FUSION facts

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

VOLUME 8 NUMBER 3 **SEPTEMBER 1996**

CONTENTS FOR SEPTEMBER 1996

This issue of *Fusion Facts* provides its readers with abstracts of papers presented at LENR conference. The Proceedings will be published within the next two weeks as Volume 1, Number 3, Fall Issue, of the *Journal of New Energy*.

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A. SUMMARY OF THE SECOND LOW ENERGY NUCLEAR REACTIONS CONFERENCE

By Hal Fox

Fifty scientists, engineers, and interested business leaders attended the Second Conference on Low-Energy Nuclear Reactions. This important conference was held at the Holiday Inn, College Station, Texas on September 13-14, 1996. The conference was not held on the campus of Texas A&M because 12 out of 12 members of the Department of Chemistry voted **no** to the request by Distinguished Professor of Chemistry, John O'M. Bockris to hold the meeting on campus. The vote was an example of a democratic process. The choice was an example of pathological skepticism.

Papers presented in all conferences range in importance, however, this conference must be considered as being of special importance **because the issue of low-energy transmutation was directly addressed with reports of several new sets of experimental data from prestigious scientists.** Here are some examples:

George Miley presented "Nuclear Reactions in Palladium-Hydrogen System." This paper is especially important because it is the first paper to explore the nuclear reactions occurring in the thin-film layers of nickel-palladium-nickel coated on small beads. This work was supported by CETI (Clean Energy Technologies, Inc.).

Mitchell Swartz presented an excellent paper discussing the cold fusion work using light water and nickel cells. Swartz made an excellent point about using data from the noise level when making claims for excess heat. Swartz also

indicated that all of his data is conservative because it does not subtract for the power consumed in electrolyzing the water. Swartz reported three to six times as much energy out as input into the cells. It appears that Swartz has accomplished some of the most effective work with the nickel-light water cold fusion. Swartz has not observed elemental changes.

Kenneth Shoulders presented an excellent paper on the possible effects of high-density charge clusters in promoting nuclear reactions in metal lattices. Shoulders has examined a variety of cathodes used in cold fusion work and has found evidence for numerous metal lattice damage sites caused not just by the strike of a high-density charge cluster (EVs) but apparently from nuclear effects caused by the highly-energetic EVs. To Shoulders, with his familiarity with EVs, the nuclear results are clearly evident. Shoulders has labeled such high-density charge clusters as NEVs or nuclear electrum validums. He suggests that the primary cause of nuclear reactions in cold fusion occurs by creating a brittle metal by hydrogen loading, causing cracks which produce EVs, and the energetic EVs cause nuclear reactions. Ken presented SIMs analysis of typical EV-reaction spots to show that the palladium had been transmuted into other elements. The concepts presented by Shoulders were not readily appreciated, as shown by a vote of two out of about fifty who thought that this process was an explanation of heat production in cold fusion cells. We believe that the number of believers will increase as they further examine their cathodes. However, no one is saying that this is the **only source** of excess heat in cold fusion reactions.

The first-ever paper on the Neal-Gleeson Process was presented. This was not a scientific paper in the sense that a full disclosure of the process was not made. However, it was announced that third-party verification was being planned for the near future. From the preliminary data (taken from over 100 experiments) it was suggested that radioactivity could be reduced fifty percent or more in a one-pass operation taking only one to four hours. The paper strongly suggests that **if replicated by noted scientists** this process has great potential for ameliorating radioactive slurries, such as the 66 million gallons stored in over 170 tanks at the Hanford Site, Washington. (Note: The inventors are Rod Neal and Stan Gleeson who have been previously referred to as "the Cincinnati Group".)

John Dash (Portland State University) presented a paper extending his successes with heavy water and palladium to include the use of titanium electrodes. With each successful experiment that produces excess heat, there are shown to be low-energy nuclear reactions involved. His procedures are sufficiently reproducible that he brings in quality high-school students each summer to get them involved in this new technology of cold fusion. John Dash has offered to share his procedures with anyone that is interested.

T. Mizuno (Hokkaido Univ.); Z. Minevski (Lynntech); Russ George (E-Quest Sciences); Guang Lin (Texas A&M); R. Monti & E. Bauer (Burns Development); G. Rabzi (Ukrainian Int'l Academy of Original Ideas); Thomas Claytor (LANL); and T. Ohmori (Univ. of Hokkaido) all presented additional data on transmutation in their papers.

In summary: Drs. Bockris and Lin of Texas A&M University should be congratulated for a successful and important conference. All authors were asked to provide copies of their papers immediately after the conference so that these important papers can be published in the **Proceedings** immediately. We have already received 13 of the 21 papers presented. These papers will be published as Volume 1, Number 3, of the *Journal of New Energy*.

We are pleased to announce that articles published in the *Journal of New Energy* will be abstracted in *Chemical Abstracts, Engineering Index Monthly,* and *Metal Abstracts*. Scientists, engineers, and students world-wide will have access to the excellent papers given at this important conference. The same staff that publishes this newsletter also publish the *Journal of New Energy.* The same policy of rapid communication is a constant goal of this organization. To keep current on the latest developments in this exciting new science, you will want to subscribe to this new journal.

CONFERENCE VIDEOS

A set of six (6) video tapes, recording the scientific presentations at the second International Low Energy Nuclear Reaction Conference (College Station, Texas, September 13-14, 1996) is available now. The tape format is standard VHS. Price: US $125 for U.S. and Canada, US $140 for other foreign. Price includes shipping. Send check or money order to: Guang Lin, Dept. Chemistry, Texas A&M University, College Station, TX 77843 for ordering. Please contact Guang Lin at 409-845-3661 for details.

THE SECOND INTERNATIONAL LOW ENERGY NUCLEAR REACTIONS CONFERENCE

Abstracts of Presented Papers
(received by press time)

Basic Experimental Studies Sessions

Tadahiko Mizuno (Dept. of Nuclear Eng., Hokkaido Univ., Japan), Tadayoshi Ohmori (Catalysis Res. Cntr., Hokkaido Univ., Japan), Michio Enyo (Hakodate Natl. College of Tech., Japan), "**Isotopic Changes of the Reaction Products Induced by Cathodic Electrolysis in Pd**."

AUTHORS' ABSTRACT

It was confirmed by several analytic methods that reaction products with mass number ranging from 6 to 220 are deposited on palladium cathodes subjected to electrolysis in a heavy water solution at high pressure, high temperature, and high current density for one month. These masses were composed of many elements ranging from hydrogen to lead. Isotopic distributions for the produced elements were radically different from the natural ones.

S. Szpak and P.A. Mosier-Boss (Naval Command, Control and Ocean Surveillance Center RDT & E Division, San Diego, CA), "**Nuclear and Thermal Events Associated with Pd + D Codeposition**."

AUTHORS' ABSTRACT

In the Pd + D codeposition process, palladium is electrodeposited in the presence of evolving deuterium. This process favors the initiation and propagation of nuclear and thermal events through a rapid absorption of deuterium to yield high D/Pd atomic ratios. This process results in the formation of non-equilibrium electrode structures that become the seat for localized gradients. Evidence for tritium production, X-ray emanation and generation of localized heat sources, with emphasis on experimental methodology, is provided. The active role of the electrode/electrolyte interphase in the development of these events is examined.

Mitchell Swartz (JET Energy Technology, Inc., Weston, MA), "**Deuterium Production and Light Water Excess Enthalpy Experiments using Nickel Cathodes**."

AUTHOR'S ABSTRACT

Select nickel cathodes can produce excess enthalpy (heat) during the electrolysis of light water solutions. A multi-body reaction involving two protons within the lattice of the fully loaded Group VIII transition metal cathodically driven to a ~1 kilmolar electron density, is proposed to account for the excess heat by the production of deuterons. The reactions occur through an intermediate excited nuclear state of a deuteron formed (D^+), which then de-excites with the generation of a cloud of phonons. The excess heat is driven by the reconfiguration of the intermediate state to the more tightly bound deuteron ground state.

The phonons are linked to the de-excitation (a Phonon) and are critical both because they enable a pathway permitting further penetration of the coulomb barrier and also because they focus energy and interstitial into optical sites, thereby creating feedback mechanisms which can further fuel the desired reactions. The observed temperature rise occurs at disequilibrium as the well-mixed acoustical and optical phonons are unable to carry off all the local momentum and excess energy of the reactions. Special relativistic considerations indicate the phonon cloud in nickel subtends ~200 unit cells. Four-vector analysis indicates that these hypothesized reactions are consistent with conservation of energy.

Robert Bass, Rod Neal, Stan Gleeson, & Hal Fox, "**Electro-Nuclear Transmutations: Low-Energy Nuclear Reactions in an Electrolytic Cell**."

AUTHORS' ABSTRACT

A special electrolytic cell and power supply have been designed to promote low-energy nuclear reactions (electro-nuclear transmutations). Using electrical power ranging up to 1,000 watts, it has been experimentally determined that various high-mass parent elements can be fissioned into somewhat equal daughter products. The experimental evidence for nuclear reactions is based on the difference between input samples and processed samples as determined by commercial mass-spectrometer analysis and by gamma-ray emission spectroscopy.

Although other new elements are produced, the bulk of the fission elements appear to be mass fractions consistent with the conservation of the initial elemental atomic number. For example, tungsten can be fissioned into cadmium and iron. Thorium has been fissioned into mercury and neon. Up to seventy percent of a parent element has been

fissioned with a few hours of processing time. Further development work is planned, especially for application to the stabilization of radioactive slurries. It is important that these preliminary results be independently replicated and verified.

David J. Nagel (Naval Res. Lab., Washington, DC), "**Cold Fusion Experiments, Theory, & Management at the Naval Research Laboratory**."

AUTHOR'S ABSTRACT

As a matter of responsibility to the public, which ultimately funds it, the Naval Research Laboratory has actively conducted and monitored attempts to make "cold fusion" phenomena reproducible and understandable. This presentation will survey these activities.

Experiments: We performed six different experiments, either new or copies of others, explicitly aimed at "cold fusion' and related phenomena. These will be summarized and some views of others reported "cold fusion" experiments will be presented.

Theories: NRL and associated scientists have published theoretical work on two "cold fusion" motivated studies, namely ion band states and phonon-driven hydrogen isotope diffusion. A broad review of "cold fusion" theories is now underway,

Management: Numerous presentations have been made by the author to government agencies and other groups to provide information and stimulate programs, These include the OSTP, DARPA, DSWA, (ex-DNA), ONR, IDA, and the Philosophical Society of Washington. Results of these interactions will be summarized briefly.

T.N. Claytor, M.J. Schwab and D.G. Tuggle (Los Alamos Natl. Lab., Los Alamos, NM), "**Tritium Production from Palladium and Palladium Alloys**."

AUTHORS' ABSTRACT

A number (22) of pure palladium samples and palladium alloys have been loaded with a deuterium or hydrogen plasma is a system that allows the instantaneous measurement of tritium. By carefully controlling the high pressure plasma conditions, the plasma can be constrained to only contact palladium surfaces and to only lightly sputter the palladium. Long run times (up to 200 h) result is an integration of the tritium and this, coupled with the high intrinsic sensitivity of the system (~0.1 nCi/1), enables the significance of the tritium measurement to be many sigma (>10). In addition to the real time tritium measurement, the deuterium gas can be combined with oxygen, at the end of a run, resulting in water samples that were counted in a scintillation counter. The results of these confirmatory measurement of the tritium in these water samples agree quantitatively with the decrease in tritium as measured by the ion sensor. However, surprising concentrations (up to 1.5 X 10_6 dpm/ml) of tritium were found in several samples that had been exposed to a hydride inhibitor. We have continued to investigate the effects of hydrogen additions on the output of tritium in these types of experiments and find that hydrogen additions always suppress tritium production. We will show the difference in tritium generation rates between batches of annealed palladium, as received palladium and the palladium alloys (Cu, Ni, Be, Li, Hf, Hg and Fe) of various concentrations to illustrate that tritium generation rate can vary greatly from alloy to alloy as well as within a specific alloy, dependent on concentration. Other metals (Pt. Hf, Ni, Nb, Ta, V, W, Zr) have also been run in the system as background samples or to determine if tritium could be detected in the gas analysis system. In nearly all cases they have produced results very close to background drift rates.

