FUSION facts

A Monthly Newsletter Providing Factual Reports On Cold Fusion Developments

ISSN 1051-8738 • University of Utah Research Park •

ISSN 1051-8738

***Fusion Facts* Now Reports on Both Cold Fusion and Other Enhanced Energy Devices.**

VOLUME 6 NUMBER 6 FUSION FACTS DECEMBER 1994

CONTENTS FOR DECEMBER 1994

The Peer Review Process
or, a physicist and his peers contemplate cold fusion.

With apologies and thanks to Robert Longo, for his sculpture Corporate Wars.

A. THE CASE FOR TRANSMUTATION

By Hal Fox

I. ANCIENT AND MODERN "ARTS"

Alchemy, or "The Art" was practiced in ancient China, India, Greece, and Islamic lands [1]. The key word characterizing Alchemy was "transmutation." However, the term transmutation included chemical changes: life's physiological changes such as sickness to health, restoration of youth, longevity, and even means of bypassing or cheating death by an easier transition to the next life. As used today, alchemy denotes an ignorant belief in nuclear changes to materials, such as the transmutation of "base" metals into the more valuable "gold."

Our current concepts of material changes embrace chemistry (changes accommodated by various combinations of elements due to linkages involving the electrons orbiting the nuclei of elements); physics (changes of physical characteristics involving mechanical, optical, electrical, and magnetic phenomena); and nuclear physics (involving changes to nuclei of elements). All of these perennially valuable concepts have greatly promoted man's understanding of the real world and are based on a paradigm (model, example, pattern) in which elements have nuclei around which electrons orbit in circular, elliptical, or spherical paths. Electrons, especially the outer electrons, can be easily removed, linked, or coupled. Atomic nuclei, except for a few radioactive elements, are regarded as impenetrable, unchangeable, or immutable, except under conditions of very high temperatures or velocities. There is an enormous scientific literature supportive of these atomic model concepts. It is interesting to note that the concept of radio-active nuclei represented an early twentieth century paradigm shift (model change).

The current atomic model is so pervasive in Science that experimental evidence that is contrary to the model have been disallowed by the peer-review publishing system. **It**

is not unexpected, in exercising due diligence to protect the sanctity of Science, that there would be cases where "we kept the bath water and threw out the baby." In honesty, it must be reported that, in general, the scientific peer-review system has done a good job in protecting what has been found to be a reasonable model of the real world. The peer-reviewed literature does, in general, represent a significant contribution to the understanding of the reality of the world in which we live. However impaired our currently-accepted model may be, we still have walked on the moon, conversed over an information superhighway, and identified problem genes.

The challenge to Science, is not so much what we have accomplished as it is what we are prohibiting from being accomplished. From this author's view, the major concepts that require immediate re-evaluation are the following:

* The constancy of the speed of light (Marinov) [2].
* The emptiness (non-energetic nature) of space (King) [3].
* The Lorentzian versus Amperian formulas for electricity (Graneau) [4]
* The immutability of atomic nuclei (Kevran/Komaki) [5].
* The magnetic model (Aspden) [6].
* The gravity and inertial models (Puthoff, Haisch, Rueda, [7] also Mills [8]; Alzofon [9]).
* The Maxwell equations (Pelligrini) [10].
* Einstein's theory of relativity (Pelligrini, Marinov, & many others) [10,2].
* The denial of Cold Nuclear Fusion (over 2,000 references in Fox's book) [11].

The names in parentheses are names of persons who have contributed theory, experiments, or data which **strongly challenge or, in some cases, disprove currently accepted Scientific dogma.** Some persons who strongly challenge the currently-accepted scientific paradigms are variously ignored, tolerated, challenged, criticized, or attacked. In this discussion, the author chooses to address the issue of "The immutability of atomic nuclei."

II. THE CONCEPTS FOR TRANSMUTATION

First, transmutation as defined is the term that will be used herein: Transmutation of an element is the process by which an element is transformed from one element in the periodic table to another element. The process must involve nuclear changes. By this limited definition, all nuclear reactions in which a new element is produced can be classed as transmutations. Radioactive decay where new elements result (not just isotopic changes) can be classed as transmutations. This restricted definition of transmutation has been chosen so that the issue of transformations of one element into another by nuclear reactions is the predominant issue to be discussed.

Now, the following questions can be addressed:

* Is transmutation scientifically possible?
* What are the concepts involved in transmutation?
* Is there strong experimental evidence for transmutation?

First, is transmutation scientifically possible?

The answer is, "Yes." All nuclear reactions in which an element appears in the results, and which element was not present in the initial conditions, is transmutation, by definition. The fields of nuclear chemistry and nuclear physics are replete with examples. The author recognizes that **currently-accepted scientific theory does not admit to low-energy transmutation.** However, the author stresses **the scientifically-accepted fact that experimental evidence precedes, modifies, or supplants theory.** One new scientific fact is better than any number of incomplete or faulty theories. However, low-energy transmutations need to be replicated in many laboratories before it will be well accepted that low-energy transmutation is a scientific achievement.

Second, what are the concepts involved in transmutation?

The reader is referred to the extensive literature by which nuclear reactions occur in hot fusion (tokamaks, and similar systems), high-energy physics, in both experimental and commercial nuclear reactors, in atomic and hydrogen explosions, etc. The concepts to be addressed in this paper will explore the idea of "subtle" or "low energy" methods by which transmutation may be achieved. The author suggests that at least four concepts exist by which low-energy transmutation appears to occur:

a. Transmutation can occur in electrochemical cells by "proton capture."
b. Transmutation can occur in low-pressure gas plasma devices with electrical voltages less than 1,000 volts.
c. Transmutation can occur in gas-plasma devices by a form of proton capture.
d. Transmutation can occur in biological organisms.

These four concepts are discussed in the Section III of this paper.

Third, is there strong experimental evidence for transmutation?

The answer is, "Yes." However, the experimental evidence is largely ignored; explained away as experimental artifacts, contamination, inadequate experimental conditions, or fraud by the experimenter; or denied by many in the current peer-review system. In honesty, it must be admitted that there are experiments that qualify for such criticisms. However, there are many highly-qualified, careful, well-trained, and highly-honest experimenters who have obtained experimental evidence that should no longer be ignored nor attacked. It is time to encourage competent replications of several of the concepts for transmutation. **The experimental evidence is, at least, pervasive, if not compelling, that low-energy transmutation is a scientific fact.** (A scientific fact is defined as "the close agreement of a series of observations of the same phenomena.") The following section III discusses the above concepts and cites the experimental literature.

III. DISCUSSION OF CONCEPTS AND EXPERIMENTS

The following discussions are based mainly on the experimental evidence. In some cases, the evidence is less compelling. In all cases the experiments are considered worthy of replication under carefully-controlled experimental conditions. Science has survived and progressed after many paradigm shifts (model modifications). **The potential advantages that are expected from the acceptance and development of some of the new evidence for nuclear transformations have such enormous benefits to improve our understanding, our lives, and our planet that it is an unacceptable choice not to seriously investigate these concepts with scientific skepticism but not with overt, preconceived denial.**

1. Transmutation can occur in electrochemical cells by "proton capture."

Cold fusion has been vehemently denied by some hot fusioneers who mistakenly proclaim that cold nuclear fusion must produce the same nuclear reactions found in hot fusion experiments. There is little scientific basis for this preconception. Now the extensive literature of cold fusion experiments strongly supports the opposite view, that cold nuclear fusion within or on a metal lattice is fundamentally different than nuclear fusion in high-energy plasmas. The most important difference is that the production of neutrons are very much lower than in high-energy plasmas. Much effort and money has been spent to disprove cold fusion by showing that neutrons are not emitted. Hot fusioneers proclaim success in disproving cold nuclear fusion when all they have accomplished is to support the experimental findings that cold fusion produces very few neutrons.

The hundreds of cold fusion experimental reports now show that the production of heat is far more prevalent than the production of tritium and that the production of tritium is about six- to eight- orders of magnitude more prevalent than the production of neutrons. Even more astounding is the experimental data from light water electrochemical cells using nickel cathodes, platinum anodes, and alkali-metal carbonates as the electrolyte. The data now clearly shows that nuclear reactions involving protons and high-mass elements appears to be the most likely nuclear reactions. The author has previously (in *Fusion Facts*) labeled this process as **proton capture.**

Contrary to the high-energy plasma experience, the alkali elements (such as potassium or rubidium as carbonates in a pure water electrolyte and in the presence of a nickel cathode having high surface area) become involved in nuclear reactions such that calcium or strontium are produced [12,13,14].

One of the most elegant experiments designed and carried out by Bush and Eagleton is based on the fact that the isotopic abundance of naturally-occurring rubidium is such that transmutation of rubidium into strontium **does not produce the naturally-occurring isotopic ratio of strontium.** Therefore, if it can be shown that there is no measurable strontium in the initial rubidium electrolyte and that the post-experimental measurements not only show the presence of strontium **but show that the isotopic ratio is different than the naturally-occurring isotopic ratios, then the evidence strongly supports the concept of transmutation and denies the concept of contamination of the experiment by strontium [15].**

Theories are now being developed to explain how a proton can be captured by a rubidium nucleus or, alternatively, the mechanism by which nuclear reactions are catalyzed on or within a metal lattice (especially with palladium or nickel cathodes). Using the measurements made in high-energy plasma physics, a d + d reaction in an electrochemical cell is highly unlikely. Even more unlikely are any of the following: p + Li; p + Na; p + K; p + Rb; or p + Cs. However, all of these reactions appear to be relatively easy to produce in light-water electrochemical cells using alkali-metal carbonate electrolytes and porous nickel cathodes.

2. Transmutation can occur in low-pressure gas plasma devices with electrical voltages less than 1,000 volts.

In one of the more interesting developments of post-Pons & Fleischmann experiments is the use of a palladium cathode in a low-pressure deuterium gas operating in the glow-discharge region of electrical plasmas [16]. There is increasing evidence that this type of reactor produces a variety of fusion and fission reactions. Some of the reactions are characterized by beams of energy that appear to be focussed or directed from the surface or near-surface of the palladium cathode. At the time of writing, replication of this important work was being done at two prestigious U.S. laboratories and summary papers are expected shortly after the first of 1995. Romodonov in Russia [17], Dufour in France [18], and H. Long in China [19] have produced similar experimental data.

