Intimations of Disaster:

Glenn Seaborg, the Scientific Process, and the Origin of the "Cold Fusion War"

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Almost seven years ago in an issue of *Infinite Energy* (#15/16, July-November 1997), we discussed some of the material that follows. But in 2004, with the U.S. Department of Energy's impending review of the past fifteen years of evidence for low-energy nuclear reactions (a.k.a. "cold fusion"), it is an appropriate time to review—in a fresh light—a most critical turning point in the saga of cold fusion. In an episode which occurred in the spring of 1989, we find the seeds of the disastrous DOE response to cold fusion. Upon further investigation, I later found that the false premises that gave rise to the "Cold Fusion War" were evident as far back as 1964.

The events in question occurred only three weeks after March 23, 1989, when Drs. Martin Fleischmann and Stanley Pons made their startling announcement at the University of Utah of excess heat production and low-energy nuclear reactions. Nobel laureate Glenn T. Seaborg had been called in to brief President George H.W. Bush (the father of today's U.S. President George W. Bush). Days before Seaborg spoke to the first President Bush, there had been a very enthusiastically received talk by Dr. Pons before the American Chemical Society Meeting in Dallas, Texas (April 12, 1989).

Glenn Seaborg briefing President George Bush on "cold fusion" at the White House on April 14, 1989. Photo courtesy of the Ernest Orlando Lawrence Berkeley National Laboratory.

Even though the jury was certainly still out on the evidence for or against "cold fusion," Seaborg, *through some as-yet-to-be-revealed process* (though he certainly had conducted no experiments), had determined that cold fusion was not what it was claimed to be. On April 14, 1989 Seaborg told President Bush that *"it is not due to nuclear fusion."* Thus was launched a sham investigation, biased from the outset by this Nobel luminary's words to the U.S. President, who had taken office only a few months earlier. Of course, Seaborg had ample time between 1989 and when he passed away (in 1999) to investigate what was even in 1992 quite mountainous evidence that had been compiled for low-energy nuclear reactions and excess energy production. During his life, Seaborg did not advise any U.S. President, nor any other official to our knowledge, that the case *against* cold fusion, which he helped set in motion, should be re-examined. In fact, we now know from Seaborg back in 1997 that he was still unrepentant and biased. We discovered this extremely revealing account of Glenn Seaborg's actions in the spring of 1989, which appeared in an issue of *Skeptical Inquirer*, November/December 1997, as part of "The Elemental Man: An Interview with Glenn T. Seaborg":

SI: During the early stages of the cold fusion furor, President Bush asked you to come to the White House and give him your views on the matter. What happened? What did you tell him?

Seaborg: In April 1989, I was called back to Washington to brief George Bush on "cold fusion," the totally unexpected phenomenon that University of Utah scientists announced they had discovered by the simple process of electrolysis of heavy water. A couple of days earlier, the purported co-discoverer of "cold fusion," University of Utah electrochemist Stanley Pons, spoke to an enthusiastic standing-room-only audience of chemists at the semi-annual meeting of the American Chemical Society in Dallas. His talk had attracted so much attention that, apparently, the news had reached the White House. After briefing White House Chief of Staff John Sununu, I went into the Oval Office to brief President Bush on April 14, 1989.

I told him about my role in the discovery of the radioactive iodine that had been used a couple of days earlier to treat his wife, Barbara, and said that a similar treatment with radioactive iodine had effected a miraculous cure for my mother, who was suffering from the same condition as Barbara. The president facetiously said that Barbara is now radioactive and she is not allowed to kiss their dog as long as this condition prevails, but he implied that it didn't seem that this prohibition included himself—the president.

I then went on and described briefly the situation with respect to cold fusion. ***I indicated that this is not a valid observation—that is, that it is not due to nuclear fusion—but, on the other hand, it must be investigated.*** *The president seemed very interested and convinced by my assessment, and encouraged us very much to go ahead with an investigation.* [*Infinite Energy's* emphasis]

I might add that the panel I recommended to study the purported "cold fusion" process was created and about six months later came out with a report disputing the validity of the observation, pretty much in line with the view I adopted in my briefing of the president. Also it is interesting to note that President Bush himself, two years later, in May 1991, benefitted from treatment with the same radioactive iodine (iodine-131).

—(End of the *Skeptical Inquirer* interview section)—

Of course the panel that Seaborg recommended ended up with the negative view put forth by Seaborg on Day One. How could it have done otherwise? Just consider who was on the panel in leading roles. First we had Seaborg's close colleague, Prof. John Huizenga, then of the University of Rochester, the panel's driving force, who later wrote his version of cold fusion history (*Cold Fusion: The Scientific Fiasco of the Century*, 1992). In Huizenga's book, we find confirmation of Seaborg's negativity on April 14, 1989, but not until the *SI* interview did we have such stark words from Seaborg himself.