T. Ohmori (Catalysis Res. Cntr., Hokkaido Univ., Sapporo, Japan), T. Mizuno (Faculty of Eng., Hokkaido Univ., Sapporo, Japan) and M. Enyo (Hakodate Natl. College of Tech., Hakodate, Japan), "**Isotopic Distributions of Heavy Metal Elements Produced During the Light Water Electrolysis on Gold Electrode**."

AUTHORS' ABSTRACT

Some 100 μ g of fine black porous deposits comprising mainly of Au, Hg, Pt, Fe, Si and F were obtained during the cathodic electrolysis on Au electrodes in 0.5 M Na_2SO_4 and Na_2CO_3 light water solutions for 20-30 days at a current densities >300 mA/cm^2. The isotopic distributions of these elements other than Au, Pt and F determined by SIMS analysis were found to deviate from their natural isotopic abundance. The structure of Au electrode surface after the electrolysis revealed very unusual aspects.

Thoretical Models Session

Yeong E. Kim and Alexander L. Zubarev (Dept. of Phys. Purdue Univ., West Lafayette, Indiana),"**Nuclear Physics**

Mechanisms for Gamow Factor Cancellation in Low-Energy Nuclear Reactions."

AUTHORS' ABSTRACT

In our recent paper [1], we showed that a Gamow factor cancellation (GFC) can occur for nuclear fusion reactions if the imaginary part of the effective nuclear interaction in the elastic channel (ENIEC) has a small component of a finite long-range interaction (FLRI), but we could not prove nor rule out theoretically the existence of such a FLRI component in the imaginary part of ENIEC. In another recent paper [2], we demonstrated (without a rigorous derivation) a possibility of the existence of FLRI components if the target nucleus has a weakly bound excited state ("halo" nuclear state). Most recently, we have succeeded to derive rigorously a new type of FLRI interaction in the imaginary part of ENIEC for the case in which one of the final-state nuclei has an excited halo nuclear state [3]. We have obtained a separable form factor for the imaginary part of ENIEC which at large distances behaves as $cos(k_o r - \eta ln 2k_o r + \delta)\, \Psi_n(r)/r^4$, where k_o, η, δ, and $\phi_n(r)$ are the final state wave number, the Sommerfeld parameter, the phase shift, and the wave function for the excited *p*-wave halo nuclear state, respectively. Consequences and implications of our results for the cold fusion phenomena are described. GFC due to effects of excited halo nuclear state for low-energy radiative nuclear fusion reactions are also described using a three-body formulation [4].

[1] Y.E. Kim and A.L. Zubarev, *Nuovo Cimento*, vol 108A, pg 1009-1025 (1995).

[2] Y.E. Kim and A.L. Zubarev, *Genshikaku Kenkyu*, vol 40, no 5, (1995), pp. 27-36.

[3] Y.E. Kim and A.L. Zubarev, "Excited Halo Nuclear State and Long Range Interaction in Nuclear Reactions," to be published in *Physical Review C.* (Oct. 1996)

[4] Y.E. Kim and A.L. Zubarev, "Low-Energy Radiative Nuclear Reactions Involving Weakly Bound States," submitted to *Fusion Technology*.

Albert Cau (A.R.T., Paris, France), "**Natural Nuclear Synthesis of Superheavy Elements (SHE)**."

AUTHOR'S ABSTRACT

As soon as nuclear scientists became convinced that some superheavy elements (SHE) could exist with atomic numbers around 114 and 126, numerous attempts have been made to detect them in natural samples and to synthesize them in heavy ion accelerators. No positive results have been obtained until now since no element higher than 101 have been isolated for chemical study.

A new direction to the research of SHE is taken. The source of the present work is old alchemy as described in old treatises written prior to 1850. It appears that the key material used by alchemists was pitchblende. The hypothesis that SHEs could be peculiar elements but only stable in the form or fluorides is discussed.

The mechanism conducive to the production of SHE, in a chemical medium is studied. The main point is that SHE are necessarily produced via *soft fusion*, a synergism of exoenergetic nuclear reactions (proton absorption) and endoenergetic nuclear reactions (light element fusion) — a mechanism that allows the creation of macroscopic amount of SHE fluoride under mild conditions.

The nuclear reactivity of natural mixtures containing uranium and light elements is described. A 1986 experiment showed an unexpected nuclear activity characterized by very intense neutron bursts. The 1996 experiment shows increases of gamma activity upon heating and the production of a peak around 50 KeV.

Shang-Xian Jin and Hal Fox (Fusion Information Cntr., Inc., Salt Lake City, Utah), "**Possible Palladium-Related Nuclear Reactions**."

AUTHORS' ABSTRACT

The recent discoveries by Bockris and Minevski and by Mizuno et al. of apparent numerous low-temperature nuclear reactions has challenged current atomic models. By making the assumption that standard conservation laws for nuclear reactions would be preserved, a large variety of possible nuclear reactions have been proposed and checked for obeying conservation rules. The purpose of this paper is to present a list of some possible nuclear reactions between palladium isotopes and the following single particles: deuterons, protons, neutrons, and alpha particles.

Innovative Approaches Session

G.H. Lin and J. O'M. Bockris (Dept. of Chem., Texas A&M Univ. TX), "**Anomalous Radioactivity and Unexpected Elements as a Result of Heating Inorganic Mixtures**."

AUTHORS' ABSTRACT

This paper reports on anomalous radioactivity and unexpected elements observed in 1992 at the Texas A&M University as a result of igniting a mixture of inorganic compounds. The details of the experiments and the analysis in our laboratory and other private laboratories are presented.

T. Grotz (Wireless Engineering, Inc., Craig, CO) "**Investigation of Reports of the Synthesis of Iron via Arc Discharge through Carbon Compounds**."

AUTHOR'S ABSTRACT

Recent research has investigated the transformation of carbon to iron under certain experimental conditions. Reports by Pulver and Oshawa of iron formation in carbon by exposure to an electric arc are the subject of this report. Iron formation was originally proposed as a result of the reaction of carbon and oxygen to form silicon, then nickel and finally iron as follows;

$$2_6C^{12} + 2_8O^{16} \rightarrow 2_{14}Si^{28} \rightarrow {}_{28}Ni^{58} \rightarrow {}_{26}Fe^{56}$$

Particles of magnetic material attracted to a magnet were given as proof of a transformation. Duplication of this experiment under more controlled conditions with analysis of the iron content of the of the carbon sample before exposure to an electric arc discharge lead to the conclusion that the iron found in the sample may be due to other factors than originally proposed.

Ken Shoulders and Steve Shoulders (Bodega, CA), "**Observations on the Role of Charge Clusters in Nuclear Cluster Reactions**."

AUTHORS' ABSTRACT

Deuterium-loaded palladium foils, produced by both electrolytic and ultrasonic processing, have been micro-analyzed for nuclear reactions. The characteristic strike marks of charge clusters, known as EVs, have been found to occur concurrently with nuclear reactions in micrometer-sized areas. In the electrolytic case, the reaction is attributed to charge clusters generated from mechanical energy, first stored and then suddenly released, from a brittle metal lattice through the mechanism of fracto-emission of electrons. For the acoustic case, EVs are generated by charge separation in a collapsing bubble. When areas previously free of low energy nuclear reactions are bombarded in either vacuum or air by externally generated charge clusters, nuclear reactions are produced at the bombardment site. Charge clusters are considered to function as a collective accelerator capable of injecting a large group of nuclei into a target with sufficient energy density to promote the nuclear cluster reactions observed.

Roberto A. Monti, "**Low Energy Nuclear Reactions: Experimental Evidence for the Alpha Extended Model of the Atom**."

AUTHOR'S SUMMARY

An up to date list of experimental tests constituting, in my opinion, a good validation for the alpha-extended model of the atom, is presented.

A. Michrowski (President, P.A.C.E., Inc., Canada), "**Advanced Transmutation Processes and Their Application for the Decontamination of Radioactive Nuclear Wastes**."

AUTHOR'S ABSTRACT

There are deviations to the standard model of radioactive atomic nuclei decay reported in the literature. These include persistent effects of chemical states and physical environment and the natural, low-energy transmutation phenomena associated with the vegetation processes of plants. The theory of neutral currents is proposed by Nobelist O. Costa de Beauregard, to account for the observed natural transmutations, also known as the Kervran reaction. "Cold fusion" researchers have also reported anomalies in the formation of new elements in cathodes. This body of knowledge provides the rationale for the observed, successful, and developed advanced transmutation processes for the disposal of nuclear waste developed by Yul Brown involving a gas, developed by him, with a stoichiometric mixture of ionic hydrogen and ionic oxygen compressed up to 100 psi. Another procedure, still in experimental stages, involves the environmental interaction

of non-Hertzian electromagnetic fields and targeted radioactive samples. In both methods, the radioactivity in samples decreases by up to 97% rapidly and at low cost.

Other Papers

Georgiy S. Rabzi (Ukrainian International Academy of Original Ideas, Southern Branch, Odessa, Ukraine), "**Natural Cold Fission - Natural New Energy - Natural New Physics**."

AUTHOR'S ABSTRACT

"Cold fusion" and "hot fusion" - here are two antagonists whose uncompromising struggle will either produce new clean sources of cheap energy and help the world overstep the threshold of the third millennium under the banner of new physics, or prolongate burning huge of money sums in tokamaks. The struggle takes place in your laboratories as well when in your cold fusion test cells you observe reaction products, such as elements, particles, and phenomena allegedly inherent solely in high temperature nuclear reactions. Most often among these are tritium, helium, silver, chlorine, iron, excess energy, as well as protons and neutrons. The variety of cold fusion cells all have a joint in the armor: their structural materials and reacting substances therein are chosen arbitrarily. The attempts to understand the nature of these processes and of the phenomena observed stem concomitantly from the experimental results. We have heard about electrolysis, catalysis, chemical affinity, lattice-induced phenomena, and the like.

As for me, I am absolutely positive and have abundant reproducible results to support my conviction that so-called "cold" and "hot" fusion phenomena are the outcome of radioactive-free low-temperature transmutation. In material objects this process is induced by their nature: presence of "-" and "+" electric charge fields which interact continuously with the spatial electric field. It is those interactions that govern all the processes both in the Universe and in our devices. My numerous experiments unambiguously suggest that controllable manipulation of the artificially intensified spatial field promotes transmutation.

Edward Lewis (Chicago, Illinois), "**Recent Experiments that Produced Fundamental Anomalies for Novel Hypotheses Concerning the Production of Elements, Superconductivity, and Anomalous Radiation**."

AUTHOR'S ABSTRACT

Recent experiments have produced fundamental anomalies that are hypotheses for a new theory. From the 1950s to the 1990s, some experimenters produced fundamentally anomalous phenomena. Bostick's electrical discharge devices produced stable dense plasma structures ("plasmoids") that existed for long periods of time and exhibited the structure and behavior of astrophysical phenomena. K. Shoulders' research showed that plasmoids and atoms interconverted and converted to electricity and light. [Private communication indicates that Shoulders considers this statement to be overly simplified. Ed.] Matsumoto produced evidence that during electrolysis palladium composites may convert to plasmoids that are emitted leaving voids, tunnels, and ditches, and may convert to new elements and light and electricity. From various evidence the plasmoids behave like ball lightning. Much substance may move inside and outside apparatus as moving plasmoids. Superconducting vortices are a type of plasmoid associated with particle emission and elemental production.

