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DOES LOW TEMPERATURE NUCLEAR CHANGE OCCUR IN SOLIDS?

A Low-Energy Transmutation Conference held at Texas A&M University
June 19, 1995.

INTRODUCTION BY DR. BOCKRIS

Dr. John O'M. Bockris sponsored this historic conference and welcomed the invited attendees. The purpose of the conference was to share experimental and theoretical findings to answer the question, "Does Low Temperature Nuclear Change Occur in Solids?" Bockris mentioned that some evidence has been gathered. For example, 120 papers have reported the finding of tritium produced from experiments using palladium. Here are the presentations made at this conference:

PAPERS PRESENTED ON BASIC EXPERIMENTAL STUDIES

Thomas O. Passell (Electric Power Research Institute, Palo Alto, Calif.), "Overview of EPRI Program in Deuterided Metals."

Passell took this opportunity to report on funded research conducted at Texas A&M under the direction of Dr. Kevin Wolf. Three cold fusion cells containing small amounts of boron and aluminum in a 0.1 Molar LiOD heavy-water reactor were connected in series and operated at a constant low current for 42 days. On the 21st and 22nd day of the experiment two successive fast neutron episodes were observed at about two times background. After the completion of the experiment, the three 6mm dia. by 60 mm palladium cathodes were found to be mildly radioactive. Upon analysis it was found that all three cathodes contained about 100 billion atoms of Ag, Pd, Rh, and (in one cathode) Ru isotopes having ratios unlike ratios that could have been obtained from bombardment by high energy deuteron or proton beams. This later measurement was made to ensure that no one would claim that these isotopes could have come from

inadvertent use of high-energy bombardment. Postulated nuclear reactions that could have occurred are Pd-108(d,gamma)Ag-110 or impurity Ag-109(d,p)Ag-110; Pd-102(p,alpha)Rh-99; Pd-106(d,p alpha)Ru-103 or Ru-102(d,p)Ru-103; Pd-105(d,n)Ag-106 or Pd-105(p,gamma)Ag-106; Pd-104(d,alpha)Rh-102 or Pd-105(p,alpha)Rh-102; Pd-104(p,alpha)Rh-101; Pd-104(d,n)Ag-105 or Pd-104(p,gamma)Ag-105. Note that only two of these 12 possible reactions produce neutrons. This experiment has been repeated but not with successful replication as yet.

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If this work is replicated the tentative conclusions are: Neutron capture is precluded as the primary mechanism because these isotopes lie on the neutron deficient side of isotope stability. Deuterons or protons must have somehow entered palladium nuclei with the subsequent emission of alpha (He-4) particles, protons, gammas, and neutrons. Protons and deuterons can enter palladium nuclei. Similar effects [of proton capture] should be sought in light-water experiments. These type of nuclear reactions can be the source of excess heat. The following tentative conclusion: "Since the activation levels in Pd are 2 or 3 orders of magnitude above detector background, this phenomenon provides an unequivocal nuclear signature observable outside the cells because of the high penetrating power of gamma rays." [As cited by Robert Bass, in his ICCF-5 paper, some type of reactions in a metal lattice cannot emit gammas but the energy is absorbed by the entire crystal. Ed.]

Dr. T. Ohmori (Hokkaido Univ.), "Iron Formation in Gold and Palladium Cathodes."

In experiments excess heat has been obtained from gold, silver, nickel, and tin cathodes in light-water reactors with excess power ranging from 0.2 to 1.0 watt. Some iron was produced using gold electrode with the amount of iron being a function of the excess heat produced. The iron isotopes depart from the usual isotope ratios found in nature, therefore contamination was not a source of the iron. It was found that sodium sulphate was a better electrolyte than sodium carbonate (with same 0.5M and same current). Examination of the gold cathode showed that the iron content depleted rapidly with depth below the gold electrode's surface. The ratio of Fe-57 to Fe-54 was much greater than the natural ratio.

Dr. Y. Kucherov (ENECO), "Material Analysis after Glow Discharge Experiment."

The glow-discharge plasma experiments used about 1 milliampere of current at voltages of 100 volts and higher. From theoretical considerations a variety of elements have been projected to be produced and such elements have been found in the palladium cathode after experimental use in the glow-discharge reactor. Admittedly, there are some sources of contamination for some of the observed elements, but not for all of the elements found. The conclusion is that there appear to be elements that can only be created by nuclear reactions and that it appears that both fusion and fission reactions must be occurring in the glow-discharge gas-plasma reactor using deuterium gas and palladium cathodes.

Dr. John Dash (Portland St. Univ.), "Microanalysis of Pd Cathodes after Electrolysis in Aqueous Acids."

Dash and his graduate students have used two identical electrochemical cells in series. All of the features of each cell were the same except that one cell contained heavy water and the control cell contained light water. The electrodes used were platinum and palladium with a sulfuric acid electrolyte. After operating the cells for a minimum of five hours an SEM analysis is performed on the cathodes to determine the experimental results. Spots of activity are observed on the heavy water cathodes. When examined it is found that silver and cadmium are present in the active areas. One experiment was run for four hundred hours. There were large concentrations of gold in spikes protruding from the palladium electrodes in both the light and heavy water cells. Careful observation of the same electrode

surface without further electrolysis showed that elemental changes still continued. In other experiments using titanium cathodes for 50 hours of electrolysis the excess heat raised the temperature of the active cell four degrees higher than the control cell. Post experimental examination found Cr, Fe, and Ca in one spot on the titanium cathode.

Dr. Robert Bush (Cal Poly, Pomona), "Electrolytically Stimulated Cold Nuclear Synthesis of Strontium from Rubidium."

Bush reported on the work that he and Robert Eagleton have accomplished in an ingenious light-water cold fusion experiment. The isotopic abundance of rubidium is well known. If rubidium can be changed to strontium by proton capture in an electrochemical cell, the isotopic ratio of the strontium **would be different than the natural isotopic ratios**. This elegant experiment was conducted, mass spectrometer measurements were made, followed by chemical

The isotopic ratio clearly confirms that the strontium could not be explained by contamination!

analysis in which the isotopes of strontium were separated and measured. The end result conclusively proves that the strontium (which is not present in either the nickel electrode, nor in the electrolyte, is present on the surface of the nickel cathode after the experiment was conducted. In addition, the isotopic ratio clearly confirms that the strontium could not be explained by contamination! The mechanism appears to be the entry of protons into the rubidium nuclei to create strontium elements.

Dr. Reiko Notoya (Catalysis Res. Center, Hokkaido Univ., Japan), "Low Temperature Nuclear Change of Alkali Metallic Ions Caused by Electrolysis."

Notoya reported on her light-water experiments in which before and after chemical determinations were conducted. Reportedly some potassium from the electrolyte is changed into calcium; Cs-133 produced an element of mass 134; and sodium-23 became sodium-24. Notoya apparently uses an open cell type of experimental light-water reactor.

Dr. Georgiy S. Rabzi (Ukrainian Int'l. Acad. of Original Ideas), "Mechanism of Low Temperature Transmutation."

Rabzi read a paper in Russian and it was translated for the attendees. An English translation was copied and handed to all attendees. Here are some of the salient concepts from the paper by Rabzi: During his presentation Rabzi passed several samples to be viewed by the attendees. These included a steel nut which acquired the color of copper and was reduced in size; magnetic stainless steel turned non-magnetic; and asbestos which became like a ceramic. These are all the result of low-temperature transmutation. Certain forces are used to trigger nuclear reactions. These forces are combined geo-electric and artificial fields and control of temperature. Experiments were begun in 1958 to observe transmutations in solids and liquids directly. The results are somewhat akin to cold fusion reactions but are not the same.

In the years of experimenting it was found that various electrodes were best for various materials. Electrodes of copper, aluminum, titanium, and stainless steel have been used. Materials that have been used in experiments include zinc, carbon, graphite, lead, table salt, silica sand, fuel oil, etc. As an example of a typical experiment a sample of 99.5% lead was treated on March 15, 1994 at 650 C and yielded Pm, Cd, Ge, Ag (0.25%), and Au (0.21%). In an August 1, 1994 experiment silver at the level of 3% was obtained from the 99.5% pure lead. Rabzi states that no radioactivity has been observed in any of their experiments. In fact, the claim is made that radioactive atomic wastes can be stabilized.

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The many years of experiments were performed to obtain an insight into the origin of the processes involved, be the processes transmutation or cold fusion. This search has led to a better understanding of the earth processes in the changing of various elements including the energy-producing fission of uranium.

After presenting the basic concepts of his theory in the paper, Rabzi closes with the following: "I hope to have introduced by my theoretical study a fresh understanding of cold fusion as an essentially natural cold fission, a mere stage in the universal transmutation." The paper will be published in the proceedings.

PAPERS ON THEORETICAL MODELS

Yeong E. Kim and Alexander L. Zubarev (Dept. Phys., Purdue Univ., West Lafayette, IN), "Uncertainties of Conventional Theories and New Improved Formulations of Low-Energy Nuclear Fusion Reactions," paper presented by Dr. Kim.

AUTHORS' ABSTRACT

We examine uncertainties of conventional theoretical estimates for low energy nuclear fusion cross-section $\sigma(E)$ and fusion rate (σv) . Using new formulations based on the optical theorem and the radial distribution function, we derive new improved formulae for $\sigma(E)$ and (σv) . Our results of the optical theorem formulation for $\sigma(E)$ indicate that a near cancellation of the Gamow factor can occur if the imaginary part of the effective nuclear interaction in the elastic scattering channel has a very weak component with a long finite interaction range. Uncertainties of conventional estimates of the electron screening effect for $\sigma(E)$ are also examined and a new alternative formulation is proposed. Finally, based on a solution of three-body Schrödinger equation and the optical theorem formulation, we derive a new formula for three-body fusion cross-section and rate and compare its predictions with conventional estimates and also with the recent experimental data for three-deuteron fusion reaction.