Robert O. Hunter, Jr., a hot fusion man, was at the time the Director of DOE's Office of Energy Research. It was he who called upon Seaborg to come to Washington, according to Huizenga. On the morning of April 14, Seaborg briefed Admiral Watkins, then DOE Secretary, and later John Sununu, then President Bush's top advisor.

By Huizenga's own statements, Huizenga was opposed to moves to have a cold fusion investigation. He wrote in his book: *"**My initial feeling was that the whole cold fusion episode would be short-lived and that it would be wise to delay appointing such a panel.** However, the persuasive manner of both Seaborg and Schoettler and the ongoing press reports on cold fusion convinced me that such a panel was necessary and timely from the Department of Energy's point of view for reasons to be discussed in the next chapter."* [*Infinite Energy's* emphasis]

Huizenga and Seaborg had already determined that the Utah results were unimportant, according to Huizenga in his book and elsewhere, because ". . .cold fusion should not be possible according to current nuclear theory, which is supported by a large body of experimental data."

But that was not the end of the bigotry on the DOE panel. We have this account by Gary Taubes (in *Bad Science*, 1993) from Dr. William Happer, a Princeton hot fusioneer: "Happer had decided upon hearing of cold fusion that it was probably wrong. In fact, a *Scientific American* reporter had called him a few days after the announcement, and Happer had harangued him for over an hour on the various aspects of fusion—its physics, the fatal effects of neutrons—that made cold fusion so implausible. 'The thing I didn't have the nerve to do was say that *just by looking at these guys on television, it was obvious that they were incompetent boobs*.'" [Infinite Energy's emphasis] In 2004, Happer remains convinced that he was correct from the start, and he is still eager to have LENR science killed with the same bureaucratic scam that was used in 1989: "But if you put together a credible committee, you can try to put the issue to bed for some time. It will come back. The believers never stop believing," according to Happer (quoted by Toni Feder in *Physics Today*, April 2004).

So much for the "impartiality" of the DOE cold fusion panel of 1989. Let us hope that the evaluation committee in 2004 will merit our confidence. And so much for the reputation of Glenn Seaborg, who helped initiate the disgraceful behavior of DOE over the past fifteen years—its refusal, at every turn until recently, to reconsider its highly flawed cold fusion report of November 1989. During his life, Seaborg did nothing to make amends. History should remember him for that. For now, one of his other tangible legacies is having his name permanently affixed to element number 106, seaborgium.

A Stroll Down Memory Lane: 1964

Because I happen to be an inveterate packrat, I tend to collect old scientific literature, magazines, and other paraphernalia, which others might long-ago have shredded, but which I imagine might eventually be useful. And on occasion, one piece of pack-ratted scientific memorabilia percolates to the top of a pile and sends a message across the sands of time. So it was for a small pamphlet that I saved from my high school years—from 1964, to be precise. It was published by the U.S. Atomic Energy Commission (AEC), that era's precursor of today's DOE. It features an address by Glenn T. Seaborg, who was then AEC Chairman, to the 14th National Science Fair International (NSFI) at Albuquerque, New Mexico in 1963. Seaborg's talk, "The Creative Scientist: His Training & His Role," is so quaint (note, for example, the gender bias in the title) and pregnant with intimations about future scientific history, that I consider it to be a useful accompaniment to this commentary. We reprint it in its entirety. Enjoy!

Notable about Seaborg's lecture is its tiresome blandness and repetition of bureaucratic-sounding nostrums about how the young people he is addressing should view their prospective careers in science and engineering. Note especially: Seaborg gives no obvious challenge whatsoever to the students to find something truly *new*, something really revolutionary, or—heaven forefend—something fundamentally *wrong* with existing theories of nature. The implication is clear, and even spelled out in its deification of certain "genius" scientists: "Furthermore, much of the potential of a Fermi or a Von Neumann would be lost were there not many other scientists to try out their suggestions or to turn up new phenomena and new data for them to study and consider." The not-so-subliminal message is clear: "You are likely to be drones in the house (hive?) of science, whose work is to be evaluated and *used* by these superior kings and queens, who disdain getting their hands dirty in your sort of pedestrian experimentation. Esteemed theorists will consider, accept, or reject, the value of *your* work. Boy or girl, know your place."

