

FUSIONfacts

A Monthly Newsletter Providing Factual Reports On Cold Fusion Developments

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A. THE REDISCOVERY OF COLD NUCLEAR REACTIONS

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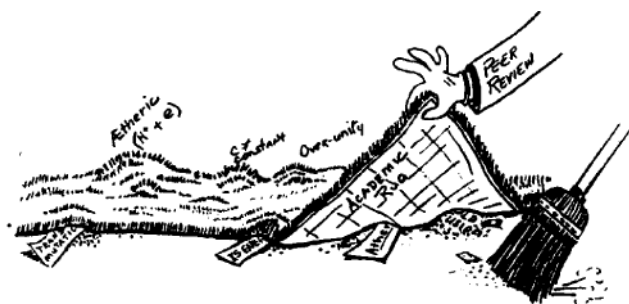
INTRODUCTION

The word transmutation is often associated with medieval alchemy. Nevertheless, the change of one metal into another is a common place of modern nuclear chemistry carried out in nuclear reactors or in high energy cyclotrons.

In the last few years a number of pieces of information have arisen which suggest that there is a low temperature way of provoking nuclear changes. There are several titles at present being used to describe the reported phenomena. They are: chemically stimulated nuclear change; lattice assisted nuclear change; low temperature nuclear change; cold nuclear reactions. This latter term will be used in this article. Such reactions embrace also the D + D reactions discussed since 1989, in the so-called cold fusion literature, but include a wider swathe of systems, characterized by observation of changes in solid systems, not far (e.g., up to 1000°K) from room temperature which seem only explicable on the assumption that a nuclear change has occurred although none such would be expected on the current theories of nuclear chemistry.

EARLY SUGGESTIONS

It seems to have been Borghi [1] who first suggested cold nuclear change occurred in a klystron in which he had been making discharges at c. 5000 volts. He detected neutrons after



High time to sweep out from under the rug!

these discharges and therefore inferred some kind of nuclear change.

Such cold nuclear reactions have been reported and described in the 1960's by Kevran [2] and he sought evidence particularly in biological systems.

1992 AT TEXAS A&M UNIVERSITY

In April 1992, a suggestion was made to Bockris by J. Champion [37] that explosive heating of a mixture of cheap materials including mercurous chloride and lead chloride would form noble metals. Experiments to examine Champion's method were carried out in the Chemistry Department at Texas A&M University by Bockris and two senior research scientists, G.H. Lin and R. Bhardwaj. β activity in the residue obtained after heating was observed and decayed as if it originated from Pt^{197} [3]. On four consecutive experiments variable amounts of noble metals were observed as a product of the heating [4]. The analyses were always carried out by at least two independent analytical methods and in two experiments by up to four different analytical organizations (which often gave results only in qualitative agreement). Much later (December 1992) the people who had carried out the initial experiments could not reproduce the same results. A sample of results is given in Table 1.

Table 1 Explosion Method: Absolute Amounts (ppm) in 1 Exp.

Analytical Organization	Au	Rh	Pd	Pt
Mintek, South Africans (4 methods)	471 - 986	0.03 - 1.8	1.2 - 2.7	0.18 - 0.2
Chemex (Nevada) Cupelling	93.3	0.28	4	0.6
Texas A&M University (Neutron Activation)	408	-	-	-
Bondar Clegg, Ottawa (2 methods)	910	-	2.7	0.16

The blanks given in Table 1 indicate that element referred to was not sought.

December 1992, there were reports about the results of some experiments performed in the Cyclotron Institute at Texas A&M. The work came from the authorship of Kevin Wolf [5] who was being supported on an EPRI contract to study the phenomenon widely referred to as Cold Fusion. Wolf found that three of the Pd electrodes which he had been using to examine neutron production and to try to see if tritium was also formed (as he had earlier reported), became "hot" after being saturated with D and upon analysis, some of which were carried out by T. Claytor [6] at Los Alamos. It was found that the palladium contained numerous radioactive nuclei which were identified by examination of the γ -ray spectrum. The estimated concentration was in the region of 10^9 atoms per cc for each species.

Work in the Texas A&M Chemistry Dept. on transmutation in 1993-94 was furthered by Sundaresan and Bockris [7] who carried out experiments using spectroscopically pure carbon

rods to form an arc in lightly purified water. Great precautions were taken about contamination (e.g., air). It was found (Table 2) that if oxygen was present, iron was formed in amounts about 100 times more than would be expected from contamination or from the residual impurities in the Johnson-Matthey spectroscopically pure C. If oxygen was not present, no iron was formed. Similar experiments were reported by other scientists [8-9]. However, the isotopic abundance of the "new iron" was not measured by Sundaresan. Similar results have been reported by others [8] who could detect no difference in the isotope ratio in the "new" Fe.

Table 2. Values of Iron in the Carbon Detritus after Arcing

Time (hr)	Electrode 1			Electrode 2			Electrode 3		
	weight of carbon (mg)	iron (μ g)	Iron in carbon (ppm)	weight of carbon (mg)	iron (μ g)	Iron in carbon (ppm)	weight of carbon (mg)	iron (μ g)	Iron in carbon (ppm)
1	24.5	3.43	140	30.3	1.4	46.2	25.1	1.94	77.3
3	79.1	9.62	121.6	83.6	22.8	272.7	86.3	1.50	173.8
5	140.9	1.1	8	142.7	4.5	4.5	-	-	-
10	-	-	-	-	-	-	286.1	39.9	139.5

THE REIFENSCHWEILER EXPERIMENT AND NUCLEAR WASTE DISPOSAL

Reifenschweiler published a paper in 1993 in *Physics B*, in which he reported that, in 1967, he had been examining some tritium sensors [10]. Adventitiously, he had heated them and found the tritium radioactivity was substantially reduced. He had taken precautions to be sure that the tritium containing compound had not evaporated or decomposed and concluded, therefore, that heating the tritium compound had caused the decrease in radioactivity.

The results of this experiment, with its prestigious background (it was done in the Phillips Lab in Eindhoven) seemed similar to those of Yul Brown, carried out between 1993 and 1995.

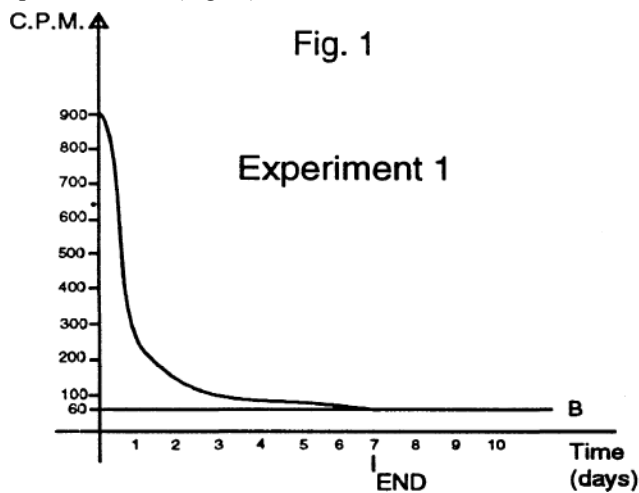
A description of a demonstration of Yul Brown's experiment was published by Dan Haley [11]. Several DOE engineers were present but refused to report that they had observed the cessation of the radioactivity after Brown had heated a mixture containing such wastes with the so-called Brown's gas (essentially a hydrogen-oxygen flame) and shown a 95% decrease of radioactivity. The DOE inspectors suggested that the apparent cessation was due to sublimation of the material into the laboratory. However, inspectors from the California Department of Health found no radioactivity. The DOE engineers then suggested that the disappearance of the radioactivity must be due to screening due to new particle formation. Powdering the post-experiment particles was also

negative. The engineers refused to report that they had witnessed a reduction of radioactivity because it was anomalous within their knowledge.

An independent partial verification of Yul Brown's transmutation was carried out by Chinese Baotou Nuclear Institute [12]. The substance investigated was ^{60}C . Its radiation was reduced by about 66% on heating for a few minutes in a hydrogen-oxygen flame. In other experiments, a 99% reduction in radiation (e.g., of americium) has been obtained.

Jack Keller demonstrated the reduction of radioactivity in a 1995 experiment in New Orleans, using the explosion method which had been used by Champion in his radioactivity experiments at Texas A&M. The experiment gave rise to a 50% reduction of radioactivity [13].

R.A. Monti, working with E. Bauer in Vancouver, has published [14] a description of his own investigation of the results of heating the ThO_2 . One of the diagrams from his paper is reproduced here (Fig. 1).



Monti reports the presence of a number of new materials in the residue (large quantities (~1000 ppm) Pb, Al, Mg, Ce and Fe) including 5 ppm of gold.

Some work was carried out on similar residues by Noninski [15] and he made two negative reports on his experiments, the aim of which was to detect whether the residues contained gold. His neutron activation experiments may have lacked the sensitivity to detect 5 ppm.

More recently, a group at the University of Cincinnati with Gleason has been experimenting on the decrease of the activity of nuclear waste on heating (patent applied for) and they report having found a number of new nuclei in the resulting residue.

JUNE 19, 1995 MEETING AT TEXAS A&M

These numerous reports, particularly the work here in 1992, but also a number of corresponding reports from the United States (Bush) and Japan (Mizuno, Notoya, Ohmori) all encouraged us to hold a meeting to discuss these phenomena which are anomalous within accepted normal nuclear chemical experience. The proceedings of the meeting at Texas A&M have been published in the first issue of the *Journal of New Energy*, and therefore here they will be summarized only briefly.

1. Tom Passell [5] who knew of the 1992 unpublished Wolf work through contact with Tom Schneider, his colleague at EPRI and Wolf's Manager, gave a description of the work based upon the reports that Wolf had made to his sponsor, EPRI. The electrodes which Wolf had exposed to D_2 until the Pd was saturated with D contained around 10^9 atoms of Ag, Pd, Rh, respectively, and also some isotopes of Pd which had a ratio different from those of natural palladium. Wolf's observations (some materials were radioactive) seemed to prove transmutation. On the other hand, Wolf reports he could not reproduce the results, his basis for the absence of publication [38].

2. T. Ohmori (University of Hokkaido) reported that utilizing gold and palladium cathodes, he had found the formation of iron on the electrode surface during hydrogen evolution [20]. He had analyzed the iron isotopes and found that the $\text{Fe}^{57}/\text{Fe}^{54}$ was much greater than the natural ratio. Ohmori's work brings out the extreme ease of achieving nuclear reactions: transmutation products turn up upon electrolyzing light water, a result earlier implied by Matsumoto [21].

3. John Dash [22] from Portland State University reported experiments which were similar to those of Ohmori. He simply utilized platinum and palladium electrodes in an aqueous sulfuric acid solution. Analysis by SEM on the cathodes determined that silver and cadmium were present in spots upon the surface. Large concentrations of gold were found in dendrites protruding from the palladium, both in light and heavy water. When the current was switched off, the changes continued. Chromium, iron and calcium were found on a titanium electrode in similar experiments. These experiments also resonate with the statements of Rabzi at the June 19, 1995 meeting, that high electric field transfer lead to transmutations.