Yeong Kim's work is best summarized in his own words as follows:

"We have examined uncertainties due to many approximations made in the conventional theoretical formulations of low-energy nuclear fusion reactions, and presented new improved formulations which avoid some of these approximations. Some of the new formulations lead to unexpected results. One striking result is a possibility that a near cancellation of the Gamow factor (or Coulomb barrier transparency) cannot be ruled out completely at present. Another surprising result is that the large value of the 3d fusion rate recently observed in the laboratory beam experiment [of Kasagi, et al.] may be justified theoretically in terms of a solution of the quantum mechanical three-body problem. Since there are still a great deal of uncertainty and absence of replicable reproducibility at a desirable level of about 100% for anomalous effects, it is at present premature to make

definitive tests and comparison of the predictions of our new improved formulations with experimental data."

During his presentation Kim stated that by using the new optical theorem **the work is almost model free and rigorous**. During his presentation at the Monaco ICCF-5 conference, Kim showed that the probability of proton capture by higher mass elements was about fifty orders of magnitude larger than proton capture with lighter mass elements **which is contrary to what has previously been the scientific belief**.

Dr. Peter Hagelstein (MIT), "Neutron Capture in Low Temperature Nuclear Reactions."

Hagelstein is a brilliant and persistent cold fusion theorist. In each cold fusion conference he has presented one or more papers that have explored new ways in which the observed experimental results can be explained. In his presentation he stated that there are eight experimental observations that are not accepted by the scientific community. These include energy transfer within the metal lattice and neutron hopping in crystals. Neutron hopping can transfer energy. Resonant emission and neutron capture by another nuclei can explain some of the observed results.

*Phonon laser phenomena
may be a part of the
cold fusion experiments.*

Hagelstein discussed the concept of a phonon laser and showed how such a phenomena may be a part of the cold fusion experiments. In addition he showed that thermally-induced neutron hopping can occur with elements having 1s orbitals (H and He), 2s orbitals such as silicon, and 3s orbitals (Sn, Cd, Te, and Xe). He concludes that in metal hydrides neutron hopping appears to be feasible. [Neutron hopping with a neutron being captured by the nuclei of a metal lattice would, of course, explain some of the experimental results of observed changes in isotopic ratios in palladium during electrolysis. This result is a form of transmutation.]

Dr. Robert Bush (Cal Poly, Pomona), "Can the Electron Catalyzed Fusion Model (ECFM) Account for Light Water Fusion?"

Bush cites Hal Puthoff's paper in which Puthoff shows that the stability of the hydrogen atom is a byproduct of the zero-point energy (ZPE) field. Bush suggests that

if the ZPE is distorted by something then the electron could go into a higher energy state and thus give off energy. Bush shows that the maximum tritium production in a heavy-water cold fusion cell occurs at about 0.825 D/Pd ratio. Bush's theory shows that the tritium production function is a 12th power function and therefore can change abruptly with loading. His theory also explains the rollover of the excess heat in light-water nickel cathode environment by explanations similar to those used to explain the tritium production.

[Bush's latest theory has been criticized as being too empirical. However, the theory certainly deserves a careful consideration in our search for the parameters that are important in the production of excess heat.]

Mr. R. Davis, "General Explanation of Radioactivities in the Experiments of Deuterided Metals."

Davis presents the theoretical work of Ron Brightsen in this co-authored paper. A part of the theory explains why the numbers 20, 50, 82, and 186 are special. Davis also handed out a paper, "Application of NCM to Experimental Results" where NCM stands for Nucleon Cluster Model.

PAPERS ON INNOVATIVE APPROACHES

Dr. T. Mizuno (Hokkaido Univ.), "Analysis of Elements for Solid State Electrolyte in Deuterium Atmosphere during Applied Electric Field."

Mizuno used an alternating current field of 5 to 45 volts and a temperature of 400° to 700°C to produce a few watts of excess thermal power. As a result of these experiments several new elements (not present in the initial materials) were observed. The basic mixture used is a combination of Sr, Ce, Nb and oxygen with other impurities about 38 parts per million. After a process of sintering, refining, sintering, and plating, this type of proton conductor was used in the experiment at low pressures and with 5 to 45 volts potential. Over a period of 5 to 6 hours excess heat was observed. Analysis of the material using SIM showed that several elements were produced including Al, Bi, Sm, Gd, and Dy.

Toby Grotz, Dr. Timothy A. Binder & Ronald J. Kovac (Univ. of Sci. & Phil.), "Experimental Examination of Russel's Theory of Transmutation."

About one hundred years ago Russel claimed to produce transmutation. Grotz, Binder, and Kovac have been attempting to replicate Russel's work. This presentation showed that they have had modest results

in such replication. Binder briefly presented Russel's table of elements and its structure. Grotz reported on their experiments in which they produced some fluorine from water vapor using electric and magnetic fields. Ron Kovac showed the results of some of his vacuum plasma studies in which he has produced an element having a mass of 5 (which is not usually presented in the mass spectrographic charts.) These experimenters are some of the few who have deliberately tried to establish the serious nature of transmutation of elements and have had experimental successes.

Dr. Thomas Claytor (Los Alamos Natl. Lab.), "Tritium Production from a Low Voltage Deuterium Discharge on Palladium and Other Metals."

Claytor has been working for several years trying to find relatively low energy methods to produce tritium. Tritium has been produced by bombarding heavy water with floods of neutrons from an atomic reactor, a very expensive and environmentally hazardous process. Tritium is a key ingredient in hydrogen bombs and costs about \$32,000 an ounce. Even with the cold war being over, there is still some interest in the production of tritium for military (defense) purposes. Claytor is using a plasma-type device to produce tritium in substantial amounts. At the present time the production of tritium is still not a resounding commercial success.

[Editor's Note: A person under contract to the DOE was present at the meeting and cited the commercial importance of the production of tritium. It is difficult in this time of relative peace to become serious about the production of tritium when the great need for the world is to produce non-polluting energy.]

Mr. D. Hudson (private researcher), "Orbital Rearrangement of Mono-atomic Elements (ORMES)."

Hudson has been doing intensive experiments with gold, nickel, and copper. He has been able to demonstrate that some elements can be made essentially "invisible" to most chemical measurements and then restored so that the elements are measurable. Hudson showed copies of several articles, mainly from peer-reviewed literature and textbooks to indicate that there are some strange results that differ markedly from standard accepted chemistry. For example, Hudson shows that when certain elements are reduced from metals (large arrays of atoms) to states where only a few atoms are clustered, then the normal metallic behavior of these

elements is dramatically changed. These experimental results are being investigated by other researchers working in the nanomaterials area. Hudson says to get a metal out of the metallic cluster give the element something that it wants more than it wants itself. Two such separation elements are lithium and sodium.

[Hudson has applied for some patents on his findings. His work is unusual and worth further investigation. Some of the materials that he has formed appear to have a beneficial effect on health. His presentation was logical and impressive. The short presentation was inadequate for Hudson to describe all he had discovered during the past several years of intensive research.]

Dr. Roberto Monti (Burns Development Ltd.), "Variations of the Half-lives of Radioactive Elements and Associated Cold Fusion and Cold Fission Reactions."

Dr. Monti first came to this editor's attention at the ICCF-3 at Nagoya, Japan where he handed out a formula for transmutation of some elements by an explosive or "ignition" method. At this conference Monti described his work in which he believes that cold fusion and cold fission are complementary and reversible. He described experimental results in which after "ignition" the chemical composition of the materials was dramatically different than the initial conditions. **Of great interest was his reports on work with radioactive materials in which the radioactivity was greatly reduced after ignition.**

[Dr. Bockris mentioned the claims that if some radioactive materials were heated to 1000° to 1500°C that the radioactivity decreased and asked if anyone was familiar with that work. None in the audience was acquainted with such work.]

General Discussion at Meeting's End:

There was a discussion of producing proceedings of the conference. Hal Fox, President of Fusion Information Center offered to publish the proceedings if the presenters would get papers to him within thirty days. A copy of the proceedings would be given to each person providing a paper and the proceedings would be offered for sale. Mr. Bauer from Burns Developments Ltd. (Canada) mentioned that his company has offered to pay for experiments with radioactive materials to show that the Monti techniques could reduce the radioactivity. He had not had success

in contacts with scientific officials in either Germany or in the U.S.

NEN EDITOR'S COMMENTS

This was an important first in modern science: A serious conference with twelve papers presented by academic or recognized industrial scientists. Four additional important papers were presented by non-academic private experimenters. Thirty-four concerned scientists, researchers, and journalists were invited and 27 were able to attend this international conference. Four came from Japan, 1 from Canada, 1 from Italy, and 1 from Ukraine.

There is no question but that low-energy nuclear change is a controversial topic.

Every paper presented either experimental (12 papers) or theoretic (4) evidence for low-energy nuclear changes within or near the surface of various metals. Much of the evidence is an outgrowth of the international work on cold nuclear fusion. There is no question but that low-energy nuclear change is a controversial topic. Currently accepted scientific theory denies low-energy changes. **One of the most prevalent established scientific beliefs is the inability of a charged particle (such as a proton or a deuteron) to penetrate the Coulomb barrier, especially in metals where the atomic model presents a cloud of orbiting electrons that shield the nuclei.** Kim has shown, theoretically, that a hydrogen ion is more likely to penetrate into a high mass element (by fifty orders of magnitude) than to penetrate into a small mass element (like lithium). This theoretical discovery, based on the optical theorem, is strongly substantiated by experimental evidence.

The findings from these 12 experimental and 4 theoretical papers are important. **All of the diverse experimental papers substantiate the concept that low-temperature or low-energy nuclear changes can occur. This concept is buttressed by new theoretical considerations, especially related to neutron hopping or "proton capture". In furthering our understanding of matter, nuclear changes, and new energy sources, this scientific approach may be the most fruitful area of scientific investigation to be proposed in this generation.** You will want to get a copy of the proceedings which will be published by Fusion Information Center in about four weeks.

