



New Energy News

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THE CENTURY'S MOST IMPORTANT THEORETICAL PAPER

No scientist, nor group of scientists, have rationally explained **INERTIA**, until now! Drs. Bernhard Haisch, Alfonso Rueda, and Harold E. Puthoff, in an article entitled "Inertia as a Zero-Point Field Lorentz Force," have provided the theoretical explanation for inertia. The implications are enormous!



Dr. Bernhard Michael Haisch is a staff scientist at the Lockheed Palo Alto Research Laboratory in Palo Alto, California. He has held this position since 1983. Dr. Haisch is also Associate Editor of *The Astrophysical Journal* (1993 to present); Deputy Director

for the Center for EUV Astrophysics at the University of California at Berkeley (1992-3); Visiting Fellow at the Max Planck-Institut für Extraterrestrische Physik, Garching, Germany (1991-3), etc. Born in Germany in 1949, he received his B.S. in Astrophysics from Indiana University (1971) and his Ph.D. in Astronomy from the University of Wisconsin (1975). Haisch has published about 80 papers in various technical journals, especially related to astronomy and astrophysics. He has also written a book, is an inventor, and speaks or reads five languages.

Dr. Alfonso Rueda is a professor in the Department of Electrical Engineering at California State University, Long Beach, California. He was born in Colombia in 1940 and graduated with B.S. and M.S. from MIT in Electrical Engineering (1963). He obtained his second master's and a doctoral degree from Cornell



University in Applied Physics (1968) and Applied Math (1973) respectively. During the period from 1963 through 1989 he has performed research and/or taught in Universities in Colombia, Italy (International Centre for Theoretical Physics), and Puerto Rico. He has been teaching in the Electrical Engineering Dept. of Cal State University at Long Beach since 1989. Rueda has consulted with several large corporations, has written many technical papers (recently specializing in fields in vacuum and in zero-point phenomena). He is a member (and sometimes founding member) of several scientific and professional societies.



Dr. Harold E. Puthoff is already well known to the readers of *New Energy News* especially for his recent acclaim as the **NEN Theorist of the Year** (see January, 1994 issue for a more detailed resumé.) Dr. Puthoff is Director of the Institute for Advanced Studies at

Austin. A theoretical and experimental physicist specializing in fundamental electrodynamics, his research ranges from theoretical studies of quantum vacuum states as they apply to the stability of matter, gravitation, cosmology and energy research, to laboratory studies of condensed-charge technology (CCT), a newly-emerging, high-power microelectronics technology based on micro-arc discharges. A graduate of Stanford University in 1967, he has published over 30 technical papers in the areas of electron-beam devices, lasers and quantum zero-point-energy effects, has patents issued and pending in the laser, communications and energy fields, and is co-author of a textbook Fundamentals of Quantum Electronics (Wiley, 1969), published in English, French and Russian.

SPACE ENERGY - PEER REVIEWED

By Hal Fox, Editor

The way the various institutions of science are structured, it is important to work within the system to successfully introduce new scientific theories and facts. That is what Dr. Harold E. Puthoff has gently accomplished over the past few years. As shown by Moray King [1], others have been involved in this task and have contributed over 400 peer-reviewed articles to the scientific literature.

Experimental evidence precedes theory. That does not mean that experiment has to precede theory. In nearly all of the progress of science we have observed a cycle of new experimental data (new discoveries): theories that seemed to explain the experiments, the use of the theory to predict new experiments, and new experimental data. So that scientists everywhere can have access to both new data and new theories, the papers are submitted for peer-review and accepted papers are published.

This peer-review/publishing cycle has led to a great increase in the development of our understanding of the world about us. The peers (those scientists who are sufficiently well-trained in a particular discipline) help maintain the integrity of the system by correcting errors before they are published and by preventing the publication of obvious scientific nonsense. The peer-review system sometimes fails; especially if the discoveries are new, unusual, unexpected, or challenging to our current scientific understanding. **In these cases the new truth is neither recognized nor accepted because for such new science there are no peers.** As John Masters has said, "A really new idea at first has only one believer." To paraphrase, a new science, at first, may have only one peer.

The concept of an energetic space is a relatively new one. Originally, an **ether** or **aether** or **luminiferous ether** was theorized to explain how light can travel from the sun to the earth. Later the Michelson-Morley experiments showed that light traveled at the same speed in the direction of earth's travel as perpendicular to earth's travel in its orbit around the sun. One explanation for this experimental evidence (which became dogma) was to deny the existence of an ether. Alternative explanations are that the ether is dragged along with the earth or that the measuring instruments are distorted in the direction of earth's

motion so that the velocity of light is **apparently the same in both directions.**

In addition to the experimental evidence, the concept of the dual nature of light (either as waves or as particles) seemed not to need an ether to explain how light particles travel, therefore, space became defined as being empty. Einstein did not so much deny the existence of an ether as to build a mathematical theory of relativity that did not require an ether. **The interpretation and acceptance of Einstein's work in theoretical physics has, for over 80 years, been distorted to claim that the successes of Einstein's theory precludes the existence of an ether.** The peer-review system has previously accepted that incorrect interpretation.

After Einstein's Special Theory of Relativity, the development and acceptance of quantum dynamics (which began to explain many heretofore unresolved mysteries of our physical universe), led to the mathematical prediction of either a real or a **virtual** (only a mathematical concept) energetic ether. Some of the space energy concepts date back to the work of Casimir in 1948. Casimir explained that the force that exists between two closely-spaced, conducting, parallel plates is the result of space energy pushing the plates together (from the outside) as the close spacing ruled out an interior opposing force of electromagnetic radiation for wavelengths longer than half the spacing between the plates. Therefore, the closer the plates the stronger the Casimir force. Thus a possible real (not virtual) ether began to explain some factors of observed reality.

In May, 1978, Richard A. Muller published a paper explaining the "new aether drift" [2]. In this paper Muller reports on his measurements showing that the background radiation from the cosmic background had a slight departure from being everywhere (in all directions outward far from the solar system) the same. The interpretation of this non-uniformity in radiation is that the solar system is moving in one direction at a calculated rate of 600 kilometers per second. The motion may involve more than just the solar system. Muller suggests that a vast volume of space (light years in diameter) is moving with respect to the distant universe. **The importance of this paper is that direct measurements of one portion of the electromagnetic emanations in our universe shows**

that there is a type of ether (or aether) and that the earth moves relative to the ether. This finding is contrary to the optical measurements made by Michelson and Morley that have incorrectly become the basis for the denial of space energy.

THE WORK OF DR. HAROLD E. PUTHOFF

Experimental data available to Hal Puthoff led him to believe that there was an energetic ether, and that it could be tapped. By basing his theoretical physics carefully on the previous peer-reviewed literature (some of which brought Nobel prize nominations to his older fellow scientists), Puthoff has developed a carefully constructed, peer-reviewed basis for space energy. Here is the chronological history of his most important published articles:

In December, 1986, Puthoff submitted a paper (published in May, 1987) to the prestigious American journal, *Physical Review* [3]. This peer-reviewed and published paper was firmly based on previously accepted scientific papers (peer-reviewed, published, and referenced). However, Puthoff extended the concept of an energetic space to explain that the ground state of the hydrogen atom (the lowest energy level of the electron orbiting the hydrogen nucleus) was a dynamic equilibrium between the energy emitted by the orbiting electron and **energy received from "zero-point fluctuations of the background vacuum electromagnetic field."** This theory explains the paradox of how an electron can emit energy while circulating around the atomic nucleus and yet not spiral into the nucleus (a major unresolved difficulty with the Bohr model of the atom.)

If Puthoff had proclaimed that the electron was tapping the energy of space, his paper probably would not have been accepted for publication. However, the highly successful equations of quantum dynamics predict an energetic space (virtual or real.) In addition to working in harmony with quantum dynamics, Puthoff accomplished something equally as clever. He cites the literature to show that stochastic electrodynamics (SED) had been used to help in solving some of the equations or expressions of quantum mechanics. In other words, Puthoff was able to use the classical concepts to develop his mathematical proof or demonstration of his thesis. Specifically, for much of his work, he bases his equations on Newton's laws of motion without having to start with relativistic laws of motion.