4. Kucherov [23], reporting experiments carried out in 1992 in Moscow with colleagues Karabut and Savvatimova, described glow discharge plasma experiments with one milliamper of current and voltages of about 100 V gave rise to a number of new elements in the palladium. In the presentation at Texas A&M, Kucherov was extremely cautious about impurities as a source of these but thought that with

some of the new nuclei he and his colleagues had detected there seemed to be no origin for them except low temperature nuclear changes involving D and Pd.

5. Robert Bush pushed experiments of this type further, finding that he could observe strontium formed as a product from rubidium in electrolysis. Bush measured the isotopic ratio of the strontium finding that it was radically different from the natural ratio. [24]

6. Notoya also from the University of Hokkaido reported calcium formed from potassium; cesium produced barium [25]. On the other hand, Notoya uses an open cell and isotopic ratios have not been measured.

7. G. Rabzi from the Ukrainian Academy of Science, presented several results which he said were transmutational [26]. As an example 99.5% lead was treated (essentially by heating) and yielded a number of developments including 0.2% of gold. He claimed, similar results to those of (separately, Yul Brown, Monti, Keller and Gleason), that the actively radioactive wastes could be "stabilized" by simply heating the material.

8. One of the most interesting papers published at the Texas A&M meeting, was that by Y. Kim [27]. He had been able to make a formulation of the theory of barrier penetration showing that when energies were low, the transparency of the Coulomb barrier greatly increased. One of the results of Kim's work was to show the probability of proton capture by higher mass elements was about 50 orders of magnitude larger than the proton capture probability by lighter mass elements.

9. Peter Hagelstein [28] presented an alternative view of how cold nuclear reactions occur. He suggests neutron hopping can transfer energy. Resonant emission and neutron capture by another nucleus may explain some of the observed results. He has pointed out the direct relevance of his work to an interpretation of the nucleus A to nucleus B results now widely reported.

10. One of the more remarkable experiments was reported by T. Mizuno who used an alternating current field produced between 5 and 45 volts applied to a ceramic at about 500°C [29]. This not only produced heat above that arising from the electric current but also new materials including Al, Bi, Sn, Gd, Dy are produced. Mizuno found these new nuclei have isotopic abundance ratios radically different from normal ones,

11. Lastly, R. Monti gave a presentation [14] of the work concerning the decay of the radioactivity of ThO₂ mentioned above.

WORK ON THE CETI CELLS

Particular attention has been given in recent discussions to the work of George Miley because of the background and experience of this worker in his function as a nuclear physicist and editor of the *Fusion Technology*, International Journal of the American Nuclear Society.

Miley has been carrying out work to examine and confirm the measurements made by the CETI organization on excess heat produced in the cells containing palladium-nickel beads. Miley and his coworkers have detected a number of new materials within the palladium in results which bear some resemblance to those of Wolf and of Kucherov [30].

DAMAGE FOUND IN PALLADIUM-HYDROGEN CELLS

Work has been published by Matsumoto [21] in Japan upon what he calls "black holes." These are the small holes and fissures found in electrodes which have been used to evolve hydrogen. According to Matsumoto the holes are due to micro fissures occasioned by local nuclear reaction.

Some support may be given to this view by the work of R. George and Stringham [31]. They have found in sono-illumination of palladium, that new nuclei are formed within the palladium but that these nuclei form at points of damage. Correspondingly, Nate Hoffman who, in analyzing electrodes from the original Texas A&M work on helium production, found that the helium was largely found in fissures within the palladium.

This raises the possibility that works, such as those carried out recently by Minevski at Texas A&M on damage in Pd electrodes saturated with D or H, may be subject to a nuclear interpretation [32]. Thus, Minevski found extensive damage and hole formation within his palladium electrodes only at a depth of a few microns. He also found a number of new nuclei at a similar depth but not at the surface [39].

CONCLUSIONS

There is now extensive evidence that nuclear reactions occur slowly in the cold within solid lattices in the presence of H or D. There is weak evidence that nuclear reactions may occur in some biological systems. These findings should give rise to revision of the theory of nuclear kinetics in the solid state [33-35]. The findings have the potential of giving rise to a revolution in the treatment of nuclear wastes.

The discoveries may have some bearing on the mechanism of the heat formation in experiments named (misleadingly) "cold fusion." Thus, the measurement of helium in the output stream

by Miles and Bush [36] at China Lake has given rise to the thought that the reaction causing the heat in cold fusion is $D + D \rightarrow He^4 + \gamma$ but the Miles measurements indicate an amount of He^4 only enough for 50% of the heat. There is unexplained heat left over and it may be that reactions providing transmutational debris inside the palladium provides the missing heat. The palladium in the electrodes is being "burned up" by the protons and deuterons within the lattice (the fission products found being the results of "cold nuclear combustion").

The implications in respect to the peaceful use of nuclear energy without waste disposal problems seem significant.

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37. Champion reported that the basic idea and technique had been originally described to him by J. Keller who had worked in the 70's with R. Becker and Y. Lusitch.
38. It has been reported [18] that Wolf himself favors the action of large but unknown particles which occasionally arrive from space and strikes his electrodes. Hoffman [19] suggested that the D_2O source used by Wolf could have contained the radioactive isotopes which were found in Wolf's electrodes.
39. There are, of course, other explanations of such fissures which pertain to the high pressure produced in voids molecular H_2 corresponding to the electrochemical over potential exerted on the metal.

B. EDITORIAL

SUBTLE SCIENCE OR BRUTE FORCE

The End of the Hot-Fusion Energy Dynasty
by Hal Fox

With various announcements concerning the complex nuclear transformations discovered in both heavy-water cold fusion and light-water cold fusion, the subtle, low-cost approach to science scores a stunning victory over the large institution, mega-dollar brute force approach. After two decades of

taxpayer-funded research with over eleven billion dollars spent from DOE funds, the hot fusion gang have yet to achieve a goal of breakeven of power out versus power in. See Fig. 1 for the last 20-year funds allocated for hot fusion (Source: Department of Energy as reported in *Newsday's* "Health & Discovery" section, March 26, 1996.) Any reasonably equipped high-school laboratory can now demonstrate a ten-fold increase of thermal power output as compared to electrical power input using relatively simple materials.

As quoted in the April 23, 1996 issue of *The New York Times*, Dr. Martha A. Krebs, head of DOE's Office of Energy Research admitted, "the department's fusion program is now at a turning point... There will be dramatically fewer dollars for the foreseeable future." This *New York Times* article also states, "Not all scientists regard this as a bad thing. Physicists are loath to criticize publicly large and expensive fusion experiments, but some acknowledge privately that the latest cuts are justified, both by the over all scarcity of money for scientific research and by the disappointing achievements of fusion experiments in the last four decades."

It makes sense to ask, "What caused such a conflict between the hot fusion and the cold fusion approach?" **The answer is money, not science.** Those scientists who recognized the fact that Professors Stanley Pons and Martin Fleischmann were world-class electrochemists and **would not make fraudulent claims of their discovery of cold fusion**, were among the many scientists who replicated the discovery. An example [1], is the world-recognized electrochemist, Dr. James O'Malley Bockris, a distinguished professor of Chemistry at Texas A&M. In contrast, 16 scientists at MIT signed off on a paper [2] **which by its half-page discussion of the palladium cathode demonstrated that they did not understand the basic elements of creating a successful cold-fusion experiment.** Some associated with that group of 16 eminent scientists even participated in making "corrections" to the data to ensure that they had negative experimental results to report [3].

As suggested earlier in this publication, the intelligent approach for the **hot fusioners** would have been to suggest that a small percentage of their budget be devoted to the study of cold fusion. **If that intelligent approach had been taken, recognizing the previous achievements of Martin Fleischmann and Stanley Pons, today the United States would be the leader in new-energy systems rather than Japan [4].** The adamant attitude of the hot fusioners derives from their strict adherence to an out-dated model of nuclear reactions. This model denies the existence of an energetic aether, places nuclei in an empty space in which nuclei protons (with neutrons) are held together by **strong nuclear forces** but with a combined charge that repels like charges from fusing with the nuclei (the Coulomb barrier) except for high

-momentum, highly-accelerated charges such as can be produced in the high temperatures of the sun. Evidence refuting this model has been ignored for over fifty years [5].

Just as there is a tendency to **freeze the design** of a pre-production prototype, so too, is there a tendency to **freeze the models of physical science.** Barrett and Grimes [6] state the problem this way: "Just as a system design is frozen for progress ... theories are frozen so progress may be made in applications. In the 1920s and '30s the founders of quantum theory knew that their understanding was incomplete. Although serious questions regarding interpretations were raised by de Broglie, Schrödinger, Einstein et al., the descriptive equations formed the basis of contemporary quantum theory, and, in turn, solid state physics and, later, the electronic-based evolution of society. But forging ahead in this way carries an inherent risk -- with each success of a working model come additional adherents to the view that the interpretations adopted... are correct for all time, rather than a photographic still taken during its evolution... The major point... is that great predictive power without physical insight may be an impediment to future progress." This insightful thought, applied by the authors to electromagnetism, is just as applicable to the field of elemental fusion and the out-dated, but fervently-held, model of the atomic nuclei, **protectively shielded from charged incursions, and serenely floating in a sea of nothingness.**

The old model is no longer viable. In 1996 the following events are in progress: the amelioration of radioactive materials has been demonstrated; a super motor produces an anomalous output of power; solid-state devices apparently tap space energy; and papers are being published and written on the anomalous low-energy nuclear reactions within cold fusion electrochemical cells. **We now need a new model or models of electromagnetism, of nuclear reactions, and of the nothing that penetrates matter and provides the boundaries for nuclei and elemental particles.**

The commercialization of new-energy devices, including cold nuclear fusion, is well underway. Several important new announcements are pending this year. Although new models are needed, neither the lack of such models, nor the lack of widespread understanding by academia, nor the lack of government funds, will prevent the commercialization of new energy devices and systems. **This generation will have the privilege, beginning in 1996, to change the way the world produces and distributes energy. This generation will be able to provide an enormously important legacy to the next generation: abundant energy and a cleaner planet.**

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C. INTERNATIONAL SYMPOSIUM ON NEW ENERGY

ABSTRACTS

All of the following abstracts were from papers presented at the 3rd International Symposium on New Energy.

VACUUM SPIN ENERGY

Harold Aspden, "Vacuum Spin as a New Energy Source."

AUTHOR'S ABSTRACT

"Vacuum spin" consists of cylindrical or spherical pockets of aether spinning inside coextensive matter, and developing powerful electric fields. While these fields are canceled by unseen ionization or polarization in matter, the spin does develop kinetic energies from an electrical coupling with outer space by the phase-lock of a quantum synchronization with the surrounding aether. The kinetic energy obtained with low electrical input power amounts to more than a billion joules

per cubic meter -- thus providing an over-unity prospect. By regenerating the spin condition cyclically, one can access aether energy at a power rate determined by the pulse frequency and the physical volume of the 'vacuum spin' form. Independent experiments, and relationship to the so-called N-machine will be discussed.

EDITOR'S COMMENTS

In this paper Aspden gives us further insight into the "Aspden Effect" in which a type of rotational inertia is demonstrated.

REGAUGING & MULTIVALUED POTENTIALS

T.E. Bearden, "Regauging and Multivalued Potentials: Permissible Over-Unity Performance and Specific Engine Examples."