Proceedings of the
Conference on Low-Energy Transmutation
- held at Texas A&M on June 19, 1995 -
will be available from the NEN office.
The proceedings will sell for \$75 per copy,
with a pre-publication order price of
\$50 until August 1, 1995:

Fusion Briefings

SONOFUSION IS A POSSIBILITY

Lawrence A. Crum (staff writer), "Bubbles Hotter Than the Sun," *New Scientist*, no 1975, 29 April 1995, pp 36-40.

SUMMARY

Sonoluminescence is causing more scientific interest now than it has since it was discovered-over 60 years ago, or since its cause was identified in 1959 by Meyer and Kuttruff. In acoustic cavitation, ultrasound waves passing through a liquid cause bubble formation and collapse, the gas inside the bubble is greatly compressed and heated to a very high temperature and light is emitted. Andrea Prosperetti (Johns Hopkins Univ.), using sophisticated computer models of bubble collapse, calculated that the gas in the bubbles could reach temperatures around 7000°K, approximately the same as the Sun's surface.

Understanding exactly what was happening in sonoluminescence was a problem because so many bubbles were in action at the same time that observing just one was impossible. In 1990, Felipe Gaitan, a graduate student at U. of Miss., came up with a system that could contain a single "levitated" sonoluminescing bubble for examination. By adjusting the sound field in opposition to the buoyancy of the bubble, he was able to keep the bubble in a fixed position in the liquid. By finding just the right conditions of ultrasound and gas dissolved in the liquid, he eventually had the bubble glowing like a tiny star.

In 1991, Seth Putterman et al. at the U. of California replaced Prosperetti's predictions with even more startling ones. Instead of the light flash which lasted 20 billionths of a second, Putterman discovered that they lasted less than 50 trillionths of a second, and the spectrum of light emitted showed that the temperature inside the collapsing bubble was not thousands of degrees, but tens of thousands. To explain this, Wu and Roberts at UCLA used the suggestion made by Peter Jarman in 1960, that a shock wave developed inside the bubble was responsible for heating the gas. This shock wave theory would provide for a higher concentration of energy and therefore higher temperatures.

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Last year, Robert Hiller of UCLA discovered that the presence of noble gasses in the atmosphere make the luminosity increase by a factor of nearly 30. They are still not sure of the cause of the change. But these extreme conditions have raised a question of the possibility of nuclear fusion occurring in the bubble itself. Mathematical calculations have shown the range of temperature in the collapsing bubbles could be brought up to several million degrees, with pressures equally enormous. Even if the fusion possibility is null, these new findings about sonoluminescence are expected to open up many new avenues of research.

MORE SONOCHEMISTRY

Kenneth S. Suslick (staff writer), "Sounding Out Chemistry," *New Scientist*, no 1975, 29 April 1995, pp 38-39.

SUMMARY

Because of sonochemistry's acoustic cavitation it proves to be useful in other areas of research and technology. Due to the intensity of the heat and pressure produced and the extreme rapidity of the heating and cooling cycle, sonochemistry has many exciting applications. In amorphous metals, it facilitates the super-fast cooling that inhibits the formation of crystalline structures in the metal, thus enabling it to have unique electronic and magnetic properties and resist corrosion. It is used to form super-small

amorphous metal powders, which are used in making unusual materials at low overall temperatures. For instance, the use of pentacarbonyl to produce amorphous iron (an active catalyst) used in converting carbon monoxide from coal into liquid fuel. Magnetic measurements reveal that amorphous iron is a very soft ferromagnet, that is it quickly forgets its original magnetization and accepts a new one when a magnetic field is applied.

In another field, sonochemistry is known to yield hydrogen and hydrogen peroxide from aqueous solutions, but recently Peter Riesz of the U.S. Nat. Inst. of Health proved it also yields the hydroxyl radical, an extremely potent oxidizing agent normally found in flames. The extreme temperatures of cavitation produce flame-like conditions inside the water, which break the water's hydrogen-oxygen bond and form the hydroxyl, very difficult usually.

Due to its extreme speed, ultrasound can be used to substantially increase the speed of reactions in metal surfaces, which has made it an important technique in many chemical reactions. The shock waves generated by the cavitation collapse is useful too. When used in the presence of metal powder, they cause the particles to smash together at such high speeds that they melt at the points where they hit. Such treatment can cause striking changes in surface texture, composition and reactivity in the powders.

Sonochemistry can be used to split polymers dissolved in organic solvents. The shock waves mechanically split the polymer chains. This has been used in the synthesis of block copolymers. Ultrasound has been used for synthesizing biomaterials such as bonding together protein molecules to make shells around micrometer-size spheres. Being smaller than red blood cells, these microspheres can then be used to carry drugs or medical imaging agents throughout the body. This application was recently used to make a long-lived hemoglobin suspension that can act as a blood substitute to carry oxygen where no regular blood is available.

Summaries by D. Torres

Space Energy

DEFENCE AND THE AETHER

By Harold Aspden, U.K.

It has been my experience that scientists involved with missile and satellite communication rely on mathematicians who calculate distance according to the theory of relativity. Such errors as do occur are not attributed to a false theoretical basis, because relativity is the accepted doctrine which has displaced the aether. Yet, in our search for a new energy source, many of us know that the aether with its hidden energy is the only hope we have of succeeding in that quest. So long as scientists in general persist in ignoring the aether, so the research training of power engineers will cause them to shun our efforts in the forum of 'new energy.'

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It is therefore appropriate to mention and applaud an item of news emerging from the Electronics and Surveillance Research Laboratory of the Department of Defence in Australia (PO Box 1500, Salisbury, South Australia 5108).

In a Research Report approved for public release and circulated officially to a select group of overseas government departments, university libraries, and a few academics (including myself), the stance has been taken that relativity is wrong and that aether-based treatment of space and time suffices to establish intra- and inter-frame relationships in electro-dynamics. The Research Report advocates 'the return to pre-Einsteinian physics,' a rather startling proposition for recipients at Princeton, Stanford and Yale Universities, but perhaps more palatable for recipients at M.I.T. and the Naval Research laboratory in Washington! The reference follows:

R.S. Edgar (Electronics & Surveillance Research Laboratory), "Field Analysis and Potential Theory," Australian Department of Defense report.

AUTHOR'S ABSTRACT

An aether-based treatment of space and time measurement is employed to investigate the rate of a moving clock, to develop doppler formulae, and to establish intra and inter-frame relationships in electro-dynamics.

WATER ARC EXPERIMENTS

Richard Hull, "Water Arc Experiments," reprint from *Electric Spacecraft Journal*, issue 15, 15 June 1995, p 37.

The group of Peter Graneau, Neal Graneau, George Hathaway and Richard Hull continues with its interactive effort to provide a simple, convincing demonstration that a powerful arc discharge in water can release more energy than the amount of energy input from a supply capacitor. Dr. Peter Graneau has suggested that the extra energy may come from a free-release of the latent heat in the water, bypassing the normal thermodynamic process. The current belief is that a cold nuclear fusion process is not involved in the generation of a suspected extra-energy output.

Richard Hull has recently assembled an entirely new experimental setup for continued tests at his TCBOR lab. It incorporates a new 20,000 VDC capacitor rated at 2 μ F. It has a super-low inductance of only 20 nH! The leads to the arc gun terminals have been shortened, now having only 0.4 Ω total impedance (500 μ H total circuit inductance). Additionally, new fiber-optic laser beam pickups have been placed close to the gun for taking velocity measurements.

The new capacitor/inductor circuit's impedance loss is considerably less than that of the earlier setup, as demonstrated by 29 cycles of circuit decay oscillation upon discharge, compared to the former seven cycles of decay oscillation takes 7.5 μ sec.; thus the time needed to achieve peak current ($\frac{1}{4}$ wave) is less than 2 μ sec. The circuit can produce 13,000 ampere peak current.

SHOULDER'S PLASMA CONFIGURATIONS

The EV is an abbreviation for "Electrum Validum" (meaning strong electron) and is Kenneth Shoulders' designation for strong-density charge clusters. Readers of *NEN* will remember that the high-density charge clusters are clusters containing about 10^{10} electrons in a stable cluster (possibly as a miniature

toroid), that travel about 0.1 the speed of light, and appear to have the capability (according to U.S. Patent 5,018,180) of tapping zero-point energy.

There is very little literature directly concerning EVs. However, the recent issue of *Fusion Technology* has a special section: "Spherical Plasma Configurations." Here are four articles in that section which may have some peripheral concepts that may be applicable to some of the reported EV phenomena:

S. Manservigi, V.G. Molinari, & A. Nespoli, "X-Ray Emission from the Linear Plasma of a Spherical Pinch: The Electron Distribution Function in a Strong Electric Field," *Fusion Technology*, May 1995, vol 27, no 3, pages 237-244, 2 figs, 10 refs.

Haibo B. Chen, Brian Hilko, Jiong Chen, Emilio Panarella, "Radiation Emission Characteristics from a Spherical Pinch High-Z Plasma: A Numerical Study," *Fusion Technology*, May 1995, vol 27, no 3, pages 245-254, 12 figs, 8 refs.

J. Reece Roth, "Ball Lightning: What Nature is Trying to Tell the Plasma Research Community," *Fusion Technology*, May 1995, vol 27, no 3, pages 255-270, 15 figs, 20 refs.

Igor Alexeff, Mark Rader, "Possible Precursors of Ball Lightning -- Observation of Closed Loops in High-Voltage Discharges," *Fusion Technology*, May 1995, vol 27, no 3, pages 271-273, 3 figs, 10 refs.

In the last reference, Figure 3, shows "a spark discharge at high voltage containing closed current loops and reflected images." It is suggested that some of the traces recorded by the camera were from fast-moving high-density charge cluster trails that, on the picture, appear to be filaments. It has been reported that many electrical discharges create EVs. You can try it for yourself. Place a very thin sheet of metal foil against a d.c. anode and create a spark from cathode to anode. By microscopic examination, you will probably find several pin-points of perforations on the witness plate (the thin metal foil) that range in size from 1 micron to 20 microns in diameter. These are probably the EVs that are the subject of Shoulders' patents. It is supposed that EVs come in sizes ranging from 1 micron to several inches (as ball lightning). Look carefully at time-lapse photographs of lightning strokes. You will often note lightning tracks that appear to create their own directional environment -- obviously not following a plasma trail. These changing,

meandering, and even looping patterns are suggested to be large high-density charge clusters. When you put that many electrons (mostly) together, they appear to form a local highly-charged environment that essentially shields the charge clusters from any general electric field. The result is that these charge clusters make their own local rules as to what direction they will travel.