The conclusions of this important paper by Puthoff are (paraphrased by me) that **the stable ground state of the hydrogen atom is a by-product of the action of an energetic space.** This Puthoff paper extended the number of quantum phenomena that have yielded to classical analysis (which is understandable to more professional scientists than are the more difficult concepts of quantum dynamics.) In addition, his paper also provided deep insight into the **role of space energy in stabilizing all matter.** Puthoff states in a less-threatening way, "Although the nature of the background field [space energy] is still considered to be an open question ... the electromagnetic field ... is a likely candidate ... The level of success obtained here in accounting for the hydrogen ground states ... provide[s] additional evidence for this viewpoint." In his final paragraph Puthoff states more strongly, "Finally, it is seen that a well-defined, precise quantitative argument can be made that the ground state of the hydrogen atom is defined by a dynamic equilibrium in which collapse of the [ground] state is prevented by the presence of zero-point fluctuations of the electromagnetic field. **This carries with it the attendant implication that the stability of matter itself is largely mediated by ZPF phenomena in the manner described here, a concept that transcends the usual interpretation of the role and significance of zero-point fluctuations of the vacuum electromagnetic field."**

ONWARD TO GRAVITY

In March, 1988, Puthoff submitted a second article to *Physical Review* [4]. Puthoff begins by reviewing the peer-reviewed publications, especially six attempts to explain gravity. He cites a 1967 model by the famous Russian physicist, Andrey D. Sakharov (who was awarded the 1975 Nobel Prize for Peace), in which Sakharov suggests that gravitation is not a fundamental interaction at all, but rather an induced effect brought about by changes in the "quantum-fluctuation energy of the vacuum when matter is present." In my words, this is saying that gravity is the by-product of space energy.

Puthoff explores the model suggested by Sakharov in a straight-forward mathematical treatment using previously published results of ZPF models of van der Waals and related effects in flat (as contrasted to Einsteinian curved) space-time. Puthoff shows that the **Zitterbewegung** motion (a type of random oscillation of a particle) is related to the internal particle energy that is identified with the rest-mass

energy of a particle. It is this mass that is shown to be involved in the gravitational interaction. Puthoff assumes that the gravitational and rest masses are identical and can be equated to obtain a cutoff frequency (of the ZPF) which satisfies the Sakharov condition. This cutoff frequency can be inverted (a mathematical process) to give the well-known gravitational constant. This specification of the cutoff frequency and its relationship to the gravitational constant are the major concepts derived from the Zitterbewegung model. Next Puthoff considers the interaction between two such masses with the assumption that the average force acts along the axis joining the two masses. Some equations later, Puthoff shows that the results can be expressed in the form of Newton's law with no adjustable parameters required (**even the Gravitational Constant has been derived.**)

In his **Discussion** section, Puthoff finds, "The fact that gravitational interaction is characterized by a unipolar [single-valued] **charge** (mass) can be traced to a **positive only** kinetic energy basis for the mass parameter." Puthoff continues, "The lack of shielding effects in gravity can also be comprehended on a rational basis. As understood here [in Puthoff's paper], this is a consequence of the fact that ZPF **noise** (quantum noise) in general cannot be shielded, a factor which in other contexts sets a lower limit on the detectibility of electromagnetic signals." It is important to note that difficulty in shielding gravity does not preclude the possibility of some other type of space energy interaction with mass. [See Puthoff's latest contribution concerning inertia, ref. 7]

Finally, Puthoff notes, "**Assuming that the model is a proper representation of the gravitational attraction, the already unified aspect of the model would seem to mitigate against canonical attempts at unification of gravity as a separate force.**" In my terminology: We no longer need to search for a GUT (Grand Unifying Theory), Puthoff has provided it for us by showing that gravity is a byproduct of the electromagnetic space energy!

ON TO THE SOURCE OF SPACE ENERGY

Puthoff next addresses the issue of the source of Zero-Point Energy (which is a misnomer and is better replaced by the concept of an all-pervading **space energy**.) In a paper submitted in March, 1989, and revised in May, 1989, and published by *Physical*

Review A in November, 1989, Puthoff explains the source of ZPE [5]. Puthoff states that Nature provides two choices for an explanation: Either ZPE exists as a boundary condition of the universe or by **the quantum-fluctuation motion of charged particles that constitute matter.** [see also ref. 8]

Using "straightforward calculations", Puthoff shows (with 30 equations) that the spectrum of electromagnetic energy from the motion of charged particles is approximately the right value to account for the dynamic-generation process to produce the ZPE field (or space energy.) This energy-generation process as defined is of fundamental importance because this total process and energy field can explain atomic stability, gravitation, and the Casimir and van der Waals effects.

TAPPING SPACE ENERGY

The next logical question to be explored by Puthoff (aided by Daniel C. Cole of IBM) is the concept of whether the vacuum of space at zero degrees Kelvin (in other words, no thermal energy to utilize) can give up energy. In a paper received in March, 1993, and published in August, 1993, the authors show that, in principle, energy can be extracted from vacuum energy (space energy) [6].

This paper is one that deals more with thermodynamic logical considerations than with complex equations. Therefore, this paper, with its four equations, is relatively easy to read. The paper concludes that, in principle, systems can be defined that can either generate heat or perform work using "vacuum" energy. The paper does not address the issue of a practical method of energy or heat extraction.

EXPLAINING INERTIA!

Inertia, we are taught, is the property of matter such that when at rest, a mass tends to remain at rest or when in motion, tends to remain in motion unless acted upon by an outside force. First recognized by Galileo (c. 1638) and more formally defined by Newton (c. 1687), **inertia has never been adequately explained, until now.** This mystery was somewhat explained by Mach (c. 1883) whose "principle" was that inertia is a function of the cosmic distribution of all matter. Now Puthoff and two friends (Bernhard Haisch of Lockheed and Alfonso Rueda of California State University at Long Beach) have explained this

centuries old mystery [7]. With a rigorous mathematical development, these authors show (using over 100 equations) that the bulk of the inertial effect comes from the very high frequency components of the zero-point electromagnetic fluctuations. Read about this historic development in the words of Dr. Harold E. Puthoff in the following paragraphs.

Inertia, Mach's Principle, and Fluctuations of the Vacuum

by Harold E. Puthoff

You are standing on a train in the station. As the train leaves the platform with a jerk, you could be thrown to the floor. What is this force that would knock you down, seemingly coming out of the nowhere?

*Although oft-experienced at a mundane level, the above phenomenon, which we conveniently label as **inertia** and go on about our physics, is a subtle feature of the structure of the universe that has perplexed generations of physicists from Newton to Einstein. Since in the above example the sudden disquieting imbalance results from acceleration "relative to the fixed stars," in its most provocative form one could say that it was the **stars** that delivered the punch. This key feature was emphasized by the Austrian physicist and philosopher of science Ernst Mach, and is known as **Mach's Principle**. Nonetheless, the mechanism by which the stars might do this deed has eluded convincing explication - - **until now**.*

Addressing this issue in a paper entitled "Inertia as a Zero-Point Lorentz Force" [7], researchers Bernhard Haisch of the Lockheed Research Laboratory in Palo Alto, California, Alfonso Rueda of California State University at Long Beach, California, and Harold Puthoff [the author] of the Institute for Advanced Studies at Austin in Texas, trace the problem of inertia and its connection to Mach's Principle to properties of the vacuum itself, specifically its zero-point fluctuations. In a sentence, although a uniformly moving body does not experience a drag force from the vacuum fluctuations (the spectrum is Lorentz-invariant), an accelerated body meets a resistance (force) proportional to the acceleration, the constant of proportionality is defined as the inertial mass m , and the results leads to Newton's Second Law, $F = ma$.