The QM model of atoms is contradicted, and atoms may convert to light and electricity. There is no other way, as far as I know, to explain the voids and plasmoid markings found on electrodes and the anomalous behavior of plasmoids. All phenomena is plasmodial. Plasmoids behave in characteristic ways, no matter the size. The various types of astrophysical phenomena such as jets and quasars may also occur in various devices and in ball lightning. Since plasmoids convert to light and electricity and are magnetic, they may be assumed to be basically an electrical-magnetic phenomena. The phenomena of atoms clumping to form new atoms or larger plasmoids shows a type of superconductivity phenomena. Anomalies such as elemental production, neutron radiation, excess radiation, anomalous radiation such as beams, and superconductivity are plasmoid phenomena.

B. CONTENTS OF *INFINITE ENERGY*

vol 2, no 8, May/June 1996.

EXCERPTS

"**The Reality of Perpetual Motion**," by Dr. Harold Aspden, pp 15-22.

Based on simple Newtonian mechanics, perpetual motion within a purely mechanical device is impossible. However,

once one understands the true electrodynamic nature of the force of gravity and how interactions are set up which involve energy transfer between electric charges, then perpetual motion, subject to machine wear and tear, is just a matter of exercising one's ingenuity. This is because electric charges in motion interact as a function of motion relative to one another and by virtue of their interaction with the all-pervading sub-quantum medium that some call a frame of reference, but which we will here refer to by its proper name, the aether.

There are three ways in which one can contemplate building a "perpetual motion" machine, which is really what we are all talking about when we use terms such as "free energy." These three are:

1. Build something you imagine might work and then pray for a miracle as you try to set it running.

2. Be attentive to claims made by others who say they have built something that does perform such a miracle and then try to replicate it from the gist of what you can find they have disclosed.

3. Study the detail of the mechanism of an existing very large perpetual motion machine, which you know does work and to which you have access, and see if, by first probing the physics of that mechanism, you can devise a way of tapping into its energy activity, just as the alternator draws electrical power from the engine in your automobile.

The middle course above is the one normally adopted and it has its excitement but is very frustrating. I have chosen the third track, and even though that has had its frustrations I have advanced relentlessly. I believe I now understand the physics needed to access that hidden energy and so can help to build the new energy technology....

"**The Correa Invention: An Overview and Investigation in Progress**," by Michael Carroll, pp 10-14, 7 figs.

This is a follow-up to the feature story on the Correa Pulsed Abnormal Glow Discharge Reactor in *IE* #7. Because of time limitations, one patent and parts of another and a laboratory report by the Correas were published in that issue. The patents and report are informative, but require careful study to extract the data of most interest to readers of *IF*. In preparing this article, the author had the benefit of several long conversations with Dr. Correa, access to the full test of three patents, and some recent data taken with digital instrumentation.

"**Science Revolutions**," by Dr. Ramond Prasad of England, pp 28-29.

"Because of the way in which the cold fusion era started with the Fleischmann-Pons announcement, together with the three flawed attempts at replication, the scientific community is polarized between two opposing paradigms, one that cold fusion exists, the other that it does not."

> "There is absolutely no reason why a newly discovered phenomenon should have a theoretical explanation lurking in the undergrowth of established physical theory, apart from the conceit of established theoreticians. They would have you believe that everything is known and comprehended."

"**An Interview with Dr. John O'M. Bockris and Dr. Hal Puthoff**," 21st Cent. Radio's *Hieronimus & Co*., Cold Fusion Special June 23, 1996. Transcribed by Jed Rothwell, *Infinite Energy*, vol 2, no 8, May/June 1996, pp 38-43.

EXCERPT

On June 23, 1996, Dr. Bob Hieronimus conducted a live radio interview with Dr. Eugene Mallove, Professor John O'M. Bockris, and Hal Puthoff.

Bockris: "I think that Rutherford's work was the beginning of what we call now high energy physics. This is a very large part of physics, and it has that basic assumption - that you need enormous energies. Now what has happened in the last five or six years is: It's been found that nuclear reactions can be made to occur inside solids, with rather small energies. Instead of having to strike them with these enormous energies which cost so much to set up and to have apparatus, you can do it all for 10^{-4} (as it were) the price. That's the great important thing. The cost comes down and one can obtain nuclear reactions under very, very simple conditions."

"The furor, I think, was due to two things. On the one hand, I think a great deal of the emotion which went into it in 1989 and 90, was sheerly emotion. I think that people were ... the old people were arrogant and they thought they had it all, and they thought they had to have these enormous energy releases, and when it was proved that you could do it very simply, with lesser energy, they were very, very annoyed!"

Puthoff: "Whenever you try to accelerate a body there is this resistive force that holds you back, and that is what we experience as inertia. So when you are trying to move your car down the street when its battery has gone dead, all that effort it takes to get it moving is the fact you are actually pushing against the vacuum [aether]. Unlike an ordinary wind, just moving at constant velocity, you don't feel this force at constant velocity but you do feel it whenever you art trying to accelerate or to accelerate an object."

"When we started our research into the zero-point energy underpinning of these kind of phenomena, the thing we realized is that gravity, inertia, and a number of other phenomena are really consequences and results of this underlying energy bath, you might say, that we are in. And so, having that knowledge and developing some equations about what effects it has, we are now at a point where we can consider: Okay, if we understand how gravity is produced by this underlying energy, and if we understand how inertia is a consequence of this underlying energy, we can now ask new kinds of questions. Can we manipulate this energy? And the answer is: Yes."

ABSTRACTS..... of *Infinite Energy* Papers/Articles

Dr. David Deak (Quantum ΣoniX Corporation), "An Ultrasonic Momentum Transfer Pump," *Infinite Energy*, vol 2, no 8, May/June 1996, pp 58-62, 5 refs, 4 figs.

AUTHOR'S ABSTRACT

This paper relates to an Ultrasonic momentum transfer pump and its pumping action for fluids. It has particular reference to pumps for liquids that would replace electromechanical pumps in the main classification of compression pumps and force pumps.

The two categories of electromechanical pumps, namely, force and compression pumps, all require moving parts for operation and in some special way these parts are designed in relation to the amount of fluid to be pumped per unit time and the overall volume of the physical pump design. Methods of design for increased pressure equivalent to conventional pumps are discussed along with several "non-pump" applications relying on this technology.

A theoretical treatment for sonoluminescence is covered to illustrate its use in this "non-pump" mode of the Ultrasonic momentum transfer pump used as a possible blue water laser.

Paul E. Rowe (Mashpee, MA), "Controlled Transmutation of Elements Under Surprisingly Mild Conditions?" *Infinite Energy*, vol 2, no 8, May/June 1996, pp 30-31, 10 refs.

AUTHOR'S INTRODUCTION

Bockris and Minevski of Texas A&M University recently reported experimental results which strongly suggest that palladium atoms near the surface of hydrogen atom-saturated catalysts are transformed into atoms of other elements under certain mild electrical conditions.

T. Minzuno, T. Ohmori, and M. Enyo, reported similar results with palladium catalysts saturated with deuterium atoms. The isotope make-up of some of the elements produced was quite different than that which occurs in nature.

> It is extremely difficult (perhaps impossible) to explain these experimental results, unless one accepts that transmutation of elements has occurred during these experiments.

This paper will attempt to show that experimental results reported prior to 1930 lead to a similar conclusion.

Dr. Edmund Storms (Santa Fe, NM), "A Study of Those Properties of Palladium that Influence Excess Energy Production by the 'Pons-Fleischmann' Effect," *Infinite Energy*, vol 2, no 8, May/June 1996, pp 50-57, 11 refs, 27 figs, 3 tables.

AUTHOR'S ABSTRACT

A large collection of palladium plates having different [manufacturing] treatments were examined to determine the composition limit produced after electrolysis in LiOD-D_2O electrolyte, the amount of excess volume produced by the contained deuterium, the open circuit voltage generated by the material referenced to a platinum electrode, and the deloading rate in air. The influence of these properties on the ability to produce excess power from the "Pons-Fleischmann" effect was explored. The palladium was found to be very nonuniform with respect to the measured properties. Excess power production was associated with a minimum amount of excess volume and an open circuit voltage above 1.0 V. Samples capable of producing excess energy can be reactivated even after deloading or removal of the surface.

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C. THIS MONTH IN *COLD FUSION*

Issue 18, August 1996

Report on "4th Russian Conference on Cold Fusion and Nuclear Transmutation" by Hideo Kozima.

"Anomalous Heat Evolution of Deuterium-Implanted Al Upon Electron Bombardment," K. Kamada, H. Kinoshita, H. Takahashi, et al.

"More evidence of Nuclear Transmutation in Cold Fusion Experiments," H. Kozima, M. Ohta, M. Nomura, K. Hiroe. [See page ## for abstract]

"The Behavior of Neutrons in Crystals," H. Kozima

"Symmeterized Maxwell Equations," R. Kuhne.

"The Connection Between the Particle and the Wave in the Zero-Point Energy Field as Applied to Cold Fusion," Steve Lazarus, Chuck Bennett, Warren Cooley.

"An Experiment to Test the Nickel-Hydrogen System in High Temperature," Chuck Bennett

"An Analysis of Experimental Data Using the TNCF Model," Hideo Kozima. [See page ## for abstract]

"A Theoretical Mechanism for Sonofusion," "Variable Magnetic Energy Storage Devices," and "The Micro-Fusion Cell," all by Chuck Bennett

"News from China," Xing Zhong Li

"Carbon-14 found in the YUSMAR Hydromachine," David Moon.

D. NEWS FROM THE U.S.

CALIFORNIA - ISOTOPE EFFECTS OBSERVED

Robert A. Hiller and Seth J. Putterman (Phys. Dept., Univ. of Calif., Los Angeles, CA), "Observation of Isotope Effects in Sonoluminescence," *Physical Review Letters*, vol 75, no 19, 6 Nov. 1995, pp 3549-3551, 17 refs, 3 figs.

AUTHORS' ABSTRACT

The spectrum of sonoluminescencc emitted by single bubbles of H_2, D_2, He^3, and He^4 trapped in H_2O and D_2O has been measured. We find that heavy water has a dramatic effect on the spectrum of hydrogenic gases, yielding a blackbody-type spectrum with a special peak at about 400 nm. The explanation of why such a small change in the driving fluid leads to such a large spectral shift is unknown.

CALIFORNIA - THE SPECTRE OF AFTERLIFE

Bart Simon (Dept. of Sociology/Science Studies, UC - San Diego, CA), "The Specter of Post-Closure Cold Fusion: An Hauntology for the Technoscientific Afterlife," talk given in the Science and Technology Studies Program, York Univ., Toronto, Canada, March 12, 1996.

AUTHOR'S INTRODUCTION

In 1993 Martin Fleischmann and Stanley Pons reported a new phenomenon associated with their cold fusion experiments. They call the effect "heat after death" based on observations in experiments where the electrolytes of certain deuterium/palladium cells were driven to the boiling point and allowed to boil until no liquid remained. The mystery is that once the electrolyte boiled dry, the electrolysis stopped but the production of excess heat did not...if the excess heat was not coming from some artifact of the electrolytic process (wire heating or the recombination of gases for example) where could the excess heat be coming from?

> Fleischmann and Pons still think the heat comes from some new kind of aneutronic nuclear fusion, and there are many other cold fusion researchers who agree with them.

[Bart Simon was a visitor in our office as this issue was being completed. Ed.]

CALIFORNIA - A COMMERCIAL APPLICATION

Adrian A. Joseph (The Metaluse Corporation, Los Angeles, CA), "Metafusion: A Breakthrough in Metallurgy," NASA Conf. Publ., 3249 (Technology 2003, vol. 1), pp 60-63 (1994).

AUTHOR'S ABSTRACT

The Metaluse Process is a patented development in the field of thin film coatings utilizing **cold fusion** which results in a true inter-dispersion of dissimilar materials along a

gradual transition gradient through a boundary of several hundred atomic layers. The process is performed at ambient temperatures and pressures requiring relatively little energy and creating little or no heat. The process permits a remarkable range of material combinations and joining of materials which are normally incompatible. Initial applications include titanium carbide into and onto the copper resistance welding electrodes and tungsten carbide onto the cutting edges of tool steel blades. The process is achieved through application of an R.F. signal of low power and is based on the theory of vacancy fusion. [This discovery was reported in *FF* Oct. 1993 (p 3, second paragraph) mentioning a paper by Kornikenko et al. presented at the 1st Russian Conference on Cold Fusion. Another paper on this subject by Kornikenko et al. was abstracted in *FF* June 1994, p 17, from the 2nd Minsk Conference.]