*EVs...
probably one of the richest sources of
research for new discovery since
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In the miniature world of Shoulders' EVs, the patents teach that these charge clusters retain their size and stability in the absence of a conductive material. However, when the charge cluster encounters a conductor, such as impacting a metal anode, the charge cluster may disintegrate rapidly. One of the Shoulders' inventions controls the sudden impact of the charge cluster so that X-Rays are produced. It is this editor's opinion that in the next few years there will be hundreds of Ph.D. candidates investigating various aspects of the formation, travel, and dissolution of EVs. It is probably one of the richest sources of research for new discovery since Shockley rediscovered the transistor.

TOMI THEORY AND BACKGROUND

Dan A. Davidson "Theory of Magnetic Instability (TOMI) Free Energy Device," *Space Energy Journal*, vol 6, no 2, June 1995, pp 41-49, 12 figs.

SUMMARY

The TOMI device was invented by Stewart Harris. He tried to patent it in 1978, but was rejected. An agent from Washington traveled to Las Vegas where Mr. Harris lived to witness the device. The man was impressed and returned to Washington. Very soon, all copies of the application and other information disappeared from the Washington Patent Office. Mr. Harris' house was broken into and all drawings, papers, applications and correspondence concerning the TOMI were stolen. Someone was interested.

Mr. Harris' health hinders him from continuing the work on the device, but many other researchers have taken

up where he left off. Dan Davidson has taken magnetic field readings along the magnetic orientation axis (length) of stacks of magnets such as those used in a TOMI device, using a hall-effect gauss meter which is hooked to a computerized data collection system. Tests were done with many different numbers of magnets in the stacks. 8 to 10 magnets were found to be the optimum number in most instances.

Tests show that the magnet roll would get a maximum push by the rail magnets if the retarding magnetic field in the second half is minimized. This can be accomplished by angling the rail magnets away from the track, at about the middle of the stack. (Similar to the arrangement by Don Casul, *NEV*, June 1995, p 6) Davidson also comments on possible applications to magnetic motors and the use of higher power magnets.

TEST OF POTAPOV DEVICE BY PUTHOFF

Scott Little, H.E. Puthoff (EarthTech Intl.), "Preliminary Test Results on the Potapov Device," pre-print from authors.

Introduction

A water-heating device developed in Kishinev, Moldavia by Dr. Yu.S. Potapov has been reported to produce a heat output up to 3 times greater than the energy required to drive it. A Russian physicist, Lev G. Sapogin, has offered a theory to explain this phenomena in his paper entitled "On One of Energy Generation Mechanism in Unitary Quantum Theory." We obtained a Potapov device and conducted a series of energy balance measurements on it. No evidence of over-unity performance was observed.

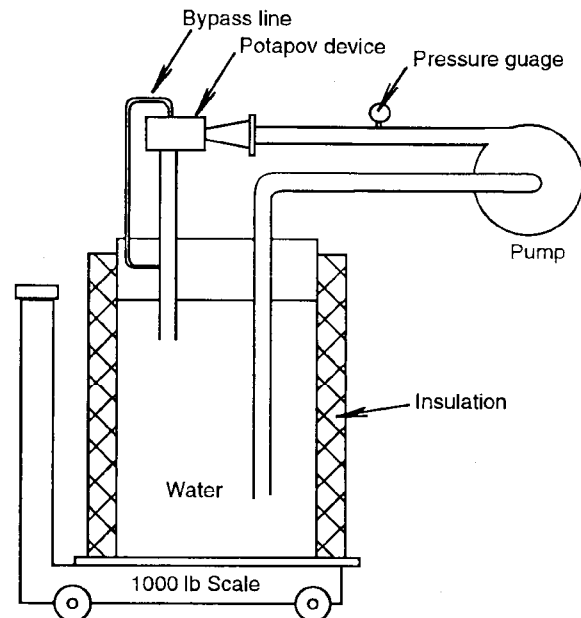
Apparatus

The device we tested is known as a YUSMAR-2 to the manufacturer. Apparently, these devices are enjoying some acceptance in Russia as building heaters and the YUSMAR-2 is the second in a line of four models that they make. For this model, the manufacturer specifies an inlet pressure head of 50 meters of water (71 psi) and a flow rate range of 12.5-23 cubic meters per hour (55-101 gpm).

The device we tested consists of a largely cylindrical chamber with a tangential inlet that spirals gradually into the cylindrical body of the chamber. There is a main axial outlet that occupies most of one end of the chamber and a secondary, smaller axial outlet on the other end of the chamber. The chamber is 2.5" in

diameter and 1" high. The inlet port is rectangular, 1" high and 0.6" wide. The main outlet is 2" in diameter. The secondary outlet is about 3/8" in diameter. Outside the chamber, the inlet pipe is a cone which tapers from 2" pipe down to the rectangular inlet over a distance of 5". The main axial outlet immediately opens into a 24" long section of 2" pipe.

As shown in the figure below, the device is mounted directly above a steel 55 gallon barrel. The exit pipe from the device was extended with 2" PVC pipe and a "no-hub" coupling to a total length of 38" of which approximately 4" is below the water level. The discharge was placed below the water level to prevent air entrainment in the suction pipe.



The bypass line connects the secondary outlet to the main exit pipe. This line appears to be an optional feature of the Potapov device. In the literature accompanying our YUSMAR-2, the bypass line is not shown. However, in a photograph we obtained which shows a device similar in size to the YUSMAR-2, the bypass line is clearly present. We conducted tests with and without this line.

The inlet of the Potapov device is connected directly to the discharge of a 7.5 hp centrifugal pump with a straight 1.5" pipe (discharge port size) 16" in length. 2" PVC piping was used for the suction tube. The total lift in the suction line is about 22". In this configuration, the pump achieves a head pressure of about 60 psi (indicated with a cheap pressure gauge in the

discharge line) and a flow rate of about 106 gpm (measured by letting the pump empty the 55 gallon barrel and measuring the fall rate of the water level).

The electrical supply to 7.5 hp pump motor passes through a General Electric 3-phase watt-hour meter to permit measurement of the electrical energy consumed. This meter has a K of 10.8 which means that the wheel rotates once for every 10.8 watt hours (38,880 joules) delivered to the load.

A small immersible pump (not shown in the figure) is used briefly when starting the system to prime the main pump.

The barrel was wrapped with 3.5" thick R-11 insulation batting and is situated on the platform of a 1000 lb. scale so the water can be weighed.

A high-accuracy glass thermometer (partial immersion type) with 0.1 degree Centigrade graduations is used to measure the temperature of the water in the barrel.

Test Procedure

The energy balance measurements were conducted by running the main pump for a certain period and measuring both the electrical energy consumed by the pump motor and the heat energy delivered to the water during that period.

Prior to starting the test, the 55 gallon barrel was filled with ordinary tap water to within about 8" of the top and weighed (the empty weight of the barrel is known).

Before starting the test, the main pump was operated briefly in order to bring the rotating wheel in the watt-hour meter around so the index mark was centered in the viewing port.

Before starting the pump, the water in the barrel was stirred vigorously with a large wooden paddle and a temperature reading was taken by immersing the glass thermometer to the proper depth and waiting until the mercury appeared to be perfectly stationary for at least 30 seconds (i.e. had stopped moving).

To start the main pump, the small priming pump was operated for about 1 minute to fill the piping system and the main pump. Then the main pump was started and the priming pump stopped within a few seconds. While the main pump was operating, revolutions of the watt-hour meter wheel were counted.

The main pump was stopped precisely when a certain number of wheel rotations had been completed and the index mark was again centered in the viewing port on the front of the watt-hour meter.

Immediately after stopping the main pump, the water in the barrel was stirred with the wooden paddle and another temperature reading was taken in the same manner.

Results

	Test 1	Test 2	Test 3
starting water temp	25.60	29.60	25.95
ending water temp	29.65	33.90	27.90
water wt. (lb.)	366.5	366.5	341.5
wheel revolutions	100	100	40
bypass line	absent	present	present
energy input (Mj)	3.89	3.89	1.56
energy output (Mj)	3.03	2.99	1.27
over efficiency*	0.78	0.77	0.81

*see motor efficiency discussion below

Air temperature in our laboratory is typically around 27°C. In test 3, an effort was made to conduct the test over a temperature range that would minimize heat losses to the air (i.e. the water was warmed from slightly below air temperature to slightly above air temperature). Presumably, this is why the efficiency in test 3 is a few points higher than in tests 1 and 2.

Test 2 was conducted about 1 hour after test 1, using the same water. Note that the water temperature fell only 0.35 degrees during that hour.

The pump run in Test 2 was timed at 727 seconds. This time allows the calculation of the average power consumption of the pump motor: 5.35 kW. The motor manufacturer provided a load curve for this motor which indicates that under this loading the motor should be 85% efficient (the efficiency vs. load curve is very flat in this loading region).

Error Discussion

The errors associated with each of the critical measurements have been estimated as follows:

- delta-T 0.05 °C (2.5% relative in test 3)
- water weight 2 lbs. (about .5% relative)
- watthours .5% relative

These errors are independent and would thus combine to produce an overall expected error of about 2.6% relative.

Conclusions

The Potapov device we tested did not show any evidence of over-unity performance in our tests. The observed efficiency is 4-8% lower than the rated motor efficiency. This difference is significant and is probably due to heat losses to the air and to the body of the pump, which were not measured in these tests.

Our test conditions closely matched the manufacturer's recommended operating conditions for the YUSMAR-2. Our head pressure was about 60 psi instead of the recommended 71 psi but our 106 gpm flow rate was at the high end of the recommended range (55 to 101 gpm). It therefore does not seem likely that we were "underfeeding" the device.