*The vacuum fluctuations also provide the missing link with regard to Mach's Principle. Mach's Principle states that since accelerated motion would appear to be devoid of meaning in the absence of surrounding matter, the local property of inertia must **somehow be a function of the cosmic distribution of all other matter**. The link is that it is the cosmic distribution of matter, via radiation processes associated with the quantum fluctuations in that matter, that has been shown to be the source of the local vacuum field fluctuations. (See for example, "Where Does the Zero-Point Energy Come From?" [8]) Thus, the quantum fluctuations of distant matter structure the local, Lorentz-invariant, vacuum-fluctuation frame of reference, and **acceleration relative to this frame results in the retarding force that we label inertia**.*

*The implications of this discovery are far-reaching. As an example, since inertial and gravitational masses are known empirically to be identical in magnitude, this study provides further support for a concept due originally to Sakharov, and further explored by Puthoff [4], that gravitational effects in general, and gravitational mass in particular, also derive from vacuum-fluctuation-driven phenomena. Further, light is shed on concepts as fundamental as the conservation of energy. A particle set into motion by the application of a force, for example, can be seen in terms of work being done against the vacuum fluctuations during particle acceleration which is then returned from the vacuum during the inverse deceleration process - a **new view of the concept of the transformation of kinetic energy into another form**. Again, as in the recent discoveries in cavity QED (quantum electrodynamics) wherein the restructuring of vacuum states has been shown to lead to changes in atomic parameters formerly thought to be immutable (such as spontaneous emission rates), **there is the possibility (at least in principle) that inertial and gravitation masses can also be similarly affected**.*

*Probably the most important aspect, however, of the discovery of the intimate connection between inertia and the vacuum fluctuations is that the number of independent physical concepts upon which the structure of modern theory is built is reduced by one, thereby **providing yet another step in our attempt to develop a coherent, unified view of the structure of the physical universe**.*

[End of Dr. Puthoff's explanation.]

Perhaps more important to the readers of this article is the concept that if we can learn to modify space energy, we should be able to modify or control inertia and gravity. **Thus, this series of enormously important peer-reviewed papers (especially this last paper) provides us with a better understanding of the physics of matter and energy.** This enhanced perception removes the barrier to scientific communication that has prevented the understanding and acceptance of the works of such stalwarts as dePalma, Tewari, Inomata, and Robert Adams.

SUMMARY

Although many inventors, engineers, and scientists have been personally convinced of the reality of space energy (an energetic ether or aether), it has taken the dedicated and ingenious efforts of Puthoff and his colleagues to get the message into the scientific literature. By careful and brilliant theorizing, coupled with strong mathematical expertise, buttressed by a thorough knowledge of the peer-reviewed published literature, Puthoff et al. have won an important victory in search of truth and knowledge.

We will now be pleased to follow the remaining battles in the war for the acceptance of the concept of space energy. The scientists who have accepted and taught physical science (including the 90-year old denial of an energetic ether) now have a challenge to meet. They must either ignore, refute, or accept this important paper. A somewhat similar battle has been raging around the discovery of cold nuclear fusion (Pons-Fleischmann, University of Utah, March 1989 announcement.) However, in the case of space energy, there does not appear to be a well-funded, entrenched group of scientific lobbyists (like the hot fusioners who are spending \$500 million a year of U.S. tax dollars and who have been named as the primary source of discontent with cold fusion). Nor is there any specific project that would compete with this new understanding of inertia and of space energy. **It would be a clever strategy for federal-dollar-hungry university researchers and for aerospace scientists to quickly make proposals to various government agencies on methods of influencing or controlling zero-point energy fluctuations.**

The battle for recognition of space energy has been won, but the war is not over, peace has not been declared. **However, this intellectual achievement of**

Puthoff and others, cannot be purchased and shelved.

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Fusion Briefings

Electrochemical Microscopy: A Possibility for In-situ Studies of the Cold Fusion Phenomena
by Peter Glück

I believe it was Professor Bockris who stated that there is something basic missing in our understanding of phenomena in solid state. This unknown factor is

the root of the difficult reproducibility of the solid state nuclear reactions and, as long as not revealed, it will be practically impossible to distinguish a working electrode and an idle one before an experiment. Actually, pre-birth or post-mortem analyses of any kind or any degree of sophistication seem to be unable to predict or postdict (justify) the behavior of a cold fusion electrode. This is equally difficult as trying to study somebody's personality by a very careful dissection of their corpse.

Based on a global version of this field and on foraging in neighboring areas [1], we presumed that cold fusion is a catalytic process intimately (and causally) bound to the dynamical properties of the surface and near surface atoms [2], and is restricted to localized centers for high dynamic activity. However, as long as these dynamic phenomena on the atomic level cannot be observed directly, surface dynamics remains just a plausible speculation or model, even if compatible with and based on all the known data. Fortunately, the advent of a new science, Electrochemical Microscopy, based on scanning probe microscopy and X-ray techniques, will transform the impossible of yesterday into tomorrow's routine observation and measurement. The dynamic activity of the electrode surfaces can now be investigated with more and more precision and detail. Thus, new possibilities appear for electrochemistry focusing on electrocatalysis, for chemical catalysis and for our scientific field, too.

The *Research and Development* magazine has published an excellent paper on electrochemical microscopy [3] and is generously distributing a bibliography on the subject [4]. An extensive review written by some of the gurus of this emergent discipline was published recently [5].

Many unexplained phenomena have been observed [3]. Professor Michael Weaver (Purdue Univ.) is quoted as saying, "The structure you get on the surface depends qualitatively on the applied electric potential. This electronic switch allows you to study the dynamics of surface structure. When we're sweeping or stepping the potential, we can see the structure change and the atoms move. Surface structures that are stable in a thermodynamic sense, can vary dramatically as we alter the potential. **The surface is a live animal.**" Of course, ex-situ studies are killing it.

Professor Dieter Kolb (Univ. of Ulm, Germany) "sees electrochemical microscopy moving to the next step: obtaining a dynamic picture of events at the interface." This is exactly what is necessary to

confirm or to (God forbid!) unfirm the Surfodyn concept. The R&D paper [3] concludes that current research (in electrochemical microscopy) is leading to a fundamental reevaluation of liquid-solid interfaces that is going to have a very broad-based impact. Beyond any doubt these studies will be beneficial for cold fusion. However, as far as I know, hitherto no studies of surfaces of special interest (Pd/D, Ni(K)/H) have been performed.

Recently, a new breakthrough was accomplished in the field: "Two research groups, working independently, have combined scanning tunneling microscopy with ultrafast laser optics to create a powerful new tool for probing surface phenomena, not only on the atomic length scale of angstroms (10^{10} meter), but also on the atomic time scale of picoseconds (10^{12} second)." [6] This is exactly what can make Surfodyn dreams become a reality.

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SPACE ENERGY COLLAPSES BUBBLE

Courtesy of Dr. Hal Puthoff

Julian Schwinger, "Casimir light: The source," *Proc. Natl. Acad. Sci. USA*, March 1993, pp 2105-2106, 6 refs.

AUTHOR'S ABSTRACT

The release of Casimir energy in filling a dielectric hole is identified as the source of coherent sonoluminescence. Qualitative agreement with recently acquired data is found for the magnitude and shape of the spectrum.

EDITOR'S DISCUSSION

Remember that the Casimir effect is the following: Take two conductive parallel plates and bring them close together. If there is electromagnetic space energy, then the only radiation that can push the plates together has to have a half-wave length greater than the distance between the plates. As the plates get closer together, more and more of the radiation energy is excluded from between the plates and the unbalanced pressure from the outside radiation pushes the plates together with a stronger force the shorter the distance between the plates.

Consider that we somehow create a small bubble in the middle of a conducting fluid. The same Casimir effect should be expected. As the bubble gets smaller, the Casimir forces get larger outside the bubble than the forces inside the bubble and at some small diameter, the forces can become rather large to collapse the bubble.

Nobel-prize winner Julian Schwinger uses his mathematical capability to describe the equations that represent this bubble-crushing condition. His calculations show that the bubble should be collapsed with sufficient energy so that photons should be emitted. Further, his first mathematical description shows that the wavelength of photon energy should be close to the ultra-violet.