AUTHOR'S ABSTRACT

Scalar Multivalued Potentials (MVPs) are naturally occurring, nonconservative fields, which can be utilized to accomplish potential energy regauging of an engine. Excess electromagnetic energy is furnished directly from the vacuum during regauging, and thus exhibits a coefficient of performance greater than 1.0. While this violates the familiar classical electromagnetism of conservative fields, it does not violate known electromagnetics nonconservative fields, thermodynamics or conservation of energy laws. Examples include: Johnson's patented non linear all-permanent-magnet motor, and the Takahashi and Kawai engines -- all of which demonstrate permissible over-unity coefficients, such that these prototypes are now ready for full development and ultimate introduction into world markets.

EDITOR'S COMMENTS

Bearden's discussion is always interesting. This latest addition to Bearden's analytical discussions of creating new energy devices, uses the following concept. One of the topics in discussing Maxwell's equation has to do with the definition of **potential**. Normally, the rate of change of **potential** with distance is treated. The rate of change of **potential** with time is usually treated as unimportant and that portion of a solution to the Maxwell's equation is arbitrarily set to zero (or to a constant). For some historical reason this has been dubbed as "gauging". Regauging involves changing the value of this "rate of change of **potential** with respect to time". Bearden argues that there may be some method by which the value of this term can be changed (**regauged**) and thus, **without violating the Maxwell's equation, provide a method to obtain energy.**

PULSED GLOW DISCHARGE REACTOR

Alexandra and Paulo Correa, "Excess Energy Conversion System Utilizing Pulsed Glow Discharge Reactor."

AUTHORS' ABSTRACT

Vacuum arc discharges (VADs) have been shown to deploy anomalous cathode reaction forces. By driving the cold-cathode vacuum tube into sustainable cyclical oscillations, spontaneous auto-electronic erosion occurs which appear to conform to Aspden's Law of Electrodynamicity. Utilizing the anomalous cathode reaction, electrical energy can be extracted from the plasma reactor through a capture and rectifying circuit, by virtue of a pulsatory interaction with the polarized zero-point energy field. Direct utilization is then possible with A.C. motors and transformers.

EDITOR'S COMMENTS

Alexandra Correa presented a variety of video pictures of glow discharges (vacuum arc discharges). Correa was highly complimentary of Aspden's work that led him to this VAD work and his development of means by which excess energy can be obtained. His work certainly should be treated by the scientific community as another avenue by which we can extend our understanding of the energetic aether. Whether this work will lead to practical commercialization is not readily apparent. See page 13 for further information on this technology.

RODIN'S AERODYNAMICS

Alastair Couper, "Thoughts upon Reading Marco Rodin's Aerodynamics."

AUTHOR'S ABSTRACT

Rodin has conceived of a toroidal form upon which a coil of very specific geometry is wound. The details of the flow of energy are dependent upon an elaborate numerological scheme rendered on the surface of the toroidal form, and result in a strong gravitational effect in the case of a properly executed and powered winding. Included in the designs are ancient geometries, as well as fractals, holograms, monopoles, phased arrays, synchronized electricity, and other modern scientific concepts. This paper is intended to link Rodin's aerodynamics with established theories and concepts, and includes a fascinating link between numerological sequences such as the Fibonacci Series and the potential for electromagnetic systems tapping into vacuum or zero point energies.

UNIFIED MODEL

Paul Cox, "The Unification of Electromagnetism and Gravitation Using an Interconnected Universe Model -- 'Soul Psychophysics'."

AUTHOR'S ABSTRACT

A model of an interconnected energy universe is developed which unifies the concepts of electromagnetism and gravitation, as well as connecting human beings to an interconnected evolving universe. This model allows for multiple energy dimensions (i.e. Souls) in a dynamic free energy system in which energy can change form, increase or diminish, and be created or destroyed.

EDITOR'S COMMENTS

Cox is an interesting person who has been lead to the development of this theory. In scanning his document, I found no relationship by which his theory could be tied to any of the vast area of scientific evidence with which I am familiar. I suggested that he talk with Brian O'Leary who is far better versed in psychophysics than I am.

PATTERSON POWER CELL

Dennis Cravens, Keynote: "The Patterson Power Cell."

AUTHOR'S ABSTRACT

The Patterson Fuel Cell is a light-water, lithium electrolyte, nickel/palladium catalyst, which provides for a new type of water hydrolysis. The patented system has been demonstrated at prior conferences, was the main subject of a report on ABC's Nightline, and is considered by many experts as the leading contender for commercialization of New Energy devices.

EDITOR'S COMMENTS

In addition to his excellent discussion of the **Patterson Power Cell™**, Dennis Cravens held a workshop in which he demonstrated a working power cell. This cold fusion device (but not so-called by Clean Energy Technologies) is doing an excellent job of raising corporate, utility company, and academic interest in cold fusion devices. We commend this group on their excellent work in advancing the technology of new-energy systems.

BIEFIELD-BROWN EFFECT

Larry Deavenport, "Towards Flight Without Stress or Strain... or Weight."

AUTHOR'S ABSTRACT

In 1923 Professor Paul Alfred Biefeld, a physicist at the California Institute for Advanced Studies, discovered that a heavily charged condenser moved toward its positive pole when suspended in a gravitational field. He assigned T. Townsend Brown to study the effect as a research project. The discovery was later called the Biefeld-Brown Effect. The question today is the credibility of T.T. Brown and his system of propulsion called electro-gravitics.

MODERN WIND POWER

John Earle, "Windmill Home Comes of Age."

AUTHOR'S ABSTRACT

A motivational approach for widespread wind power generation is presented by combining modern wind power generation with a structure resembling an Old World (Dutch) windmill. In contrast to the skeletal windmill of the windmill farm, an attractive type of structure is described with the dual purpose of generating power and providing a uniquely attractive home.

ENERGY MEASUREMENT

Robert Emmerich, "On Energy Measurement."

AUTHOR'S ABSTRACT

Definitions and measurements of basic mechanical, thermal, and electric energies was discussed, along with examples of measurement pitfalls, difficulties, and errors. Measurement of electrical energy - from dc to gigahertz - was described in detail, as was absorptive and transmissive energy measuring wattmeters.

NEW ENERGY COMMERCIALIZATION

Hal Fox, "Three Types of New Energy Technologies Being Commercialized."

AUTHOR'S ABSTRACT

A summary of progress made in the development of three new energy technologies: cold nuclear fusion, high-density charge clusters, and super-magnets/ super-motors -- providing thermal, electric, and mechanical energy. These three technologies are expected to form the basis for energy-producing systems of the 21st century, and all three are expected to be commercialized during 1996 and 1997.

EDITOR'S COMMENTS

Fox announced the successful invention, patent application, and early positive results of a new fiber power cell. This invention has the following inventors: Bruce Everingham, Avard Fairbanks, Hal Fox, Peter Glück, and Shan Jin. Fox announced that specially plated nickel-fiber cathodes were the key that provides for ten to twenty times as much thermal output as compared with electrical input.

BALL LIGHTNING IN THE LAB

Robert K. Golka, "Laboratory-Produced Ball Lightning."

AUTHOR'S ABSTRACT

Discovering ball lightning was more of a high current phenomenon than a high voltage one, the author contends that cavity-formed plasmoids can be made by putting a 2-inch burning candle in a home kitchen microwave oven. The plasmodes float around for as long as the microwave energy is present. Although anticipating some types of ball lightning to emerge as strictly electrostatic- electromagnetic manifestations, laboratory provable evidence has not been found.

HYDROSONIC PUMP

James L. Griggs, Keynote: "The Hydrosonic Pump."

AUTHOR'S ABSTRACT

The Hydrosonic Pump is a novel device for heating liquids by the use of shock waves, cavitation, or the implosion of bubbles within the liquid. The efficiency of the device has been shown to be significantly greater than 100%, and may be connected with the phenomenon of sonoluminescence, and the development of the Keeley motor by John Keeley in the late 1800s. The presentation included discussion on advantages, uses, and energy balances of the Hydrosonic pump, including the latest research findings.

EDITOR'S COMMENTS

James Griggs and his company are marketing the only commercial application of a new-energy device in the United States. At each conference that we listen to James, he shows us that he is improving his device. NASA and at least one university are testing the Hydrosonic Pump™. James found that you do not sell a device by telling people that it is over-unity -- they won't believe you. Griggs marketing ploy is just to provide a comparative list of costs of producing hot water or steam with his device and typical "fired-up" devices.

SPACE ENERGY ECONOMICS

Josef Gruber, Ph.D. "Economic Effects of Space Energy Technologies (SET) on Individuals and Society."

AUTHOR'S ABSTRACT

Space Energy devices include the Patterson Fuel Cell, Takahashi's supermagnet-supermotor (utilizing super-strong permanent magnets), the Swiss M-L-Converter, Stanley Meyer's water-fueled engine, Grigg's Hydrosonic Pump, and other inventions. Several scenarios were presented which incorporate these developed devices in the mainstream society in the areas of transportation, electricity and heat production, and the unprecedented economic, fiscal, social, political and environmental effects which are expected. Of particular importance is the potential for sustainable development, and the need for important required actions and goals.

TESLA DESIGNS FOR PROPULSION

Richard Hull, and Charles Yost, "Tesla Coils, Electrostatics and Electric Propulsion."

AUTHORS' ABSTRACT

A discussion of the latest results of experiments on the character of dynamic electrostatic fields (dynamic E-fields), including a test of Nicola Tesla's assertion that much of the electrical phenomena produced by his coils were electrostatic in nature and not electromagnetic. Details of new electrostatic experiments were presented along with what appears to be promising paths in which electrostatics, magnetics and dynamic E-fields might be combined for aerospace flight.

NEW ELECTROMAGNETIC TECHNOLOGY

John Hutchison, "Electromagnetic Space Charge Technology."

AUTHOR'S ABSTRACT

Discussion on the Hutchison Effects (including a video presentation), zero point energy, methods to tap into the zero point energy, and a demonstration of a no-moving-parts, Casimir Effect unit showing energy activated in a special space charge system. The latter unit, which fits in a briefcase or even a pocket, was displayed, tested and measured.

[Hutchison was unable, at the last minute, to make the conference. We look forward to more information from John at a later conference. Ed.]

THE SUPER TUBE

Moray B. King, "The Super Tube."

AUTHOR'S ABSTRACT

Combining the results of four areas of plasma research yields the principles for developing the "Super Tube," a plasma tube which optimally coheres the zero point energy. Such a tube could become the foundation for re-inventing the 50 KW radiant energy machine of T. Henry Moray. The four areas of plasma research include: Abnormal Glow Discharge (e.g. Correa), Hollow Cathode Discharge, Radioactive Cold Cathode, and Noble Gas Mixture (e.g. Papp). A free running, two-stage device, similar to T.H. Moray's first radiant energy invention, can be constructed with two super tubes operating in the abnormal glow discharge regime, and the output rectified onto capacitors which gradually charge to become the mutual input current source for the tubes.

EDITOR'S COMMENTS

Moray presented an excellent review of research leading up to the possible development of the "super tube." It should be mentioned that Ken Shoulders' work with high-density charge clusters can be considered as a special form of plasma.

PLASMA SHAPING & ENERGY

Ronald J. Kovac, "Plasma Shaping, New Mass and Energy Source."