We can find no explanation for the failure of this Potapov device to perform as reported (300% efficiency). (It is of course possible in principle that we have failed to meet some operating condition that is critical for the over unity performance.) We welcome suggestions for further testing.

Rotating Space-Energy Machines

BRITAIN - PERMANENT MAGNET MOTORS 1942

Courtesy of Dr. Harold Aspden

UK 547,668, "Improvements in or relating to Permanent Magnet Motors," Stanley Isaiah Hitchcox, 30 Jan. 1942, 7 Sept. 1942. This invention relates to permanent magnet motors, i.e. electric motors including permanent magnets in the rotary or stationary magnet systems in lieu of the electrically energized magnets commonly used in the usual type of electric motor. The chief object of the present invention is to evolve a permanent magnet motor of a generally improved construction which will consume a minimum amount of energizing current, will have a high torque output comparable with the electric input at both high and low speeds, and which generally will be of a simple construction.

BRITISH RESONANT MOTOR

Courtesy of Gene Mallove

Chris Tinsley (Nottingham, U.K.), "General Description of the Resonant Motor," paper from author.

EXCERPTS:

The Resonant Motor is a form of variable reluctance synchronous motor; consisting of a permanent magnet rotor and a wound inductive stator which, together with a capacitor, forms a parallel resonant circuit. Although this is apparently a very simple motor, a full understanding of its behavior is not trivial. This description is being written during the development of a practical prototype, and makes no claims to being a definitive description of the device.

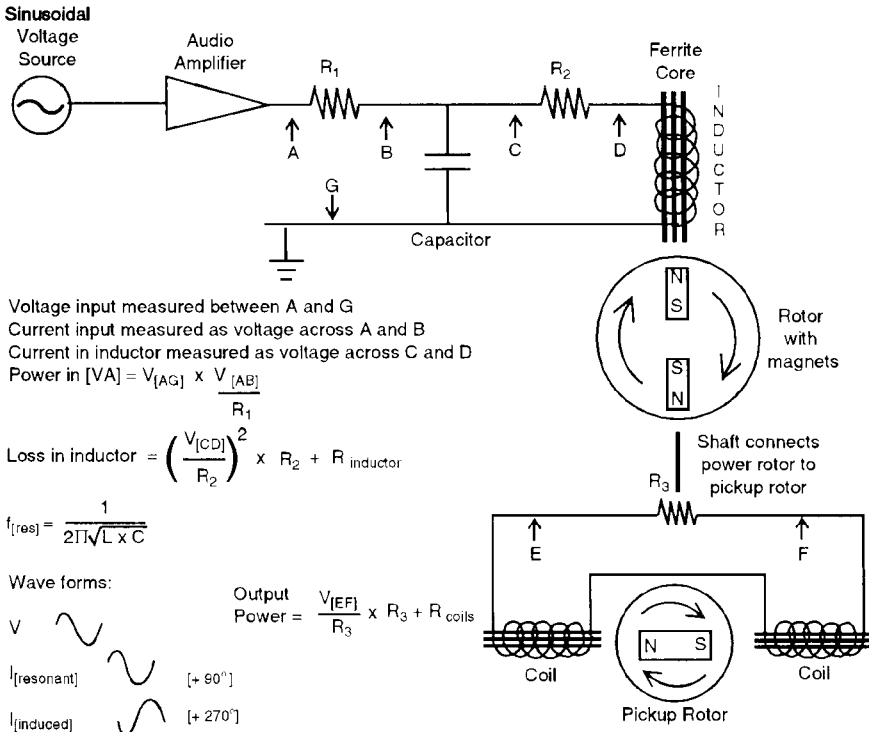
The principle of operation is that an amplifier or similar low-impedance source is used to place a sinusoidal voltage across the resonant circuit, thus stimulating resonant action in the circuit. The magnetic field produced by the current in the inductor drives the magnet rotor in synchrony with the oscillating magnetic field of the stator.

... In practice the motor must fulfill certain basic requirements. Firstly, the resonant circuit must not be disturbed significantly by the motor action. This means that the presence of the magnets of the rotor must not alter the resonant frequency of the circuit by varying the inductance of the stator as they pass, or at least not by an amount which changes as the magnets rotate. The sum of the effects of the coil current and the magnets must not cause any part of the stator core to reach the flux density at which it saturates.

... Cores formed from such low permeability materials as iron laminations have sufficient flux leakage as to make it difficult to get a good flux linkage between windings. Thus the material chosen is usually high permeability ferrite of a type with a high saturation flux density, but the problem of possible saturation of the core has to be taken into account. Naturally, the higher the apparent permeability of the core, the smaller the inductor for the same ratio of inductance to resistance.

See drawing on next page.

Resonant Motor, designed by C.P. Tinsley



BEWARE THE INSTANT NEW ENERGY EXPERT

You can "bet your bottom dollar" that there will be ten times as many scams as there will be honest proposals for new energy investment! How can you protect yourself? The answer to that question is the purpose of this discussion. You may want to spend some investment capital to "get in early", but you don't want to "pour money down a rat hole." The issue is to use your best intellectual efforts and tools to discriminate between the high future return on investment (ROI) and the "rat hole."

The author of this book has been reading the enhanced energy literature (over 2500 papers), attending technical meetings, and meeting many scientists, engineers, and business persons who are involved in this exciting new energy field. This experience coupled with the author's education, both as a scientist and later

in earning an MBA degree, provides a background for the evaluation of new energy proposals. However, even with this training and experience, it is not possible to accurately forecast the future of a proposed business venture. However, there are some observations that will help the investor, as follows:

1. Determine if the company has a balanced business plan. For example, one new company seeks to manufacture new batteries, new motors, and new battery-charging systems for electric vehicles. It may be assumed that with sufficient capital the company has an opportunity to make a success out of three different product lines. In this company, only the new charging system is based on the successful application of enhanced energy technology. A second example is a Nevada company that proposes to build an electric automobile based, in part, on enhanced energy technology. No one can assure you which company is going to be the best investment. However, it would appear that the company specializing in batteries, motors, and battery chargers would have the least risk because, conceptually, they could succeed with any one of the three projects.

Miscellaneous

INVESTING IN NEW ENERGY

By Hal Fox

The inventor of the xerographic copy machine told a taxi cab driver about his invention. It is reported that the cab driver invested \$100 and became a millionaire. While this may be an unusual or a somewhat distorted story, it is true that those who invest early in new technology if they pick a winning company, can realize handsome returns on investments. For example, managers of many venture capital funds expect to realize a tenfold return on investment within a two- to three-year period. However, this tenfold return must make up for failed expectations where there were zero returns or a complete loss of an initial investment in other non-winner companies.

2. **Determine if the company has professional management and sufficient capital to achieve their stated goals and objectives.** Lack of sufficient capital and poor management will probably be the two most important factors in determining the success or failure of a new business.

3. **Determine if the company has a proven, independently-replicated, enhanced-energy process.** Has the proposed technology been developed to a production prototype? What is the test data? What are the production costs as compared to alternate technologies. (This is an important issue. There are many good products that just do not compete in price with current, established technology.) Does the company have patent protection or license rights? Even if all elements appear to be favorable, one of the greatest risks is that today's invention may be surpassed by tomorrow's invention by another company. For example, one of today's cold fusion patented devices has been replicated, demonstrated, and is being offered for licensing to manufacturing

*Those who invest early in new technology
can realize handsome returns
on investments, if they
pick a winning company.*

companies. However, there is another technology that has been tested, proven, but not announced. How is the investor going to ensure that he is investing in the best technology? The answer is, "You will never know." Therefore, don't invest all of your money on one product or one device.

4. **What is the market size for the specific product being promoted?** In general, the size of the energy market is absolutely huge. Energy costs are an estimated one-fifth to one-fourth of the total costs of all goods and services. No one company can be expected to have a large percent penetration into such a huge (multi-trillion dollar per year) market. Therefore, a company has to plan to penetrate a segment of that market. For example, if a company states that they expect to make millions of dollars providing new power sources for roller coasters, the market may not be big enough to produce their anticipated revenues. On the other extreme, making millions from the electric auto market must be tempered with the fact that all of the major automobile companies are working on models of electric automobiles. These companies already have huge distribution organizations in place. You might decide that the company furnishing new energy systems for roller coasters has a better chance of

success then the company planning to compete with General Motors and several other automobile giants.

5. **Obtain qualified, competent technical advice.** Where does one obtain competent, scientific or technical advice on enhanced energy devices or systems? This is an important and controversial question with no simple answer. It has often been stated in articles about cold fusion that the majority of scientists do not believe in cold fusion. However, it is now a historic fact that after six years of development, cold fusion devices and systems are being commercialized. The important concept is not how many scientists "believe in it", but does it work and can it be produced economically. The Fusion Information Center (FIC) in Salt Lake City, Utah has the world's most complete collection of information on cold fusion. This organization has been publishing *Fusion Facts* for six years and has an extensive data base. This organization consults with both individuals and companies who are seeking information about cold fusion and its future. The same statements can be made about enhanced energy devices in general, therefore, FIC may be able to answer queries concerning experimenters, theorists, and consultants in the field.

6. **Find out whether you are investing in Research, Development, Manufacturing, or Sales.** The most risky is financing research because, by definition, no end product has been specifically defined. If the research has been completed (at least to the extent of a definable product) the risk is less and the Development of a production prototype is the next step. If a production prototype is available, then the business plan is probably related to manufacturing a product. Here the risk is generally less than a Development project. Finally, if the business plan is to market products manufactured by others, the risk reduces to business marketing skills, and penetration of a specific market. An investor knows that reduced risk usually means reduced rates of return. Only the most risk-seeking (and potential large profit-seeking) investor will invest in research. Unless you are highly competent to technically judge the merits of an invention, it is strongly suggested that you avoid investing all of your risk capital in Research. Again, it is wise to diversify.