Putterman and others have worked with sonoluminescence. Using a somewhat spherical-shaped flask of water, they cause a bubble to form by the use of relatively low energy waves of ultra sound. The bubble apparently would have water vapor in the center. The water vapor could be expected to turn into water and cause the bubble to decrease in size. Experimental observation shows that a blue light (not too far from Schwinger's ultra violet calculations) is observed when the bubble collapses. It is regarded as a significant achievement to be able to take low-level energy of sound and create energy of light that is

perhaps a trillion times higher frequency. Schwinger suggests 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. Sonoluminescence is an elegant experimental demonstration to show the nature of space energy.

Schwinger's mathematical presentation is based, in part, on the change in the dielectric constant between the liquid on the outside of the bubble and the vapor on the inside of the bubble. A challenge to inventors: How else can you create a bubble and have it collapse? What range of photon frequencies can you obtain? It has been experimentally shown that by creating and collapsing these types of bubbles in heavy water, near a palladium surface, the phenomena of cold nuclear fusion can be accelerated. (See *Fusion Facts*, vol 5, no 6, Dec. 1993, page 7, "Cavitation Fusion" by Stringham, for a report on this phenomena.) What other kinds of effects can be obtained by creating and collapsing "space-energy bubbles?" I would predict that some interesting chemical changes can be catalyzed. Are there any biological entities that produce and collapse bubbles? That would be a great method for living organisms to use to obtain packets of energy for transmutation. Assume you created a large number of small bubbles in a conducting fluid and then began to compress the fluid so that the bubbles would decrease in diameter until space-energy collapsing bubbles were formed. What type of reactions could you cause to occur in such a fluid? Could you design this type of reaction to create photons that would make or break certain chemical bonds or nuclear bonds? Is this the answer to the excess heat produced in water by specially designed pumps? Write us and tell us your results or suggestions. [Thanks, Hal Puthoff, for sending us this paper! Hal Fox, Editor]

Space Energy

FARADAY EXPERIMENTS OF 1831 AND SPACE ENERGY

By Hal Fox, Editor

BACKGROUND

Michael Faraday (1791-1867) was one of the foremost experimenters in the scientific world. His

numerous papers, read before the **Royal Society**, and published in the *Transactions of the Royal Society*, and later published in three volumes (1844, 1847, 1855) are superb examples of experimental science. Although Faraday is honored by today's scientists, he was not properly educated to be considered a scientist in his day. At the age of 12 he became an errand boy for a bookseller/bookbinder. His education began while binding books, which he read in the hours after work. He gained his first education about electricity from the *Encyclopaedia Britannica* and from Mrs. Marcet's *Conversations on Chemistry*. He bought materials with scarce spare funds and at the age of 21 (1812) he began experiments in electrolytic decomposition. He attended four lectures by Sir Humphry Davy, took notes, carefully transcribed and bound the notes, and presented them to Davy with a request for employment. He became a lab assistant to Davy in March 1813. In 1815 he added research activities of his own choosing and published his first paper in 1816. In 1821 he began work with electromagnetism, with his experimental findings meticulously recorded in numbered paragraphs and with appropriate drawings. In 1831 he started the first section of *Experimental Researches in Electricity*. **All experimenters should read, study, and emulate the experimental procedures and reporting methods of Michael Faraday.**

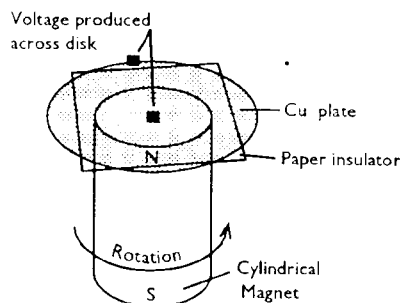
FARADAY'S FINDINGS REVISITED

In his First Series, Article 2, *On the Evolution of Electricity from Magnetism*, Faraday states (paragraph 30) [for helical coils of copper wound on an iron ring] "The deflection on making a battery contact always indicated an induced current in the opposite direction to that from the battery; but on breaking the contact the deflection indicated an induced current in the same direction as that of the battery." This effect has been compared to inertia (see lead article p. 2 this issue). If Faraday had been aware of **space energy**, and that it can only be tapped from an accelerated frame of reference, he might have concluded that only when an electrical current is accelerated (or decelerated) will there be exhibited the effect of electrical induction. He further could have stated that the direction of the change in acceleration (or deceleration) determines the direction of the induced current.

In paragraph 34 Faraday reports on the use of cylindrical coils and notes the difference between a hollow (air) coil and a coil with an iron bar in the center: "But when a soft iron cylinder seven-eighths of an inch thick, and twelve inches long, was

introduced into the pasteboard tube, surrounded by the helices, then the induced current affected the galvanometer powerfully and with all the phenomena just described (see para 30). It possessed also the power of making magnets with more energy, apparently, than when no iron cylinder was present." Faraday also found the following: When copper replaced the iron only the effect of the air coil was noted. Bar magnets could be demagnetized or have their magnetism reversed by inserting them in the coil and connecting the coil to a battery. A magnet, thrust into or withdrawn from the coil, would induce a current through the galvanometer with opposite directions for opposite motions. (paragraphs 35-43). What would an advocate of **space energy** conclude from these experiments? Possibly the following: **The property of magnetic materials, when magnetized, has the capability of changing the structure of space energy so that electrical induction is greatly increased. This property of magnetic materials can be modified, especially in its direction (polarity) by current flowing through a coil, therefore, electric current flowing through a coil exhibits a similar aligning effect upon space energy. The process of modifying the alignment of space energy couples space energy into electrical coils thus inducing an electric current. Electric induction can therefore be attributed to changes in the alignment of space energy.**

Faraday next performed experiments with a large permanent magnet and concluded at the end of Article 2, in paragraph 58: "The similarity of action ... between common magnets and either electro-magnets or volta-electric currents ... furnishes powerful reasons for believing that the action is the same in both cases; ... I propose to call the agency thus exerted by ordinary magnets, *magneto-electric* or *magnelectric* induction."



No cutting of lines of magnetic flux (whatever that means)

Faraday later reports on his experiments in which he rotated a 12-inch copper disk between the poles of a magnet and generated electricity from the hub to the outer periphery of the disk. The current flows in opposite directions when the direction of rotation is reversed or if the magnetic poles are reversed. In Article 4, paragraph 101, Faraday states: "It is now evident

that the rotating plate is merely another form of the simpler experiment of passing a piece of metal between the magnetic poles in a rectilinear direction, and that in such cases currents of electricity are produced at right angles to the direction of motion, and crossing it at the place of the pole or poles."

SOMETHING YOU DIDN'T LEARN IN SCHOOL

In Article 6 "*General Remarks and Illustrations of the Force and Direction of Magneto-electric Induction*," paragraphs 217 & 218, Faraday questions **whether it is necessary for there to be relative motion between the magnet and the conductor to establish induction**. According to the principles of electricity and magnetism as taught in high schools and colleges, it is immediately evident that without magnetic lines of force (whatever they are) cutting the conductor, there would be no electrical current produced. Faraday took an ordinary cylinder magnet and cemented on the end a copper disk with insulating paper intervening. He reports: "...the magnet and disk were rotated together and the collectors ... brought in contact with the ... [rim and hub]. The galvanometer needle moved as in former cases, and the direction of motion was the same as that which would have resulted, if the copper only had revolved, and the magnet been fixed. Neither was there any apparent difference in the quantity of deflection. Hence, rotating the magnet causes no difference in the results." **This basic experimental fact is seldom taught in either high school or college!**

Knowing that an energetic space pervades all space and matter, how would one explain **magneto-electric induction**? Here is a suggested approach: **A magnetic field aligns or modifies space energy such that if a conductor is moved through that modified space energy field, electrical current is caused to flow in the conductor**. Note that this explanation says nothing about "cutting magnetic lines of force." This explanation implies that regardless of how the space energy is **aligned or modified** the mere motion or rotation of a conductor, in that modified space energy field, will be sufficient to induce an electric current.