I regret to say that had I been in the audience listening to Seaborg in 1963, I might then have been in awe of this great messenger of supposed wisdom about the process of science. I would not then have been sensitive to the implicit distortions being served up. Seaborg airily offered this canard: "The time lag between the discovery of a fundamentally new scientific principle and its application in engineering or medicine is now very short." This is utter nonsense; it is blather. It pertains only to some new kind of technoid gadgetry based on accepted principles that engineers and marketers may disgorge, not to the fruits of "fundamentally new scientific principles." In fact, those "fundamentally new scientific principles" that are allowed admission to the cathedral of official science are so rare as to be virtually non-existent these days. And as we have seen, thanks to the likes of Seaborg, substantial evidence for low-energy nuclear reaction phenomena and excess heat have been side-tracked for at least fifteen years—and perhaps the farce will go on much longer. (An unbiased DOE review of LENR is by no means assured.) At the same time, all manner of experimentally untethered, nonsensical theory in physics is bandied about and rewarded as received cosmic wisdom.

At another point Seaborg told the students, "In his search he knows that in the final analysis his success as a scientist is measured against the criteria of nature—rather than the judgments of persons." That was another con-job from Seaborg. That statement may be true and self-evident as far as Science, the abstract, ideal process may go, but it is most certainly not the *real experience* of pioneering scientists these days. The work of frontier scientists now faces immediate scorn and ridicule by the rash

judgements of "persons"—persons such as Seaborg or Huizenga, who tell the President of the United States and then the world that a new scientific finding is not such-and-such, based on totally anti-scientific *a priorisms* ("It simply can't be true. . .etc., etc."). This is another sad howler from Seaborg: "A scientist who is correct can prove he is correct, and by a proper marshalling of experimental evidence can convince his colleagues regardless of their superior reputation, seniority, or rank." Oh, sure, just serve up a a few hundred bullet-proof papers on LENR and the Scientific Establishment will roll right over! Evidence with revolutionary implications means *nothing* to the hide-bound theorists of today.

Then comes blatant propaganda about how, "By intensive study of the organizing law the new scientist may understand immediately many hundreds of individual facts which were quite mysterious to the past generation of scientists." That's it, man, just memorize those "laws" and you have the whole shebang in hand, the world of scientific "facts" at your fingertips! Implied, of course, is that those "laws" can't be wrong, because, after all, from them can be derived "facts." Get it? After such nonsense, a disastrous, false assertion popped out of Seaborg's mouth, which a quarter century later would come to characterize perfectly the idiotic rationale for launching the War Against Cold Fusion: "New mathematical techniques may also make it possible to explain or quickly derive numerous experimental facts which could only be understood at the expense of great labor by previous students." *Mathematically derive an experimental fact?* Isn't that how LENR phenomena were so resoundingly dismissed by Seaborg *et al.*—by mathematical calculation from sacrosanct "laws," purporting to show that certain experiments *had* to be the result of error?

Seaborg tells us how it should be with graduate students: "He learns how to set up a meaningful experiment and how to extract correct answers from the data he collects. He learns the importance of letting the unexpected result lead him to new conclusions or at least to new experiments." Of course, Seaborg can't possibly be talking about truly anomalous, "law"-violating results that could lead to "new conclusions." He emphasizes "correct answers," which in his lexicon cannot be allowed to appear to violate those laws. He then describes a hypothetical graduate student. One who recalls the early history of the LENR field may immediately think of Nigel Packham, a doctoral student under Professor John Bockris at Texas A&M University during 1989-1990 and afterward, who through hard work found irrefutable tritium evolution in cold fusion cells. That is the kind of research that should merit a Nobel Prize, at least. But, not so fast. Seaborg describes an open-minded graduate student: "With this fresh outlook it frequently happens that he contributes greatly to the success of the research and may transform it into an advance far greater than might reasonably have been expected at the initial stages of the work." Yes, that is precisely what Packham did under Bockris, except that Packham was "rewarded" by being called a likely fraud-perpetrator in a slanderous article by Gary Taubes in *Science* magazine, which spanned five pages of that still unrepentant journal in June 1990. So, it did not work out for Packham in 1990 as Seaborg had suggested it would back in 1963. Packham was driven out of the field and has been working in the U.S. space program doing human factors biophysical research.

With these now all-too-evident intimations of the disaster for science that would later emerge in the Cold Fusion War, it is perhaps a blessing for him that Seaborg is not around to see the consequence of his acts: the inexcusable delay in recognizing that a new window on physics and chemistry had opened, one with a huge technological potential. But the eventual blossoming of that initially small sprout of scientific discovery that Seaborg so incompetently sought to abolish could not be stopped. "Law"-defying experiments in LENR continue and become an ever larger threat to what Seaborg thought he knew about science. We can agree with at least one of Seaborg's 1963 truisms, although not in the way he intended it: "Science is self-correcting in that spurious results will sooner or later be unmasked by new experiments or the attempted verification of previous conclusions." The unmasking that is occurring is the crushing correction that experiments are delivering to the fraudulent "previous conclusion" of Seaborg and Huizenga that there was nothing to investigate in the cold fusion claims.