After all of these suggestions and warnings, invest in some aspect of new energy. Be out of debt (except possibly for your home.) Don't invest money you can't afford to lose. Do not borrow to invest. Diversify your investments within the new energy field. Cold fusion and other enhanced energy systems will have a greater impact on this world than any previous

have a greater impact on this world than any previous invention of this century! Become informed and become a participant in the coming energy-rich world. If you can't invest money, invest time and become an expert in some aspect of this new energy field. The new energy world needs both capital and talent.

[Note: This editorial is the essence of a chapter in Hal Fox's forthcoming book: Space Energy Impact in the 21st Century.]

WORLD ENERGY UPDATE

Gordon B. Moody, Publisher/Editor, *World Energy Update*, May 1995, 13 pages, numerous graphs and tables.

EDITOR'S COMMENTS

This publication is distributed courtesy of Bell Helicopter Textron, Inc. Each issue has interesting and factual summary information about the world's energy, especially for the oil industry. The first statement of this issue states, "Whether or not we have a political or economic crisis in the Middle East (which has two-thirds of all known oil reserves) market fundamentals indicate higher oil and natural gas prices as we head toward the end of the 20th century." The article also states that the new hydrocarbons in Colombia, Yemen, Vietnam, and Myanmar are adding to the current oil reserves that will soon be marketable.

An interesting graph of OPEC versus Non-OPEC oil production shows that the OPEC oil production has varied from 31% in 1974 to a low of 14.9% in the mid-eighties to a current 25.1% of the world's oil production. The Non-OPEC production has varied from about 25% in 1974 to a high of about 38.7% in the mid-eighties to a current value of 37.4%. Saudi Arabia accounts for about 9% in 1974, a low of 2.25% and a current 7.9% of the world's oil production. These three major groups of oil producers provide over 70% of the world's oil production. The current trend appears to favor the further development of Non-OPEC production.

The world dynamics of oil consumption is shifting from the U.S. and Western Europe to the Asian-Pacific regions. OPEC is no longer setting world oil prices. The world's free market forces are now in effect as the world demand for energy grows. In some places the ownership of oil reserves have shifted from the

countries of oil origin to countries that could pay to buy out the reserves (such as Japan). More than 80% of the new refinery capacity is slated for construction in Asia and the Middle East. Oil companies have increased their earnings and have allocated an increase in capital spending for 1995 (about 12% higher than 1994.) The major impact of cost on capital spending in the increasing demand for more stringent environmental standards world wide.

As cold fusion and other enhanced energy devices and systems become commercialized, there will be an impact on the oil and gas industry. The impact will be gradual but over the next decade there will be a potential for enormous changes in the way the world produces and markets energy production and use. The information from sources such as this World Energy Update will provide a greater understanding of the enormity of the energy market that we seek to supplant. Oil and gas will still be a huge factor in the world's economy not only for this decade but for the 21st century because of its critical importance for use a chemical feedstocks.

RUSSIA - NEW SCIENCES SPOTLIGHTED

Courtesy of Alexander Frolov

The International MegaScience Academy is located in Petrozavodsk, Rep. of Karelia, Russia. We have recently received some information about this Russian organization that was begun in December of 1991. Its president is Mr. Victor M. Jurkin, and it has representation in Moscow, St.-Petersburg, Kiev, and Tumen. Dr. Frolov has sent us the following information:

"Main activity in next directions: system optimization of infrastructures, energetics, ecology, international megascience and educational activity, and realization of a unified theory of World.

"Mission of MegaScience is optimization and correction of world science according to Laws of Natural Correctness, Global Ecology, Transfer of Humanity to Space Mentality.

"Business activity of IMSA: international trade in high-technology, "know-how" and patents, science conferences, introduction of new technologies."

Institutes of IMSA

- "1. The Institute for General Theory, Russia, Rep of Karelia, Petrozavodsk. Unified theory of World, unified algorithm of science (spectrum science), unified knowledge. Director Mr. Victor M. Jurkin.
2. The Institute for System Optimization of Infrastructures. Moscow. General theory for optimization, Ideal social models, state models, World models. Systems for utilization of social evil. Director Mr. Anatoly A. Ovseitsev.
3. The Human Institute, Petrozavodsk. General theory for widening of human possibilities, Training, education, culture, art. Religion, spirituality, Synthesis. Director Mr. Alexey M. Popov.
4. The Institute for Trans-World Communications, Moscow. Multidimensionality. Plurality of Worlds. Experience for transworld communication. Director Mr. Michail S. Eltsin.
5. The Institute for Free-Energy, St.-Petersburg. General Theory for Free Energy. Systems for controlled generation of free power from spatial medium.
6. The Institute for Free-flow operative hydroenergetics, Petrozavodsk. General theory for Energetics of Free Flow. Systems for controlled generation of electrical power by means of free hydro-torrent. Director Mr. Yury M. Novikov.
7. The Institute for Forces, Petrozavodsk. Forces. Operation. Paradox. Parallelity. Trans-world. Director Mr. Victor M. Jurkin."

BOOK ANNOUNCEMENT

Universal Laws Never Before Revealed: Keely's Secrets, authors Dale Pond, John Keely, Nikola Tesla, and others. Second edition, newly revised. 288 pages, 8½ x 11 trade paperback, illustrated with B&W photos, drawings, graphs, and charts; patents, bibliography, index. List price \$19.95. Available from the Message Company, RR2 Box 307MM, Santa Fe, NM 87505. Add \$2 shipping.

Summary: One hundred years ago, scientist/inventor/philosopher John Keely built various devices that were able to overcome gravity, tunnel through rock using a hand-held device, use acoustics to power engines, and create superconductivity by using wires made of gold, silver and platinum. Almost lost, this book finally compiles then years of research by the editor/author that explains the technology used. Understandable to the layman and useful to the most advanced researcher.

LETTERS

LETTER FROM DR. HAROLD ASPDEN

Dear Hal,

.... Concerning what you have kindly termed the 'Aspden Effect' I had hoped by now to have found the time to get the experiment mounted in a calorimeter housing to see if it was producing anomalous heating, but my circuit design problems on the funded motor research have set me back more than two months in my efforts.

On the latter I will have more flexibility in testing the 'over-unity' feature if I now build two new machines coupled back-to-back and use the induction in one machine to control the pulse commutation of the other and vice versa. This will avoid parasitic oscillations which come into play when I reduce the pulse period with the self-commutation from the single machine. It will spare me the need to build what to me with my limited experience with semi-conductor circuit design is rather complex electronic control circuitry but which experts would see as close to child's play. With the motor I am testing in the range that is free from oscillation, there is clearly over-unity in overall energy terms, even so, but the margin of gain increases as the pulse duration is trimmed. That takes my circuit into its oscillation range, but I can see that, with the right circuit design, I may well have a three-to-one scope for improvement on what I have now, even with the present machine structure and its inferior magnets. However, I am not ready to disclose this until I am further forward in the project.

So, concerning the 'Aspden Effect', you should know that before I was awarded the funding for the motor project I had agreed to give a talk in Scotland and I chose my topic as 'The Experimental Pathway to New Sources of Energy'. My paper and presentation material for the overhead viewer were all prepared and then, three weeks before the event, I heard of the research award. I resolved not to go to more conferences or write more papers until I had made significant experimental progress in that motor pursuit, but did deliver my talk at the August 24-26 meeting of the Society for Scientific Exploration (Second European

Conference). That meeting was very well attended and my talk was well received, but curiously the organizers, though trying to persuade me to join that society, somehow in their pre-planning (which lacked coordination between the meeting planners and the editorial people of the society) never asked for or received a copy of the paper I had prepared. I get requests for copies from those who attended or heard about my talk, but I have deferred response to these until I get around to its eventual publication. In fact, my plan then was to hold the copyright back and use the theme for a book as soon I had done a crucial experiment. Action was shelved following that August meeting owing to embarking on the motor research.

Then, in the late December/January period, testing my first motor, I ran into the 'virtual inertia' phenomenon [the Aspden Effect] quite unexpectedly. I thought I would need a calorimeter test to see what I had predicted, or possibly evidence of excess flywheel inertia on slow-down, but it came instead from the transient inflow of anomalous power. The latter now makes the calorimeter tests essential for onward investigation.

The work needs presentation of some detailed calculations to show how the structural design and operation fit the measurements and I need to build the machine afresh to run it inside a heat-shielded aluminum housing of fairly thick metal plate. I now have the latter with its bearing mounts ready for assembly, but it has not been high on my list of priorities. Also there is a specific test I want to do before publishing details, namely the calorimeter test with an automatic-off timing of the motor drive, say 5 seconds on and 5 seconds off, to see if the continuous change of speed activates excess heat release - but that is still a speculative proposition.

The book would begin with much the same text and style that you see in the paper, noting that this was five months before the experimental discovery that confirmed what I said at that lecture.

Then the onward account would be the experimental details and a discussion of how the measurements and findings bear upon other new energy research projects, from there leading to the motor project and its outlook.

Possibly, depending upon the objectives of the 'book' the later chapters could enlarge on the underlying importance of the whole theme, namely those fundamental and universal issues which come under

the heading of 'Creation' meaning the role of vacuum spin and its magnetic influence in regulating cosmic energy transfer in the reducing entropy sense. As to the book's market potential, apart from the 'free energy' impact and the 'Creation' interest, you will see that there is some science creeping in that pertains to homeopathy researches (dilution of water and its anomalous interactions with human body cells). Indeed, the arch-heretic on that latter theme, Beneviste, was a speaker at the Scottish conference, along with Hal Puthoff, and there were several scientists urging interest in thunder ball [ball lightning] phenomena. The latter, as you will know, is something, in the context of 'free energy', that features prominently in the experimental aspects of Kiril Borissov Chukanov's book 'Final Quantum Revelation'

I will now see if I can expedite reporting on the virtual inertia topic and will keep you informed.

Meanwhile, best regards, /s/ Harold Aspden

LETTER FROM DON KELLY

To Pat Bailey, Pres. INE

Something has just happened recently in the new energy field which, I believe, will be a turning point toward the acceptance of new energy, for all time to come!!