THE BASIS OF N-MACHINES

Bruce dePalma learned of this Faraday effect and put it into operation in his early work during his development of the N-machine. I am indebted to communications from dePalma, Avarad Fairbanks, and from Hal Puthoff for prompting me to review Faraday's reports. [The book I used was Volume 45

of the Britannica Great Books of the Western World.]

Those working with N-machines have found some interesting effects. Contrary to the conventional motor/generators, the torque on the N-machine generator does not vary appreciably from no load to full load! **This experimental discovery would suggest that we have chosen to use the least efficient method of generating electric power for more than 100 years**. The operation of the N-machine suggests that we can get most of our electrical power from tapping space energy. In the conventional prime-mover/generator power plant, we get most or all of the electrical power from the prime-mover, and space energy is used merely to provide electrical current. As reported by Tewari and Inomata (who have also been developing the N-machines after dePalma showed the way) the output power is directly proportional to the strength of the magnetic field, the area of the conductor, and to the rotational velocity of the conducting disk. Currently Tewari is using an electric motor driving an N-machine generator and getting twice the power out to generate hydrogen by electrolysis of water. Inomata has designed an N-machine that will use magnets powered by superconducting coils to greatly increase the strength of the magnetic field through the rotating copper disk.

Harold E. "Hal" Puthoff [3,4,5], Cole and Puthoff [6], and now Haisch, Rueda, & Puthoff [7] [Refs. on page 6], have provided us with **five peer-reviewed articles published in prestigious technical journals**. These five articles now provide us with a much greater understanding of space energy -- also called zero-point-energy (ZPE). With this theoretical background, we can better understand the physical world around us. For example, we should now better understand the following:

1. Space energy is everywhere. Therefore, devices that tap space energy can be used everywhere.
2. Materials having ferromagnetic properties locally change the nature of space energy so that the motion of a conductor produces electrical current flow.
3. A massive rotating body modifies space energy so that local time-keeping is modified as measured by a tuning fork clock. [dePalma, "On the Nature of Electric Induction," *NEV*, Oct. 93, p 8.] Maybe inertia and not time is modified.

4. The proper arrangement of magnets and coils (usually bifilar coils) locally modifies space energy so that gravity is reduced. [Kelly, "Letter from Don Kelly," *NEV*, Sept. 93, p 10.]

5. High intensity electrical fields locally modify space energy so that mechanical forces are produced. [T. Townsend Brown's work.]

6. The Methernitha rotating power generator does not violate the Law of Conservation of Energy. This machine is a clever method of locally modifying space energy so that electrical power can be produced. [Stefan Marinov, *Divine Electromagnetism*, pp 268-270, East-West International Publishers, Graz, Austria, c1993.]

7. **N-machines do not violate true physical principles**, they merely transform energy from space energy to electrical energy. Theoretical physicists, such as Puthoff, should now be able to write the equations that explain the operation of N-machines.

8. Over-unity magnetic motors and generators are not perpetual motion machines but they use magnetic fields to store and capture space energy to produce extra power. [Aspden, "The World's Energy Future," Proc. Int. Symp. New Energy, April 16-18, 1993, p 1.]

9. Atomic and nuclear reactions can be expected to be catalyzed by local modifications to space energy. Specifically, the Coulomb barrier is likely a function of local space energy and is modifiable by subtle means (as contrasted to hydrogen fusion by using the brute force methods of the Tokamak.)

10. The transport and the speed of photons (light) is a direct function of the nature of space energy. It is speculated that some of the phenomena that locally modify space energy may modify the speed of light.

11. Inertia is a natural byproduct of space energy, therefore, those devices that modify space energy may modify inertia. We should try to operate a massive fly wheel within a strong magnetic field and measure its inertia. For example, spinning up a massive fly wheel stores space energy which is released when the flywheel is decelerated. If an effect is found that reduces the inertia on spinup then the removal of the effect should provide additional energy on spindown.

12. Flying objects, identified or not, may be equipped with **inertialess drives** and thereby be able to make sudden changes in direction without violating the laws of physics.

13. NASA can finally achieve methods (at least theoretically) of moving large payloads into orbit without "mass throwers." Rocket propulsion for spacecraft is the most inefficient means of propulsion currently used by mankind and its days of use may be numbered.

14. Anti-gravity, levitation, and inertialess drives await our improved understanding of the means by which space energy can be modified.

A MODEL OF THE ELECTRON

R.C. Jennison (Elec. Eng. Labs., The University, Canterbury, Kent, UK), "A New Classical Relativistic Model of the Electron," *Phys. Let. A*, vol 141, no 8/9, 20 Nov. 1989, pp 377-382, 13 refs., 3 figs.

AUTHOR'S ABSTRACT

An electromagnetic model of the electron is derived from the application of rotational relativity to the tapping of an electromagnetic wave at the Compton frequency. This results in a spinning entity having the major properties of the electron. The electric field distribution is isotropic and varies as $1/r^2$ from the center to infinity and there is a magnetic field aligned along the spin axis. The vector potential does not vary with distance from the center but, when sampled by a relatively moving observer, it exhibits a wavelength inversely proportional to the relativistic momentum.

Rotating Space-Energy Machines

ELECTROMAGNETIC AND GRAVITY FORCES ANOMALIES

By Robert G. Adams (Edited version).

The following paragraphs discuss electromagnetic and gravity forces, and efficiency analysis of the Adams motor generator, indicating anomalies found to concur with and validate predictions made by Nikola Tesla.

The author has gained a wealth of knowledge and the discoveries by the author, particularly over the last 25 years, pertaining to magnets are compelling. Strange anomalies appear to take place when output power exceeds input power (over-unity). Standard instrumentation used for measurements will today appear to operate perfectly normally, but tomorrow could indicate a different figure, although still well beyond unity. This effect not only pertains to electrical measurements but also to mechanical measurements of shaft power.

Self-battery-charging will, on occasion, show substantially higher potential across the supply than the actual standing/or loaded potential, as much as five volts or more. Upon disconnection of the machine after two hours or more running, the battery potential is usually found to be normal, apart from a small charge rise.

This battery voltage phenomenon was subsequently checked using a new batch of 6 - 12 V miniature lead acid batteries connected in pairs to provide 24 V input. All three new pairs subsequently displayed the same characteristics. That experiment provided proof that the anomaly required investigation. A further important discovery was made: The charge and discharge condition of a lead acid or Ni-cad batteries and the charge ability of the machine compared to the charge condition of the battery. For example, a small laboratory machine producing 1-2 watts or 5-10 watts won't keep a high capacity fully-charged battery fully charged.

The reason appears to be that for a small laboratory machine to maintain a fully-charged condition of the battery of high rating the battery must be partially discharged. In other words, the charge condition must be below the plateau condition that the small machine is capable of reaching and maintaining and must also be below the natural discharge rate of the cells, to maintain a plateau level of constant charge.

Similarly, in a larger machine, the maximum level of charge will be higher, dependent solely upon its power rating. This is not to say that a tiny machine can't charge flat batteries. The effect depends solely upon the battery rating. A tiny machine can be constructed and fed with tiny low amp. Ni-cad half-discharged batteries, but due to their low capacitance, can be fully charged overnight and the machine will still be running for free, just as a 1-2 W or 5-10 W machine would be running for free on partially discharged high Ampère/hour rated batteries. However, the machine maintains the

potential of the batteries, i.e., **no apparent consumption/dissipation.**

When designing an Adams motor using conventional formula, results do not concur with expectations. Instrumentation readings are only a guide and cannot be relied upon when efficiencies appear to exceed several hundred percent.

However, notwithstanding the above, having built a successful "Adams" motor generator, the factors of I^2R losses, magnetic drag, windage and bearing losses are no longer a problem, and in a mathematical sense, have been cancelled upon reaching unity. Furthermore, efficiency, though on occasion variable during the observed phenomena periods, remains well beyond unity.