CALIFORNIA - ZINC-AIR BATTERY TESTED
Courtesy of Chris Fischer

A press release from BAT International, Burbank, Calif., announces the testing of the first production zinc-air electric vehicle battery cells. The cells were rated at 400 ampere hours. The field testing is expected to confirm that this type of battery can be used to achieve over 200 miles per charge in a production electric vehicle.

ILLINOIS - LETTERS TO THE EDITOR OF *FUSION TECHNOLOGY* INCLUDED:

"Facts Being Distorted in Cold Fusion Controversy," Edmund Storms. pp 130-131, 2 refs.

"Response to 'Facts Being Distorted in Cold Fusion Controversy'," Lee D. Hansen & Steven E. Jones, pp 131, 2 refs.

"Response to 'Facts Being Distorted in Cold Fusion Controversy'," Nathan J. Hoffman, pp 131-132.

"Comments on 'Calorimetry, Excess Heat, and Faraday Efficiency in Ni-H_2O Electrolytic Cells'," W.R. Good II, pp 132. 5 refs.

"Comments on 'Calorimetry, Excess Heat, and Faraday Efficiency in Ni-H_2O Electrolytic Cells'," Z. Shkedi, pp 133, 3 refs.

"... the common assumption that underlies almost every 'successful' light water experiment, i.e., that the Faraday efficiency is unity, was proven to be wrong."

"...'The net Faraday efficiency of gas evolution is assumed to be unity,' This is quite a heavy assumption for such a controversial topic."

"The objective of the Bose research and publication was not to duplicate, prove, or disprove any other work. The objective was to introduce a new standard of experimental methodology and calorimetric accuracy into the field of 'cold fusion.' All of us in this universe would be very grateful if anyone could demonstrate long-term real excess heat, free from errors related to Faraday efficiency or duty cycle, or any other error sources."

"We have yet to see an excess heat demonstration that lasts continuously for many months in a calorimeter that meets or exceeds the accuracy and stability demonstrated by the Bose Calorimeters. The challenge presented at the conclusion of Ref. 2 is still open. `... all reports claiming the observation of excess heat should be accompanied by simultaneous measurements of the actual Faraday efficiency'."

"Will anyone pick up the glove?"
[We know there are experimenters who can meet Shkedi's challenge. Are any of you ready? Ed.]

MASSACHUSETTES - SPARK-INDUCED C.F.

Ernest D. Klema and Gerald W. Iseler (Tufts Univ., College of Eng., Medford, MA), "Spark-Induced Radiation from Hydrogen or Deuterium-Loaded Palladium," *Fusion Technology*, vol 30, no 1, Sept. 1996, pg 114-115, 3 refs.

AUTHORS' ABSTRACT

Three sets of experiments were conducted to investigate the radiation produced by spark discharge on (a) oxidized palladium samples, (b) oxidized palladium samples loaded with hydrogen, and (c) oxidized palladium samples loaded with deuterium. In the first set, no radiation was measured above background; in the second set, 24-KeV X-rays were observed, and in the third set, 17-KeV X-rays were produced.

The intensities of the hydrogen X-rays were measured over a period of 12 days. During this time, the daily fluctuations overshadowed any long-term variation that might be

present. The deuterium X-rays were followed over a period of 26 weeks. Again, the intensities fluctuated with time, obscuring the long-term trend; in one case, there was a 40% change from one day to the next.

TEXAS - ENERGY SECURITY
Courtesy of Gordon B. Moody

Gordon B. Moody (Publisher/Editor), "Editorial", *Global Energy Outlook*, August 1996, Vol 1, no 7, page 1.

MOODY'S EDITORIAL

Offshore exploration activity is growing at a feverish pace worldwide. The U.S. drillers, plagued for nearly a decade by oversupply, have suddenly found that their industry has been reborn. Utilization of available rigs is now above 90 percent in the offshore arena, and onshore rigs are likely to reach the same utilization rate within a year or two. Natural gas demand is threatening to outpace supply. The rapid growth of industry along the Pacific Rim will tax the ability of producers worldwide to meet energy demands of the 21st century. Only a handful of countries in the Middle East have the capability to expand their capacity to produce the oil to fuel the rapid growth of the world's developing countries.

> The United States needs to reexamine its energy policies and look to its neighbors both to the north and to the south for a hemispheric solution toward its energy security.

EDITOR'S COMMENTS

Gordon Moody lives in Utah but commutes to Arlington, Texas to publish the *Global Energy Outlook*. Moody visits our office and is gradually adding new-energy information to his publication. One of the articles in this issue of *Global Energy Outlook* is titled, "Asia-Pacific to Replace North Sea as Leading Offshore Region by Year 1999." Another article is "Worldwide Oil Demand Expected to Grow 1.7 Million Barrels per Day During 1996." In this article Kenneth L. Bird, President of the Illinois Association of Railroad Passengers, is reported as follows: "U.S. policymakers maintain troops in the Middle East to protect the artificially low-priced oil supply that fuels the urban-sprawled, four-wheel drive society of the United States. Gone is any semblance of conservation or alternative fuel programs. ... politicians have demonstrated their lack of courage in facing our lack of energy independence." *Global Energy Outlook*'s address is P.O. Box 13830, Arlington, Texas 76013. Fax 817-457-8224.

TEXAS - TUBULAR BALLS

"Carbon Chemistry: Tubular Balls," Science and Technology column of *The Economist*, 3 August 1996, p 70.

SUMMARY

Nanotubes (or buckytubes as they are sometimes known) are related to the buckyball (Buckminsterfullerene) which was discovered in 1985 by Dr. Richard Smalley (a chemist at Rice University, Houston, Texas) and Harold Kroto (University of Sussex, Britain). The buckyball consists of 60 carbon atoms at the vertices of a shape known as a truncated icosahedron, in which each carbon atom is linked to three of its neighbors.

Nanotubes are similar in concept, each carbon atom also has three links. But the models of this molecule look more like cylinders made of chicken wire instead of soccer balls. Over the past few years, chemists have created quite a collection of various shapes, but they have not yet made anything practical. "Many uses have been proposed for the original 60-carbon fullerenes — lubricants, catalysts, superconductors and even anti-viral agents. But the only industry the buckyball has really revolutionized is the generation of scientific papers."

Buckytubes, the optimists hope, may change that. Recent research has confirmed that they are the strongest fibers known. Researchers also found that they can conduct electricity, like metals. And if nanotechnology is destined to be more than science fiction, then buckytubes seem to be the right components to build with.

Carbon atoms bonding with each other cling very tightly – hence the hardness of diamonds, a form of carbon in which each atom is linked to four neighbors. Carbon fibers used as reinforcement have long exploited this fact both strongly and lightly, in uses ranging from tennis rackets to aeroplanes. But these carbon fibers are rather crude, patchwork strips of graphite "pasted" into columns.
Measuring this strength is challenging since nanotubes are 1,000 times skinnier than most carbon fibers. In June Michael Treacy and Thomas Ebbesen, at the NEC Research Institute in Princeton, New Jersey, announced that they had managed to measure a tube's strength indirectly. Dr.

The strongest carbon fiber, in theory, should be a seamless cylinder of mutually binding carbon atoms – a nanotube.

Treacy, trying to look at individual nanotubes through an electron microscope, found that he could not bring them into focus, and realized that this was because they were vibrating. He and Dr. Ebbesen then realized that, by applying standard engineering theory to the vibrations, they should be able to calculate a tubes stiffness from the rate at which its vibrations grew as its temperature rose. Buckytubes, they discovered once they had done the relevant measurements, are stronger than steel, carbon fibers and even diamonds.

Unlike diamonds, buckytubes can sometimes conduct electricity. This has been suspected since 1991, but it had not, until recently, been put rigorously to the test. A few months ago Dr. Ebbesen decided do so. He worked with Henrik Lezec at Micrion Europe GmbH, a firm in Munich. Together they were able to attach four tiny electrical leads to nanotubes, using a technique similar to that with which electrical circuits are laid down on silicon chips. They announced their results in July. Some tubes, they discovered, conduct as well as metals — that is, very well indeed. Others, whose carbon atoms are arranged differently, are superb insulators — only one millionth as willing as their conductive cousins to pass electrons between their atoms.

To make such a discovery useful, it must be able to be manufactured reasonably easily. Dr. Smalley thinks he can do that now. Instead of making nanotubes with an electric arc using graphite electrodes, which produced nested concentric tubes, Smalley is vaporizing graphite with laser beams. This produces bundles of single nanotubes, most having the same diameter and the correct geometry to conduct electricity. This is a distinct advantage to researchers. But, at one gram of nanotubes per day, production won't be big business quite yet.

Summary by D. Torres

UTAH - ACADEMIA AND FUTURE ENERGY

Hal Fox, "Academia: Your Role in Future Energy," *Frontier Perspectives*, vol 5, no 2, Sp/Su 1996, pp 46-48.

SUMMARY

With world energy use on a constant rise, the ways in which that energy is produced is of utmost importance. The acceptance of clean commercial new energy systems will begin to enable all cultures to acquire the same technological advantages, without the current increase in pollution. Acceptance of these new energy concepts and devices has been hampered by the obdurate academic denial of observed experimental results which are contradictory to the current (current since last century) scientific dogma/theory. Presently on-going research and commercialization of these new systems will put the lie to old theories which seriously need reevaluation. The entrepreneurs will pay heed to the adage, "Fight it and Die. Accept it and Live. Lead it and Prosper." But, will the academics?

Summary by D.Torres

E. NEWS FROM ABROAD

BELARUS - TRANSMUTATION AND COLD FUSION
Courtesy of Dr. Peter Glück

V.A. Filimonov (Chem. Dept., Belarus St. Univ., Minsk, Belarus), "Cold Fusion and Transmutation of Nuclei: Recent Achievements and Old Problems," translation.

AUTHOR'S ABSTRACT

Corroborative evidence on radiationless production of excess heat by "Cold Fusion" systems was reported during last two or three years. Thousandfold excess heat release as related to electrical power input was demonstrated under the operating Patterson Power Cell (USA), using complex palladium cathodes for light water electrolysis. Much more excess heat relative to input energy was reported by Arata (Japan) under electrolysis of heavy water using similar cathodes, etc.

Nevertheless, no satisfactory theoretical explanation for non-conventional rates of nuclear transformations "in the cold" is proposed. The problem of poor reproducibility, both quantitative and qualitative, has not been solved until now.

Noted controversy is analyzed within Synergetic Activation model by the author. Both experimental data and useful analogies with extra-high chemical processes in solids are considered. The invalidity of quantum approaches to provide general explanation for "cold" nuclear reactions is stated. Our conclusions are as follows: 1) no radical

changes in nuclear physics paradigm for Coulomb barrier height or sections of nuclear interaction changing is needed to explain experimental data obtained; 2) consideration of cooperative self-organization processes in highly nonequilibrium conditions providing non-conventional probabilities of high-energy excitations in condensed media is significant for understanding Cold Fusion and Transmutation.

FRANCE - POSITIVE FEEDBACK

S. Pons, M. Fleischmann (Cent. Sci., IMRA Europe SA, Valbonne, France), "Calibration of the Pd-D_2O System: Effects of Procedure and Positive Feedback," *J. Chim. Phys. Phys.-Chim. Biol.*, vol 93, no 4, (1996), pp 711-730.