3. Transmutation can occur in gas-plasma devices by a form of proton capture.

There is less compelling evidence for nuclear reactions produced by a simple gas-plasma flame. However, the demonstrations are sufficiently simple that replication is strongly urged. Yul Brown has demonstrated, for many audiences, how the use of Brown's gas (a mixture of hydrogen and oxygen derived from the electrolysis of pure water) produces anomalous high temperatures in some metals. The gas mixture is fed directly into a torch. Upon ignition, the hydrogen-oxygen flame has a relatively low temperature. However, when this flame is used to heat some metals, there is an anomalously high temperature produced. It is reported that titanium can be cut using such a simple torch.

This author has hypothesized that the flame produced by Brown's gas certainly contains hydrogen ions (protons). It is suggested that these protons are involved in nuclear reactions on or near the surface of certain (as yet, unspecified) metals. The resulting heat from these nuclear reactions make it possible for the Brown's gas torch to cut or weld such metals. In phone discussions with Yul Brown and in communication with witnesses of his demonstrations, the author believes that there is sufficient evidence to warrant a careful replication and evaluation of this phenomena. The potential addition to our understanding of nuclear reactions that could be the result of a series of successful replications of this work warrants our interest. **Even if the probability of success appears to be low, the payoff in new understanding is potentially large enough for the experiment to be tried.**

4. Transmutation can occur in biological organisms.

The least acceptable concept to many scientists is the concept of biological transmutation. Peter Tompkins and Christopher Bird [20], in a book describing strange scientific findings to the layman, discuss some biological transmutations that were reported and ignored several decades ago. Of more recent interest is the work by the Japanese scientist Kervran which has been carefully replicated by Komaki [21]. In these experiments molds and yeasts are grown in normal nutrients in petri dishes as controls. Other experiments use nutrient solutions deficient in one of the critical life-supporting elements such as calcium, potassium, magnesium, or iron. In all cases, the organisms grown in the element-deficient petri dishes suffered considerable reduction in growth. However, the unusual result, in all cases, was the ability of the organisms to create the missing element required by the life form!

The ease with which this type of experiment can be replicated **and the enormous importance of the reported result of biological transmutation** necessitates that this experiment be carefully replicated in many laboratories. If replication is successful, the implications are enormous: We will have an entirely new concept as to the source of many of the elements in the earth's crust. The results may make enormous changes in bio-engineering in the development of methods to produce some needed elements from more abundant elements. New studies of animal and plant nutrition will be accomplished. New biologies of animal digestive tracts and of cud-chewing animals will be investigated in order to increase the amount of some nutritional elements.

And if we fail? Then, we will paraphrase Edison in his statement of progress, "We know something else that doesn't work." But try, we must. Because **knowledge is too important to be denied by letting our models get in the way of our learning and our progress.**

Note: I must acknowledge the help of Prof. J. O'M. Bockris, who has supplied concepts relating to the possibility of a wider-than-expected occurrence of low-energy nuclear processes and, if true, the enormous impact on science.

REFERENCES

[1] Alchemy," Encyclopaedia Britannica, 15th Edition, vol 1, pages 431-436.

[2] Stefan Marinov, Divine Electromagnetism, International Publishers East-West, Morellenfeldgasse 16, 8010 Graz, Austria, 290 pages, c 1993.

[3] Moray King, Tapping the Zero-Point Energy, Paraclete Publishing, P.O. Box 859, Provo, UT 84603, 170 pages, over 300 refs, c 1989.

[4] Peter and Neal Graneau, Newton versus Einstein, How Matter Interacts with Matter, Carlton Press, N.Y., 135 refs, 220 pages, indexed, c 1993.

[5] Hisatoki Komaki (Biological & Agricultural Research Institute, Shiga-ken, Japan), "An Approach to the Probable Mechanism of the Non-Radioactive Biological Cold Fusion or So-Called Kervran Effect (Part 2)," Proceedings: Fourth International Conference on Cold Fusion, Volume 4, pp 44-1 to 44-12, 18 refs, 2 figs, 6 tables.

[6] Harold Aspden, "Power From Magnetism," Energy Science Report No. 1, Sabberton Publications, P.O. Box 35, Southampton, SO16 7RB, England, 41 pages, illus.

[7] Haisch, Rueda, and Puthoff, "Inertia as a zero-point Lorentz force," *Physical Review A*, vol 49, No. 2, Feb 1994, pp 678-694, 45 refs. See also H.E. Puthoff, "Gravity as a zero-point-fluctuation force, *Physical Review*, vol 39, no. 5, March 1, 1989.

[8] Randell L. Mills & William R. Good, A Unified Theory Derived from First Principles, available from author, HydroCatalysis Power Corporation, 1860 Charter Lane, Lancaster, PA 17601.

[9] Frederick E. Alzofon, "The Unity of Nature and the Search for a Unified Field Theory," *Physics Essays*, vol 6, no 4, 1993, pp 599-608, 24 refs.

[10] G. N. Pelligrini, "Evidences Violating Relativistic Electrodynamics in the Non-Radiative (first order in v^2c^2) Macroscopic Domain," *Physics Essays, (to be published).*

[11] Hal Fox, Cold Fusion Impact in the Enhanced Energy Age, published by Fusion Information Center, book includes updated diskette with over 2,000 references, c 1992.

[12] R.T. Bush and R.D. Eagleton (Dept. of Physics, Cal Poly, Pomona), "Calorimetric Studies for Several Light Water Electrolytic Cells with Nickel Fibrex Cathodes and Electrolytes with Alkali Salts of Potassium, Rubidium, and Cesium," Proceedings: Fourth International Conference on Cold Fusion, Volume 2, pp 13-1 to 13-22, 27 refs, 27 figs.

[13] Reiko Notoya, Yohichi Nova, & Toshiuuki Ohnishi (Hokkaido Univ., Sapporo, Japan), "Tritium Generation and Large Excess Heat Evolution by Electrolysis in Light and Heavy Water-Potassium Carbonate Solutions with Nickel Electrodes," *Fusion Technology*, vol 26, no 2, 1994, pp 179-183, 11 refs, 1 fig, 2 tables.

[14] H. Ramamurthy, M.Srinivasan, V. Mukherjee, & P. Adibabu (BARC, Trombay, Bombay, India), "Further Studies on Excess Heat Generation in Ni-H_2O Electrolytic Cells," Proceedings: Fourth International Conference on Cold Fusion, Volume 2, pp 15-1 to 15-31.

[15] Bush and Eagleton, "Evidence for Electrolytically Induced Transmutation and Radioactivity Correlated with Excess Heat in Electrolytic Cells with Light Water Rubidium Salt Electrolytes," Proc ICCF-4, vol 3, pp 2-1 to 2-19, 6 refs, 12 figs.

[16] I. Savvatimova, Ya.R. Kucherov, A.B. Karabut (LUCH, Podolsk, Russia), "Cathode Material Change after Deuterium Glow Discharge Experiments," Proceedings: Fourth International Conference on Cold Fusion, Volume 3, pp 16-1 to 16-11, 3 refs, 7 figs, 5 tables.

[17] V. Romodonov, V. Savin, V. Elksnin, & Y. Skuratnik, "Reproducibility of Tritium Generation from Nuclear Reactions in Condensed Media," Proceedings: Fourth International Conference on Cold Fusion, Volume 3, pp 15-1 to 15-15, 11 refs, 2 figs, 4 tables.

[18] Jacques Dufour, "Cold Fusion by Sparking in Hydrogen Isotopes," *Fusion Technology*, vol 24, no 2, 1993, pp 205-228, 22 refs, 27 figs, 6 tables.

[19] Heqing Long, et al. "The Anomalous Nuclear Effects Inducing by the Dynamic Low Pressure Gas Discharge in a Deuterium/ Palladium System," Frontiers of Cold Fusion, Proceedings of Third International Conference on Cold Fusion, pp 455-459, 4 refs, 2 figs, 4 tables.

[20] Peter Tompkins & Christopher Bird, "Alchemists in the Garden," in The Secret Life of Plants, Harper & Row, c1973, 402 pgs, includes bibliog & index.

[21] Hisatoki Komaki (Biological & Agricultural Research Institute, Shiga-ken, Japan), "An Approach to the Probable Mechanism of the Non-Radioactive Biological Cold Fusion or So-Called Kervran Effect (Part 2)," Proceedings: Fourth International Conference on Cold Fusion, Volume 4, pp 44-1 to 44-12, 18 refs, 2 figs, 6 tables.

B. SONGS OF THE CAN'T-ERS

Man's progress has many times
At first just been rejected.
Then when it is obvious
New things gets accepted.

Replace my whale oil with
Black stuff from the ground?
A substitute for my lamp
Never will be found.

Edison's new light bulb?
I'd rather buy a load of mud.
Gas lamps are still great.
Electric lights will be a dud!

"Those Wright Brothers
They can't fly
Anymore than I."
The Can't-ers cry.

What, rocket through space?
Goddard, we are incensed!
Everyone knows, there's
Nothing there to push against!

Energy from the atom?
Why that's insane!
Don't those numbskull scientists
Even have a brain?

Radar waves detect warplanes
Farther than I can view?
Don't bet on that solution,
We'll throw you off the crew.

Missiles jump over nations
And fly across the sea?
I'm an aero-space expert.
Don't pull that stuff on me!

Pons and Fleischmann's fusion?
A chemical phenomenon?
MIT says it won't work,
Unless it's on the sun!

Light water gives cold fusion?
Mills sent his brains for slaughter?
You know you can't get fusion
Unless using heavy water!

Sure, Bush and Eagleton
Are making transmutations!
Don't you ever believe it.
It's just some aberrations.

Energy obtained from Space,
And to a great degree?
Hal Puthoff is playing games.
Space has no energy!

Tapping vacuum energy?
You must think that I'm a klutz!
Making electron clusters?
Ken Shoulders must be nuts!

Progress is only made
If we ignore this banter.
Think what this world would be
Listening to the can't-er.

Once we all accept this truth
Our knowledge will be newer.
Progress is not made by
Can't-er; **ONLY BY A DO-ER!**

By Hal Fox

C. NEWS FROM THE U.S.

CALIFORNIA - WARM FUSION

Courtesy of the author.

Charles Bennett, "Warm Fusion?" *"Cold Fusion" Update*, No. 4, Sept 1994, pp 12-18.

EDITOR'S COMMENTS

Bennett reviews and comments on the rocky road from Fleischmann & Pons to ICCF-3 in this reprint of his speech to a chapter of the California Society of Professional Engineers, in January 1994. In this article, Bennett proposes an alternative theory in which he defines a Q-particle as "a basic cell of our universe." "Then the Q is seen as a resonance or a grand conjunction of many particles." Bennett describes an experiment involving the use of deuterated titanium at liquid nitrogen temperatures and high pressures. When the deuterated titanium is suddenly heated, Bennett expects a form of "warm fusion" to occur. [See further information about Bennett on page 10 of this issue.] Bennett has both aerospace and state utility experience and is strongly supportive of further developments in cold fusion.