AUTHOR'S ABSTRACT

Mass spectroscopy analysis has revealed that the contents in a tube after plasma shaping (electromagnetics) included substantial amounts of helium-4 and lithium-5. Lithium-5 is considered the "missing link" element in that mass spectrometer literature indicates that there is no element with

an atomic weight of five. The existence of this element is theoretically predicted, and has been created by using a vacuum tube with only nitrogen-14 exposed to electromagnetic force fields and high voltage.

[Kovac showed videos and a platform demonstration of special plasmas having various geometries. In addition, he showed photos taken by the Hubble telescope where this same type of geometry is found in astronomical structures as large as galaxies. Ed.]

COLD FUSION AS LEADER TO THE FUTURE

Eugene F. Mallove, "Cold Fusion: Vanguard of the New Energy Age." [This was the banquet presentation.]

AUTHOR'S ABSTRACT

It is difficult to imagine a more profound reversal of scientific fortunes than what has been emerging in the **cold fusion** field. One of the most reviled, disputed anomalies in the history of science is painfully, but inexorably heading toward acceptance by the scientific community. Not only that, but because cold fusion is rapidly entering the mainstream of media and industrial attention, it will have the collateral effect of focusing attention on other perhaps related anomalous excess energy machines -- New Energy devices that rely on vortex-cavitation principles and ones that are entirely electromagnetic, e.g. permanent magnet motors of unusual design that are claimed to be over-unity.

EDITOR'S COMMENTS

It is now clearly evident that the advent of cold fusion has paved the way for the more ready acceptance of other anomalous alternative energy devices. Several utilities and corporations are testing and verifying the excess thermal power results that are advertised for the **Patterson Power Cell™**. Several university professors are making serious studies (sometimes funded by corporations). Without any government secrecy act to curtail such activity, and with funding being provided, it is not difficult to obtain some academic acceptance of the experimental facts that nuclear reaction byproducts are being found in cold fusion devices. This activity has engendered the humorous observation at the conference that **scientists will believe what they are paid to believe**. In a serious vein, the activities of the CETI organization are laying the groundwork for the acceptance of other new energy devices. **We wish to express our great thanks to James Reding, president of CETI, and to Dr. Dennis Cravens for his demonstrations of the Patterson Power Cell™.**

A WOMAN IN ENERGY RESEARCH

Jeane Manning, "New Energy: One Woman's Odyssey."

AUTHOR'S ABSTRACT

A journalistic view to new energy research, including details of individuals working in the field. Emphasis is placed on the creative energies of implosion-based technologies (vice [sic] the destructive tendencies of explosion-based burning of fuels and smashing of atoms). A clean-energy basis for national economies is discussed.

EDITOR'S COMMENTS

Jean Manning is a noted writer with a new book to be released by a major publisher this coming year. She turned part of her time over to members of the audience and invited them to share their view of what the soon-to-be New Energy future would be like. One comment related Ken Shoulders observation that the major problem in the future would not be a scarcity of energy but the need for new technology to get rid of **thermal pollution**.

BROWNS' GAS FOR ENERGY

A. Michrowski & J. Van Rhee, "Brown's Gas in Autonomous Energy Homes." [A. Michrowski was the presenter.]

AUTHORS' ABSTRACT

There is a demand for the design and realization of healthy, autonomous energy homes. The proposed modality for the safe supply of energy uses a solar energy system generating DC power for a stoichiometric 2:1 proportion hydrogen/oxygen gas (Brown's Gas) generating electrolytic cells. This gas generates and stores electrical power, feeds heating and cooling systems and provides clean water. This combination involves a relatively mature and safe technology and is available at present.

EDITOR'S COMMENTS

One error in calculation of energy required to electrolyze water and the energy available from the electrolyzed **Brown's Gas** lead to an over-estimation of energy available from the use of **Brown's Gas**. In an earlier discussion with Yul Brown, I was surprised that a relatively low-temperature flame (of the stoichiometric ratio of hydrogen and oxygen from water) could cut some metals better than an oxy-acetylene torch. My explanation was derived from cold fusion experiments in which protons appear to enter nuclei and cause exothermic nuclear

reactions. Supplied by the flame from Brown's Gas, the hydrogen ions (protons) would similarly combine with some metal nuclei producing the observed high temperatures by nuclear reactions. These proton-capture nuclear reactions do not, in general, produce damaging nuclear byproducts.

NEW ENERGY & CONSCIOUSNESS

Brian O'Leary, "The Relationship Between Free Energy, The Zero-Point Field and Consciousness."

AUTHOR'S ABSTRACT

An exploration of the hypothesis that anomalous, quantifiable results from zero point energy devices and human produced psychokinetic events (consciousness) may involve the same basic physics in which charges dynamically interact with a zero point field. This suggests an equivalence analogous to Einstein's energy-mass equivalence, and may be expressed in terms of a complexified charge in which the imaginary component manifests as consciousness. Questions and suggested hybrid experiments were discussed which address the requirements to initiate significant flows of energy from the void, such that over-unity energy and mind-over-matter events can occur.

50 HP FREE ENERGY UNIT

Gerald J. Orlowski, "Disclosure to Construct a 50 HP Free Energy Unit."

AUTHOR'S ABSTRACT

A disclosure of how to construct a 50 HP free energy unit is freely offered. The Ro-Mag magnet motor/generator is a magnetic device incorporating the use of permanent magnets turning in a rotor in order to generate a magnetic/electro energy that is then circuited to other mechanisms to do useful work. The unit does not require an input of electricity, but rather a build-up of magnetic energy to cause an energy thrust. The Ro-Mag unit utilizes a principle of attract-attract and attract-release, instead of mainstream attract-repel principles.

EDITOR'S COMMENTS

Orlowski gave a interesting account of his quest to replicate the work of Rory Johnson. In this work magnetism is treated as an energy source that can be directed and controlled. We expect to hear more about Orlowski's work in the near future. The Ro-Mag motor was previously used to operate an automobile for several years. The paper gives a most interesting account of the problems that were faced by early developers of new-energy technologies. We believe that this type of conference and this (and other) newsletters and

publications are paving the way toward a new-energy future with less obstruction.

TIME & MAGNETIC FIELDS

Edwin L. Pangman, "Time and Magnetic Fields, A Lay Perspective."

AUTHOR'S ABSTRACT

Omnidirectional (isotropic) flow of magnetic fields may constitute the flow of time, in effect, dynamic movement of canceled magnetic fields becoming artificial time fluxes. This suggests the possibility of created time generators, which in turn create a state where material objects may be governed by hyper laws of physics that don't apply to matter in the space normal time. In this realm, thought and motion may become one.

KEELY MUSICAL DYNASPHERE

Dale Pond, "The Keely Musical Dynasphere."

AUTHOR'S ABSTRACT

Development of a "scalar" developer (phase-conjugate polarizer) and differentiator (refractive modulator), modeled after Keely's original Musical Dynasphere. One of the basic working principles is the development of a Neutral Center (so-called zero point energy zone) and the differentiating of that state into motive force. The process is a vibrational one, and recognizes the necessity for universal harmonies in design and operation of energy devices.

BELTRAMI VECTOR FIELD

Donald Reed, "The Beltrami Vector Field - The Key to Unlocking the Secrets of the Vacuum Energy?"

AUTHOR'S ABSTRACT

An exploration of the Beltrami vortex topology derived from the annals of hydrodynamics and electrodynamics of the 19th century - as a possible archetype for the primordial electromagnetic vacuum fields of space. The significance of this topology is under-scored in the contra-rotating non-linear vortex filaments discovered in plasma focus research. It is argued that chiral Beltrami morphology may be universal in microscopic quantum phenomena as well as macroscopic plasma levels. A new classical model for the self-action of the electromagnetic field, devoid of standard divergences attendant with QED analysis is surveyed, incorporating the Beltrami vortex morphology.

WATER AND ZPE

Glen Rein, and William Tiller, "Some Evidence for Anomalous Information Storage in Water: A Possible Manifestation of ZPE."

AUTHORS' ABSTRACT

Water exposed to electromagnetic fields, and measured by a variety of optical and electrical methods, shows altered physical properties. Compared results of the effects of a self-canceling coil on water using UV spectroscopy were presented - a first demonstration of a macroscopically measurable event caused by information which is non-electromagnetic and non-quantum. It is speculated that the coil geometries may warp local space/time, allowing an influx of ZPE, with the energy/information acting in a manner unlike quantum and EM fields.

HADRONIC ENERGY

Ruggero Maria Santilli, "Hadronic Energy, a New, Clean, **Subnuclear** Source."

AUTHOR'S ABSTRACT

Outline of the new, subnuclear, clean Hadronic energy, and indications these new forms of energy generally contain the principles for recycling nuclear waste. The basis of the relativistic hadronic mechanics (RHM) is a quantitative representation of interactions due to mutual wave overlappings, which are *nonlinear* (in the wavefunction), *nonlocal* and *nonpotential*. They are therefore outside the domain of relativistic Quantum Mechanics. Importantly, nonlinear, nonlocal and nonpotential interactions can produce attraction among particles, i.e. nuclei or atoms of the *same* charge - a fact already established in the proton-proton bonding in the nuclear structure, superconductivity, and chemical bonding. RHM is expected to provide quantitative treatments of cold fusion and other new energy technologies, including RHM providing a rigorous explanation of how cold fusion processes can be initiated even against repulsive Coulomb barriers.

GRAVITATIONAL DRIVE

Pierre Sinclair, "Gravitational Magnetic Drive (Anti-Gravity)."

AUTHOR'S ABSTRACT

A presentation on Gravity Magnetic Devices, with a description of the hardware and theory behind the invention. Also included was a comparison with other researchers with similar theories and technologies, and a brief summary of the tremendous possibilities and potentials of the technology.

MRA MEASUREMENT VERIFICATION

Robert Taylor & Ed Everett, "Measurement Verification of MRA."

AUTHORS' INTRODUCTION

One (1) MRA S/N 95-3 was setup for demonstration and measurement verification on 25 September 1995. The demonstration and measurements were performed at the Teledyne Ryan Aeronautical (TRA) Engineering Environmental Laboratory located in San Diego, California. The demonstration was conducted by Robert Taylor and the measurement verification was performed by Ed Everett of Teledyne Ryan Aeronautical. The MRA demonstration and measurement verification was conducted according to customer direction. No written plan/guideline was provided. A chronological record of the event was maintained and is identified as TR 3715. The test log was used as the basis of this report and a copy of this log is presented as Attachment A. A copy of the equipment list is also included as Attachment B. A short discussion of the measurements made is provided [in the paper].

EDITOR'S COMMENTS

A special arrangement was made for an independent test of the MRA to be made just prior to the conference. As reported to me by Dr. Robert Bass who witnessed the tests, the equipment used was not sensitive enough to measure the input power to the MRA. Output power was measured. **However, no signed official value could be given to the overall power gain of the device due to the lack of input power measurements. Therefore, the test did not result in a signed certification!** This failure to get certified test results was very frustrating, not only to Robert Taylor but also to the rest of us at the conference.

FREE ENERGY PROPULSION

Tom Valone, Keynote: "Free Energy and Propulsion."

AUTHOR'S ABSTRACT

A presentation on non-conventional energy and propulsion inventions which have been reviewed, tested and replicated to establish proof-of principle, but which defy conventional analysis. Highlights include developments of the homopolar generator (N-Machine), recently declassified information about T.T. Brown's electrogravitic propulsion system, a synopsis of the Patterson Power Cell, and information on (Yull) Brown's Gas.