AUTHORS' ABSTRACT

The authors outline some of the considerations which have prompted their research on anomalously fast nuclear reactions of D^+ compressed electrochemically into Pd (and Pd alloy) host lattices. The most surprising result has been that the generation of high levels of excess enthalpy is not accompanied by the expected levels of tritium and neutron generation. Some of the major steps in the development of this particular aspect are outlined; it has been found that excess heat production is dependent on the protocol of the experiments mainly because of "positive feedback." A rationale for such "positive feedback" is presented which also explains oscillations in the system properties. The authors illustrate the progressive development of the investigation leading to the achievement of specific rates of excess enthalpy production of 4 kW cm^{-3} at temperatures up to 100 ° (i.e. of low-grade heat).

INDIA - ENERGY FROM WATER

M. Srinivasan (Physics Group, Bhabha Atomic Research Center, Trombay, India), "Cold Fusion: Promising New Source of Energy from Water," *Physics News*, bulletin of the Indian Physics Association, vol 27, no 1, March 1996, pp 48-52.

AUTHOR'S INTRODUCTION

I can almost hear the reaction of typical "establishment scientists," "Oh No! Not again! I thought cold fusion was dead and buried years ago!" Most physicists had convinced themselves that the claims of two "crazy chemists," that they had succeeded in causing nuclear fusion reactions at room temperature using only a car battery and test tube electrolytic cell, were mistaken and erroneous. They simply dismissed it as "bad science." The French physicist Pierre-Gilles de Gennes, recipient of the 1991 Nobel prize for physics who was in India a few months ago, is quoted as having told an Indian journalist "Cold fusion exists only in the minds of over-enthusiastic scientific workers and in media person's minds." On the other hand, Nobel Laureate Julian Schwinger, who was one of the foremost theoretical physicists of our time, was among the first to endorse cold fusion, and in fact resigned from the American Institute of Physics in protest, when they formally dissociated themselves from the phenomenon of cold fusion.

AUTHOR'S CONCLUSION

Cold Fusion research is relatively very inexpensive. But it does demand something which seems to be in short supply, namely "open mindedness" and a readiness to concede that science progresses through surprises. It is high time that the Indian Scientific community and Indian Industry wakes up and joins hands to foster indigenous development of this technology. Otherwise, I am afraid this new technology is going to enter the country through the multinational route and capture the Indian market in a big way within the next decade, sidelining the Indian Scientific Community completely.

JAPAN - SOLID-STATE PLASMA FUSION
Courtesy of Peter Glück

Yoshiaki Arata and Yue-Chang Zhang (Osaka Univ., Japan), "Solid-State Plasma Fusion (`Cold Fusion')," original paper, 16 refs, 29 figs.

AUTHORS' ABSTRACT

It is well known that metal behaves like Strongly Coupled Plasma ("SC-plasma") under the One-Component Plasma model ("OCP"). This concept plays a very important role in grasping the existence of "solid-state plasma fusion."

In order to initiate a deuterium nuclear reaction in a localized zone within a host solid, it is indispensable that the deuterium plasma in the host solid be caused and transformed coherently for at least a few picoseconds into SC-plasma, that is deuterium "coherent Plasma" within solid-state. To describe the reaction which occurs the authors use the term "solid-state plasma fusion" ("Cold Fusion"), and it is a "coherent solid-state plasma fusion" in substance.

It seems clear from all available data that "Latticequakes" of natural or artificial origin take place within localized lattices of solid-state materials, similar to the earthquakes that occur in localized zones within the earth. Lattice defects known as "radiation damage" are thought to be damage caused by "Latticequakes," correlative with the "disaster zones" after intense earthquakes.

During the explosive shaking of a "Latticequake," strongly coupled deuterium plasma within solid-state is coherently created that is able to induce a "Cold Fusion" reaction; but the "post-quake wreckage" or lattice defects themselves, however, do not contribute directly to the fusion reaction.

The phenomenon that takes place in a localized zone during an intense latticequake cannot be described by solid theory based on the Shröedinger equation, which is generally applied to normal solids. **An entirely new set of dynamics is necessary.**

When deuterium nuclear fusion takes place continuously in a solid, the large amount of energy released will drastically heat the solid and the reaction product will be either spontaneously emitted and/or confined in a "frozen state" within the host solid. In other words, both energy and helium at least must be produced as the result of a fusion reaction. Both should proportionally increase with the increased number of fusion reactions over an extended period of time. As a result, a tremendous amount of reaction product (helium) should be expected to accumulate in a frozen state within a host solid which discharges huge excess energy at normal ambient temperature.

In our study, a significantly large amount of helium was detected with mass spectroscopy when the palladium host solid was heated in a vacuum to a high temperature of over 1300 [K]. The existence of solid-state plasma fusion ("Cold Fusion") was thus verified in this study by detection of a huge amount of helium as well as a tremendous amount of excess energy.

[For another explanation of a "Latticequake," see the paper by Kenneth Shoulders, on page ##. Ed.]

JAPAN - SPECTROSCOPIC DETECTION

S. Isagawa (Nat'l Lab. for High Energy Physics, Japan), "Mass Spectroscopic Means for Determining ^{4}He in the Presence of Large Amounts of D_2," *Pergamon*, vol 47, no 6-8 (1996), pp 497-499.

AUTHOR'S ABSTRACT

The low intensity of neutrons and the poor enrichment of tritium in so-called cold fusion experiments have prompted proposals of nuclear processes that yield only heat and helium as products. Determination of the presence or absence of ^{4}He as a nuclear product, buried in a large amount of D_2, became highly necessary. A novel mass spectroscopy system was designed and prepared to meet this special demand. In this system, effluent gas during electrolysis as well as electrically charged solid palladium samples can be analyzed with sufficiently high sensitivity and resolving power.

AUTHOR'S SUMMARY

A novel mass analyzer system with high sensitivity and high resolution has been specially designed and prepared for detection of ^{3}He and ^{4}He buried in a large amount of D_2. The use of a CP-NEG combined filter removes the interfering D_2, N_2, O_2 and D_2O from the effluent gas. The process allows unambiguous observation of helium, if any, by mass spectrometry. In a preliminary experiment an unexpected amount of ^{4}He build-up seemed to have been found in a gas sample collected after a heat burst phenomenon. If it were true, it would be simultaneous evidence for excess power and helium production and strongly supported the claim that the heat excess originates from a new nuclear reaction mechanism in solids. No decisive conclusion, however, can be drawn yet, as there was possible ^{4}He contamination from air in the gas collecting system at that preliminary stage. To make it clearer, improvements have been made in the effluent gas sampling system and a new series of electrolysis has been started. No direct correlation between boiling of electrolyte and ^{4}He production has been found so far. We are now looking forward to observing another excess heat burst, as found before, with all the analyzing systems well prepared.

JAPAN - TNCF MODEL ANALYSIS

Hideo Kozima (Dep. Phys., Fac. Sci., Shizuoka Univ., Japan), "An Analysis of Experimental Data Using the TNCF Model," *Cold Fusion*, issue 18, August 1996, pp 30-39, 1 table, 35 refs. Presented at 3rd Symp. of Basic Research Group of New Hydrogen Energy Project, July 3-4, Tokyo.

AUTHOR'S SYNOPSIS

The TNCF model, which I proposed three years ago, was used to analyze the typical quantitative experimental data reported over the seven years since the discovery of the cold fusion phenomenon, i.e. the generation of the excess energy and the nuclear products which were unexplainable by the usual physical and chemical processes occurring in solids with hydrogen isotopes.

The fundamental assumptions of the model: the existence of stable thermal neutrons trapped in cold fusion materials and their fusion reaction with the lattice nuclei at the boundary region, were verified by the success of the analyses. Furthermore, the success of the model has given a consistent interpretation for the wide-spread spectrum of results and the strangeness of the phenomenon, which is unexplainable from the viewpoint of conventional nuclear physics, solid state physics and electrochemistry.

Predictions for the new phenomena are given which need to be tested experimentally.

JAPAN - TRANSMUTATION EVIDENCE

Hideo Kozima, Masayuki Ohta, Masahiro Nomura, Katsuhiko Hiroe (Dep. Phys., Faculty Sci., Shizuoka Univ., Japan), "More Evidence of Nuclear Transmutation in Cold Fusion Experiments," *Cold Fusion*, issue 18, Aug. 1996, pp 12-16, 11 refs.

AUTHORS' ABSTRACT

Experimental data of a cold fusion experiment measuring excess heat, neutron emission and distribution of minor atoms D, Li, Si and Al in Pd cathode are analyzed on the trapped neutron catalyzed fusion (TNCF) model. A consistent explanation of the data is given, including nuclear transmutation of Al into Si by absorption of the trapped thermal neutron.

JAPAN - NUCLEAR POWER TOMORROW?
Courtesy of Dr. Peter Glück

T. Kanoh (Managing Director, Tokyo Electric Power Co.), "Is There a Tomorrow for Nuclear Power Generation?," *Nuclear Energy*, vol 35, no 3, June, 1996, pp 143-154, 13 refs, 14 figs, 4 tables.

AUTHOR'S ABSTRACT

Critical comments are publicly made about nuclear power generation and the nuclear fuel cycle. This criticism is directed at three areas of concern: accidents, radioactive waste disposal, and proliferation of nuclear weapons. In addition, there are other comments that ask 'Why are there countries pushing for nuclear power generation when other countries around the world are giving it up?' and 'Will further efforts to develop new energy sources and energy conservation not eliminate the need for nuclear power generation?' Such critical comments appear in some media more often than those expressing other opinions. Is there really no tomorrow for nuclear power? This question is studied below.

EDITOR'S COMMENTS

Kanoh lists three things that are likely to happen in the now to 2050 time period: 1. There will be a sharp population increase. 2. There will be an increased energy demand. 3. A warning will be given against the use of fossil fuels. In discussing these issues, Kanoh points out that sometime in the 21st century China's population will likely be consuming as much oil per capita as Japan now uses, which means that China will be using more oil than the U.S. and the European countries combined.

Kanoh then cites the three scenarios of P. Beck: 1. The phase out of nuclear power. 2. The gradually small increase in nuclear power. 3. Considerable increase in nuclear power. **It is important to note that in an 11-page article about future power generation there is scarcely any mention of the development of new methods or sources of producing energy!** Readers of this newsletter would be astonished if there were not dramatic scientific advances in new scientific and technological methods of producing energy within this decade of the 90s. We are surprised at the lack of knowledge concerning new-hydrogen energy, solid-state devices, and new super magnets making possible super motors. These three new sources of thermal, electrical, and mechanical energy are most likely to be commercialized during the remainder of this decade.

T. Kanoh has made a very important point: **Don't sit back and wait for some scenario to happen. Try to make the most desirable scenario happen.**

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JAPAN - CATHODE SURFACE MODIFICATION

Keiji Kunimatsu (Imura Japan Co., Ltd., Sapporo, Japan), "Surface Modification of the Cathode in the Study of Cold Fusion," *Hyomen Gijutsu*, vol 47, no 3, (1996), pp 218-22, 12 refs.

AUTHOR'S ABSTRACT

A review on relations between D absorption on Pd cathode and excess heat, measurement of the absorption, and surface modification of Pd cathodes with thiourea for increase of the absorption.

JAPAN - CNF APPARATUS PATENT

JP 07 287 085 A2; "Cold Nuclear Fusion Apparatus;" Toichi Chikuma, issued 31 Oct 1995; appl. JP 94-101 697; 18 Apr 1994; 5 pp.

ABSTRACT: The title apparatus is equipped with a means around an absorbent (such as Pd or ceramic) which absorbed a material (such as D) which starts the nuclear fusion to prevent the absorbed material from escaping from the absorbent. The means is a magnetic coil. The means may comprise an absorbent (which is a cathode), an electric conductive layer (which is used as an anode) is formed around the absorbent via an electric insulator, and voltage is applied. The efficiency of the nuclear fusion is improved.

KOREA - Pd CATALYST ON C FIBERS
Courtesy of Dr, Peter Glück

H. Jin, S.-E. Park, J.M. Lee (Korea Res. Inst.) & S.K. Ryu (Dept of Chem Eng, Chungnam Nat'l Univ., Taejon, Korea), "The Shape-Selectivity of Activated Carbon Fibers as a Palladium Catalyst Support," *Carbon*, vol 34, no 3 (1996), pp 429-431, 2 figs, 2 tables, 9 refs.

