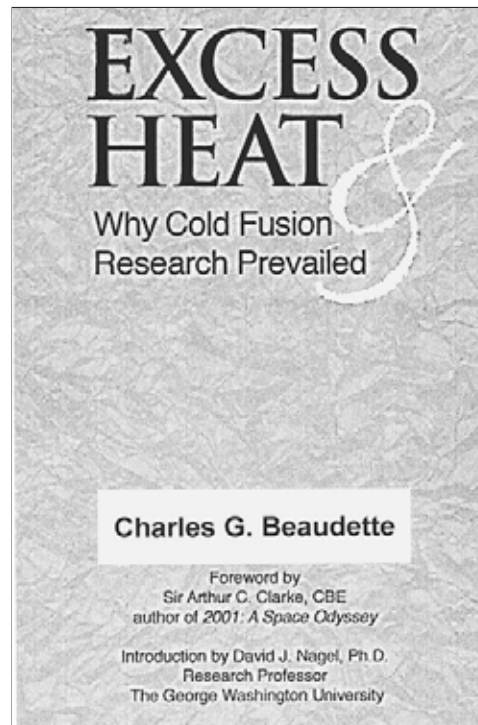
The confluence of an emerging "infinite oil" and "infinite natural gas" paradigm with advanced fuel cells represents both an opportunity and a threat to emerging new physics energy technologies. If cold fusion and BlackLight Power Corporation's hydrino energy processes (see article on BlackLight in Briefs, p. 45), do not accelerate fast enough into the marketplace, they could be left behind for some time. It will be fascinating to watch how these technologies fare amid the onslaught of fuel cells in a possible era of emerging hydrocarbon abundance and concern about the threat of human-induced global climate change.

Despite the great technical progress evidenced at ICCF8, we must be frank that the commercialization of low-energy nuclear reactions is in a moribund state. Two corporations that had been in the forefront, ENECO of Salt Lake City and CETI of Sarasota, Florida, have both put their problematic excess heat technologies on the back burner. Another company, Lattice Energy, LLC, founded on a proprietary thin-film electrolytic heat process of Prof. George Miley of the University of Illinois, is just getting off the ground. Despite what we have learned of the excellent financial backing for Lattice Energy, young companies in this area have not fared well. We wish the company well, with all our fingers crossed! Other, less well-financed companies continue to struggle for funding and defend themselves against the obstructors at the U.S. Patent Office.

Editorial continues on page 69

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"Charles Beaudette has done a remarkable job in untangling and documenting the whole story of cold fusion. *Excess Heat* is not only a superb record of an extraordinary episode, but is also highly entertaining."

—Sir Arthur C. Clarke

Editorial continued from page 5

We at *Infinite Energy* and New Energy Research Laboratory seem to be one of the only groups interested in developing demonstration cells so that the tangible embodiment of the excess heat phenomenon can be reliably seen and studied by greater numbers of laboratories, individuals, and industries. A discussion we had at ICCF8 with one of the leaders in a now scaled-back cold fusion company proved to us there is little understanding in the field about the critical need for such a direction.

The cold fusion field is similarly befuddled with actions by good friends that are totally counterproductive and incomprehensible, but all too familiar. For example, we learned that several excellent journalists had been turned away from ICCF8 by the conference leadership, which wanted to be "selective" in what journalists were allowed to attend! This is part of the historic devaluation of efforts to develop good "PR" for the cold fusion community. And, there remains a significant trend within the cold fusion field to maintain secrecy, so that the meager funding that may be available is retained by small groups of "insiders." It is not uncommon to hear cold fusion theorists and experimenters worry that the outside world's impression of the field will turn around too quickly, many others will begin working in cold fusion, and they will be left without credit for their many years of work and sacrifice.

But some *have* gotten the right message. We very much like what Professor Akito Takahashi of Osaka University had to say in his summary of ICCF8: "Science only is not enough." He said there is a need to interest "industry people, people from other fields, and young people" in cold fusion. We couldn't agree more!

Moving On...

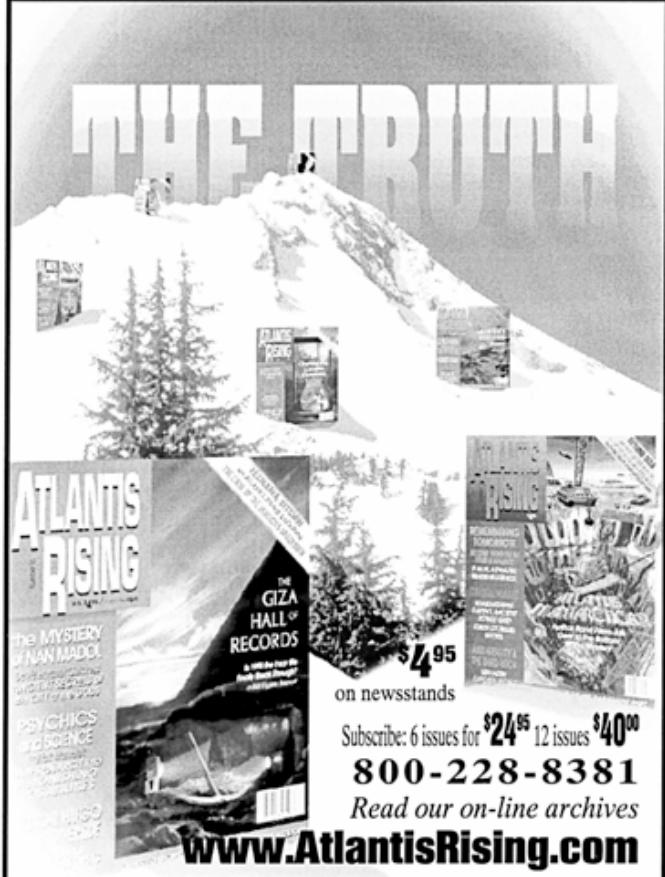
Our former Associate Editor, Jeff Kooistra, is no longer with *Infinite Energy* after a little over a year of good service on our pages. Others will continue to provide expert editorial discussions in the electromagnetics arena, which was Jeff's forté. He has moved on to other pursuits in the field of frontier physics and we wish him well. He'll likely continue working with a provocative theorist, whom I had met long before Jeff did (though it was Jeff who pro-actively grappled with his theories), a man from academia with military-industrial connections who is a deep scholar of physics and more.

Jeff's mentor insisted on remaining anonymous, and that became a great problem for a magazine that prides itself on openness. "Mr. X" believes he has a solid handle on the direction that electromagnetic and gravity theory must take if the world is to benefit from what may well turn out to be very productive insights. More power to him. We wish him well too.

Regrettably, Mr. X felt he had to be highly secretive. His desire for unwarranted control over communications and editorial policy, led to severance of both "Mr. X" and Jeff from Cold Fusion Technology and *Infinite Energy*. It was a very difficult decision for me to make, but circumstances dictated that action. Fortunately, we are the stronger for it. The technical insights that Jeff began here will continue to be developed at our New Energy Research Laboratory (NERL). They will eventually be demonstrated to the world, as we had hoped to have done earlier. ♦♦♦

The Irish physicist, George Fitzgerald (1851-1901), claimed that producing lightlike waves by oscillating electric forces was impossible, yet not many years after publication of his paper, the feat was accomplished by Heinrich Hertz (1857-1894).

Submitted by David Moon



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