EDITOR'S COMMENTS

Tom Valone is one of the pioneers in the search for alternative energy systems. He has published several books and is widely recognized for his work. His presentation was an excellent review of the history of this many-year quest for better ways of producing clean energy.

ENERGY ACCUMULATORS

George Wisemann, "Solid State Energy Accumulators."

AUTHOR'S ABSTRACT

A discussion of several types of Free Energy Receivers, all of which use some sort of antenna and are grounded to earth. A detailed description will be included of an Energy Accumulator, which was based upon the research of Nicola Tesla and T. Henry Moray. The Energy Accumulator is a passive device, using NO input power to operate. The unit, instead, readily absorbs various types of ambient energies and stores the energy in capacitors or batteries for later use - thus qualifying it as an "Over-unity" invention. The ambient energies absorbed by the Energy Accumulator consist of several categories, including but not limited to, electromagnetic waves and ionized particles.

NEW UNIFIED THEORY

Al Zielinski, "A New Theory that Unifies the Forces of Nature."

AUTHOR'S ABSTRACT

Presentation on the behavior of the aether, providing a new concept of the essence of aether, and explaining the failure of the Michelson-Morley aether experiment. A theory is proposed which explains and unifies the forces of nature, explains quantum theory and the cosmogony of the universe, and provides insight into new sources of energy for the future.

EDITOR'S COMMENTS

This paper is highly recommended. The theory of the aether is only briefly summarized and should be carefully read. According to the author, he has more to tell, provided that the information is protected by signed non-disclosure agreements. Zielinski has patents pending on his work and is visiting the U.S. to determine the advisability of applying for patents on his work in the U.S. In a personal discussion, he told about being in a concentration camp for Germans during World War II with his family. From age 5 to 11 he lived under spartan

conditions. His father, an engineer who had been employed by an American oil company before the incarceration, asked for a physics book to be sent to him. It was this physics book, received in a concentration camp, that launched Zielinski on his trek to become a scientist. I am sure that we will hear more about Zielinski's work in the future.

D. NEWS FROM THE U.S.

CALIFORNIA - ANOMALOUS EFFECTS IN DEUTERATED SYSTEMS

Melvin H. Miles and Kendall B. Johnson (Chem. & Matls. Branch, Res. & Technol. Div., Naval Air Warfare Ctr., Weapons Div., China Lake), "Anomalous Effects in Deuterated Systems," final report, March 1996.

EXECUTIVE SUMMARY

Our results provide compelling evidence that the anomalous effects in deuterated systems are real. Nevertheless, we have not been able to solve the reproducibility problem. This research area will remain highly controversial until reproducibility can be demonstrated. The lack of reproducibility stems mainly from unknown and uncontrolled variables contained within the palladium stock. There is a remarkable correlation of excess power with the source of the palladium. The best reproducibility was obtained using Pd-B materials supplied by the Naval Research Laboratory. Seven out of eight experiments that used Pd-B cathodes produced excess power. A high success ratio was also obtained using Johnson-Matthey materials. Seventeen out of twenty-eight experiments that used this palladium source produced excess heat. In contrast there were several palladium sources that never produced excess power in any experiment. Our calorimetric results, conclusions, and problems are practically identical to those reported by the SKI laboratory. They are also consistent with many other laboratories that have reported excess heat. Calorimeters that are capable of detecting excess power levels of 1 watt per cubic centimeter of palladium **are** essential for research in this field. The small volume of palladium in co-deposition experiments likely made it difficult to detect excess power effects.

Results from our laboratory indicate that helium-4 is the missing nuclear product. Thirty experiments have shown a correlation between either excess power and helium production or no excess power and no excess helium. Studies using both glass and metal flasks place the 4He production rate at 10^{11} to 10^{12} atoms/s per watt of excess power. This is the correct magnitude for typical fusion reactions that yield helium as a product. It is highly unlikely that our heat and helium correlations could be due to random errors. The only valid

experiments that showed significant excess power but no excess helium involved a Pd-Ce cathode.

Our best experiments produced up to 30% excess heat, 0.52 watts of excess power, and 1400 kJ of excess enthalpy. This amount of excess enthalpy is difficult to explain by any chemical reaction. We have demonstrated that any recombination of the D₂ and O₂ electrolysis gases in our experiments can be readily detected and easily corrected. There was never any measurable recombination when the palladium cathodes were fully submerged in the D₂O-LiOD electrolyte.

Anomalous radiation was detected in some experiments by the use of X-ray films, several **different** types of Geiger-Mueller counters, and by the use of sodium iodide detectors. Normal radiation counts were always observed when no electrolysis experiments were running. The appearance of anomalous radiation always correlated with the expected rate of loading of the palladium with deuterium. Nevertheless, the anomalous radiation effect was not reproducible.

There was never any significant production of tritium in any of our experiments. A few experiments, however, suggested low levels of tritium production.

MASSACHUSETTS - COLD FUSION TIMES

The Spring 1996 edition of *Cold Fusion Times* includes such articles as:

"ABC-TV Reports on CF Device," by Gayle Verner, page 1
 Commentary on the *ABC-TV's Good Morning America* which featured a segment on the "Patterson device" in February 1996. Also includes a transcript of the discussion on page 4, and a summary of the "Nightline" program which presented a documentary on the Patterson Cell and a debate between John Huizenga and Mike McKubre, page 6.

"Bose-Einstein Condensates & Cold Fusion," by Mitchell Swartz, page 1

A discussion of the Bose-Einstein condensates, their traits and the relationship they have to superconductivity and cold fusion.

"Political Interest in Helium Heats Up," page 1.

Helium is scarce, in the long run, and now the government has done away with the national helium reserve. What are the politics of the situation, and where else can we get helium.

"Current State of Cold Fusion -- 1996," by Edmund Storms, page 2.

Many points of interest in the worldwide research of cold fusion.

"Bose-Einstein Condensates," pages 6 & 10.

Recognized as Molecule of the Year by the American Academy for the Advancement of Science, the Bose-Einstein condensate is a new state of matter first predicted by Einstein in 1924, but not seen until 1995. It is a coherent state of matter, following the rules of quantum mechanics.

"Cold Fusion Theories -- Two-Dimensional Proton Conductors," by William S. Page, page 6.

(See abstract, page 16 this issue)

"Comments of Steve Jones' Theory on Recombination," by Dennis Cravens, CETI, page 9.

(See abstract below)

TEXAS - CRAVENS COMMENTS ON JONES

Dennis Cravens (CETI, Texas), "Comments of Steve Jones' Theory on Recombination," *Cold Fusion Times*, vol 4, no 2, Spring 1996, page 9.

ABSTRACT

[A response to Steven Jones' criticisms on the Patterson Cell demonstration at the *SOFE* conference.] "Jones' idea that the 30 minutes at 0.06 W of input (0.03 watt hours of energy) could somehow be responsible for the 12 hours at 4.5 W (54 watt hours) violates the conservation of energy. His idea that the hydrogen and oxygen are somehow stored in the electrolyte or cell and by recombination are responsible for the 4.5 W is also invalid."

E. NEWS FROM ABROAD

BRITAIN - ABOUT SONOLUMINESCENCE

Courtesy of Dr. Harold Aspden

Nigel Hawkes, "A puzzle solved?", *The Times*, Monday, May 6, 1996, page 12.

Nigel Hawkes reports that Claudia Eberlein, a physicist at Cambridge University has rediscovered the energetic aether [my words, not Hawkes'. Ed.] Carefully couched in terms of quantum dynamics (a currently acceptable scientific dogma), Dr. Eberlein's explanation is that the light emission is a quantum vacuum effect -- energy given off by a vacuum. According to the article, "Quantum theory says that there is in reality no such thing as a vacuum, and that empty space teems with **virtual particles** including photons, which flit in and out of existence." [*Fusion Facts* reported to its readers in March, 1994, the explanation by Nobel-prize winner Julian Schwinger that "this effect is most probably caused by the same forces of space energy (or zero-point energy) that causes two closely

positioned plates to collapse and **stick** together," i.e. the Casimir effect.]

Dr. Eberlein adds another dimension to the discussion, according to Hawkes, that if the photons were caused by high temperatures **"the huge temperatures would break the surrounding water into its constituent atoms -- and it does not."** Eberlein adds the concept that it should be relatively easy to test her idea by analyzing the time distribution of the emitted photons. We commend Claudia Eberlein on her analytical capability and on her willingness to delve further into the non-existent (by some theories) aether. We invite Eberlein to read the U.S. Patent 5,018,180 in which it is suggested that the high-density charge cluster phenomena (of producing energy from nothing) comes from the "zero-point radiation of the vacuum continuum" which uses 10^8 to 10^{12} electrons in a charge cluster to produce as much as 100 times more electrons! That is a pretty high number of *virtual* particles. We also suggest the reading of the same patent information by Nigel Hawkes and his friend Dr. Peter Knight of Imperial College. Hawkes' article concludes with "If it turns out to be right, her explanation will be a major coup, **the first observable manifestation of quantum vacuum radiation. ... 'This would come as a bit of a relief.' Dr. Peter Knight of Imperial College told *New Scientist*.**" **Sorry, Nigel and Dr. Knight, but Kenneth Shoulders has been doing it for years (but perhaps under a different label than quantum vacuum radiation).** Furthermore, and closer to home, these gentlemen should contact Dr. Harold Aspden for a more enlightened insight into the reality of the energetic aether

System;" and 5,502,354, issued on March 26, 1996, entitled "Direct Current Energized Pulse Generator Utilizing Autogenous Cyclical Pulsed Abnormal Glow Discharges." The Correa grid-independent Energy Conversion System utilizes an energy reactor whose function is based upon heretofore unknown spontaneous emission properties of certain metals in vacuum and involves an anomalous cathode reaction force conforming to Dr. H. Aspden's Law of Electrodynamics. The associated Motor Drive provides for direct electromechanical transformation of the energy accumulated within the reactor. The reactor may be conceived of as a portable vacuum battery made active only when needed. The Correa technology employs cold-cathode vacuum discharge plasma reactors to set up self-exciting oscillations, in the form of pulsed abnormal glow discharges triggered by auto-electronic emissions, in order to produce power. The circuit is driven from a direct current source of impedance sufficient to prevent establishment of a sustained vacuum arc discharge. In combination with a special circuit, electrical power, in excess of the input power needed for operation, can be extracted. The System, therefore, may also be referred to as an over-unity system: where net energy output greatly exceeds net energy input. Unlike the cold fusion process, which claims to output low grade heat, the Correa technology directly generates electricity at power voltage levels, without any utilization of cold or thermonuclear fusion principles. Another important feature of the apparatus is that it employs no radioactive compounds and generates no nuclear radiation or radioisotopes. The energy system is entirely pollution-free, self-contained, and composed of readily recyclable materials. Storage of the power produced may be carried out by traditional means, be these mechanical or electrical.

CANADA - PRESS RELEASE

BREAKTHROUGH IN POWER GENERATION

Non-polluting Electrical Power from Pulsed Cold Plasmas Delivers More Power Than it Consumes, Prepares for Manufacturing Development, and is Fully Protected by Recently Granted U.S. Patents.