Voltage in a battery is a relative measure of the dissipation (or gain) of a finite amount of potential energy. It is not a true measure of the available potential, or potential used in a pulsed system. It is found that instrumentation connected to the Adams motor will register 'X' volts and 'Y' current but, on further analysis, the readings displayed are meaningless where the machine has been designed to operate without the aid of electronic switching. The motor can be designed and constructed in such a way that it utilizes only the potential gradient of a free energy source: in this case, the battery. The excess energy density would be from the potential gradient of the battery which, in turn, would be simultaneously replenished by the system. In this mode, at well beyond unity, further free energy is apparently being obtained from the environment by the magnets on the rotor, thus delivering greater shaft power. [1] In addition, we have the large collapsing field energies that occur at switching times, flowing back into the battery, hence replenishing any power ($E \times I$) that may be dissipated through the system.

Since it has been found that the Adams motor does not appear to draw actual power during the switching cycle in the battery charging mode, there is no voltage or current dissipation to calculate power input! The instruments display voltage 'X' and current 'Y' but the Adams motor does not dissipate it. The paradox is -- with voltage or current being dissipated, how do you calculate efficiency? Further, the Adams motor has been independently replicated many times and has been shown to deliver shaft and/or electrical power and maintain the supply voltage constant. In other words, the system keeps the battery charged while delivering power. This

system could be considered the ultimate in free clean energy. As previously stated, instrumentation readings of over-unity (i.e., conventional readings) are not reliable. In fact, in the case of the Adams motor, in the mode of charging its supply battery, instrumentation readings are misleading.

The efficiency/gain possibilities outlined appear compelling evidence [that space power is being tapped.] It is expected that future machines being developed by the author [and others] may far exceed the current technology, particularly in the self-charging mode. It appears obvious for devices operating well beyond unity that the conventional concept of efficiency evaluation must be scrapped and replaced with a "gain figure" or Beyond Unity Rating (BUR) [1].

[1] "Adams Generator Update," *Nexus New Times* magazine, Australia, vol 2, no 15, Aug./Sep. 1993, pp 43-47.)

EDITOR'S NOTE: Aspden has shown [see ref. page 11, item 8] that magnets can store excess energy in air gaps. It appears that Adams has found a method to utilize this effect. Of great interest is the experimental evidence that part of this "excess" energy is used to power the Adams motor and part (under proper design) is used to charge the batteries used to operate the system.

We commend Adams for his persistent experimental achievements, even while being ridiculed by some who were convinced (on the basis of accepted scientific beliefs) that the concept was impossible. Note that if space energy exists, the Adams motor does not violate the Law of Conservation of Energy but is an energy transformer.

The Adams machine together with machines developed by dePalma, Tewari, and Inomata are compelling evidence that space energy exists and can be tapped!

--Hal Fox, Ed.

OPEN LETTER FROM DR. HAROLD ASPDEN

to Duncan M. Roads, Editor of *Nexus New Times* magazine, Australia

I congratulate *Nexus* for recognizing and supporting the motor project of New Zealander Robert Adams just at a time when interests in USA and U.K. were sensing that something on those lines might be possible if only we had a champion who could prove

the case. Over-unity in the performance of an electric motor means that a latent energy resource of limitless magnitude has come into sight. We have the vision of a motor carried through space with the earth at its cosmic speed of 600 km/s feeding on energy drawn at the 2.7°K temperature of the cosmic background and leaving behind a cool 'vapor' trail in the vacuum energy field.

The Adams motor which makes this possible, and its derivatives [and similar machines], are destined to change our future. No longer will we depend upon oil resources nor need to suffer the hazards of nuclear power. There are those of us besides Adams who already knew, whether by intuition or insight, that electrical power technology had a hidden access route connecting our material medium world with the sub-quantum energy state of that vacuum medium scientists used to call "the aether." Records show that others in history, besides Adams, have discovered that secret route but their discoveries did not survive suppression in the contest for recognition. Those in power could not adjust to the magnitude of what was claimed. Indeed, to the scientist, there are physical laws which forbid one from thinking of the possibility that the vacuum wants to act creatively and constructively in returning to us some of the energy shed by thermal decay. To the commercial world there are other implications and vested interests that will be impacted progressively as this technology develops. [For a compelling recitation of these changes, see reference 1.] It is only now, as we approach the end of the 20th Century, that it is in the common interest of all to see and take a way forward on a path that can so easily solve our energy problems. Without the ingenuity and dedication of Robert Adams we would probably not have had proof of the feasibility of this new technology until some time in the 21st Century. Without the initiative of *Nexus* in presenting the discovery in a positive and constructive way, we would not have witnessed the upsurge of interest that has suddenly spread around the world. The fact that others in several countries have replicated his motor and confirmed its operation has now set the scene for major change.

Having already seen prospect of such a development I set out in the U.K. some five years ago to challenge the patent system by applying for a patent on what many would see as verging on being a technology branded as *perpetual motion*. Even so, I recently obtained grant of both a U.K. patent and a U.S. patent for such a motor. The invention differed from that adopted by Robert Adams and the route to that

hidden energy resource was less direct than that discovered by Robert Adams, but he had no patent. He had reason, good reason, to think that the patent laws would block his way. Here, however, I had a professional advantage and I knew how to go about getting a patent. In light of these events and seeing the sense of us both getting together in our quest to take this technology forward, we have combined our forces. The day before the Whakatane A&P Spring Show opened, we jointly filed a patent application in the U.K. covering a prospective innovative development of the motor. Australian Bill McMurtry, who has replicated a working machine based on the *Nexus* disclosure, has joined in this venture and his machine was also featured in that Whakatane show. This gives us together an initial foothold in New Zealand, U.K. and Australia.

We now intend to strengthen our patent position taking advantage of my own professional background experience as both an engineer and a European patent attorney. I was IBM's director of European Patent Operations from 1963 to 1983. Therefore I shall be dealing with patent matters and the scientific aspects while a prototype device for manufacture is being worked on in Australia and New Zealand. Later we hope to put arrangements in hand for onward activity in U.K. and elsewhere. At this time we welcome collaboration with others with the necessary funding and marketing resources inasmuch as the greater the funding, the sooner the technology can be of service, but we see it as our duty to convince the scientific establishment that we have a solution to the world's energy problems which they would do well not to ignore. This means that, in the spirit of your article "Power to the People," we are not going to clothe our venture in a cloud of secrecy.

Added by Editor:

[1] Hal Fox, Cold Fusion Impact in the Enhanced Energy Age, c1993, Fusion Information Center, Inc.

TWO MORE REPLICATIONS

Update on the Adams Pulsed Electric Motor Generator

Letter from Robert Adams, 1 January 1994

This communiqué relates to a young man, age 27, a control systems engineer of Sydney, Australia. His name is Grant Stepa. This young man first contacted me in Whakatane, New Zealand, on the 31st of Dec. 1992. He had arrived in New Zealand

to spend a few days with his friends and contacted me for a meeting/interview to be held on 2nd Jan. 1993.

We duly had our meeting and upon his departure I commented to my wife that he appeared to have considerable talent and a very keen interest to launch into replicating my machine. He displayed a more than usual inquisitiveness in relation to certain factors for which I admired him. The foregoing is a briefing on my first encounter with this young man.

Over a period of some months later, he eventually replicated the Adams M/G from what spare time he could afford beyond work and attending University at nights. He is now back there in Whakatane on a brief visit until 3rd Jan. 1994 and once again asked to see me, which I agreed to. At that stage I was totally unaware that this young man had an incredible statement to make known to me pertaining to his results of his Adams M/G replication. His report to me is as follows:

During mid-Sept. 1993, the machine's construction had been completed, the unit had been tested and was left to run overnight from 10 p.m. to 6:30 a.m. Upon checking the unit next morning at 6:30 a.m., he was in for an incredible surprise. Not only was the machine still running, but it had grossly overcharged the 12v 1.2 amp-hour Nicad battery to such an extent that the battery case was severely warped and hot - the machine was still running at ambient.