This even can best be described as the "Matsumoto Initiative" and centers on the inquiry of a Japanese engineering group in Switzerland into the present status of the Swiss M-L Converter. I have sent them info on three sources to contact over there, and wished them well in their quest on this important project work.

As you know, the Swiss M-L Converter has always been my favorite new energy project for various well known reasons. For one thing, it is the only new energy system which has shown a clear "stand alone" operation, with its unique feedback circuit, which powers a small motor which revolves the twin, E/S discs.

Since no similar inquiries about the status of the Swiss M-L Converter have come from U.S. sources, I must conclude the U.S. science is now in the grip of some kind of "dumb malaise," about the future prospects for new energy, at this time!

The ominous aspect of the "Matsumoto Initiative" is that it again shows that the U.S. is content to assume a second best role, or importation status to Japanese advanced technology, as in the past.

All of the most advanced energy project work in this country is now being done within the energy "underground." One has to wonder if the "powers that be" really know and understand the real implication of our official "do nothing" position in this new energy field!

What will it take to wake up our scientific establishment over here, now? Maybe it is this "Matsumoto Initiative," but I suspect that it will actually take the importation of the M.R.A.'s, S-M-L-C's, or similar new energy systems from JAPAN to do it!

The very clear evidence for this is the fact that none of the MAJOR pioneering work of Viktor Schaubberger, John W. Keely, T.T. Brown, Hans Coler, T.H. Moray, or Paul Baumann is accepted! Very little or none of their pioneering work has ever appeared in any physics texts, or generally released tech data in physics.

As far as the present physics establishment is concerned, all of these major pioneers in applied physics might just as well have been local hotdog vendors outside the local courthouses.

Regards, /s/ Don Kelly

LETTER FROM ED WALL

Mr. [Jerry] Decker described how Hal Puthoff queried "high officials of several major oil companies" to see how they "would respond to a free energy device that would result in a major reduction in oil consumption...", ending the paragraph by stating "So much for the oil company conspiracy." [Jerry Decker, "KeelyNet Philosophy" *NEN*, May 1995, p 13]

This reminded me of a comment made by cigarette manufacturers when their ability to advertise was infringed, which was that they don't think that advertising induces people to smoke, anyway. A wise business man or politician does not air his wounds or admit his weaknesses.

I have to ask, is it reasonable to believe that if the major source of revenue for a company is eliminated, will the livelihoods of the employees be threatened? We all know that there are better uses for hydrocarbons than burning and [added] markets for the

many products open all the time. Revenues from such products are enormous. The value added in production of products from petroleum to pharmaceuticals, for instance, is astounding and in the league with silicon to semiconductors. I am glad that oil companies will not be destroyed if free energy devices reach mass markets, but the impact will be great. If you want proof, look into the profit categories for a typical oil company. Look at profits for fuels versus profits from everything else. I find it hard to see the enormous wealth concentration in the Middle East as a result of sales of oil to chemical companies for use in cosmetics, plastics, road surfaces, etc.

[If you owned an oil well in the U.S. would you sooner sell now at \$20/bbl or hold off a few years and sell for \$60/bbl? -Ed.]

LETTER FROM NORM WOOTAN

Dear Fellow MRA Researchers:

Enclosed is the Test Report from Walter Rosenthal on his test of the MRA. Walter did not send a letter with the report so you get exactly what Joel and I got so you have to interpret the report as we did. Walter shows an overall efficiency of 87% when tuning up in frequency above peak resonance and an efficiency of 68% when tuning down below peak resonance. Joel and I have promised to share all information with all who are interested in this project for we have nothing to hide from anyone. We will continue to provide info as things develop so everyone is on the same sheet of music so as to keep the "rumor mill" from creating false information. More info as it happens.

Norm

[The Test Report consists of 4 pages of graphs acquired from an oscilloscope, with the appropriate operating parameters listed. No text discussion was included, except for the above note from Norm Wootan.]

LETTER FROM EUGENE MALLOVE

Published as part of a full page advertisement in *The Tech* (MIT newspaper), vol 115, no 27, Fri., 9 June 1995, p 19.

An Open Letter

Dear Graduates and Friends of MIT:

Do you know that a U.S. corporation's portable ultrasonic reactor has created helium-4, helium-3, and hundreds of watts of excess power from palladium foils in heavy water -- reproducibly? Do you realize that tritium is now being generated -- reproducibly -- from palladium and deuterium in cold fusion experiments at Los Alamos National Laboratory? Dozens of other laboratories have also generated tritium in chemical environments. Imagine the dismay of the nuclear physicist in Texas -- a skeptic -- who was startled to observe numerous radioactive transmuted elements in palladium electrodes from his cold fusion experiments! Are you aware that Japan's MITI and numerous Japanese corporations are developing "New Hydrogen Energy," i.e. cold fusion?

Do you know that a university physics group in Italy is working with Fiat Corporation on a high-temperature process in which nickel and hydrogen have liberated hundreds of megajoules per mole of material -- with no sign of an upper limit to energy release? Do you know that several commercially available devices exist (in the United States and in a province of the former Soviet Union [Moldavia]), which generate intense cavitation in water and produce continuous excess power in the multi-kilowatt range, in some cases over 400% excess over input power? These units are already heating buildings and are beginning to be exported to foreign countries.

If you did not know about these astonishing developments please educate yourself by reading about them in the pages of *Infinite Energy!* To be sure, these facts are highly disturbing to those with knee-jerk reactions to data that they can't explain with existing theory. The phenomena are now absolutely confirmed, we lack only a firm microphysical explanation. One of the greatest paradigm shifts in the history of science is occurring **right now**.

That is the good news. And now for the bad news: In 1989, after the announcement of 'cold fusion' at the University of Utah, certain members of the MIT community gave MIT a very bad name as a "bastion of skepticism" against cold fusion. What if in 1903-1908 prominent members of the MIT faculty had attacked the Wright brothers as incompetents and frauds and what if they had defended their government grant for hot air balloon experiments against the invention of controlled heavier-than-air flight?

Think about it.

Sincerely,
Dr. Eugene F. Mallove
MIT '69 (Aero/Astro)

"Let us hope that in a decade or two, or at least, just before the beginning of the twenty-first century, the present meager years of theoretical physics will come to an end in a burst of entirely new revolutionary ideas similar to those which heralded the beginning of the twentieth century."

George Gamow, Russian-American physicist, 1904-1968

CORRECTION

Another letter from Toby Grotz:

[This is a reprint with information that was inadvertently left off of Toby's letter last month (*NEN*, June 1995, p 16). New information is bold italicized.]

There have been a number of comparisons made between the MRA and the VTA. There is actually little similarity between the VTA and MRA. To clarify the record, the following table will show the differences:

Device	MRA	VTA
Type of circuit	resonant LC	inductive coupling not resonant
Frequency of Operation	40 kHz, ± 20 kHz	60 Hz
Materials	capacitor & high freq. ferrite core	BaFe magnet
Documented output (written test results available)	0.5:1 <i>Rosenthal</i> <i>Puthoff & Little</i>	>1,000,000:1 <i>Bearden</i> <i>Rosental</i> <i>Video Report</i>

The MRA is a totally different type of circuit. I see no similarity between the two other than the common use of copper wire. The VTA device did not operate on a resonance principle or use ferrite core material.

Toby

PHYSICS ON A.O.L.

Many of these articles or papers or book chapters listed below include email addresses of authors and other sources. This file will soon be available for downloading on America On Line (AOL).

NUPHYSIC.ZIP

1776308 total uncompressed. 682,917 total compressed. 57 files

BASICS.TXT spherical electromagnetic quantum
 VACENRGY.TXT vacuum energy application from Bearden
 VOID.TXT why matter, why quarks, etc., bunch of stuff here
 ZPENRGY.TXT zero point and free energy theory
 ZPGRAVITY.TXT zero point energy as energy source
 NEWGRAV.TXT gravity in terms of an inflow of matter into material bodies
 NEWMATTR.TXT why matter exists
 NEWQUANT.TXT new hypothetical properties of elementary particles

NONLOCAL.TXT faster than light communication, loop-holes in quantum mechanics.

LAWS.TXT laws, rules, principles, effects, paradoxes, limits, thought experiments

LEWIS.TXT EVs, ball lightning, CF. plasmids etc. a new set of phenomena

QUANTUM.TXT relity as described by quantum mechanics

KEELY.TXT discussion of Keely's work in 19th century..aerial craft

KEELYLAW.TXT Keely's law of sympathetic vibrations

CHEINIE.TXT 82,000 reward for proving Einsteins theory of special relativity

HYPRHOLO.TXT The universal hologram

GRAVAC.TXT The sun is a shell enclosing an absolute vacuum

GRAVGEN.TXT Gravity wave generator, how to alter spatiotemporal continuum

GRAVKIT. TXT resonant gravity field coil (how to manipulate reality in 530 sq inch area) dangerous

stuff to build at home.

GRAVQUES.TXT Chapter III, gravity, light and force, nature of gravitation

GRAVRES.TXT objection to mass/velocity relationship hypothesis

GRAVWAV.TXT all about gravity waves

DEPALMA.TXT extracting electrical energy directly from space

DNOYES.ASC an encounter with DeNoyes himself

COILBAK.ASC energy amplifier (electrical)

COILBAK.GIF graphic of figure for coilbak. asc

COLDFUSX.TXT text of lively 3rd international cold fusion conference 1992

TIMLN3BG.DOS one of several texts on discussion of historical timeline

TMLN3SH.DOS

TIMLN3DC.DOS

TMLN3REG.DOS

TACHYON.TXT About tachyons and their field.

TEDEM.ASC new property of matter from new model of interaction of matter and space

SONSGOD.DOS the clustering of "gods" from 700 ad to 0 BC [sic]

TEDGRAV.ASC on gravitation

TRNSLRT.TXT scalar translations

TIMESPA.TXT 3d time and space

TIMETRAV.TXT time travel

RELATIV.TXT chapter IV relativity and the physical universe

SCALARI.TXT a look at scalar technology and one of its applications

SCALAR2.TXT scalar translators

SCALAR3.ASC scalar "detectors"

SCALRWAV.TXT the cadeuces or "tensor coil"

CONTACT.TXT excellent source for contacts and files on this kind of stuff

SPIRAL.TXT the genesis factor

SSC.ASC superconducting super collidor

STDPHYS.TXT Chapter III, the nature of space, time and matter

STS61.TXT access the NASA space link

FREEBTU.TXT. defense of free energy and feasibility.