Dr. Paulo Correa, M.Sc., Ph.D., Partner and Director of Research at Labofex-Experimental and Applied Plasma Physics of Concord, Ontario, and Partner Alexandra Correa, (Hon) BA, are today announcing a significant breakthrough in the field of clear power generation. The technical basis for the extraction process has been a carefully guarded secret until full disclosure was secured through the granting of three US patents: US Patent Numbers: 5,416,391, issued May 16, 1995, entitled "Electromechanical Transduction of Plasma Pulses;" 5,449,989, issued September 12, 1995, entitled "Energy Conversion

Energy conversion system applications for electric vehicles, stand-alone power supplies and autonomous housing are currently under development. The inventors hope that by making vehicles self-sufficient in terms of energy, this technology will offer the possibility of bypassing massive infrastructure expansions in order to make the electric vehicle a feasible reality while solving the problems of range which currently detracts from its appeal. Other potential applications include: pulsed lasers, inverters, transformer and motor circuits. The inventors are presently engaged in negotiating licensing agreements with a view to development of the applications.

Contact: Dr. Paulo Correa, Research Director
Tel: 905-660-1040 Fax: 905-738-8427

CANADA - PROTON CONDUCTORS

William S. Page (Daneliuk & Page), "Two-Dimensional Proton Conductors," *Cold Fusion Times*, Cold Fusion Theories column, vol 4, no 2, Spring 1996, p 6.

INTRODUCTION

In direct analogy with the treatment of electrons in conventional solid state physics, it is possible to describe the quantum motion of hydrogen in hydrogen-bonded solids and many liquids as a superposition of Bloch states. The detailed structure of the periodic potential that the hydrogen nuclei encounter is the result of the overlap of electron orbitals, but because the nuclei are so much more massive than electrons, for many purposes, we can represent the interaction between hydrogen and other atoms simply in terms of a generalized "Morse" potential. Just as for electrons, however, solutions of the wave equation take the form of energy bands. This has significant implications for the mechanical, thermal and electrical properties of hydrogen-bonded materials.

implantation to observe phenomena connected with so-called cold fusion. *In situ* analysis is shown to be effective in identifying the physical processes occurring in such hydrogen-metal systems.

The system is equipped with charged-particle detectors not only for the detection of nuclear reaction products occurring under bombardment with kilo-electron-volt deuterium ions but also for ERD analyses using a mega-electron-volt accelerator. The beam-target D(d,p)t reaction yield during implantation is dependent on the beam current or the deuterium flux. This is interpreted in terms of a temperature dependence of the deuterium concentration that is measured *in situ* by the ERD method.

During the bombardment with heavy ions for ERD, measurements of reaction products are also made simultaneously with those of the recoil particles to clarify the structure of the spectra, although some unidentified peaks remain.

INDIA - DEUTERON SCREENING

S.N. Vaidya (BARC, Chem. Div., Bombay), "Deuteron Screening, Nuclear Reactions in Solids, and Superconductivity," *Fusion Tech.*, vol 29, no 3, May 1996, pp 405-408, 23 refs.

AUTHORS' CONCLUSION

The effectiveness of the *in situ* ERD analysis system has been demonstrated. The evolution of the D(d,p)t reaction yield during the deuterium implantation of palladium with cyclically changing fluxes has been well understood by conventional physics with the help of the *in situ* monitoring of the implant deuterium. The spectra recorded on the back silicon surface barrier detectors (SSBD) during the fluorine-ERD analyses have also been clarified with the help of the simultaneous measurements using the two detectors; the back SSBD and the ERD SSBD. However, some peaks near 2.2 and 10 MeV in the back SSBD are left unidentified. Further study to clarify the origin of the peaks is in progress.

AUTHOR'S ABSTRACT

Screening of Coulomb interactions by itinerant deuterons contributes to the enhancement of the deuteron-deuteron reaction rate in some metal deuterides and fast deuteron conductors such as PdD_x, D_yNa_xWO₃, SrCeO₃:Y, Nb, and so forth. We propose that the deuteron screening mechanism also gives rise to the anomalous isotope effect in the PdD(H) system and to the increase in the superconducting transition temperature T_C of D_xYBA₂Cu₃O_{7-δ}. In conjunction with the currently known factors that govern superconductivity, the deuteron screening might lead to a new class of superconductors.

JAPAN - ELASTIC RECOIL DETECTION ANALYSIS

Akira Kitamura, Takakazu Saitoh, and Hiroshi Itoh (Kobe Univ. Mercantile Marine, Dep. Nucl. Engr., Kobe, Japan), "In Situ Elastic Recoil Detection Analysis of Hydrogen Isotopes During Deuterium Implantation into Metals," *Fusion Technology*, vol 29, no 3, May 1996, pp 372-377, 11 refs, 6 figs.

JAPAN - HEAVY-ION-INDUCED FUSION

Kenji Konashi, Hideo Kayano, and Makoto Teshigawara (Tohoku Univ., Inst. Matl. Res., Oarai Branch, Ibaraki), "Analysis of Heavy-Ion-Induced Deuteron-Deuteron Fusion in Solids," *Fusion Tech.*, vol 29, no 3, pp 379-384, 10 refs, 5 figs.

AUTHORS' ABSTRACT

Elastic recoil detection (ERD) analysis is successfully applied to *in situ* measurements of hydrogen isotope distributions formed in palladium and titanium during deuterium ion

AUTHORS' ABSTRACT

When energetic heavy ions irradiate a deuteride titanium target, a number of recoil deuterium atoms are produced in the solid. The recoil deuterium atoms cause deuteron-deuteron (d-d) fusion reactions in solids. The probability of the d-d fusion reaction has been calculated for the primary colliding deuterium atoms, as well as the collision cascade deuterium atoms. Based on calculated results, an experiment using a

heavy-ion accelerator was proposed to study d-d fusion in solids. The enhancement effect on d-d fusion in solids is particularly interesting. The experimental parameters were as follows: The energy of the ion beam for the d-d fusion experiment was in the range from several to several tens of mega-electron-volts for an experiment with an iodine ion beam and a titanium target. The enhancement effect in the solid is evaluated by comparing the experimental results with the present calculated results. The existence of the enhancement at low energies can be confirmed by measuring the depth profile of the fusion probabilities. Reported experimental data have been analyzed by the calculated results. The enhancement has not been found in the data.

that has been developed extensively to provide comprehensive explanations for the mechanisms of cold fusion. Important experimental findings that prove the model are described. Furthermore, several subjects including impacts on other fields are also discussed.

AUTHOR'S SUMMARY

In the preceding sections, the mechanisms of cold fusion have been well explained by the Nattoh model. Although important things such as the productions of ⁴He and non-baryon particles remain unproven, we have comprehensively but qualitatively understood the extraordinary phenomena associated with cold fusion. It is characteristic that cold fusion burns in various manners depending on the conditions, because the hydrogen-cluster involves many hydrogens. The branching ratios of the hydrogen-catalyzed fusion reactions are critical factors that are determined by the conditions of the electrolysis, the microscopic structure of the metals and so on. They will be studied quantitatively from now, but it seems very laborious because there are many cases. Furthermore, the study of cold fusion will be progressed towards the high voltage and current to achieve the higher efficiency of transforming mass to energy. There the gravity decays, instead of the fusion reactions, predominate so that new science such as black and white holes will be fully developed.

JAPAN - EXPLAINING NATTOH MODEL

Takkaki Matsumoto (Dept. Nucl. Engr., Hokkaido Univ., Sapporo), "Mechanisms of Cold Fusion: Comprehensive Explanations by the Nattoh Model," paper published by Hokkaido Univ., 36 refs, 1 fig.

AUTHOR'S ABSTRACT

The phenomena of cold fusion seems to be very complicated; inconsistent data between the production rates of heat, neutrons, tritium and helium. Our thoughts need to drastically change in order to appropriately understand the mechanisms of cold fusion. Here, a review is described for the Nattoh model,

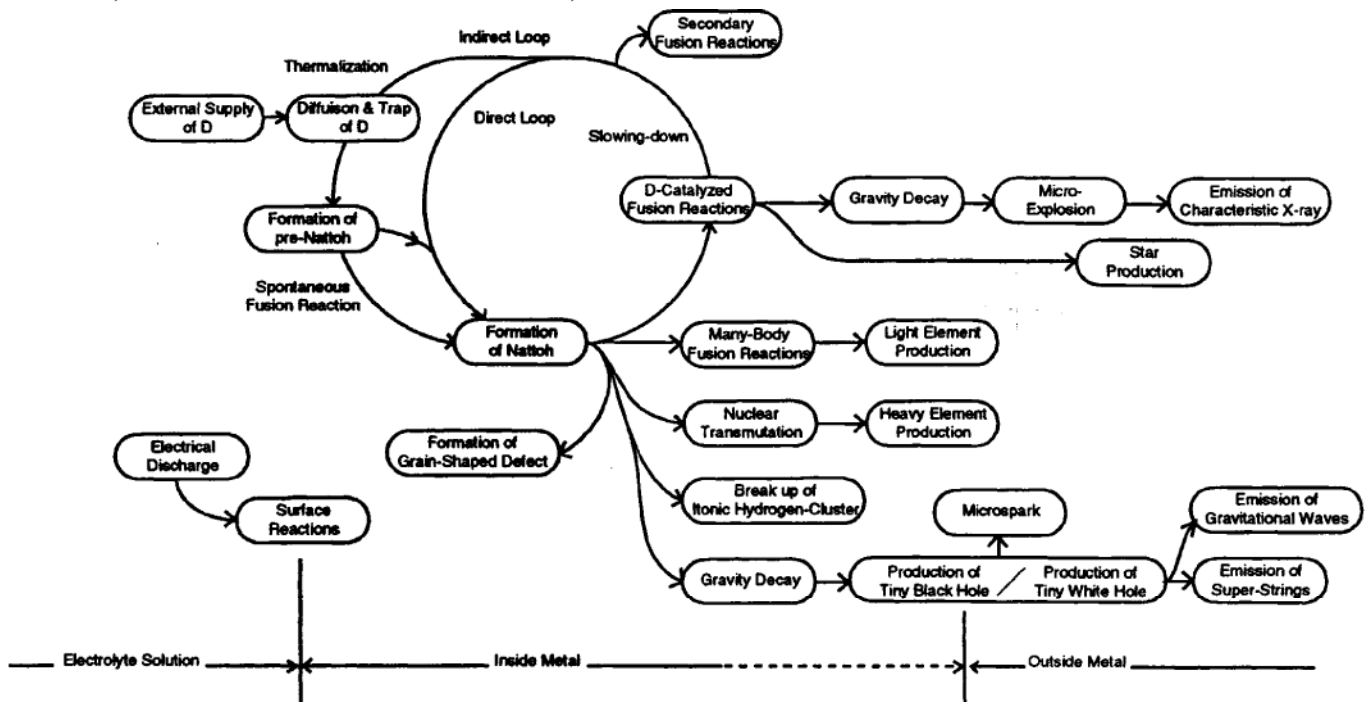


Fig. 1 Mechanisms of Cold Fusion

JAPAN - SOLID STATE FUSION AGAIN

Tadahiko Mizuno, Tadashi Akimoto, Kazuhisa Azumi, Masatoshi Kitaichi, Kazuya Kurokawa (Hokkaido Univ., Sapporo) and Michio Enyo (Hakodate Nat. Coll. of Techn., Hakodate), "Anomalous Heat Evolution from a Solid-State Electrolyte under Alternating Current in High-Temperature D₂ Gas," *Fusion Tech.*, vol 29, no 3, May 1996, pp 385-389, 8 refs, 8 figs.