He had not, at the time, recognized the enormity of what had taken place, and decided he would wait until he visited Whakatane again on his holiday to tell me about it, which he did on December 31, 1993.

This report opens up a new field of investigation into the Adams M/G and what it tells me is that this excess energy, beyond what the supply battery needs to keep it floating, can be channelled into turning another rotor and/or drive windings either in tandem or ad infinitum.

Mr. Stepa has just completed an Electrical and Computer Engineering course at Sydney University.

Further update:

Mr. Bill McMurtry of Brisbane, Australia, has just advised me that he has been contacted by a person in Australia who has also replicated the Adams M/G. This person placed an inverter across the unit's supply battery with a load consisting of a 250V,

40W lamp and lighting the lamp up with the battery remaining in a charged condition.

This person is travelling to Brisbane with his machine for Bill McMurtry to get all possible information pertaining to this latest adaptation. This situation makes it quite clear that a large motor generator can be built without any output windings whatsoever and supply considerable A.C. electric power at virtually no cost other than battery replacement at 3 to 4 year intervals. When this latest matter has been confirmed I shall forward a further communiqué.

Robert G. Adams - New Zealand

LETTERS

LETTER FROM GERMANY

From Wolfram Bahmann

Dear Editor,

With interest I followed the content of the January issue with respect to the contribution "Vacuum Field Energy Conference" in Kiev, Sept. '93, in the Space Energy Misc. section, concerning the pretended Daimler Benz invention reported by Dr. H. Nieper while at this event.

As far as I know the mentioned water decomposition system was developed by the German engineer Pöschl; to keep track of its origin. I refer to the following brief description which you may add in the next issue under the Letters section.

Water as Pöschl fuel-system

(ref. shown RTL TV company 17 Feb. 1992)

The engineer Günter Pöschl developed a new method to use water as a main substance to drive automobile engines. Diesel fuel or oil is mixed up by ultrasound energy with water. In this process, hydrogen is dissociated from the water and is free to be burned. After completion of the prototype tests, the engine shall run almost exclusively with water. The actual mixing ratio is 9:1 (water:oil). The principle is usable for every engine. The fuel conditioning unit is the main part of the system. The

dissociated oxygen is used to produce a sort of oil-water foam which is ignited.

The Pöschl system can be applied to oil burners in house heating as well. Concerning environmental aspects, the residual substances are particularly water, from the burning of hydrogen with the oxygen, and only little CO₂ and NiO₂, much less than the normal burning of fossil fuels. It is worth mentioning that not all oxygen is burned, but the process discharges some more oxygen (electrolyzed from water) than is used for the burning process.

The problem of implementation of such a system, similar to that observed in other instances, is that the large industry companies (including the main German automobile manufacturers) do not want to even apply it, with respect to the oil monopolists and maybe even governments.

The inventor's experiences in other areas of environmental technology such as reduction or replacement of fluorohydrocarbons in refrigerating devices are not positive with respect to the cooperation of the industry. They mostly want to make money from products which can profitably be sold on the market, not to implement new innovative products with the potential risk of losing part of their market.

*Best Regards, Wolfram Bahmann
Secretary of European Secretariat of PACE
Planetary Association for Clean Energy*

CURRENT NEWS ON CURRENT GAIN

By Lee Trippett, Oregon

Dear Mr. Fox,

Thank you for sharing your comments relating to the Bearden Free Energy description. The following pages represent full disclosure, a surprise, and an appeal to your readers.

An intermittently connected coil to a battery to produce a current gain does not constitute a power gain. See Item 2, "The Newman Effect," *NEN*, Dec. 93, item 2, p. 1.

With Bearden's switching circuit it is easy to show a dramatic increase in current through a fixed load while the battery current decreases. This gives the illusion of a power gain, even for the electronic experts who have seen this. And this effect can be

shown by using common electronic components in a simple circuit.

Bearden's circuit will produce at least a 40 to 1 load current ratio gain with wire of 100 feet or less. However, there is no proof of a power gain. Ref. Tom Bearden, "The Final Secret of Free Energy", Proceedings of the International Symposium on New Energy, April 16-18, 1993, Denver, CO.

Many major national suppliers (both distributors and manufacturers) of electrical conducting wire have been called and not one knew anything about 'relaxation time' or had any wire with a specification relating to relaxation time (ionic field effect time?). The "Handbook of Chemistry and Physics 1993" and "McGraw-Hill Encyclopedia of Science and Technology" were checked, without success, for a listing of relaxation times for various conducting materials. Therefore, I tried to simulate a delay by placing silicon diodes on a very long wire between the battery, switch, and collector. With enough diodes there seems to be a distinct show of delay but then the voltage (potential) drop becomes too excessive.

A synchronized flexible switch circuit has been developed according to the Bearden circuit requirements. (See KeelyNet file 'freenrg4.asc' part 2, datum 1-214-324-3501). A sharp (20 nano-second rise/fall time) ON switch time of 1 to 5 microseconds for a power MOSFET between a battery and 'collector' with a following synchronized ON time up to 10 times greater than the time constant between the collector and load has been developed. (See attached schematic.) Data has been plotted for the current, voltage, and time of carbon zinc batteries. (These are cheaper and quicker to run down for measuring energy loss). Regardless of the switching rate, on/off ratio, capacitor 'collector' size, or presence of diodes, the 'energy loss' curve for these batteries is remarkably consistent when the average current is held constant. (40 ma for a 9 v carbon zinc battery seems optimum for an energy curve that is consistent and can be seen in a short time of 20 to 30 minutes.)

A much shorter switching time is needed, at great expense, or a delay is required. This is where I decided to try Mr. W. Price's suggestion of 1500 feet of solid copper wire (see KeelyNet file 'relaxl.asc'). This length should give a delay of 1.5 microseconds. The first observation was a reverse in the direction of current in the load circuit and it was much more than the battery current. Various

placement configurations were tried for three 500 foot spools of solid 12 gauge wire. So far the greatest current ratio (40 to 1 for fixed 1 ohm resistive load) occurs with 100 feet and for a frequency between 2 to 4 kHz.

Two other setups which did not work out were: (1) having the entire 1500 feet of wire in a straight line rather than a spool; (even with a low input and output load to the long wire there is much pulse distortion) and (2) putting the 1500 feet of wire between Q2 and a capacitor. [See figure 1]

For a wide range of pulse width and frequency the current in both loops is always the same when any size ordinary capacitor is used as the 'collector'. This is for fixed resistor loads of 1, 2, 4, 12, 33, and 190 ohms. The computation of 'power in' by $V2 \times mA2$ [$P=IE$] is always greater than the computation of 'power out' by $mA3$ squared times load resistance [$P=I^2R$]. (I do not have means for measuring average voltage for a complex waveform). With a dual trace scope on the 'source' of Q2 and Q3 one can see clearly the synchronized switching action and the charge/discharge curves. The 'energy' drain on the battery is always directly related to the average pulsed current in the battery circuit. And it is equivalent to the energy drain for the same current in a directly connected non-switched load to the battery.

For a wire 'collector' and a rather narrow range of pulse width and frequency (see schematic notes) the current in loop Q3 reverses direction and can be more than 40 times the current in loop Q2. (I've measured as much as a 60 to 1 ratio). Note: The wire does not need to be in a coil form.

Therefore, the circuit only represents a 'current amplifier' for a wire 'collector' and a 'power control' for a capacitor 'collector.' This conclusion is based on a 1 ma, 8 volt value in loop Q2 which calculates as 8 mw. The corresponding values in loop Q3 can be 40 ma through 1 ohm which is 1.6 mw for a significant power loss instead of a gain. The actual current flow is not only determined by the voltage and load but also by: 1) pulse width for both loops; 2) time constant for both loops; and 3) on-off period (frequency).