CALIFORNIA - NEW ELECTRICITY ORDER?

"Wheeling and Dealing," *Rocky Mountain Inst. Newsletter*, vol 10, no 3, p 8.

SUMMARY

In April, the California Public Utilities Commission (CPUC) announced its plans to abandon most of the past century's regulatory practices in favor of "retail wheeling," a so-called simple market approach that would hypothetically encourage competition, cut rates and increase efficiency by regulation in which customers could choose to buy electricity from any supplier. Many people, and the

number is growing, doubt the ability of retail wheeling to achieve these aims, and believe that there are better ways of doing it.

Up to now, California's utility regulators have been among the best and most progressive, encouraging cost-effective energy efficiency that, in 1990-93 alone, saved Californians almost $2 billion. Utilities were rewarded for cutting customers' bills, not for selling more electricity. Retail wheeling would kill all these incentives in favor of a commodity system that does not favor the average consumer at all. The change purportedly aims at encouraging the retirement of uneconomical older power plants, but this appears to conceal a hidden agenda taxpayers would never accept. **Its main supporters are a handful of large energy users who will benefit greatly by grabbing up the cheapest power for themselves, and leaving everyone else to pay off the costly old plants' debts**.

RMI is hoping that this problem will bring a rededication to rewarding utilities for cutting bills, instead of selling more electricity, and will prove that the cost cutting measures that benefit the consumer will achieve more satisfying results than the inequities of retail wheeling.

[One of the impacts of cold fusion and/or other enhanced energy systems will be the obsolescence of many existing power-generating facilities. Intelligent utility managers will insure the future economic well-being of their companies by an early investment in new energy techologies. -Ed.]

CALIFORNIA - STILL DOUBTING COLD FUSION

David Goodstein (Vice Provost, Prof. Phys., Dept Phys. & Appl. Phys., Cal. Inst. Techn., Pasedena, CA), "Pariah Science: Whatever Happened to Cold Fusion?" *The American Scholar*, Autumn 1994, vol 63, no 4, pp 527-541.

SUMMARY

This is an articulate and well-written article, which regrettably doesn't look at all the facts with a completely open mind. However, the impression recieved is not one of hostility and fanaticism, as much as of a highly skeptical observer, who still gives cold fusion a hair-slim chance of being possible, only not as presented currently. The article contains some very damaging misconceptions, both about the level of scientific process observed by cold fusion proponents and the accuracy of their observations.

Goodstein is close to both sides of the debate, being a colleague of Koonin, Lewis, and Barnes (all also from Caltech), and a close personal friend of cold fusion researcher Franco Sacarmuzzi of Rome. Overall, his observation "both sides of the debate violated what are generally supposed to be the central canons of scientific knowledge" was correct only to a point. He asserts that the negative results of many experiments were discounted by cold fusion proponents, while heeded by their opposition. This reaction particularly occurred early on, but became a thing of the past when the opposition forced better accountability. But, because the positive results were contrary to what was *supposed* to be immutable scientific law, the opposition denied all positive results -- equally bad science.

Goodstein very accurately says, "To believe that Pons and Fleischmann, Jones, and Scaramuzzi, and many others who claimed to observe either heat of neutrons or tritium, were all observing the same phenomenon, one must believe that, **when fusion occurs inside a piece of metal, such as palladium or titanium, the outcome is radically different from what is known to happen when fusion occurs in the Sun, or in a hot-fusion plasma, or an atomic bomb, or a nuclear accelerator**. [RIGHT! -Ed.] It must be different from conventional physics." Very true, but then Goodstein turns around and again links all the research back to conventional physics theory. He does not consider the variety of the differences in the phenomena and the many parameters effecting it.

He continues and presents the example of High Temperature Superconductivity, and the Mössbauer Effect as examples of surprises that were found in science, unreflected by current theory, and yet continued on to become accepted scientific fact. A superconductor effect was first observed in 1911, but it wasn't until 1986 that both theory and materials could accept or utilize the phenomena. The Mössbauer Effect, much like Cold Fusion, presented scientists with a new idea that didn't fit in anywhere in their current theories. But it came to be recognized as a special case. Both of these are good examples why no new observation should be summarily dismissed, especially when there are such a variety of conflicting observations.

The main emphasis in Goodstein's rejection of cold fusion was that there were no dependable recipes for reproducible experiments (that were demonstrably not flawed by poor measurement systems), and that the results seemed to vary widely in content. Sometimes they would detect particles, sometimes tritium, sometimes heat, sometimes a mixture.

The results didn't fit in the small box of acceptable theory with acceptable results.

Goodstein does not come across as a pathological skeptic, merely as a dedicated scientist who has failed to learn the complete story and has a minor case of "blinders" brought on by focusing too intently on *current* theory. He does not rail against the perceived incompetence and possibly intentional deception as do some anti-cold fusion fanatics. That is refreshing.

COMMENTARY LETTER FROM EUGENE MALLOVE

Dear Professor Goodstein:

I read your attempt at an assessment of cold fusion in "Pariah Science" in a recent issue of *The American Scholar.* It was notable in that it did not take the standard hard line against the field as "pathological science." You were pleasant and reasonably kind. Nonetheless, your views fall far short of an accurate assessment. You present a highly distorted view of the science, history, and issues involved. It is quite evident that you simply have not been following what has been happening in the field.

I enclose a copy of the first issue of "Cold Fusion" Magazine to provide you with information that you sorely need. I have also attached my editorials which appeared in the subsequent issues, as well as my critical review of the Taubes book. My review of Huizenga's book is in the issue that you have in your hands. Have you read my book, *Fire from Ice: Searching for the Truth Behind the Cold Fusion Furor* (Wiley & Sons, 1991)? *Fire from Ice* brings the story up to May 1991, but much has happened since then, which is why I am working on a revised and updated version at the moment.

Here are *some* specific problems with your review (there are too many to enumerate them all):

* You write: "Cold fusion papers are almost never published in refereed scientific journals, with the result that those works don't receive the normal critical scrutiny that science requires." This is blatantly false. Though it has, indeed, been difficult to get cold fusion papers into several main stream journals, such as *Science* and *Nature,* in view of the outrageous hard line against the field that those "exalted" publications took, many excellent peer reviewed journals continue to publish cold fusion articles. To name but a few: *Physics Letters A, Fusion Technology, Japanese Journal of Applied Physics,* and the *Journal of Electroanalytical Chemistry.*

* Then you remark: ".. there is little internal criticism. Experiments and theories tend to be accepted at face value." Complete nonsense! Theories of all kinds are definitely listened to, but to suggest that they are all accepted "at face value" is preposterous. Likewise with experimental results. For example, there is a gap between some of those who believe in the validity of the light water excess heat experiments with nickel cathodes (NOT palladium!) and potassium carbonate electrolyte and those who accept the results only of the "traditional" heavy water systems. Those who suggest that heavy element transmutations have been observed are the least believed in certain cold fusion quarters, though that is changing now that skeptic Kevin Wolf has seen radioactive rhodium, silver, and ruthenium in his Pd rods -- a serendipitous discovery.

* You describe the May 1, 1989 APS meeting in which your colleagues "executed a perfect blocked shot that cast Cold Fusion right out of the arena mainstream science." **That time was certainly a critical turning point, nothing for your colleagues to be proud of...** In days before the APS meeting, individuals at MIT had done their own (albeit mostly behind closed-doors) assaults against cold fusion, which broke out in the infamous Boston Herald story planted by MIT Professors Ronald Parker (Plasma Fusion Center) and Ballinger. There was a subsequent unethical attempt at retraction by Parker. That was the opening volley against P&F... The documented deception of Parker is so amazing, that were this any other field, Parker would have been severely disciplined at MIT... He imputed possible "fraud" to Pons and Fleischmann and said their work was "scientific schlock" -- then he denied he ever said that! Fortunately, the reporter had the tape of the interview. This opened the flood-gates of ridicule, and let your Caltech boys have a field night at the APS.

* You say that Lewis and Barnes "refused to believe what they couldn't reproduce in their own laboratories." In point of fact, the Caltech results in calorimetry are totally ambiguous -- and worse. Its severe shortcomings have now been thoroughly documented in a peer-reviewed paper by Dr. Melvin Miles, and in others by Dr. Noninski. There is another interesting aspect to this. No less than three scientists corresponded with *Nature* magazine in an effort to introduce criticisms of the published Lewis, et al. paper. After lengthy iterations, the then *Nature*, Washington editor, David Lindley, chickened out. He knew that there were glaring issues, but he refused to allow negative correspondence to be published. This would have demolished the so-called "null result" of Lewis... [You should know that the MIT calorimetry situation was worse. That was blatant data fudging of a clearly positive excess

heat result. I asked for a serious investigation of scientific misconduct in this matter and it was swept under the rug -- temporarily at least. The sorry details will be reported in glaring detail in the next version of my book.]

* You later write of Lewis and Koonin: "They pursued every lead with relentless tenacity and Popperian vigor,... finding the mistakes of other scientists." There is only one word for your assessment, in view of my previous comments about their experiments and behavior: [expletive deleted] You shouldn't mind that word. After all, you agreed that that's what some disbelievers said about P&F's work.

* Here is where you make your most egregious error: "All parties agreed that if Cold Fusion occurred...the primary event would have been the fusion of two deuterium nuclei.." This shows your blinders. **Go back and read the original paper by Pons and Fleischmann. They indicated quite clearly that d-d fusion could NOT be the whole story**. That's just the straw man that Koonin, et al. set up. As an example, MIT Professor Hagelstein's theory does not rely on d-d fusion -- his posits neutron transfer reactions. And others who suggest that it IS d-d, find theoretical ways of explaining why there is no massive radiation flux. The late Julian Schwinger did a lot of work on that. He resigned from the APS because your man Koonin and others stupidly blocked his publications in the "sneer review" process. So Schwinger published in PNAS and elsewhere.

* You write: "Is it plausible that the nuclear reaction might be altered radically when it takes place among the atoms in a metal, rather than in the rarefied atmosphere. The answer, quite simply, is no." Oh? Let's get down to basics here. If laboratory after laboratory reports tritium generation in palladium and titanium lattices -- there are several dozen now -- are you going to deny experimental evidence forever? Are you going to believe your sacred theories forever? Let me remind you: the basis of physics is experimental data, NOT theories. If those theories can't accommodate new data, then they must be regarded as good theories up to a point, but they require modification to encompass the new data.