AUTHORS' ABSTRACT

A coin-shaped proton conductor made from metal oxides of strontium and cerium can be charged in a hot D₂ gas atmosphere to produce excess heat. Anomalous heat evolution was observed from the proton conductors charged with alternating current at 5 to 45 V at temperatures ranging from 400 to 700°C. The anomalous heat produced temperature increases as much as 50°C. Excess heat was estimated as a few watts in most cases, totaling up to several kilojoules.

AUTHORS' CONCLUSIONS

... However, the time lag between the occurrence of excess heat evolution and the supply of input power is almost ten times larger than the time of the relationship for a proton to reach from one side to another. And the excess heat clearly decreased after the input power supply ceased. This phenomenon suggests that the excess heat evolution may be induced by deuterium flow in the conductor accelerated by an electric field. Only 5 samples in 50 showed the excess heat evolution. Also, the construction and composition of the proton conductor can be considered an important factor that decides the reaction of the excess heat evolution.

SPAIN - POSTELECTROLYSIS EFFECTS

Miguel Algueró, José Francisco Fernández, Fermín Cuevas, and Carlos Sánchez (Dep. Física de Materiales, Fac. Sci., Univ. Autónoma de Madrid), "An Interpretation of Some Postelectrolysis Nuclear Effects in Deuterated Titanium," *Fusion Tech.*, vol 29, no 3, May 1996, pp 390 - 397, 15 refs, 6 figs.

AUTHORS' ABSTRACT

An explanation is proposed for the time dependence of the neutron emission transient observed after interrupting the electrolysis in Fleischmann-Pons type experiments with titanium cathodes. It is suggested that the time structure of the neutron emission is related to a reduction of active volume (i.e., the volume with a loading ratio higher than the critical value necessary for cold fusion to take place) in the deuterated

titanium. This reduction occurs during the postelectrolysis time due to deuterium transport from the TiD_x delta-phase layer to the undeuterated bulk of the cathode. Calculations of the active volume decrease are done by using the Wagner model.

AUTHORS' CONCLUSION

It has been deduced that a minimum loading ratio of D/Ti \geq 1.95 is necessary for cold fusion reactions to take place in deuterated titanium. It has been also shown from the extension of the analysis to the period of electrolysis that a D/Ti \geq 1.95 does not ensure the triggering of the fusion reactions and that some unidentified phenomenon must be responsible for triggering the nuclear reactions. On the other hand, the end of those nuclear reactions during electrolysis seems to be determined by some phenomenon that is not operative in the postelectrolysis time.

F. ARTICLE FROM A READER**7 YEARS ON****AND THE SUPERGRAVITON CONNECTION**

By Harold Aspden

As a result of publishing my note "Space Shuttle 'Columbia' Encounters Excess Energy?" in the March 1996 issue of *Fusion Facts*, Editor Hal Fox kindly sent me a copy of that issue. I have not been following the reports on cold fusion in recent times, owing to my concentration on 'excess energy' research by magnetic methods involving motor development. However, seven years on from the 'birth' of cold fusion, I found it interesting to read what is now being reported on the link between cold fusion and warm superconductors. The reason for my interest warrants comment at this time.

I have come to believe that there is more than one physical process that can generate heat anomalously in cold fusion experiments. One method, which may not involve fusion as such, involves setting up a pulsating radial electric field gradient within a cylindrical conductor, whether that be a cathode or even the electrolyte between anode and cathode. This is possible, as in a cathode, by exploiting the Nernst Effect and combining a thermal gradient along the length of the cathode and a pulsating current flowing axially through the cathode. That subject is closer to my present research interest. Another method which does involve nuclear fusion was the subject of my granted GB Patent No. 2,231,195, its basic date being 15 April 1989, very shortly after Fleischmann and Pons made their announcement. At the time, I had a paper under editorial review and it was in July 1989 when I received the proofs that I had opportunity to add something to it, taken from my patent specification.

The paper was published in *Speculations in Science and Technology*, 1989, vol 12, pp 179-186, and its title was "The Supergraviton and its Technological Connection." The patent, reference 12 in that paper, had the title, "Electrically Controlled Ion Fusion." My affiliation then was the Department of Electrical Engineering at the University of Southampton, England, closely adjacent to the Electrochemistry Department to which Professor Fleischmann belonged. However, there had been no exchanges between us concerning this theoretical interest of mine.

The real subject of the paper was the explanation of warm superconductivity in terms of a dynamic resonance as between a supergraviton field state and individual molecules or small molecular groups. The latter have a quantum jitter linked to the Heisenberg Principle of Uncertainty and, thinking as an engineer, I saw the need for dynamic balance in the field system. My theory, as developed in that paper, pointed to a supergraviton form that provided optimum mass balance for molecular mass in units of 102.18 atomic mass units (amu). It allowed thermal energy of the heavy molecules to be fed into electrical inductance which imparted EMF to the electron current. The paper further suggested that, when deuterons enter a cathode in a cold fusion cell, their low mass brings along, not supergravitons, but normal gravitons. My theory said that these were of triple constitution, involving a pair of tau (1.781 GeV) particles and a 2.587 GeV particle, but resonating optimally and group-wise in a dynamic sense with their mass equivalent in matter, multiples of 6.60 atomic mass units.

My argument for cold fusion was that if the superconductive state could be set up transiently in the cathode, as by the molecular mass being modified by deuteride formation, then the energy imbalance as the gravitons merge to combine as supergravitons would give a surplus energy stimulus of several MeV. **This would be a very powerful vacuum energy fluctuation and enough to trigger nuclear fusion of two deuterons.**

In my paper, I pointed out that palladium is the only element containing the 105 amu isotope and 105 plus the 4 amu of two deuterons, is quite close to 102.18 plus 6.60. I further gave several examples of warm superconductor compositions having molecular masses that were near-resonant with the 102.18 amu supergraviton. One such composition was europium-barium-copper-oxide. Note then, that adding deuterons can alter the effective dynamic mass of the molecule and enhance the chance of resonance, just as the right mix of oxygen in the composition could also tune the superconductive state. Resonance implies sustained oscillation with energy contained, possibly long enough to admit the fusion trigger.

I now see, on page 9 of the March 1996 issue of *Fusion Facts*, that a report from Russia declares the reproducible generation of neutrons and tritium in a warm superconducting saturated with deuterons. The superconductor is identical to that just mentioned, but with the europium atom (152 amu) replaced by yttrium (89 amu) and dysprosium (162.5 amu). The molecular mass has incremented by 99.5 amu and, adding 2 amu for a deuteron, would simply mean that another supergraviton has joined in the dynamically resonant balance.

My point, of course, is that we now see, seven years on from the birth of 'cold fusion,' that the role of the warm superconductor in hosting the fusing atoms is being recognized by the research discoveries. That was the theme of my 1989 paper, but I doubt if many readers will have even heard of what I then suggested.

The fusion trigger energy borrowed from the vacuum energy fluctuation is that [which is] in surplus momentarily, when 31 graviton forms of 6.60 amu, as imported into the cell cathode by 102 deuterons, decide to convert into a pair of 102.18 supergravitons. This leaves a transient excess energy of 0.24 amu associated with one unstable unitary charge, rather more than 2 MeV per deuteron adsorbed and this excess energy is seated directly in the locality of those deuterons and so must help them to combine.

The graviton function, incidently, in keeping dynamic balance with the Heisenberg jitter in matter, serves to provide quantized electrodynamic action in proportion to mass, which gives basis for gravitational attraction as an electrodynamic phenomenon. We then get the long sought 'grand unification' of field theory, simply as a by-product of warm superconductivity and cold fusion! Indeed, the theory allows G, the constant of gravitation, to be deduced theoretically in terms of the charge-mass ratio of electrons, as shown in the papers reproduced in *Energy Science Report No. 6*, entitled "Inertia and Gravitation" which I have issued privately, but the reader may also inspect the references in the above-quoted paper.

Harold Aspden
Sabberton Research, England

G. LETTERS FROM OUR READERS

A LETTER TO ANOTHER EDITOR

To the Editor of *The Economist*
Sir,

In re: "Sonoluminescence", page 86, *The Economist*, May 4th, 1996.

Your staff's education concerning nuclear fusion has been studiously neglected. Your article states: "Eliminating the heating model would disappoint scientists who are looking for nuclear fusion inside the little blue bubbles. Their hope comes from the spectrum of the flash. If, indeed, it contains x-rays, the bubbles could be at around 1m°C. This indicates enormous pressures. With tinkering these could, perhaps, be driven high enough to fuse together heavier-than-normal hydrogen atoms (deuterium and tritium) dissolved inside bubbles, and generate masses of energy. Currently, fusion requires multi-million-dollar hardware that uses more energy than it creates."

In the over-3,000 technical papers on cold fusion and allied topics that we have collected since 1989, over 600 report on successful fusion (often with excess thermal energy) events in a variety of "low-temperature" devices and systems. More than one of these articles reports on "sonofusion", where the sonoluminescent bubbles are created near a palladium surface in a solution of heavy water (deuterium oxide). See the paper by Russ George and Roger Stringham, "Cavitation Induced Micro-Fusion as Evidenced by the Production of Heat, ^3He and ^4He ," ICCF-5, April 9-13, 1995, Monte-Carlo, and reported in *Fusion Facts*, April 1995.

Other cold fusion devices are generating extraordinary number of cathodic elements that were not present in the experiment prior to electrolysis. Volume 1, number 1, of the *Journal of New Energy* published 18 experimental and theoretical papers on low-temperature nuclear reactions (the proceedings of the first conference on Low-Temperature Nuclear Reactions). In Japan, the Pons-Fleischmann heavy-water cold fusion, electrochemical cells are approaching commercialization. In the U.S., the Patterson Power Cell™ is being commercialized. Our own **Fiber Power Cell** now achieves over ten times as much thermal energy as input electrical energy.

If you would like more information about the activities in the studiously ignored new science of cold fusion, we would be pleased to allow your staff access to the world's leading center of information on cold nuclear fusion.

Sincerely, Hal Fox, Editor-in-Chief of *Fusion Facts*; Editor of *New Energy News*; and Editor of *Journal of New Energy*.

LETTER FROM HAROLD ASPDEN

Over Unity in South Africa

I returned from the Energy Symposium in Denver to find that my fax machine had received a message from Nicky Knoetze of Telecontrol Services (Telemetry, Earthing and Lightning

Protection Specialists), P.O. Box 510, Umlanga 4320, Republic of South Africa.

After acknowledging receipt of my book "Modern Aether Science," and my Energy Science Report No. 1 on "Power from Magnetism," which he said "made some very interesting reading," he stated:

"I have been working on an energy device powered by ferromagnetism for some time now, but I have never found a scale of reference to apply to my device, which presently runs at 105% above unity. I have found a lot of my answers in your report. Do you have any further reports on ferromagnetism as I do not understand the "flyback" action mentioned in Report No. 1."

For information of *FF* readers who might have the same problem, my response to that enquiry includes the following comment.