AUTHORS' INTRODUCTION

Activated carbon fiber (ACF) has been developed recently and is supposed to be the substitute of conventional activated carbon due to its superior adsorption capacity. For the supporting of active metal, ACF was occasionally used as a catalyst support. For example, cobalt supported on ACF was demonstrated to have a high catalytic activity on the oxidation of CO in air and the iron supported on ACF was shown to be able to remove traces of H_2O_2 from blood. As the pores of ACFs are mostly microporous and their pore size distribution narrow, it is thought that they could show the molecular sieving effect and the shape-selectivity in catalysis. The aim of this note is to investigate whether ACF may be used as a shape-selective catalyst support. Palladium was deposited on pitch-based ACF and used as a hydrogenation catalyst in the liquid-phase heterogeneous hydrogenation of olefinic C_6 hydrocarbons.

ROMANIA - MICROSCOPIC ACCELERATION
Courtesy of Dr. Peter Glück

Dan Chicea (Phys. Dept., T.T.P.A., Univ. "Lucian Blaga", Sibiu, Romania), "Microscopic Acceleration Mechanism and Cold Fusion in Deuterated Materials," translation.

AUTHORS' ABSTRACT

The Ampere forces occurring in a solid deuterated fibre which is the target of a high voltage capacitor discharge has been numerically estimated, in a way resembling the computations performed and published by P. Graneau and M. Rambaut. The energy increase of the ions trapped in the lattice caused by the Ampere force acceleration mechanism has been estimated. Considering the increase of a nucleus' Coulomb barrier penetration probability caused by the electron over-concentration, the possibility of nuclear cold fusion of nuclei is analyzed. Conclusion: The energy excess reported in the experiments traditionally named "Cold Fusion," cannot be explained only by means of a microscopic acceleration mechanism and a strong Coulomb barrier screening, but the low nuclear radiation level reported in some of the experiments can.

RUSSIA - NUCLEAR EFFECTS IN WATER
Courtesy of Dr. Peter Glück

Yu.N. Bazhutov, V.P. Koretski, A.B. Kusnetsov ("Erzion" Center, Moscow), Yu.S. Potapov (Scientific Firm "Vizor", Moldova), V.P. Nikitsky, V.P. Maarkov, N.Ya. Neveshin (Inst. Physical Chem., Moscow), E.J. Saunin, A.F. Titcnkov (Inst. of Nuclear Phys., Moscow State Univ.), "Recording of Tritium, Neutrons and Radio-Carbon During the Functioning of the "Yusmar" Hydrogenerator," presented at the 3rd Russian Conference on Cold Fusion, 6 pages, 6 refs. [Abstract translated by Dr. Peter Glück.]

AUTHORS' ABSTRACT

The authors have searched for nuclear effects during the working periods of the "Yusmar" thermo-generator (developed by Dr. Yu. S. Potapov from Hishinev, Moldova) in order to confirm the predictions of the Erzion model of cold fusion. Usually the "Yusmar" machine is working with tap water; by adding 0.7% D_2O to the working liquid, a 20% increase of tritium activity compared to the background level was measured. In another experiment, in accordance to the Erzion model, D_2O, LiBr and $NiSO^4$ were added and a significant increase of neutron radiation was measured; in some cases a "life after death" effect was recorded up to 100 minutes. However, the effect is sporadic and has a reproducibility of only 20-30%. By adding an antifreeze compound (diethylene glycol) the beta-activity characteristic for radiocarbon C_{14} was increased by 3.0 ± 0.3 Be/ml after a short time. The authors expect that the follow-up of this work will allow a significant improvement of the energetics and in the operating parameters of the "Yusmar" generators.

RUSSIA - FOURTH RUSSIAN CONFERENCE ON COLD FUSION AND NUCLEAR TRANSMUTATION
by Yu. Bazhutov, Chairman of RCCFNT-4 Organizing Committee, and V. Koretsky, Deputy Chairman of the same committee.

The Fourth Russian Conference on Cold Fusion and Nuclear Transmutation (RCCFNT-4) took place in Dagomys near Sochy (OLIMPISKY tourist hotel) on May 19-26, 1996. The Conference was organized by ERZION Scientific and Research Center (SRC) of Physical and Technical Problems. It was held under the aegis of Russian Academy of Science, Russian Physical Society, Russian Chemical Society, Nuclear Society of Russia. State Committee for High Education of Russia and Moscow State University.

SRC "Krystal" was the sponsor of the Conference. The Proceedings of the previous Conference (Sochy-95) were published by "VENT" Scientific and Technical Center and the Russian Institute of Interdepartment Information.

Thirty participants who represented Russia, Ukraine, Belarus, USA and Japan took part on the RCCFNT-4. Russia, Ukraine and Belarus were represented by the main research teams of Moscow, Tomsk, Podolsk, Volgodonsk, Minsk, Kharkov and Lougansk. Foreign countries were represented both by scientific centers (SRI International, Stanford, USA; Shizuoka University, Tohoku University, Japan) and the commercial firm "Honda" of Japan.

Twenty eight reports covering the results of theoretical (10) and experimental (18) works were presented on the Conference. On the closing meeting the general discussion took place where the high level of the presented reports was stressed.

In spite of the fact that Russian CF researches received no financial support from the government last year, many new rather interesting results were achieved since the time of the last Russian CF Conference (Dagomys-95). In experimental works, the registration of neutrons (I. Chernov, Yu. Bazhutov), gamma rays (A. Lipson, A. Karabut, I. Chernov), protons and alpha-particles (J. Kasagi), as well as new isotopes which were absent in the beginning of experiments - tritium and radiocarbon (Yu. Bazhutov), silver and palladium (I. Savvatimova) - were reported. The experimental procedures were quite different.

> An absence of the special-purpose CF financing may result in the loss of priority of Russian science, in falling behind in the field of new technology and creation of new energy sources, as well as in the loss of qualified scientific teams and specialists in this branch of science.

The experiments were carried out in the high-current glow discharge (I. Savvatimova, A. Karabut), with heavy water electrolysis, using tritium saturated Pd cathode (R. Stukan), in Pd/PdO heterostructures, which were electrolytically saturated with deuterium and placed into the oxygen atmosphere (A. Lipson), on the deuterated titan target exposed to 150 KeV deuterium beam (J.Kasagi). During the operation of YUSMAR hydro-power unit with various working fluids (Yu. Bazhutov), on electrolysis of high temperature proton conductors (A. Samgin), and for deuterated oxidic bronze in the gas-phase (K. Kaliev). The excess heat which could be several times as much as the input energy applied to the samples was observed in a number of above mentioned experiments (M. McKubre, A. Karabut, A. Lipson, A. Samgin). In this connection it is well worth noting the methodic report by N. Khokhlov, which pointed to possible errors in estimating the excess heat in electrolysis. I. Samoilenko was the first to report at the Russian CF Conference the results bearing witness to nuclear transmutation into microbiological structures. He managed - with the help of the Mössbauer spectroscopy - to observe the production of Fe^{57} isotopes in bacteria and yeast cultivated in the $MnSO_4$ and D_20 medium. A. Koldomasov

presented some additional information to his report at the previous Conference on the measuring of electric and radiation fields which are brought about when superclean distilled water flows through a small diaphragm (about 1 mm dia.) at high pressure (about 80 arm).

Among theoretical reports there were presented some additions and refinements to the models that aspire to completely describe CF (H. Kozima, N. Samsonenko {Bird-Vigier model}, L. Sapogin, Yu. Bazhutov) as well as to explain some experimental results (V. Shadrin, V. Mayorov, V. Filimonov, A. Bulyga, J. Waber, A. Lavrenev).

As was stressed by all the reporters, an absence of the special-purpose CF financing may result in the loss of priority of Russian science, in falling behind in the field of new technology and creation of new energy sources, as well as in the loss of qualified scientific teams and specialists in this branch of science.

The participants of the Conference confirmed the importance of the further investigation of CF, voiced the general opinion in favor of organizing the next CF Conference in 1997, and supported unanimously the proposal of the RCCFNT-4 Organizing Committee to appeal to the ICCF Organizing Committee for holding the forthcoming ICCF-8 in Russia in 1999.

RUSSIA - Pd/PdO EXCESS ENERGY

A.G. Lipson, B.F. Lyakhov, V.A. Kuznetsov, T.S. Ivanova, and B.V. Deryagin (deceased), (Inst. of Physical Chem., Russian Academy of Sciences, Moscow, Russia), "The Nature of Excess Energy Liberated in a Pd/PdO Hetero-structure Electrochemically Saturated with Hydrogen (Deuterium)," *Russian J. of Physical Chem*., vol 69, no 11, (1995), pp 1810-1813, 12 refs, 1 fig.

AUTHOR'S ABSTRACT

For the Pd/PdO heterostructure electrochemically saturated with hydrogen (deuterium), a model accounting for generation of energy exceeding that supplied in electrolysis is suggested. The model is based on the concept of the special properties of thin water layers near hydrophilic surfaces and involves the possibility of the removal of the free energy of the capillary system at the surface of the heterostructure. This energy is transformed into the energy of hydrogen bonds of structured water and, in Pd/PdO, is liberated in the form of heat or plastic strain.

RUSSIA - SUPERCONDUCTOR COLD FUSION
Courtesy of Dr. Peter Glück

A.G. Lipson, D.M. Sakov. B.F. Liahev, B.V. Deryagin (deceased), (Russia), "Generation of D-D Nuclear Fusion in $YBa_2Cu_3O_{7-\delta}D_y$ High Temperature Superconductors at the Superconductivity Phase Transition," *Journal of Technical Physics*, vol 65, no 8, 1995, pp 166-178, 25 refs. [Abstract translated by Dr. Peter Glück.]

AUTHORS' ABSTRACT

Reproducible neutron and tritium generation was obtained for ceramic samples of High Temperature Super Conductor (HTSC) types 1-2-3 which have been saturated with deuterium by an electrochemical method. Neutron emission at an intensity of $n = 0.42 \pm 0.05$ neutrons/s ($\approx$ 30 neutrons / transition) was obtained for samples with a deuterium concentration $N_D \approx 2.10^{20}$ cm^{-3} at a temperature interval of 88-93°K, coincident with the superconductive phase transition. This level of neutron radiation is 2-3 times the natural background level. Outside this temperature interval, no increased neutron radiation was found. For the $YBa_2Cu_3O_{7-\delta}D_y$ samples, tritium was also obtained. The quantity of tritium was increasing proportionally to the number of heating-cooling cycles. The tritium generation rate peaks at $\approx 4.10^8$ atoms of T^3 per transition. The possible mechanism of initiation of the D-D nuclear fusion reactions are discussed: a) spontaneous polarization of the transition through the HTSC temperature; b) screening of the deuterons uniformly located in the HTSC network and formation of Cooper pairs; c) acceleration of deuterons, due to the polarization process and to the deformation of the network.

HETEROSTRUCTURE HEAT
Courtesy of Dr. Peter Glück

A.G. Lipson, V.A. Kusnetsov, B.F. Lyakhov, T.S. Ivanova, B.V. Deryagen (deceased), (Russia), "The Energetic Yield of the Thermal Effect and the Intensity of the Nuclear Processes in Pd/PdO:H(D) Hetero-Structures," *Journal of Technical Phys.*, vol 65, no 7, July 1995, pp 68-80. [Abstract translated by Dr. Peter Glück.

AUTHORS' ABSTRACT

The authors' assumption is that discrete clusters of H(D) in condensed states are present in the Pd/PdO:H(D) hetero-structures; the energetic yield of the thermal effect and the

intensity of nuclear emissions are calculated using the authors' assumptions.

SWITZERLAND - BATTERY OF THE FUTURE?