* Sorry to say, you have made yourself look very silly by saying "the missing ingredient may have been found"-- the high loading. This has been known from the first year -- at least for the palladium-heavy water system. SRI found that out very quickly. In fact, that was their first surmise and high-loading has been discussed over and over. It was mentioned in detail by Fleischmann and Pons in that first year of the controversy. Where have you been? I certainly know that you were not at the Maui meeting, for example -- even though the phrasing of your opening seems to suggest that you were there. Did you attend any of the earlier meetings -- at Salt Lake in 1990, at Como in 1991, at Nagoya in 1992? **More important, since you are pontificating on a subject on which you have evidently performed little study, do you intend to be at the fifth international conference, April 9-13, 1995? Or at the one in Beijing in 1996?**

* You write: "If cold fusion ever regains the scientific respectability that was squandered in March and April of 1989, it will be the result of a long, difficult battle that has barely begun." Substitute the word "Caltech" for "cold fusion" in that sentence and you'll have a proper statement. Wake up Dr. Goodstein! The battle for cold fusion is almost over and it's time for Caltech to begin making amends -- or at the very least to be doing some serious soul searching.

* You say you were "even more distressed when I learned that Franco and his group had observed excess heat (the 'bad kind' of Cold Fusion)." Yes, indeed, what *do* you know about electrochemistry?! You are distressed that your friend gets a positive excess heat result, just because you are plagued with paradigm paralysis?

* You end with "What all these experiments really need is critical examination by accomplished rivals intent on proving them wrong. This is part of the normal functioning of science. Unfortunately, in this area science is not functioning normally." You have it all wrong, my friend. Science is functioning quite well in this area -- people ARE trying to prove themselves wrong about each new kilometer below the tip of the giant iceberg discovered by Pons and Fleischmann. It is *outside* this area that science has degenerated to what has aptly been called "pathological skepticism." The scientific establishment and its institutions are fatally sick in this regard. This will be shown with crushing effect in the coming several years. The scientific establishment -- *Nature, Science*, Lewis, Koonin, et al. -- is no longer interested in looking at cold fusion experiments? Fine! The cold fusion field will shove products in its face and we'll all have a good laugh. It will be poetic justice.
Sincerely,

Eugene F. Mallove, Sc.D.

CALIFORNIA - FUSION OVERKILL
Courtesy of the author

Charles Bennett, "Fusion Overkill" and "The DOE Strikes Back," flyers mailed to many major periodicals, U.S. Representatives and Senators.

OVERVIEW OF FLYERS

"The Lawrence Livermore National Laboratory has announced plans for a 1.8 billion dollar project to produce fusion energy by activating deuterated micro pellets with powerful lasers. I first disclosed a strikingly similar concept called *warm fusion* to the Raytheon Company on March 24, 1989. After issuing an inventors award to me entitled, *Nuclear Fusion Candle, April 1989,* Raytheon deeded the rights to me. I filed a patent with the U.S. Patent Department on May 10, 1990, entitled *Lukewarm Fusion*. The patent department did not accept it because they said it was unworkable. Now the Department of Energy has decided to test their own version at a much greater cost!

"I publicly disclosed the concept in a speech to the Peninsula Chapter of the California Society of Professional Engineers at the January 27, 1994 meeting. In the speech, I described a *warm fusion furnace* with micro pellets of metal deuterated under cryogenic conditions as the fuel. The metal lattice holds the deuterium for ignition without the need for powerful magnetic fields. The ongoing heat from the furnace allows continued self-sustained fusion **so that the enormously high amount of powerful lasers proposed by LLNL for the initial ignition mechanism is not needed! This is overkill!!!**

"The opening remarks of the speech state: *"Warm fusion is a hybrid between cold fusion and hot fusion. The temperatures of operation are much higher than the laboratory room temperatures of many current experiments of the so called "cold fusion" but nowhere near the extremely hot temperatures and high pressures of the hydrogen bomb."*...

"The Department of Energy has responded to my proposal for an experiment to test the concept of "warm fusion." A rejection was expected but not one that was so arrogant, presumptuous, and reactionary. The following is an analysis sent by the Division of Advanced Energy Projects, Office of Basic Energy Sciences:"

"The proposal includes arguments that rely on a number of un-verified physical concepts. The notion that heating a cold fusion device leads to a new type of mass-energy conversion has never been shown.. The existence of the Q particle and a different medium besides the space-time continuum for physical processes are unproven concepts in physics. The experiment proposed is very large in scale and not justifiable in the absence of previous experimental proof of an effect. Also references to work involving hydrogen in nickel are not cited or discussed in detail. In summary, the proposal involves a number of highly speculative assumptions. The failure of any one of these assumptions destroys the overall concept.

"The principal investigator is trained as a mechanical engineer. There is no evidence of training, experience, or publications in the areas of elementary particle physics, plasma fusion physics, or relativity and cosmology. All these fields are referenced in the proposal.

"Finally, the budget of $1.65M over two years is beyond the scope of projects supported by the Division of Advanced Energy Projects."

"The philosophy contained in the above statement suggests that new thinking is not allowed. The analysis also demands that required credentials be in disciplines that have denounced new innovations such as cold and warm fusion. Furthermore, the DOE refuses to fund cold/warm fusion so they can perpetuate claims of **"no proof"**. This is a **catch 22**.

"This is an example of one of many reasons that the American public is so mad at the government. First the bureaucracies thrash a new idea with an unsubstantiated chain reaction of frivolous attacks. Then they revamp the idea to make an overblown expensive version of their own."

Chuck Bennett, Oct. & Nov. 1994, Sacramento, California (916-368-6859)

EDITOR'S COMMENTS

Charles E. Bennett is to be commended for his "next day" idea disclosure to his employer (Raytheon) on March 24, 1989. His seven one-page articles that he has written about cold and "warm" fusion indicate that he is a champion for new enhanced energy systems. We do not have access to his proposal to DOE. However, it must be remembered that the worst pitfall for a bureaucrat is to make an error in judgement that can be attributed to that bureaucrat. Bureaucrats do not hold offices to solve problems. If an office is set up to solve a problem, a solution might mean an end to such office.

Therefore, we are not surprised at the comments Bennett received. He would probably get similar comments from a peer-reviewer. Interesting, the person writing for DOE shows abysmal lack of contact with the literature when he states, "The notion that heating a cold fusion device lead to a new type of mass-energy conversion has never been shown." Fleischmann and Pons have carefully demonstrated the need for an increase in energy to trigger energetic cold fusion. However, Bennett needs to be coached on how to write a proposal to a government agency. You do not allude to "Q-particles" or to some different medium for physical processes. One must only "ever-so-gently" propose to extend the current knowledge, if you want government or academic support. New science, however accurate, is not popular in either government or university laboratories.

Bennett's second mistake was to propose himself as the principal investigator. In the government (and academia) world, where Ph.D.s proliferate, one must have a highly-regarded Ph.D. to be the principal investigator. Lesser qualifications are not sufficient, unless you have strong political clout with the agency to which the request is submitted.

For a positive contribution to Charles Bennett, he is strongly advised to take his case to the business and financial world. **The government, especially the Department of Energy, is not going to fund a project that, if successful, makes it evident that they have been mis-spending billions of dollars in the pursuit of various types of hot fusion**. We suggest that you define a small, but carefully defined experiment, that can be completed with a few thousand dollars. Many of the government laboratories will now cooperate with industry for well-defined experiments that use existing government lab equipment. *Fusion Facts* would be willing to publish such a proposal and maybe even suggest some willing Ph.D. partners.

Bennett is certainly correct about the official action that denies funds and then continues to claim "no proof." However, Japan, with its limited energy resources and a culture that recognizes sources of energy within and about us, is not so dogmatic. So what if Japan becomes the manufacturer and distributor of new cold fusion energy sources? Who are they going to demote at DOE? Don't give up, Charles. A few skirmishes may be lost, but the battle will be won!

CALIFORNIA - SONOLUMINESCENCE

Robert Hiller, Keith Weninger, Seth J. Putterman, and Bradley P. Barber (Phys. Dept., UCLA, CA), "Effect of Noble Gas Doping in Single-Bubble Sonoluminescence," *Science*, vol 266, 14 Oct. 1994, pp 248-250, 19 refs, 5 figs.

AUTHORS' ABSTRACT

The trillionfold concentration of sound energy by a trapped gas bubble, so as to emit picosecond flashes of ultraviolet light, is found to be extremely sensitive to doping with a noble gas. Increasing the noble gas content of a nitrogen bubble to about 1% dramatically stabilizes the bubble motion and increases the light emission by over an order of magnitude to a value that exceeds the sonoluminescence of either gas alone. The spectrum also strongly depends on the nature of the gas inside the bubble: Xenon yields a spectral peak at about 300 nanometers, whereas the helium spectrum is so strongly ultraviolet that its peak is obscured by the cutoff of water.

COLORADO - TAMING RADIOACTIVITY

"A New Method for Destroying Radioactivity Discovered!" Tesla Briefs in *Extraordinary Science*, vol 6, no 3, Jul/Aug/Sep 1994, p 46.

SUMMARY

An American inventor may also be on the trail of a process to solve the world's radioactive waste problem. His process has recently been confirmed by Mandeville & Co., and by Dr. Roberto Monte of the University of Bologna. Dr. Monte claims that the discovery will force substantial review of the basic atomic theory, "high energy physics is now obsolete."

The invention, called the Keller Catalytic Process, is patent pending at present. It can reportedly eliminate radioactivity in a few days by turning radioactive elements into harmless elements like lead. The invention may also help solve non-radioactive toxic waste problems, such as lead or heavy metals contamination, by causing the waste contaminant to form into small beads, which can easily be removed and recycled.

Keller's technology has reportedly proved interesting to other scientists, such as Dr. Dogget (who pioneered the enzyme technology now used to clean up oil spills). A public demonstration is planned for the International Tesla

Society, and details will be forthcoming as soon as arrangements are made.

Also in this issue of *Extraordinary Science* is an article by Joe Champion on "Modern Day Alchemy" with a short history of transmutation experimentalists and some current information, that is still under research.

[This invention needs replication by competent scientists to be believable. --Ed.]