'Flyback' as applied to a transformer simply means power into primary winding through a diode or equivalent as the magnetic flux increases to store energy in the transformer inductance and power out from a secondary winding through a second diode as the magnetic flux decreases to shed the inductive energy stored in the core. That will not give over-unity if the primary and secondary are wrapped close together on the same section of core, one around the other, but there are interesting consequences if the windings are well segregated on the core.

Nicky Knoetze gives his tel/fax no. as Int+031-561-6305.

/s/ Harold Aspden

G. BOOK REVIEW

ADVANCING ELECTROMAGNETISM

A book review by Hal Fox

Terence W. Barrett & Dale M. Grimes, Editors, Advanced Electromagnetism: Foundations, Theory and Applications, c1995, World Scientific Publishing Co., Singapore, River Edge, NJ., 791 pages, 26 chapters.

Terence W. Barrett & Dale M. Grimes, in addition to editing a much needed addition to modernize the science of electromagnetics, have, themselves, written important chapters in this book. Terence W. Barrett presents, "Sagnac Effect: A consequence of conservation of action due to gauge field global conformal invariance in a multiply-joined topology of coherent fields." In simpler terms, Barrett shows us that the three current theoretical explanation of the ring laser gyro (normally using two sets of optical fibers and measuring

angular displacement of the gyro by noting the difference in the light that move clockwise and the light moving counterclockwise). The effect is called the Sagnac Effect and is difficult to conceptualize in our complex relativistic world. However, Barrett shows us that Maxwell's equation **with the addition of the Yang-Mills theory can explain observed reality**. Barrett ends his discussion with the following powerful logical conclusion:

*Taken to its logical conclusion, the approach adopted here requires that under the special topological conditions described above, and only under those conditions, **the photon associated with the Φ^* field will acquire mass and propagate as a disturbance of the gravitational metric**. Using field conversion, a Φ^* field-based mechanism would efficiently propagate energy as well as communications, and penetrate media normally impenetrable to force field photons.*

Dale M. Grimes (co-editor) and Craig A. Grimes (Univ. of Kentucky) provide another interesting chapter: "Classical Field Theory Explanation of Photons." In this discussion it is stated: "It is the primary purpose of this work to show that the classical field equations and our proposed electron model predict low-Q atomic radiation with the kinematic and radiative properties of photons." The authors discuss the shortcomings of, for example, the design of small, efficient antennas. Ultimately they show that certain types of antennas can be efficient radiators contrary to previous equations. At the end of this paper they describe a radiation field that is emitted from a virtual, spherical surface and is photon-like. Their final two sentences are important: *If radiation is triggered by an external plane wave, the radiated wave has the same frequency, phase, polarization, and direction of travel as the trigger. **In these terms, a photon is fully described by the classical field equations.***

Grimes and Grimes also end the book with "Transmission and Reception of Power by Antennas." In this chapter the authors state that this article includes complete analytical and partial numerical field solutions for the **transmission and reception of power**.

Peter Graneau, a long-time friend of this publications, contributes a chapter entitled, "The Newtonian Electrodynamics and its Experimental Foundation." Here again, is the battle against fervent acceptance of the *status quo* fought with intellectual prowess and experimental proof as Graneau summarizes highlights of his life's work.

For those who delight in Tom Bearden's engaging presentations of hard-to-understand concepts, the first chapter will be of interest. R. Aldrovania (Institute of Theoretical Physics of the University of Sao Paulo, Brazil) presents, "Gauge Theories, and Beyond." In his conclusions, Aldrovania states:

*The vacuum is trivial for most fields and for this reason quantum effects were looked for. **However, one of the novel features of gauge fields is precisely the non-trivial properties of their vacua even at the classical level.** It is only natural to try to bring the two approaches together. At the same time, the remaining problems both with gauge theories and General Relativity, suggest that their schemes should be somehow modified, preferably to approach each other.*

This short review cannot cover all of the important concepts housed in this one important volume. The following list of other chapter titles provides an idea of the scope of this book:

- "Helicity and Electromagnetic Field Topology," by G.E. Marsh.
- "Electromagnetic Gauge as Integration Condition: Einstein's Mass-Energy Equivalence Law and Action-Reaction Opposition," by O.C. Beauregard.
- "The Symmetry Between Electricity and Magnetism and the Problem of the Existence of a Magnetic Monopole," by G. Lochak.
- "Quantization as a Wave Effect," by P. Cornille.
- "Twistors in Field Theory," by J. Frauendiener & S.-T. Tsou.
- "Foundational Electrodynamics and Beltrami Vector Fields," by D. Reed.
- "Gravitation as a Fourth Order Electromagnetic Effect," by A.K.T. Assis.
- "Hertzian Invariant Forms of Electromagnetism," by T.E. Phipp Jr.
- "Pancharatnam's Phase in Polarization Optics," by W. Dultz & S. Klein.
- "Frequency-Dependent Dyadic Green Functions for Bianisotropic Media," by W.S. Weiglhofer.
- "Covariances and Invariances of the Maxwell Postulates," by A. Lakhtakia.
- "Solitons and Chaos in Periodic Nonlinear Optical Media and Lasers," by J.-H. Feng & F. K. Kneubühl.
- "The Balance Equations of Energy and Momentum in Classical Electrodynamics," by J.L. Jimenez & I. Campos.
- "Non-Abelian Stokes Theorem," by B. Broda.
- "Extension of Ohm's Law to Electric and Magnetic Dipole Currents," by H.F. Harmuth.
- "Relativistic Implications in Electromagnetic Field Theory," by M. Sachs.
- "Symmetries, Conservation Laws, and Maxwell's Equations," by J. Pohjanpelto.
- "Six Experiments with Magnetic Charge," by V.F. Mikhailov.
- "Ampere Force: Experimental Tests," by R. Saumont.
- "Localized Waves and Limited Diffraction Beams," by M.R. Palmer.
- "Analytical and Numerical Methods for Evaluation Electromagnetic Field Integrals Associated with Current-Carrying Wire Antennas," by D. H. Werner.

To conclude this review, it is important to state that Barrett and Grimes have provided an excellent compendium of papers

to support the paradigm shift that is occurring **and must occur in physical science if we are to accelerate our understanding of the physical world.** The price tag of \$124 may seem high, but if you are a professional involved in changing the world to a better one, we highly recommend this book. If you have problems with higher mathematics, then read between the equations. The topics and concepts presented are important and should be carefully reviewed by any who are attempting to more fully understand the nature of electromagnetism.

G. MEETINGS

ICCF6

Sixth International Conference on Cold Fusion

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

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

- Excess Energy Phenomena in D₂/Metal Systems
- Correlation Between Excess Energy and Nuclear Products
- Nuclear Physics Approaches
- Material Science Studies
- Innovative Approaches (Miscellaneous Phenomena)

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

Hotel: Deadline for guaranteed accommodation is August 1.
Contact: Hotel Apex Toya Hokkaido
Aza-Shimizu, Abuta-machi, Abuta-gun
Hokkaido 049-56, Japan.
Tel: +81-142-73-1111 Fax +81-142-73-1157

Registration: Final Deadline August 1. Send for application package to Conference Secretariat
c/o NHEI-Center, IAE
Shinbashi TS Building
1-22-5 Nishi-Shinbashi, Minato-ku
Tokyo 105, Japan
(tel. info above)

Direct International Science Consortium, Inc. (D.I.S.C.)
presents a seminar:
ALTERNATIVE TECHNOLOGY
Saturday, 1 June 1996
at The Community Centre Concourse
Grahame Park Estate, Hendon, London

The Searl Effect Generator is currently under development which increases the efficiency of the utilization of energy. The Inverse Gravity Propulsion System will be developed in Britain from April of this year onward. This system enables aero and space vehicles to be propelled efficiently and more cleanly than at present.

This seminar is an important part of Britain's future, for reasons of job creation, export marketing and in the use of the technology itself. Production of the technology is expected to begin early in 1997 so that by 2001 the resulting products will be readily available and in wide spread use.

Updates available on Web Page:

www.servtech.com/public/jansontee/

Advanced bookings L25, but checks must be cleared by May 11. Thereafter tickets may be purchased in cash at the door for L50.

World Renewable Energy Congress IV
Denver, Colorado, USA 15-21 June 1996

RENEWABLE ENERGY Energy Efficiency and the Environment

Generally dealing with the established "renewable resources" with a lesser place for other technical topics.

Preregistration required. For information contact Mr. Steve Hauser, Division Director NERL, 1617 Cold Blvd., Golden, CO 80401. Tel: 303-384-7416, Fax: 303-275-4320.

INTERNATIONAL SYMPOSIUM ON CONSCIOUSNESS, NEW MEDICINE AND NEW ENERGY

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

Dr. Shiuji Inomata is organizing a symposium to discuss and present research results in such broad topics as consciousness phenomena, holistic medicine, integration of Western and Eastern medicine, and new energy technology. The sponsor is the Japan Green Cross Society. Paramahansa Tewari has been chosen as the keynote speaker for the conference. Participation fee is US\$ 190.

Contact: Mr. Tetsu Nagano, Japan Green Cross Society
 2F Kamon Building
 2-7-14 Hamatsu-cho
 Minato-ku Tokyo 105 JAPAN
 Tel: +81(0)3-3437-2218
 Fax: +81(0)3-3437-2808 or +81(0)3-3437-2624

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) 982-8340, FAX (214) 982-8349.

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

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

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

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

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

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

International Management Systems Co. (IMSC): Technical project/program management assistance, and technology development and commercialization assistance. Contact Mark Harris or Richard Youngs, Phone 801-583-6232, Fax 801-583-2963, or Phone/Fax 801-255-3000.

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

Labofex, Experimental and Applied Plasma Physics: R&D of PAGD (Pulsed Abnormal Glow Discharge) plasma technology. Three issued US patents, including protection for PAGD reactor, pulse generator, circuitry, motor and energy conversion applications. Patents applied for and issued in other countries. Applications under development include portable power supplies, electric vehicles and autonomous housing. Licensing. Ontario, Canada. Contact Dr. Paulo N. Correa. Tel 905/660/1040 Fax 905/738/8427

Magnetic Power Inc.: The Joint Venture partner with Sciex (UK) for Takahashi supermagnets and supermotors in North America. Sebastopol, CA. Contact Mark Goldes, Voice 707/829-9391, Fax 707/829-1002.

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

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

Zenergy Corporation: Founded in 1996 to facilitate the introduction of commercially viable energy alternatives. (formerly Power Cell Technologies) Chandler, AZ. Contact Reed Huish: 602-814-7865, Fax 602-814-7665, e-mail: reedh@indirect.com

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

INFORMATION SOURCES

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

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

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

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

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

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

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

Institute for New Energy (INE), organization to promote and help find funding for new energy research. Home Page: www.padrak.com/ine/ contains many important scientific papers and current reports on all areas of research. E-mail: ine@padrak.com Salt Lake City, Utah. Voice 801/583/6232, Fax 801/583/2963.

New Energy News monthly newsletter for INE, highlighting the research and development in the worldwide new energy arena. Edited by Hal Fox.

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

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

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

Now available: *Clean Energy Review*, a technical and scientific discussion prepared for the Canadian Environmental Assessment Agency's panel reviewing nuclear fuel wastes disposal. Discusses transmutation as a possible solution for nuclear waste disposal. \$5 U.S. and Canadian, \$7.50 other countries.

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

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

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.

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