Paul Ruetschi, Felix Meli, Johann Desilvestro (Leclanche S.A., Switzerland), "Nickel-Metal Hydride Batteries. The Preferred Batteries of the Future?" *J. of Power Sources*, vol 57, (1995), pg 85-91, 14 refs, 12 figs, 1 table.

AUTHORS' ABSTRACT

Construction, performance, cost and environmental aspects of nickel-metal hydride batteries are briefly reviewed. Comparisons with other chargeable battery systems lead to the conclusion that nickel-metal hydride batteries will dominate the market for small, portable rechargeable battteries in the near future.

F. MISCELLANEOUS

QUESTIONS FOR THE NEW HYDROGEN ATOM
Millennium Twain
16 August 1996

1) At low velocities and densities, what is the dynamic vortex topology of Hydrogen? [size, shape, spin directions, charge, magnetic moments, gravitic pressure, frequencies and amplitudes]

2) Is the proton internal to the electron? Separate from? When? What are their corresponding sizes, topologies, dynamics, etc.?

3) What are the proton and electron's charge relationship? In what configurations, sizes or inertia levels?

4) How does hydrogen's topology change with inertia levels?

5) How does the low velocity/density hydrogen atom link with other electrons, protons and atoms? [shape, spin, orientation, distance, frequencies, etc.]

6) At typical interplanetary velocities, how does all of the above change? What new numbers or qualities?

7) Inside the Sun, and near-stellar environments?

8) In near C (light-velocity) environments?

9) In super-C environments?

10) In optical-quasar galactic cores?

11) What topological dynamics produces the 21cm emission? How does it change with velocity, density, etc.? Is it really produced by neutral hydrogen atoms? What then? [numbers, frequencies, etc. of both source and emission]

12) What topological dynamics produce other hydrogen emissions? [numbers, frequencies, etc. of both source and emission]

13) Implications/predictions for other atoms, the molecule, and nuclei? Hydrogen molecule, deuteron, di-proton, di-neutron, triton, 3-helium and 4-helium?

14) Other?

G. BOOK REVIEW SUMMARY

A Dialogue on Chemically Induced Nuclear Effects: A Guide for the Perplexed About Cold Fusion by Nate Hoffman, 1996, American Nuclear Soc. Pub., 223 pages. Reviewer: Bruce Lewenstein (Cornell University, Cold Fusion Archive).

This book is neither a traditional technical explication (which doesn't exist in textbook form for cold fusion) nor a conventional overview (which has already been done several times). Instead, Hoffman models the book on some classic texts in solid state physics by Hume-Rothery, written in dialogue form, with an "Old Metallurgist" and "Young Scientist" engaging in an extended conversation about cold fusion, the technical questions it raises, the available information to resolve those questions, the uncertainties remaining in the field, and various other related bits of information.

Hoffman does seem concerned, primarily, with some of the artifacts that bedeviled cold fusion, making skepticism look like the normal response. But, as he points out, errors and oversimplifications are rife in both positive and negative experiments in the early days of cold fusion. He also emphasizes the fact that the continued observation of apparently anomalous results will not go away; scientists have an obligation to explore and explain those results. His appendices help provide background for those explorations, covering various cold fusion systems, nuclear reaction

products, measurements, and branching ratios for d+d fusion at low energies.

While Hoffman's focus is the technical complexity of cold fusion, he also makes clear some of the psychological and sociological conundrums that complicate the field. Overall, the book contains substantially more detail than any of the news reports or other books on cold fusion; at the same time, its dialogue form allows it to provide more background explanation than most technical papers. It concentrates on the early period (although he has some information through 1995) and predominately looks at the heavy water experiments. Thus, it cannot be considered an absolutely complete explanation of the science of cold fusion. Cold fusion is still an evolving and expanding field.

"Toward the end of Nate Hoffman's review of the cold fusion saga, he compares the saga to Edgar Allen Poe's "The Telltale Heart" story: The protagonist is sure he has killed his victim and interred the body, but he still hears the beating heart, and it drives him crazy. Critics of the 1989 announcement by Fleischmann and Pons, that they had found a method for inducing nuclear fusion at room temperature with tabletop electrochemical techniques, must feel the same way.

No matter how hard they try to kill cold fusion, they keep hearing its muffled heartbeat. Hoffman's book explains why cold fusion will not die."

H. LETTERS FROM OUR READERS

LETTER FROM HAROLD ASPDEN

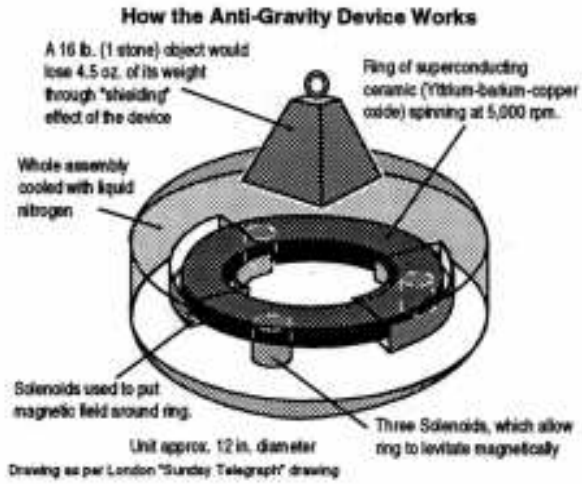
ANTI-GRAVITY BREAKTHROUGH

It was reported on page 2 of the British newspaper *The Sunday Telegraph*, September 1, 1996, that **the world's first anti-gravity device, now being taken seriously by NASA**, is to be the subject of a paper accepted for publication by the *Journal of Physics D: Applied Physics*, one of the main periodicals published by the Institute of Physics in U.K. The discovery is that of scientists in Finland.

The newspaper article gives the details and shows the constructional features of the device. It even says that objects high above the device lose weight - even the air pressure on every floor level above the laboratory decreased! It is said that this discovery "has been rigorously examined by scientists," which one cannot doubt, given that the strict peer-review of that particular British periodical would be very hostile to the notion of anti-gravity.

Note that the article envisages the prospect of the discovery extending to power generation as well as space travel.

Note also the fact that the core principle depends upon spinning a conductor in a magnetic field, which is the theme I pursue when I refer to "vacuum spin." The aether phase-lock which I discuss around p. 24 of my new book Aether Science Papers is induced either by concentrating charge in a plasma ball to set up a radical electric field in that conductive plasma or by spinning a conductor in a magnetic field to induce the radial electric field. One gets "free energy" drawn in from the aether and that means an out-of-balance force and we go from there into anti-gravity.



I am tempted now to suggest that the Finnish anti-gravity device is developing and shedding "vacuum spin" or, rather "aether spin" in the form of weak ghostly versions of thunderballs which levitate above the device and reduce the mass of the object they pass through in their homeward journey to a destiny in which they remerge with the aether of enveloping space.

Hopefully, the world of science may now see sense in revising their opinions on the Hayasaka-Takeuchi Experiment, which I refer to in my anti-gravity paper, the penultimate of the 14 papers reproduced in Aether Science Papers.

/s/ Harold Aspden

More on Anti-Gravity

Following the news of the anti-gravity discovery from Finland, and just in case some *FF* readers wonder how this may fit in with what they may have heard about the Biefield-Brown effect, I add the following to my earlier note.

Like most scientists, I am not willing to believe all that is claimed about strange phenomena involving levitation and "free energy." I therefore paid little attention when I read about the discovery of Townsend Brown. The story is that he constructed a kind of saucer-shaped aluminum canopy and set up an electrode underneath it. Then he applied some 50 kV of electric potential between the canopy and the electrode, whereupon the whole device lost weight!

I sat up and took more notice when I saw, quite recently, a T.V. program here in U.K. and there the device was demonstrated as trying to float upwards in defiance of the laws of physics that I had been taught at school. One imagines corona discharge producing some heat and then convection performing the levitation function, but I then took another look at John Davidson's book The Secret of the Creative Vacuum (ISBN 0 85207 202 3), page 194 and saw that the U.S. Navy had decided it was all due to "ion-momentum transfer" or "electric wind" and that later research in Paris proved the device did work in a vacuum.

Note then my argument. A weak radial electric field in a conductive medium or a strong radial electric field in a vacuum produces "aether spin" and brings aether energy into the act, which involves an out-of-balance linear force. The lower electrode would involve a corona-type ball of charge centered on the lower electrode but with no arc-over to the canopy. That plasma ball becomes the seat of action nucleating the "aether spin" and shedding those levitating weak versions of thunderballs. There is spin combined with the inevitable precession, which is a link to the Laithwaite gyroscopic levitating devices, but the Biefield-Brown effect had a saucer-like canopy which provided a boundary surface for an upper section of the hemisphere bounding that "aether spin" activity. If then this means a thrust by the aether on the underside of the canopy, with no downside, then one can see how levitation occurs. [Alternatively, if the aether has a net downward force, the lessening of the downward "push" would result in an effective lessening of gravity. Ed.]

In the spinning superconductor device invented in Finland there are solenoids wrapped around the superconducting ring. These can activate precession of any "aether spin" set up about the vertical axis. I conclude with the remark that 'aether spin' brings in "aether energy" and precession of "aether spin" has a way of accelerating "spin-off" and weakening the gravity force on coextensive matter. The aether cannot be ignored in such research.

/s/ Harold Aspden

LETTER BY GENE MALLOVE, Excerpt

Gene Mallove (Editor, *Infinite Energy*), "Cold Fusion Vindication?" letter printed in *C&EN*, June 17, 1996, pp 93-94.

Ron Dagani's Science Insights column, "Cold Fusion Lives - Sort Of," (C&EN, April 29, page 69), about the magazine I edit, *Infinite Energy: Cold Fusion and New Energy Technology*, raises the question of whether we are at the cutting edge, or - as Dagani suggests - maybe "over the edge."

Is a science over the edge - whatever that means - when international scientific and industrial conferences in Japan, the U.S., Europe, China, Russia, and India continue to convene to discuss a range of anomalous excess energy and nuclear effects in presumptively chemical systems that have now been made 100% repeatable? Your readers might wish to know, for example, that the 6th International Conference on Cold Fusion will be held in Hokkaido, Japan, Oct. 13-18, under the auspices of Japan's New Energy & Industrial Technology Development Organization. This agency announced last year that it will spend $100 million over the next four years on new hydrogen energy - the official term for cold fusion in Japan.

> Is science over the edge or just plain cutting edge when the University of Illinois' George Miley, who is editor of the American Nuclear Society's respected peer-reviewed journal *Fusion Technology,* regularly features cold-fusion articles in his publication?

Dagani doubts that any of what we regularly report in *Infinite Energy* has appeared in "top-tier scientific journals." He ignores references to articles on cold fusion and new energy that have appeared not only in *Fusion Technology,* but in peer-reviewed journals such as *Physic Letters A*, the *Journal of Electroanalytical Chemistry*, the *Japanese Journal of Applied Physics*, the *Journal of Physical Chemistry* and the *International Journal of Hydrogen Energy*, to name but a few.

...

Eugene F. Mallove
Editor-in-Chief *Infinite Energy*

LETTER FROM WASHINGTON, D.C. - U.S. ENERGY ASSOCIATION

[*Letter to Hal Fox*]

With your participation in the recent USEA/Johnson Control Energy Efficiency Forum, I remain puzzled as to why your organization has yet to join the United States Energy Association. Annual dues are a modest $1,000...

All of our [180] member organizations receive much more value for their membership than the modest dues. With USEA hosting the 1998 Congress of The World Energy Council, I will assure you that your dollar savings as a member will far outweight your organization's member dues.

/s/ Barry K. Worthington, Executive Director.

> Of the many speakers, **not one appeared to have any concept of the dramatic changes that are taking place** in the laboratories (and soon in the factories) of the world in the development of new sources of energy.