TESLABIO.TXT biography of Tesla

TESLA1 .TXT wireless transmission of power

TESLA5.TXT greatest hacker of all time

TURBINE.TXT Tesla's bladeless turbine

TESLANWS.TXT news about the Tesla society

TESLAQWK.TXT Tesla's ideas enumerated

FREENRGY.ZIP Bearden's earlier paper and graphics on applying free energy

courtesy of Sylvester Christie, P.O. Box 154, Berkeley, CA 94701-0154 (510) 204-0631/fax days, data evenings. Schris8588@aol.com

The numbers for a few of the technoid BBS's are as follows:

KeelyNet BBS (214) 324-3501

Outer Limits BBS (304) 327-7452

Tesla BBS (719) 486-2775

Wierdbase (314) 741-2251

Of course, they all have massive lists of numbers online which you can download.

Editorial

2002 - THE BIG NEWS

Salt Lake City, Utah, June 16, 1995. A news flash from Budapest: Salt Lake City, Utah is chosen to host the Winter Olympics, 2002. A "party of the century" begins. Centered in the square surrounding the old City and County Building, thousands of Utahns cheer mightily at the news.

Salt Lake City, Utah, March 23, 1989. At a news conference called by the University of Utah, Professors Stanley Pons and Martin Fleischmann (both renowned electrochemists) announce the discovery of low-energy nuclear fusion in an electrochemical cell.

With \$59 million (estimated) spent on the Winter Games to prepare sites and win the bid, and an estimated \$795 million more to be spent on site preparation, ceremonies, events, etc. Utah is preparing

for the February 9 to February 26, 2002 winter games. Two billion people are expected to see some of the coverage of this 15-day sports competition.

With \$5 million spent by Utah on cold nuclear fusion in 1989-1990, and an estimated \$10 million spent by the United States, Pons and Fleischmann moved to France where their work has been supported by Japanese funds. With an estimated \$100 million spent (world-wide) on cold nuclear fusion, this new science is now being commercialized.

The world will little note nor long remember what happens at the February, 2002 Olympics, except for the medal winners. The impact of the announcement of the discovery of cold fusion will reverberate through history. Billions of people now living and yet to be born will be benefitting from this important new science.

"New Power For You in Two Thousand and Two."

Let us set a motto and a goal to match the sports efforts for 2002. When the crowds convene in Salt Lake City, Utah in February, 2002, let's have the following items all ready in place and working (but not only in Salt Lake City):

1. On-board battery chargers for the electric cars and buses.
2. New energy hand warmers for coat pockets of visitors.
3. New energy heaters for the tents, houses, homes, buildings, and gyms.
4. Fresh food grown locally in greenhouses powered by new energy heaters.
5. Billboards with new-energy power to say in lights: "Welcome to Utah, the New Energy State."
6. Non-polluting electric vehicles prevalent on the freeways and highways.
7. New-energy powered TV broadcast transmitters in vans and on hill tops to broadcast to the world: "This broadcast of the Winter Olympics is coming to you from Utah, the New Energy State."
8. New-energy inventions being used in various parts of the world to stabilize radioactive debris.

9. New-energy cookers used world wide to slow down cutting of forests.

The staff at **Fusion Information Center, Inc.** is dedicated to help make this scenario come to fruition. We need the help of inventors, engineers, scientists, business managers, and investors. Here is our proposal and objectives for NEF:

1. **We will establish a New Energy Foundation (NEF) to promote the development of new energy systems.**
2. All research and development groups, all manufacturing and distributing companies, all intellectual property groups, and all investing entities who are to be involved in the development of New Energy Systems are asked to join the NEF.
3. Representatives from all groups will be hosted by the NEF to set world-wide specifications and standards for new energy systems.
4. The NEF will establish an approved safety and quality standard to go along with "Manufactured to NEF Standards." to be placed on all new energy products.
5. Provide for the free exchange of information (immediately after inventions are protected by proper patent applications) among NEF members.
6. Provide for adjudication of intellectual property disputes without recourse to expensive litigation.
7. Provide a source for multi-lingual computer-based educational materials about new energy concepts and systems.
8. Provide a system for the handling of international trade in new energy educational materials, components, devices, and systems.
9. Provide a computer-accessible database for all members of the NEF and their customers and clients.
10. Provide for a clearing house for employment and consulting opportunities for scientists, engineers, technicians, and business consultants for members of NEF and their customers and clients.
11. Provide for the publication on various media of information about new energy concepts, products, services, and investment opportunities.

12. Provide a source for accurate information to the media concerning new energy, its members, and its collective products and achievements, world-wide.

13. Provide an interface among inventors, engineers, entrepreneurs, and investing entities.

14. Provide for an unbiased, peer-review or evaluation of project proposals for the purpose of improving such submissions before presentation to funders.

15. Provide and operate an NEF member's computer bulletin board for latest new energy information.

NEW ENERGY FOUNDATION FOUNDERS APPLICATION

The undersigned desires to become a founding member of the **NEW ENERGY FOUNDATION (NEF)**, a not-for-profit corporation to be filed under the standard commercial laws of the State of Utah.

I agree to help develop and abide by the rules and regulations governing this body and to help promote the development, distribution, use, and knowledge of new energy concepts, devices, and systems:

Name: _____

Mailing Address: _____

Telephone: _____ FAX _____

e-mail: _____

Enclosed is \$10 for individual founders first year membership.

Enclosed is \$100 for corporate founders first year membership.

Papers will be filed as soon as 50 founder applications are received. Thereafter members dues will be \$25 for individuals and \$250 for corporations (or as otherwise determined by the NEF Advisory Board.)

Mail to P.O.Box 58639, Salt Lake City, UT 84158

Meetings

Announcement and Call for Papers International Forum on New Science September 13-17, 1995

New Science includes topics and phenomena which cannot be explained by traditional science, yet may have a potential for significant benefit to the health and conditions of humanity and the planet Earth.

Call for Papers and Abstracts

Scholarly papers are invited on any New Science topic. These papers should include one or more of the following:

- theories
- hypothesis
- research designs
- research results and analyses

Abstracts of not more than 400 words must be sent as soon as possible to IANS, 1304 S. College Ave., Fort Collins, CO 80524. Consideration of abstracts cannot be assured if received after August 1, 1995. Authors will be notified as soon as possible if the paper is accepted for presentation at the Forum.

Registration

A registration fee of \$150 will be charged if received by July 1. The cost will raise to \$175 from July 1 to September 1. After September 1 the charge is \$200. Daily registration fee is \$65 per person, or \$35 per half day.

Several workshops will be offered Wednesday through Sunday evenings by keynote speakers and other guest speakers for \$15 each. You may register for these individually (send for information). A banquet will be held on Saturday evening with a special program. Cost: \$22.

The Forum will take place at the Fort Collins Marriott, one of the nicest hotels in the city. Both a single and double room will be \$64 if reserved by August 30. Roommates can be arranged. Telephone the Marriott at 1-800-548-2635 or 970-226-5200 for reservations. The Inn at Fort Collins is located at 2612 S. College Ave., about one mile from the Marriott. A single room there is \$35 if reserved by August 13. Detailed

housing information will be sent upon receipt of your registration.

Send inquiries to the International Association for New Science, 1304 S. College Ave., Fort Collins, CO 80524, or call 970-482-3731 or Fax 970-482-3120.

Commercial Column

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

COMPANY: PRODUCT

American Cold Fusion Engineering and Supply: Information and troubleshooting for the fusion research and development industry. Sacramento, California. The president, Warren Cooley, can be reached at 916-736-0104.

CETI (Clean Energy Technologies, Inc.): Developers of the Patterson Power Cell™. Dallas, Texas. Voice (214) 458-7620, FAX (214) 458-7690.

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 sonoluminescence program. Contact Russ George, FAX (415) 851-8489.

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.

Nova Resources Group, Inc.: Design and manufacture ETC (Electrolytic Thermal Cell); EG (commercial power cogeneration module); and IE (integrated electrolytic system). Denver, Colorado. 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.

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

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 for later in 1995.

New Energy News monthly newsletter, edited by Hal Fox, Salt Lake City, UT 801/583-6232

Cold Fusion Times, quarterly newsletter published by Dr. Mitchell Swartz, P.O. Box 81135, Wellesley Hills MA 02181.

Infinite Energy, new bi-monthly newsletter edited by Dr. Eugene Mallove (author of **Fire from Ice**), P.O. Box 2816, Concord, NH 03302-2816. 603-228-4516.

Fusion Technology, Journal of the American Nuclear Society publishes journal articles on cold nuclear fusion. 555 N. Kensington Ave., La Grange Park, IL 60525.

21st Century Science & Technology, P.O. Box 16285, Washington, D.C., 20041. Includes cold fusion developments.

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

Space Energy Journal, edited by Jim Kettner & Don Kelly, P.O. Box 11422, Clearwater, FL 34616.

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

The above list of commercial and information sources will be growing. New listings will be added as information is received. Send information to FF, P.O. Box 58639, Salt Lake City, UT, 84158.

errata

In the June issue of *NEN*, in an article by Shiuji Inomata, "Western Science and the Mechanistic World View," pp 8-10, one equation was printed incorrectly. On page 10, the equation on the right should read:

$$E = \frac{C^2}{G^{1/2}} Q$$

The **New Energy News** is a monthly newsletter for the Institute for New Energy, and is mailed free to its members. Yearly subscription rate to corporations, libraries, and universities is \$60. Contact **New Energy News** for subscription and submissions information at P.O. Box 58639, Salt Lake City, UT 84158-8639. Phone (801) 583-6232, Fax (801) 583-2963.

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