IDAHO - LOW-ENERGY TRANSMUTATION

Gary Kissler, "Low-Energy Transmutation," *"Cold Fusion" Update*, No. 4, Sept 1994, pp 11-12. [see article p ?? this issue]

EDITOR'S COMMENTS

Kissler describes how borax (sodium metaborate decahydrate) has been used with distilled water, copper electrodes, and pulsating direct current in an electrochemical cell to produce Si and Ca. Si has been produced in a green-black material on the surface of the copper electrodes and has measured as much at 15% of the material. Ca has been found to be as high at 1.5%. Different results have been obtained with different experiments. The author strongly suggests attempted replication and sharing of experimental results.

NEW YORK - COLD FUSION CONUNDRUM

Stanley Schmidt (Editor, *Analog* Science Fiction and Fact Magazine), "Cold Fusion Conundrum," Editorial in *Analog* Magazine, vol 115, nos 1+2, January 1995, pp 4-10.

SUMMARY

Whether cold fusion is alive or not, what might we have learned from it so far? So begins an insightful editorial about the evolution of research and funding in the current scientific world. A short recap of the first discovery, rush, disillusionment and abandonment of cold fusion by most scientific circles starts the editorial.

Then, with the May/June issue of MIT's *Technology Review* and Edmund Storms' article "Warming Up to Cold Fusion," a new closer look is taken at the continuing positive research and the probable causes of failure of other research in cold fusion. It is pointed out that the significance of some of the early negative reports was exaggerated, and there have been enough serious positive results from reputable labs since to make it clear that *something* is certainly happening.

No matter the outcome of cold fusion, it "is certainly important as a reminder of some of the pitfalls inherent in doing, evaluating, managing or funding research." While reproducibility is important, in such groundbreaking science, neither providing the instructions to duplicate an experiment nor following them is likely to be as easy as it sounds. There are many parameters that the researchers may be completely unaware of, especially dealing with a brand-new phenomena which is not yet understood.

If a chemist early in this century were to look at a sample of the semiconductors now used in electronics, he would have been completely unable to figure out how they worked or duplicate them. The "doping" that makes them work involves such minute traces of added material that the chemist would probably not have even detected them, or if he did, would have dismissed them as inconsequential trace impurities.

Such "materials" variations are demonstrated in the changes of repeatability due to different manufacturers of the Palladium used as electrodes, types of cell containers (Pyrex vs. Teflon), and "impurities" in the electrolyte. So, the first attempts to duplicate the research, no matter how meticulous or well intentioned, are quite likely to inadvertently make changes in something that seems irrelevant but is really crucial. So no early failure can be taken as conclusive proof that the effect isn't real.

Any fundamentally new phenomenon is going to be hard, or even impossible, to explain with pre-existing theory. So if there are *some* positives, even with a lot of negative results also, it is just plain bad science to abandon the research and claim there is nothing there. If the photoelectric effect or the Michelson-Morley experiment were dismissed as hoaxes or bad science, we might never have gotten the new, improved theoretical tools that modern physics depends on.

The vicious funding fight or the "you can't get published unless you are already published" circular reasoning dead end are caused by overly cautious scientists or bureaucrats that can't realize that "safe science - safe investments" never has any big breakthroughs, no NEW developments, just safe changes and improvements of existing technology. "If the effect IS real, and crucially dependent on factors that haven't been fully identified, understanding it and making it reproducible *requires* that many independent

experimenters try it (which requires funding) and that they talk to each other (which requires publication). That's not likely to happen unless and until we break free of the "safe research" mentality."

"Research is perhaps the most important long-range investment we as a civilization ever make. The risk vs. potential trade-off applies as much to it as to any other investment. We should allocate our resources accordingly."

Summary by D. Torres

NEW YORK - "COLD FUSION" UPDATE

Some comments on Reader's Response column in Wayne Green's newsletter *"Cold Fusion" Update*, no 4, September 1994, p 5:

An engineer questions about cold fusion explosions (page 5). Yes, Engineer, there have been cold fusion explosions (see Fleischmann, Pons, and Hawkins first paper on CF in the 1989 *J. Electroanal. Chem.,* April 10, 1989.) And, yes, there will be those who will twist any new science to fiendish purposes. However, lots more will contribute to making this an energy-abundant world.

Mrs. Robert Horst of Cupertino, CA writes, "I would like to see more abstracts/summaries of important technical papers." Our suggestion: Subscribe to the *Fusion Facts* newsletter.

Robert Lacy of Bartlesville, OK wants to see complete text of significant papers. Robert, we have over 2,000 references to the professional literature to share with you, all on one diskette.

Dr. Hideo Ikegami, Nagoya, Japan would like to see a "discussion and comment" page on CF news and results. Good Idea!, we've been dabbling at such for over five years here at *Fusion Facts*.

HYDROSONIC PUMP AND CAVITATION

Bruce Klein, "Thoughts Concerning the Hydrosonic Pump," *"Cold Fusion" Update*, no 4, Sept 1994, pp 9-11.

EDITOR'S COMMENTS

Klein discusses pumps and cavitation (thought to be the source of excess heat in Grigg's pump). Klein correctly suspects that if cavitation occurs the pump surfaces will be eroded. Having done extensive experiments with cavitation of a "submerged jet," it is evident that if the cavitation bubbles collapse on the surface, some metals may be removed. Professor Carroll suggests that the metal is removed by the shock waves being formed and then "popping" metal out of the opposite surface. In a paper given at the 1994 Minsk conference on cold fusion, Griggs showed a seriously eroded pump impeller. It should be noted that it is possible to cause cavitation to occur away from the surface of an impeller and thereby control the cavitation. Klein suggests that an impeller could be optimized to cause cavitation and, perhaps, increase the degree of excess heat produced. Klein also suggests the use of "nickel and light water, palladium and deuterium, and titanium and deuterium." Apparently Klein is not familiar with the paper by the late Nobel-prize winning Julius Schwinger who suggests that sonoluminescence is caused by the Casimir forces in collapsing a bubble in a liquid. Although not explored by Schwinger, it seems to several of us who have discussed the possibility with Griggs, that it is the collapsing of cavitation bubbles, by the Casimir forces, that is primarily responsible for the **excess heat observed.**

COLD FUSION THEORY CORNER

John V. Kane, Edited by Milo Wolff, "The Cold Fusion Theory Corner," *"Cold Fusion" Update*, no 4, Sept. 1994, pp 25-29.

EDITOR'S COMMENTS

It is difficult to "popularize" a significant cold fusion theory in 12 columns in a newsletter. Wolf and Kane provide an attempt. The weakness, here, is that there is little evidence that either the author or the editor is acquainted with the many theoretical papers that have been written. Some of the most important theory papers have been written by the following: Bass, Hagelstein, Bush, and Chubb & Chubb. Many other qualified authors have published important contributions. Hopefully, this "corner" will cite the literature for the readers who have the mathematical skills to read such articles.

Note: We commend Wayne Green on his continued efforts to tell the world about cold fusion. We need more such publications. After five and one-half years of publishing this *Fusion Facts* newsletter, we can predict that it is not apt to make Wayne Green rich. However, Wayne, you do get to meet a lot of wonderful, dedicated people.

NEW YORK - SONOLUMINESCENCE
Courtesy of Dr. Samuel P. Faile

I. Peterson (staff writer), "Making Light of Sound in Solitary Bubbles," *Science News*, 15 Oct. 1994, vol 146, no 16, p 247.

"Trapped in an intense sound wave, a tiny gas bubble in water can emit a string of flashes bright enough to be visible in an undarkened room. Producing a startling sound and light show on an intriguingly small scale, this simple system serves as a remarkable micro-laboratory for physics and chemistry.

"Now, researchers have demonstrated that slight changes in the composition of the gas inside such a bubble can strongly influence the intensity and wavelengths of the light that escapes. For example, adding a small amount of argon, xenon, or helium to a nitrogen bubble substantially increases the intensity of ultraviolet light emission." Physicists Robert Hiller, Keith Weninger, Seth J. Putterman, and Bradley P. Barber, of UCLA, describe their findings (see under California).

Although this effect, sonoluminescence, has been known since the 1930s, it is still not completely understood. These researchers found "that raising the noble gas content of a nitrogen bubble in water to 1.0% dramatically stabilizes the bubble's motion. It also increases the intensity of light emission by a factor of at least 10." The gas inside the cavity also affects the light spectrum generated by the bubble.

In the same issue of *Science*, Lawrence A. Crum and Ronald A. Roy of the University of Washington in Seattle, also explore sonoluminescence in a shorter article (see under Washington).

[Another very important paper we have cited in the past, is Julian Schwinger's "Casimir Light: The Source," *Proc. Natl. Acad. Sci.*, USA 90 (1993), which states "the release of Casimir energy in filling a dielectric hole is identified as the source of coherent sonoluminescence. Qualitative agreement with recently acquired data is found for the magnitude and shape of the spectrum." --Ed.]

UTAH - C.F. COMMERCIALIZATION

Harold Fox (President, Fusion Information Center, Inc., Salt Lake City, Utah), "The Commercialization of Cold Nuclear Fusion," *Frontier Perspectives*, vol 4, no 1, Fall, 1994, pp 19-21, 7 refs.

AUTHOR'S INTRODUCTION

After five years of world-wide interest and development in the new science of cold fusion, several devices appear to have commercial potential. These devices are named and references provided. Of several commercially related activities, the best funded is the "New Hydrogen Energy" project in Japan. Similar commercial research and development is in progress in the United States and elsewhere. One of the most active commercial ventures has specialized in acquiring cold fusion intellectual property. This paper appraises the future of the commercialization of cold fusion.

WASHINGTON, D.C. - HOT FUSION FALSE?

Testimony of Dr. Bogdan C. Maglich (Chief Scientist, Advanced Physics Corporation), "Maglich Testimony," *"Cold Fusion" Update*, no 4, Sept. 1994, pp 23-24.

EDITOR'S COMMENTS

Wayne Green should be complimented for the publication of this testimony of Dr. Maglich. In essence, Maglich claims that the neutron-measuring equipment used with the recently (Dec-Jan, 1993-4) **highly-touted success of the Princeton Tokamak (TFTR) were inconclusive.** Maglich suggests that using only the count of neutrons from the experiment is not adequate to calculate the degree of fusion that might have occurred. **Maglich states that much of the neutron flux could have come from "Injected beam of deuterium and tritium hits the walls of the Tokamak chamber which are lined with deposited deuterium and tritium."** Maglich states, "It is incomprehensible why a $100,000 **neutron energy spectrometer** was not used for this $3-billion machine." The claimed power production of 6 megawatts was inferred from the observed neutron flux. However, false neutrons alone could account for this amount of inferred power production. **Does anyone out there wonder if this sudden accomplishment, announced just before the resumption of Congress in January 1994, could possibly have been for the purpose of inducing some Congressional committee to look favorably on the continuation of $500 million a year to be spent on hot fusion?** Wouldn't it be interesting if the hot fusioneers had to crib their data to obtain the reported 40% output versus input. Cold fusion, meanwhile, is still reporting 140% to >1000% output versus input! No wonder some of the hot

fusioneers claim that cold fusion is pathological science [the cold fusion successes must be driving them crazy].