[*Letter to Barry Worthington*]

Dear Mr. Worthington,

Thank you for your August 14, 1996 letter of invitation to join USEA. May I explain why you "remain puzzled as to why" our organization has not joined:

I attended the USEA/Johnson Control Energy Efficiency Forum. Of the many speakers, **not one appeared to have any concept of the dramatic changes that are taking place** in the laboratories (and soon in the factories) of the world in the development of new sources of energy.

For over seven years FIC has been gathering information from sources around the world and publishing information on cold nuclear fusion (over $200 million support by Japan, almost no support in the U.S.), new super magnets and super motors, and new solid-state devices that tap the energy of the environment. Our publications are *Fusion Facts*, a monthly newsletter published since July 1989; *New Energy News*, a monthly newsletter for members of the Institute of New Energy, published since May 1993; and *Journal of New Energy*, a quarterly peer-reviewed journal published since January 1996 and abstracted by Chemical Abstracts. In addition we have published the book: Cold Fusion Impact in the Enhanced Energy Age, and the Cold Fusion Source Book.

We have obtained rights to a method that ameliorates radioactive wastes. Third party verification is scheduled for this fall. The first technical paper about this exciting new discovery will be presented September 13, 1996, at College Station, Texas at the Low-Energy Nuclear Reaction Conference.

I have two questions about the USEA membership: **Why are your members so uninformed about these various new energy developments? Also: Does USEA undertake any efforts to keep members informed about new-energy developments?**

Sincerely,

/s/ Hal Fox

I. MEETINGS

Date Change for Conference

THE GERMAN ASSOCIATION OF VACUUM FIELD ENERGY

had planed a conference in the Singapore Hyatt, Singapore, in early October 1996. **This has been postponed until September or October of 1997**. Inquiries may be directed by Fax to Germany: (05 11) 31-84-17.

INTERNATIONAL SYMPOSIUM ON CONSCIOUSNESS, NEW MEDICINE AND NEW ENERGY

Yomiuri Hall, Tokyo, Japan
November 21-22, 1996

An International symposium to discuss and present research results in such areas as consciousness phenomena, holistic medicine, integration of Western and Eastern medicine, and new energy technology. The sponsor is the Japan Green Cross Society. 18 key-note speakers have been determined, among them 5 are overseas speakers, including Paramahamsa Tewari. Conference chairman is Dr. Shiuji Inomata, and overseas advisory board consists of Dr. W. Harman (USA), Dr. David Lorimer (UK), and Dr. Beverly Rubik (USA). Participation fee is approximately US$ 185 (¥20,000).

Contact: Mr. Tetsu Nagano, Japan Green Cross Society
10F Takanawa-chuo Bldg.

2-20-23 Takanawa
Minato-ku Tokyo 108 JAPAN
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Niigata 944, JAPAN
Tel/Fax: +81(0)255-72-0558

ICCF6
Sixth International Conference on Cold Fusion
will be held 13-17 October 1996
Hotel Apex Toya, Hokkaido, Japan
Conference Secretariat:
Tel +81-3-3508-8901
Fax +81-3-3508-8902
E-mail mac@iae.or.jp

The conference will consist of both oral and poster sessions covering experimental work and theory on the following topics:

- Excess Energy Phenomena in D_2/Metal Systems
- Correlation Between Excess Energy and Nuclear Products
- Nuclear Physics Approaches
- Material Science Studies
- Innovative Approaches (Miscellaneous Phenomena)

Registration fee of ¥40,000 (about $400) includes a banquet and proceedings. A technical tour to the NHE lab is scheduled on Oct. 18, along with other professional and social events.

History shows us that science progress permanently has been retarded by the overbearing influences favoring particular concepts and impelling their acceptance as dogma. Thus, it has become necessary from time to time to return to first principles, which may be used without constraint.

— DeBroglie

Commercial Column

The following companies (listed alphabetically) are commercializing cold fusion or other enhanced energy devices:

COMPANY: PRODUCT

American Pure Fusion Engineering and Supply: Information and troubleshooting for the fusion research and development industry. Developing "Fullerene Fusion Fuel™." Salem, Oregon. The president, Warren Cooley, can be reached at 1-800-789-7109 or 503-585-6746. Email to: Coolwar@aol.com

CETI (Clean Energy Technologies, Inc.): Developers of the Patterson Power Cell™. Dallas, Texas. Voice 214-982-8340, FAX 214-982-8349.

Clustron Sciences Corp.: New energy research consulting and information. Contact: Ron Brightsen, 703-476-8731.

ENECO: Portfolio of intellectual property including over thirty patents issued or pending in cold nuclear fusion and other enhanced energy devices. Salt Lake City, Utah. Contact Fred Jaeger, Voice 801-583-2000, Fax 801-583-6245.

E-Quest Sciences: Exploring The Micro-Fusion™ process. Seeking qualified research partners for their sonoluminesence program. Contact Russ George, FAX 415-851-8489.

Fusion Information Center (FIC): Research and development of new energy systems. The world's most complete resource depository for cold fusion research information, as well as other new energy research including zero-point energy; space energy research; electronic, electromagnetic, and mechanical over unity devices and more. We are the publishers for *Fusion Facts, New Energy News*, and *the Journal of New Energy.* Voice 801-583-6232, Fax 801-583-2963.

Holotec AG: Clean Energy Technology, contact André Waser, Gen. Mgr., Bireggstrasse 14, CH-6003, Luzern, Switzerland. Phone 011 41-41 360 4485, or Fax 011 41-41 360 4486.

Hydro Dynamics, Inc.: Hydrosonic Pump, heat-producing systems using electrical input with thermal efficiencies of 110 to 125 percent. Rome, Georgia. Contact James Griggs, Voice 706-234-4111 Fax 706-234-0702.

JET Energy Technology, Inc.: Design and manufacture of π-electrode systems, calorimeters, and associated equipment and systems. Consulting regarding radiation, materials, and other scientific and engineering issues. Weston, MA. Contact Dr. Mitchell Swartz, Voice 617-237-3625. Fax 617-237-3625.

Labofex, Experimental and Applied Plasma Physics: R&D of PAGD (Pulsed Abnormal Glow Discharge) plasma technology.

Applications under development include protable power supplies, electric vehicles and autonomous housing. Licensing. Ontario, Canada. Contact Dr. Paulo N. Correa. Tel 905-660-1040 Fax 905-738-8427

Magnetic Power Inc.: Supermagnets and supermotors; Solid-state, heat to electric transducers, for temperatures up to 300°F (cold fusion, waste heat, etc.). Featuring Ultraconductors[tm] under development by ROOTS, a subsidiary. Sebastapol, CA. Contact Mark Goldes, voice 707-829-9391, Fax 707-829-1002.

Nova Resources Group, Inc.: Design and manufacture ETC (Electrolytic Thermal Cell); EG (commercial power cogeneration module); and IE (integrated electrolytic system). Denver, CO. Call Chip Ransford, Phone 303-433-5582.

UV Enhanced Ultrasound: Cold Fusion Principle being used for an ultrasonic water purifier. Hong Kong. FAX 852-2338-3057.

"YUSMAR"- Scientific-Commercial Company: manufacture, licensing, research and development of water-based generators: thermal (5 sizes), electrothermal (up to 2 MW), and 'quantum' types. President: Dr. Yuri S. Potapov, 277012 Kishinev, Moldova. Phone and Fax 011-3732-233318.

Zenergy Corporation: Founded in 1996 to facilitate the introduction of commercially viable energy alternatives. 390 South Robins Way, Chandler, AZ 85225. Contact Reed Huish: 602-814-7865, Fax 602-821-0967, e-mail: info@zenergy.com

Note: The Fusion Information Center has been acting as an information source to many of these companies. We expect to augment our international service to provide contacts, information, and business opportunities to companies considering an entry into the enhanced energy market.

INFORMATION SOURCES

Academy for New Energy (ANE) is a subsidiary organization to the International Association for New Science, which has specific goals directed toward the field of alternative and "New" energy research. 1304 S. College Ave., Fort Collins, CO 80524. Tel. 970-482-3731

ANE Newsletter, quarterly publication of ANE, providing an open forum for discussion, and disseminating newsworthy and inspirational information on invention and new energy. Edited by Robert Emmerich.

Advanced Energy Network Newsletter, quarterly, a reprint of articles and papers from other energy publications, with book reviews and worldwide conference list. Advanced Energy Network, P.O. Box 691, Rondebosch 7700 Capetown, Rep. South Africa.

"Cold Fusion", monthly newsletter, edited by Wayne Green, 70 Route 202N, Petersborough, NH 03458.

Cold Fusion Times, quarterly newsletter published by Dr. Mitchell Swartz, P.O. Box 81135, Wellesley Hills MA 02181. Home Page: http://world.std.com/~mica/cft.html

Cycles, a R&D newsletter, published by Dieter Soegemeier, Editor, GPO Box 269, Brisbane, QLD.4001, Australia. Phone/Fax: +61 (0)7 3809 3257.

Electric Spacecraft Journal, quarterly, edited by Charles A. Yost, 73 Sunlight Drive, Leicester, NC 28748.

***Fusion Facts* monthly newsletter**. Salt Lake City, UT. 801-583-6232, also publishes Cold Fusion Impact and Cold Fusion Source Book. Plans on-line database access.

Fusion Technology, Journal of the American Nuclear Society, edited by Dr. George Miley, publishes some papers on cold nuclear fusion. 555 N. Kensington Ave., La Grange Park, IL 60525.

Infinite Energy, new bi-monthly newsletter edited by Dr. Eugene Mallove (author of **Fire from Ice**), P.O. Box 2816, Concord, NH 03302-2816. Voice: 603-228-4516.
Fax: 603-224-5975 E-mail 76570.2270@compuserve.com

Institute for New Energy (INE), organization to promote and help find funding for new energy research.
Home Page: www.padrak.com/ine/ contains many important scientific papers and current reports on all areas of research.
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New Energy News monthly newsletter for INE, highlighting the research and development in the worldwide new energy arena. Edited by Hal Fox.

Journal of New Energy, quarterly, presenting papers representing the new areas of energy research, leading-edge ideas in the development of new energy technology, and the theories behind them. Published by the Fusion Information Center, Inc. Editor: Hal Fox.

KeelyNet BBS - Science and health oriented information exchange that specializes in nonstandard research, much of it on new energy. Jerry Decker, 214-324-3501
Internet: www.keelynet.com E-mail: jdecker@keelynet.com

Planetary Association for Clean Energy Newsletter, quarterly, edited by Dr. Andrew Michrowski. 100 Bronson Ave, # 1001, Ottawa, Ontario K1R 6G8, Canada.

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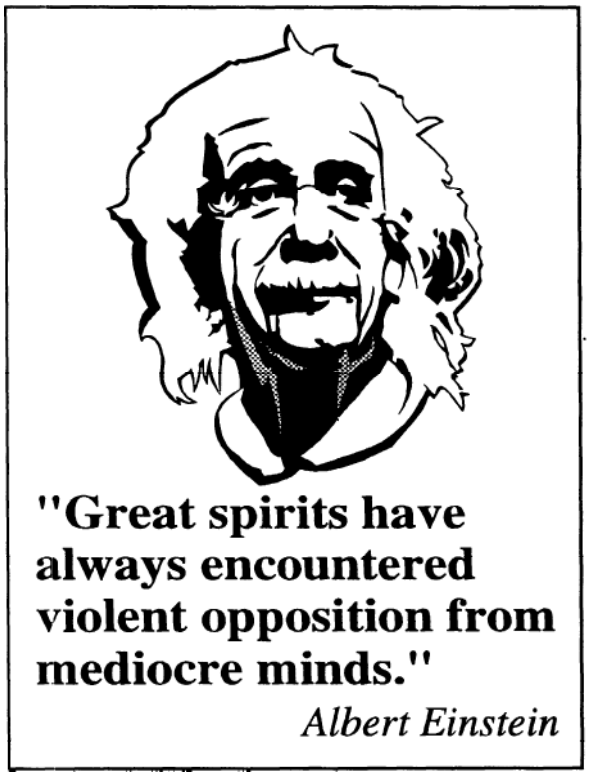

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