WASHINGTON - SONOLUMINESCENCE AGAIN

Lawrence A. Crum and Ronald A. Roy (Dept. Acoustics & Electronmagnetics, Applied Phys. Lab., Univ. WA, Seattle), "Sonoluminescence," *Science*, vol 266, 14 Oct. 1994, pp 233-234, 12 refs, 2 figs.

AUTHORS' ABSTRACT

When trapped in sufficiently intense acoustic fields, single bubbles of gas can emit luminescence bright enough to be visible in an undarkened room. The large number of intriguing results recently published about such single-bubble sonoluminescence (SBSL) suggests that this phenomenon awaits a full explanation. And as reported by Hiller et al., (page 11 this issue) some exciting atomic physics may be occurring within the collapsing cavitation bubble that gives rise to SBSL. However, many of the results they present are also anomalous and defy immediate explanation.

D. NEWS FROM ABROAD

AUSTRALIA - CHEMISTRY VS. PHYSICS

Chris Illert, "Is Quantum Mechanics Relevant to Nuclear Chemistry?" *"Cold Fusion" Update*, no 4, Sept. 1994, pp 19-22, 3 refs.

EDITOR'S COMMENTS

Illert discusses the differing views of nuclei as seen by chemists and physicists. He observes, "There is nothing inherently wave-mechanical in chemistry, or nuclear physics for that matter, which cannot be as well described by classical 19th century Newtonian reasoning. I do accept, however, that wave-mechanics works well describing atomic electron clouds and energy levels, but then so too does Timothy Boyer's Stochastic Electrodynamics (a classical theory that derives the uncertainty principle from a kind of *brownian motion* in the aether." Later, the author states, "The message for chemistry educators is that too many Maxwells and not enough Faradays make for bad science." Illert goes on to call attention to his new hadronic mechanics, which he has developed, and suggests that this approach correctly predicts all the binding energies of all isotopes of light nuclei, and all their low-lying excited states, up to Mg-24 to an accuracy of 4 to 5 significant figures. This achievement allows Illert to claim that we now have, for the first time, some kind of theoretical understanding of how nuclear processes such as cold fusion work. The author cites Japanese work in which it is shown that in Be-12 the nuclear core has been observed with neutrons orbiting at 20 to 30 fermis distant from a 3.35 fermi nuclear core. For further information see the book by Illert, Alchemy Today, volume 2., Science-Art Library, c1994.

ITALY - DEUTERIUM CHARGING IN Pd

A. De Ninno (ENEA Dip. Innovazione Settore Elettro-ottica e Laser Centro Ricerche Energia Frascati, Rome) and V. Violante (Associazione Euratom-ENEA sulla Fusione Centro Ricerche Energia Frascati, Rome), "Study of Deuterium Charging in Palladium by Electrolysis of Heavy Water," *Fusion Technology*, vol 26, no 4, Dec. 1994, pp 1304-1310, 18 refs, 4 figs.

AUTHORS' ABSTRACT

Two different polarization regimes have mainly been used during electrolytic deuterium loading of palladium cathodes to produce an excess of heat in "cold fusion" experiments. Most of the experimentalists apply a constant current density, while some prefer to work with a square-wave current. The different effects of the two techniques on the deuterium dynamics through the cathode are not yet very clear. Thus, a transport model supported by a computer code is used to describe the evolution of the deuterium concentration profile inside a palladium membrane cathode for both operating conditions.

AUTHORS' CONCLUSIONS

It was observed experimentally that there is a strong correspondence, well reproduced by the model, between the applied current value and the deuterium flux through the palladium membrane cathode in an asymmetrical configuration. The deuterium flow rate through the membrane increases by increasing the current density. This effect is equivalent to an increase of deuterium surface concentration on the palladium cathode: When the current increases, the total coverage of the adsorption sites is achieved; this is in accordance with other experimental results. In other words, in a mass transfer process, controlled by the concentration gradients, a flux increase corresponds to higher gradients. Therefore, the

enhancement of the current is related to the increase of deuterium concentration on the electrolysis side.

The model is not concerned with heat production; however, many experiments indicated a correlation between excess heat production and deuterium concentration in the cathode. Then, it must be very useful to know exactly the concentration profile inside the electrode.

The highest deuterium concentration values are achieved with the continuous symmetric electrolysis, but the period of lo-hi current affects the charging efficiency and creates concentration dynamics that might be closely connected to the appearance of heat excess. The experiments show that there is a correlation between the lo-hi current frequency, the deuterium dynamics, and the heat production.

One of the most interesting features of the system under study, evidenced by the calculations, is the actual presence of density waves moving in the bulk of the electrode. These low-frequency concentration waves could induce a local gradient profile reversed with respect to the mean concentration gradient. Such behavior is a straightforward consequence of the proposed picture of deuterons as diffusing gas.

The accordance between the model results and the experimental data concerning the pressure evaluation in the gas side is a confirmation, in terms of mass transfer, of the Enyo theory of the hydrogen adsorption on palladium during electrolysis.

ITALY - COLLECTIVE NONEQUILIBRIUM SYSTEMS

F. Pegoraro (Univ. di Torino, Dip. Fisica Teorica, Torino), "Implications of Fusion Plasma Studies to Other Collective Nonequilibrium Systems," *Fusion Technology*, vol 26, no 4, Dec. 1994, pp 1243-1249, 17 refs, 1 table.

AUTHOR'S ABSTRACT

Research in plasma physics and in controlled thermonuclear fusion (CTF) is an interdisciplinary field that involves the understanding and the solution of a new type of physical problem. Efforts to find scientific proof of the feasibility of CTF in the laboratory have led to the development of innovative ideas about the behavior of collective nonequilibrium systems that are of relevance in other areas of physics.

JAPAN - LETTER PROPOSAL

T. Matsumoto (Dept. Nucl. Engr., Hokkaido Univ., Sapporo), "Two Proposals Concerning Cold Fusion," *Fusion Technology*, vol 26, no 4, Dec. 1994, p 1337.

Letter to the Editor of *Fusion Technology*

I would like to make two proposals concerning cold fusion. The first is related to the criteria on which cold fusion papers submitted to *Fusion Technology (FT)* should be reviewed for publication. First, I would like to summarize some points about the history of the cold fusion debate.

Since the anomalous effects now termed "cold fusion" were first announced by Pons, Fleischmann, and Jones, many experiments to prove or disprove the effects have been carried out. However, there were very few scientific journals that would accept papers on the topic of cold fusion. Under these circumstances, the courageous policy of G.H. Miley, editor of *FT,* of allowing such papers to be reviewed for possible inclusion in *FT* was significant. His policy should be highly regarded in the history of this new field. Of course, the discovery of cold fusion itself was very wonderful, and many researchers have made great contributions to the development of this field. However, we must not forget that *FT* was really the only major scientific journal in which papers presenting extraordinary phenomena related to cold fusion could be published. Indeed, other journals routinely returned such papers without any review by editors. Despite this closed-door attitude, however, the extraordinary phenomena uncovered in this work are now opening the door to a new science. At the beginning, there was no existing database of experimental or theoretical work for reviewers to rely on; thus, the editorial criterion established for *FT* reviewers was that such papers could be accepted for publication unless experimental data or methods could be shown to be in error, even if the results could not be explained by conventional theories. This policy overcame the biases forced on reviewers by the negative publicity given cold fusion and the controversy that developed around the Pons-Fleischmann experiment.

However, now that an extensive database of cold fusion results exists, this preliminary criterion has been superseded, and reviewers are now instructed to apply the same rigorous standards of peer review to cold fusion papers as they would to any other paper considered for publication in *FT*. In keeping with this change, cold fusion papers are no longer segregated in a separate category and

published only as technical notes but appear as any other paper.

At the Maui cold fusion conference, I presented the observation of a tiny ball-lightning-like phenomenon in some cold fusion experiments. In nature, ball lightning seems to occur frequently. Although I have never personally observed this phenomenon, one attendee at the Maui conference told me that he had seen it in his youth. Extraordinary phenomena associated with ball lightning have not been fully understood. Since in my view, some type of cold fusion is involved in the production of tiny ball lightning, it is not surprising that this extraordinary phenomenon has not been explained by conventional theories. We should be ready to confront such confusion. If we continue to reject frank discussions and proposed theories without testing or trying to improve them, we will never be able to fully understand or explain the mechanisms now known as cold fusion.

1. Publish Extraordinary Phenomena

The first proposal that I would like to make is to return to the initial criteria for publication in *FT* of extraordinary phenomena related to cold fusion. Of course, the conventional measurements such as heat, neutron emission, and production of tritium and helium now have an extensive experimental database and should undergo the normal rigorous review. However, other aspects, ball lightning being an example, are still in the very preliminary stages of investigation. I believe that in the interest of allowing dissemination of new results, the earlier criteria for evaluating these papers should once again be used, and these papers should be published as Technical Notes on Cold Fusion. Thus, I propose that *FT* utilize these dual criteria until all aspects of cold fusion are cleared up.

2. Establish Benchmarks

My second proposal is to start an international project of benchmarking cold fusion experiments. I reported many extraordinary traces on nuclear emulsions in papers submitted to *FT,* and I feel that these results provide solid experimental evidence of cold fusion. Although these traces of nuclear emulsions show that a new science is involved in cold fusion, very few researchers have so far attempted to reproduce these results. This may be because nuclear emulsion techniques are unfamiliar to chemists and fusion scientists, although they are popular with nuclear physicists. Thus, I believe it is important to start an international benchmark project in which several groups in different countries will irradiate nuclear emulsions under the same conditions using identical experimental methods. The nuclear emulsions could be shipped to a common center, where the traces would be compared. We can expect that not only will traces be found that are similar to those reported in my papers, but new extraordinary traces may also be found. If readers are interested in the project, please contact me so that planning for this important international information-gathering project can begin.

Takaaki Matsumoto

ROMANIA - POLYWATER SURFACES!

Mihaly Beck, "A Solution to the Cold Fusion Mystery," *"Cold Fusion" Update,* no 4, Sept.1994, pp 8-9, 3 refs.

EDITOR'S COMMENTS

Polywater, N-Rays, and Cold Fusion are the oft-cited (by pathological skeptics) examples of pathological science. With, we assume, a tongue-in-cheek article, the author cites his experimental evidence that the addition of polywater to heavy water greatly enhances the excess heat observed in cold fusion cells of the Pons-Fleischmann type. A few quotes:

> *It is well known that a special form of water, the so-called poly-water, is easily formed in different experimental circumstances. Consequently, it is expected that polywater should be present, even if at very low concentration in natural waters.*
>
> *If we take into account that polywater has a much higher density than normal water, the deuterium atoms are more close in deuterated polywater than in common heavy water.*
>
> *In all experiments, the reaction medium was a mixture of polywater and deuterated polywater.*
>
> *Pure (over 99.99%) polywater was acquired from the Laboratory of Non-existent Compounds, Inc., Tule.*
>
> *In concordance with our hypothesis we never found signs of cold fusion in experiments done without addition of deuterated polywater to the solution [electrolyte].*

We now understand the value of peer review, or did I miss my polywater training?

SRI LANKA - YES, ARTHUR C. CLARKE, YOU'RE RIGHT!
Courtesy of Hal Puthoff

Arthur C. Clarke, "Space Drive: A Fantasy that Could Become Reality," *Ad Astra*, Nov/Dec 1994, page 38.

EDITOR'S COMMENTS

In this short article, Arthur muses, "I cannot help wondering if quantum fluctuation (also known as Zero Point Energy) explain some of the baffling and bizarre results reported by advocates of so-called **cold fusion** such as Drs. Pons and Fleischmann, who claimed in 1989 to have produced nuclear energy in a test tube at room temperature." Very inciteful, Dr. Clarke. At least three scientists who have contributed to the extensive cold fusion literature and developments have stated that ZPE is expected to play a role in cold nuclear fusion processes. The late Julian Schwinger, Robert T. Bush, and Robert W. Bass have also recognized that the existance of an energetic "quantum fluctuations" could have a dramatic impact on nuclear activities on or within a metal lattice. Clarke concludes by pointing out that the typical reponses to new and revolutionary concepts range through "1. It's crazy! 2. It may be possible - so what? 3. I said it was a good idea all along. 4. I thought of it first!"

Based on the recent discussions of Haisch, Rueda and Puthoff (*Physical Review A*, Feb. 1994) about inertia being a product of the Lorentz field force (ZPE), Clarke suggests that a new and revolutionary idea about the possible control of gravity and inertia may be considered. When energy can be derived from the energetic ether, then the major energy problem may be one of heating up planet earth. So, plan to teach your kids to turn off the cosmic energizer when not is use. A few billion Joules here and there can run into real energy waste.

E. ARTICLES FROM OUR READERS

LOW ENERGY TRANSMUTATION

By Gary L. Kissler (Research Program Director for Joint Research Group, Inc., 6003 Makely Drive, Fairfax Station, VA, 22039), "A Progress Report on Low Energy Transmutation," Courtesy of author.

Here is a good news/bad news combination which should be no surprise to anyone following the progress of cold fusion research. The good news: It is possible to transmute stable elements using simple procedures at low temperatures. The bad news: It is not easy to produce high yields and we often have great difficulty in achieving repeatability.

Based upon some theoretical ideas dating back to 1982, we here at Joint Research Group, Inc. have done thousands of experiments over the last few years designed to make low energy transmutation a commercial reality. At this time we feel like we are not there yet, but we are close.

As early as June of 1991, we had a transmutation experiment which had a yield of ten percent, but it produced silicon, a very plentiful and cheap element, so it was not a likely candidate for commercial transmutation. Since then we have been able to transmute cheap, readily available elements such as iron, copper and aluminum into measureable amounts of cobalt, copper, gold, tritium, palladium, platinum, rhodium, ruthenium, silver, tungsten and zinc. With the exception of silicon, copper, zinc and tungsten, the yields have all been below one percent. Some of the experiments are quite repeatable while others are successful only one time in thirty or less.

Our definition of transmutation is purely functional. If a certain element is not present in significant amounts in the materials before the experiment, we say that transmutation has occurred. Independent laboratories are used to verify our findings, for example, Ledoux & Company of Teaneck, New Jersey, analyzed our precious metal transmutations, and Teledyne Advanced Materials of Huntsville, Alabama, confirmed our tungsten transmutation. These laboratories are working "blind" in that they are not informed that the materials are the result of transmutation experiments.

Here are some of the general patterns which seem to be emerging from our research program:

1) It is possible to transmute some stable elements using simple methods at low temperatures without producing measurable amounts of what is generally known as "radiation."

2) The majority of our transmutation experiments do not produce significant amounts of excess heat. We do not investigate any of those which do seem to be energy producing, since the goal of our investigation is commercial transmutation, not energy production.

3) The transmutations seem to occur in sequences where several intermediate elements are produced and then transmute again into the final products. This transitional

period is over very quickly and makes it difficult to understand the exact mechanisms of the transmutation process. Chemical compounds are common in the final results, for example, gold frequently forms as a gold chloride, indicating that both gold and chlorine have been produced.

4) We have been unable to determine why one experiment will succeed while a seemingly identical experiment will fail. The evidence seems to point at the appearance of the large number of the transitional intermediate products. We may know what elements are initially present in the experiment, but a short time later other elements appear, changing the composition of the experiment. This makes our transmutation experiments similar to the process of adding a column of numbers where someone is changing the number while you are in the act of adding.

5) There seems to exist several "paths" possible to produce a given element. We have transmuted copper from a number of base elements.

6) Quite often the results of our transmutation experiments are not in agreement with what is predicted by the Atomic Theory.

The last pattern seems to be the most important. I would urge anyone who is interested in cold fusion or transmutation to be tolerant of new theories and ideas. We are in the very early stages of study in these fields, and it is a mistake to assume that our current theoretical ideas about the nature of matter as represented by the Atomic Theory will be the same as our ultimate theoretical understanding.

F. EDITORIAL

HELPING IN THE PARADIGM SHIFT

By Hal Fox, Editor

We receive letters and phone calls from our readers who are angry, incensed, or concerned about the apparent obstinacy of those, seemingly in authority, who reject new scientific findings. One of our frequent correspondents suggests that we should put together a group of skilled scientists, insist on a meeting with the head of the DOE, the Joint Chiefs of Staff, the patent office, and other agencies who have responsibility for energy policy. In addition, he suggests that we put together a group, obtain funding, and support our own research and development.

Collectively, what is it we are trying to do? **We are simply trying to change the world, especially the energy world, for the benefit of all of its inhabitants.** We are attempting, by our collective efforts, to cause our scientific leaders to more readily accept new experimental data which will enforce a reevaluation of our current model (paradigm) of chemical and physical reality, especially our model of the atom and of the energy of space.

A question: Have you ever known of a dramatic change to the then-current model of the science of physics or chemistry to be established by a political vote, by official action of a bureaucracy, or by an official in government?

Peer review is an acceptable and useful mechanism to help keep known error from being promulgated. For the many skilled specialists in numerous sub-divisions of science who serve to peer review the numerous papers presented to over 200 scientific journals, we admit that they are doing a good job in gradually adding new knowledge to their specialties. **Unfortunately, when dramatic new experimental evidence or theories are presented to these peer review specialists, they are not qualified to judge.** Nevertheless, if the submitter of new science is a known and valued member of that journal's specialty, his or her work is often printed, perhaps with disclaimers or with encouragement for further investigation. Such was the case for cold fusion. Drs. Fleischmann and Pons were highly respected and highly published experts in the field of electrochemistry with over 50 co-authored papers. Their first paper about cold fusion was quickly published by the *Journal of Electroanalytical Chemistry*.

From what source then, did the great cold fusion controversy arise? The answer: from scientists who were threatened by the discovery of cold fusion. From some who had been researching hot plasma nuclear fusion for several decades and who were collectively supported by an average of 500 million dollars a year from the Department of Energy funds (taxpayer's funds). Centers of strong criticism came from the Plasma Physics Laboratories in the U.S., in England, and in Switzerland (the CERN group). The hue and cry against cold fusion was encouraged and accepted by *Nature*, *Science*, *Scientific American*, by officials in the American Physical Society, and by others who were influenced by DOE's Energy Research Advisory Committee's inadequately researched investigation into cold fusion phenomena.

Remember that any group who has been spending 500 million dollars a year for over two decades has had the opportunity to build a very effective organization to help

ensure the continuation of such funding. What action would you expect from an eminent professor at a prestigious university having a gas plasma laboratory with an annual $40 million contract from DOE, if a new scientific discovery threatened his decades of effort? Collectively, they organized an effective group of lobbyists who even had the clout to influence the U.S. Patent Office to arrange that cold fusion patents would not be issued.

While the new anomalies found in cold fusion have been vigorously, and unfairly attacked, the science has continued to advance. Why? Because in today's world, with its faxes, e-mail, world-girdling low-cost telephone service, and with printed media, scientists can easily exchange information. *Fusion Facts*, as a monthly newsletter has, we are told, helped in sustaining and developing added interest in cold fusion. The result has been continued progress in cold fusion experiments and theory. **In addition, great credit must be given to the dozens of scientists who have ignored the attacks from some of their peers and have continued the search for truth.**

Next, we should ask about the success of our collective endeavors. Have we succeeded in changing the world's view on cold nuclear fusion? The answer is, "Yes, but primarily among those scientists and engineers who are closely involved in research and development of cold fusion and among our friends who have elected to stay informed about a promising new science."

Collectively we are concerned, at times angry, because of the unfair and ill-informed scientists and journalists who are still reporting negatively about cold nuclear fusion. Gradually, there is progress being made in the reporting of the continuing progress of cold fusion research. Less credence is being given to the distorted and obviously one-sided treatments of cold fusion progress (such as the books by Huizenga and Gary Taubes). But most important, new developments are still being discovered and reported. Improvements are being made in the several methods by which nuclear reactions are generated and controlled.

What should we do? The answer is, "Continue to support the research and development activities and those sources of information that are helping to develop this important new science." Here is a list of publications that are supportive of the honest dissemination about cold fusion:

Journal of Electroanalytical Chemistry
Physics Letters A
Fusion Technology, Journal of the American Nuclear Society.
Twentieth Century Science and Technology
Popular Science
Technology Review

and of course the several newsletters that are supportive, such as *Fusion Facts, New Energy News, Cold Fusion Times, "Cold Fusion" Update, Electric Spacecraft Journal, Space Energy News Letter*, etc.

Additional support should be given to those organizations who are actively and financially involved in the commercialization of new, workable, new energy systems such as the following:

HydroCatalysis, Lancaster, PA
ENECO, Salt Lake City, Utah
Hydro Dynamics, Inc., Cartersville, Georgia
Nova Resources Group, Denver, CO
E-Quest Sciences, Palo Alto, CA
and, of course, Fusion Information Center, Salt Lake City, UT

If there are other such organizations, tell us about them.

The most important task that must be accomplished, as quickly as possible, is to complete the development of a working, commercial prototype cold fusion reactor that can be publicly shown. It is highly desirable to have a system that is self-generating, that is, a system that creates its own input energy (even if batteries are used for energy storage) and that can be publicly operated over any reasonable time period. Alternatively, we need to have a cold fusion reactor that can be easily manufactured and tested by many groups to demonstrate the transmutation of elements. [See "The Case for Transmutation" on page 1, this issue.]

Finally, do not be discouraged. True science will win. Keep communicating with all serious investigators and journalists. Every month brings information about further progress, both in cold nuclear fusion and in other enhanced energy systems. **WE ARE WINNING!**

G. LETTERS FROM OUR READERS

LETTER FROM ENECO

I recently noted in the Oct. 1994 edition of *Fusion Facts* that you reprinted selected excerpts of a letter from Senator Orrin G. Hatch (R-Ut) to persons who attended a technology transfer meeting held at the Senator's offices in early September.

You reprinted a portion of Hatch's letter where he incorrectly states..."Fred Jaeger of ENECO, who holds a nonexclusive license from the University of Utah..." to the original Pons-Fleischmann patent applications, etc.

In fact, ENECO holds the EXCLUSIVE, worldwide license to the original Pons-Fleischmann inventions.

In addition to the pioneering Pons-Fleischmann work that broadly discloses excess heat from isotopic hydrogen in a lattice material, ENECO has acquired a balanced portfolio that now contains over forty (40) cold fusion patent applications including aqueous electrochemical cells (both light and heavy water), molten salt electrolytes, gas discharge devices, solid state systems, trigger & control methods, and thermo-electric devices.

Also, ENECO has recently signed co-operative marketing agreements with various international cold fusion entities to ensure harmonized, worldwide access for license sales both of ENECO and Japanese properties to suit a broad spectrum of commercial applications. Our revenues will derive from a product line including sale of technology licenses, know-how, proprietary materials, research devices, and commercial power modules.

To further our corporate growth plan and facilitate near term commercialization of cold fusion products, ENECO anticipates forming additional strategic alliances with multinational entities who can assist with our capitalization, marketing and product development activities on a worldwide basis.

Good luck and keep up your great work with *Fusion Facts*.

Frederick G. Jaeger, President

LETTER FROM DR. WIN LAMBERTSON

The Yo-Yo Game

We are back in Kuwait in what Col. Dan Smith, assistant Director of the Center for Defense Information, calls the Yo-Yo game. Those of us who remember gas rationing during World War II and the gas lines of 1976 know exactly why we are there. The reason is to insure an adequate supply of oil to the industrialized world. It does not have to be that way.

My neighbor is a department chairman in a large university in the middle east. When I asked him about the Gulf War and what he thought of keeping Saddam Hussein out of Saudi Arabia, his response was "it really doesn't matter to the Arabs whether the United States or Saddam controls the middle eastern oil fields... To us it is the same." I had thought that the U.S. had done a noble deed to protect Saudi Arabia and free Kuwait. This highly educated man did not look at it in the same way.

The United States should not have to "save" those who do not want to be saved and we need to initiate a crash program to eliminate our dependence on imported oil. The energy source which makes this possible is called zero-point energy, vacuum field energy, space energy or free energy. It is available at all times, everywhere on earth and in space. All we have to do is to collect and use it.

The first clearly demonstrated and witnessed zero-point energy collection method was invented by Dr. T. Henry Moray who, in 1925, produced 50 kW from the vacuum continuum. When he took that to the U.S. Department of Interior, he was harassed, shot at and his equipment was destroyed. That was almost 75 years ago. One German economist, dealing with the economics of change, writes of our present period as the "lost 100 years."

There is a rapidly developing field of energy conversion called new energy technology. Japan, under the MITI umbrella, has plans to invest approximately $3 billion on new energy Research and Development in the next eight years. No governmental funds are being invested in the United States. Instead, independent inventors are carrying the R&D load. Only one method has significant private funding. It will be far better for the United States to make a serious commitment now than to spend $1 to 3 billion on Saddam's yo-yo every four years.

The United States has the vehicle and the budget in its Department of Energy to move right into the new energy field with present resources. All it has to do is reprogram its expenditures. It is urged that our political leaders, our energy industry C.E.O.s and our press editors do their part to initiate this change immediately.

Eventually, zero-point energy conversion will replace both fossil and nuclear fuels. Now is the time to begin this process in a well planned and logical fashion. Otherwise, we shall wake up one morning to learn that all of our energy converters are coming from Japan. The United States will have missed another job creating opportunity. Present employment in the traditional energy field is going to decrease dramatically. We must make every effort to replace that employment with new energy positions. These will be created somewhere in the world -- why not here?

EDITOR'S COMMENTS

I attended Granite High School (where Moray's sons attended). The story then (about 1938 or 1939) was that Moray had unknowingly employed a Russian spy. When he refused to deal with the spy, one of his systems was destroyed. There was a bullet hole in his car that some of us saw. Later a "confidant" of Moray said he hid one unit "until the world was ready for it." Apparently he did not share his secrets with his sons. --Hal Fox

---

THE CHRISTMAS LETTER WE DIDN'T SEND

From Hal's vast repretoire of nonsense, he dredged up this poem that he read in a newspaper around Christmas time over 50 years ago. Hal wishes to apologize to the original author, who is probably dead now anyway, for any memory errors (Hal's, not the author's).

Another year has 'bout flashed by.
Your life is fading fast.
How soon you'll die we cannot say,
This year may be your last.

We know that you are sorry for
All your fool mistakes.
As we think of you, our heart
With sorrow nearly breaks.

It won't be long, we all know.
You'll soon be food for fishes.
Cheer up! Be brave! We're sending you
The best of Holiday Wishes.

Happy Holidays, anyway! from all the staff here at ***Fusion Facts****.*

H. MEETINGS AND MISCELLANEOUS

Second Announcement

CALL FOR PAPERS

for
The FIFTH INTERNATIONAL CONFERENCE
on COLD FUSION--ICCF-5, 9-13 April 1995
Monte Carlo, Monaco

We are pleased to announce that the Fifth International Conference on Cold Fusion (ICCF-5) will be held from 9 April (Sunday evening) - 13 April (Thursday) in Monte Carlo, Monaco.

Five years of intensive investigation have uncovered a wide variety of unexpected phenomena occurring in reactions of deuterium in condensed matter under ambient conditions. Further progress has been made in many laboratories during the last few months in experiment design, reliability and reproducibility.

The purpose of this conference is to provide a forum for scientists engaged in active research on the subject to interchange ideas, present recent results and consider the significance of these new results, demonstrations and developments in the theory. We would like to extend our warmest invitation to all of you to join together in this discussion of the research.

Format of the Conference: 9-13 April 1995

9 April, Sunday - Registration and Welcome Reception
10 April, Monday-13 April, Thursday -
Presentations in the following subject areas:

- Demonstration Devices and their Characterization
- Calorimetry
- Improved Precision Calorimetric Techniques
- Excess Power Generation
- Materials and Fundamentals
- Electrochemical Studies of Deuterated Metal Systems
- Nuclear Measurements
- Solid State Theory
- Solid-State Physics of Metal Matrices
- Behavior of Gas-Metal Systems
- Safety Issues
- Coherent Processes
- Scientific Equipment and Supply Exhibition

CALL FOR ABSTRACTS

One-page abstract due: 1 January 1995

Accepted contributions will be presented either as poster sessions and/or oral presentations. The authors will be notified by the Advisory Committee as soon as the abstracts have been reviewed.

Submit three copies of a one-page abstract in English giving the title of the presentation, contact author, and affiliation to:

Mr. Jacques Payet, ICCF-5
c/o IMRA EUROPE S.A., Centre Scientifique
B.P. 213 - 220, rue Albert Caquot
06904 Sophia Antipolis Cedex, France
Tel: (33) 93 95 73 37 Fax: (33) 93 95 73 30

FINAL REGISTRATION

Registration fees and form due: 1 January 1995

Your final registration form is included in this mailing. Please complete and return it to the address above by 1 January 1995. The registration fee for conference participants is 2.600 French Francs which is due along with the abstract(s) for presentations and hotel reservation forms. We encourage you to return your registration forms as soon as possible due to unavoidable mail delays over the Christmas holidays. The registration fee includes a copy of the conference proceedings, coffee breaks, the Conference banquet and the welcome reception.

The registration fee for accompanying persons is 1.000 French Francs which includes the welcome reception, coffee breaks, the Conference banquet and a sightseeing tour.

HOTEL RESERVATIONS

Hotel reservation due: 1 January 1995

Your hotel reservation form is enclosed with this Announcement. Due to seasonal demand in Monte Carlo, it is strongly recommended that you make your hotel reservation as early as possible because of possible space limitations. In any event the deposit of 1,150 French Francs must be received by the deadline of 1 January 1995 in order to guarantee the rate.

The conference program will be mailed to attendees and inquirers with the Final Announcement together with other materials and information. If you need further information concerning the Conference, please contact Mr. Payet at the address above.

FUSION FACTS STAFF & CORRESPONDENTS

Fusion Facts Subscription Office
P.O. Box 58639
Salt Lake City, UT 84158
Phone: (801) 583-6232 NEW FAX: (801) 583-2963

Street Address: 540 Arapeen Drive, Suite 209
University of Utah Research Park
Salt Lake City, UT 84108

***FUSION FACTS* Each Issue Mailed First Class.**

12 ISSUES.....(University or Corporate).....	$ 300
36 ISSUES.....(University or Corporate).....	$ 800

***FUSION FACTS* SINGLE ISSUES**

CURRENT ISSUES EACH.....	$ 30
3 MONTHS OR OLDER ISSUES EACH.....	$ 10

All back issues available.

SUBSCRIPTION REQUEST
For your convenience you can order by phoning (801) 583-6232, or **FAX** (801) 583-2963, or use the **Mail.**

Send *Fusion Facts* to:

NAME:_____

COMPANY:_____

PO BOX, DEPT:_____

CITY:_____

STATE_____ ZIP_____

Please pay with a check in U.S. dollars drawn on a bank located in the U.S. or with a Postal Money Order.
Send check or money order with order and receive one extra issue free. Make checks payable to *Fusion Facts*.