For a dramatic demonstration of a 'power gain', do this: set a specific value of pulse width and frequency for an ordinary 1 μ f metal film capacitor 'collector' so that current in both the Q2 and Q3 loops is 4 ma. When a wire coil of 40 ft #22 solid

magnet wire is substituted without changing anything else the current reverses direction in the Q3 loop, the current in loop Q2 drops to 1 ma, and the current in loop Q3 increases to 40 ma. How can 40 ma (10 times more output current with 4 times less input power) be pushed through exactly the same load by simply (and only) replacing a capacitor with a chunk of wire? Because a 1 ohm load for a 9 volt source should theoretically allow 9 amps. But the switching characteristics, time constant, and frequency have a greater control on the resulting current than the load.

The attached battery energy drain curves look like a very promising 'power gain' but are easily misinterpreted. (By the way, the current in mA 1 remains unchanged in this switch of passive 'collector' components. This current is about 10 ma and could probably be much less by using a small signal FET inverter stage.)

When using a wire 'collector' the current ratio increases as the voltage for V2 increases. This seems to confirm Bearden's discovery but the surprising results, I assume, are the result of an autotransformer effect by means of self induction. The current ratio decreases as the load increases. The current ratio increases as the 'coil collector' resistance decreases.

Caution: The power MOSFET's are static sensitive and they can lose their desired circuit performance even though the scope may still show a pulse or switching action.

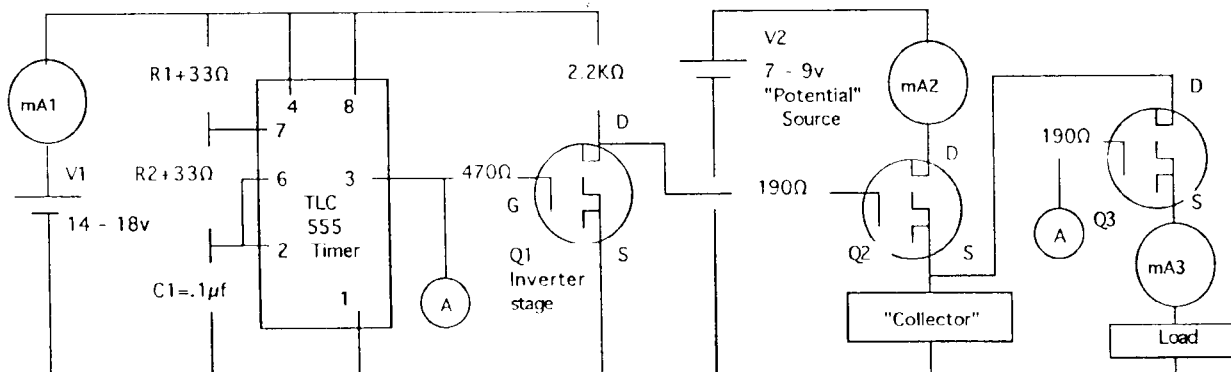
It is apparent that Bearden's requirement of a 'degenerative semiconductor material' is indeed essential. This nation manufactures all types of electrical wire conductors everyday and it seems absurd that a ready source of the required material is not available. The Thomas Register lists hundreds of electrical wire producers. Many of them advertising special-purpose products. I believe your newsletter should be employed to help search out the required doped conducting material.

Sincerely,
Lee Trippett

Addendum from Mr. Trippett: Received 1/18/93. My version of Bearden's free energy switching circuit shows a current gain up to a factor of 60. A current gain does not always mean a power gain; but, in the circuit described and shown in the above reference there is a power gain with a factor up to 25.

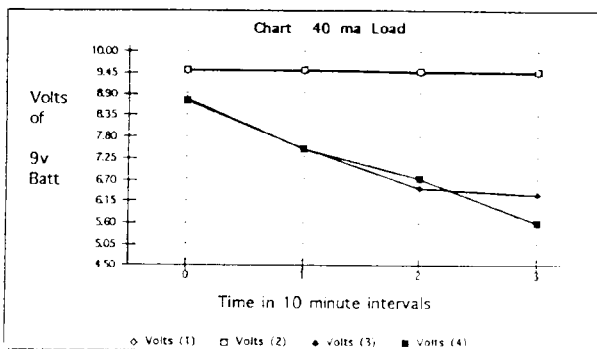
In a simple series circuit the power computation by voltage times current is the same as current squared times load resistance. For a circuit where an oscillating switch is active, the power computation must account for the on/off ratio of the switched voltage. This was not considered in the above reference.

When the input power computation for the Bearden switching circuit is adjusted by multiplying the input voltage by a fraction of (on time/on plus off time), the circuit demonstrates a power gain.



Schematic for Trippett's version of Bearden's "Final Secret to Free Energy"
See attached letter description and battery energy chart.

Bearden's Free Energy Circuit Ideas				
	Time in 10 minute intervals			
	0	1	2	3
Volts (1)	9.46	9.47	9.45	9.43
Volts (2)	9.52	9.51	9.48	9.46
Volts (3)	8.75	7.49	6.48	6.31
Volts (4)	8.72	7.46	6.72	5.6
(Note 1) Coil Collector On=2us Off=180 us New Battery 12/20/93				
(Note 2) Coil Collector On=4 us Off=300us New Battery				
(Note 3) Capacitor Collector On=30 us Off=100 to 300 us New Battery 10/28/93				
(Note 4) Capacitor Collector On=20 us Off=140 us New Battery				



TLC 555 = CMOS Timer Radio Shack Cat. # 276-1718 \$1.39

Q1=Q2=Q3 = IRF 510 or 511 Power MOSFET used as switches. Radio Shack Cat. # 276-2072 \$1.99
 R1 = 10K pot R2 = SK pot when combined with C1 these control the on/off ratio and freq. (See page 7 Engineer's Mini-Notebook by Mims III Radio Shack #276-5010)

C1 = 0.1 or .068 μ f

Load is 1 ohm fixed resistor. Greater resistor values reduces current ratio when using a wire coil as collector.

Current is always a function of settings for R1 and R2. Adjust frequency to about 3kHz and a pulse width of about microseconds for current ratio of 40 to 1.

Wire coils which give similar results are: (1) 500 ft of solid 12 gauge, (2) 100 ft of 22 gauge solid hookup wire, and (3) 40 ft of 22 gauge magnet wire. (Radio Shack #278-1345) All with plastic spools.

Caution: Current for loop Q3 reverses direction for wire coil collector. Current in loop Q2 and Q3 is always identical when using ordinary capacitors as 'collector.' Current in loop Q3 can be 40 times greater than the current in loop Q2 for a wire coil collector. Circuit values were determined by trial and error, not engineering design.

A HUMOROUS NOTE FROM AN AVID READER

Dear Sir,

Well, well, well, let me tell you how I feel at this time. Since a few months ago, I'm a subscriber of your very good newsletter *New Energy News*. I have the January 94 issue in front of me. I read, once again, the text inside the square box on the first page, and I dream.... You wrote about something very important that will be released on Feb. 1, 1994 in a press conference. And, I dream again....

It's Friday morning 3:30 a.m. and I can't sleep. Why? Because I'm like a kid whose parents said I will have a good surprise next week. I dream and I can't wait, I'm impatient.

Why are you so cruel?(!) Why do you do this to me?

Is it so important? Can I return to my bed now? I can't wait for your news. I'm asking myself what is so important in the history of science to summon a press conference? And I dream again....

Ok, Ok, I will return to my bed and I will wait. Have a nice day!

/s/ Louis Roy (Canada)

Meetings

CALL FOR PAPERS
INE'S INTERNATIONAL
SYMPOSIUM ON NEW ENERGY
 A symposium for Professionals, Industry,
 Lay people and News Media

The Institute for New Energy will sponsor an International Symposium on New Energy to be held in the Denver Hilton South in Denver, Colorado on **Thursday, May 12, 1994 through Sunday, May 15, 1994**. Fees: Registration before April 1, \$150; Registration between April 1 and May 1, \$175; Registration after May 1, \$200; Workshops \$20 each, and Banquet \$25. Checks should be made payable to the **Institute for New Energy** and sent c/o *New Energy News*, to P.O. Box 58639, Salt Lake City, UT 84158.

Expected Speakers: Robert Adams - Adams Motor/Generator; Harold Aspden - Ferromagnetics; Bruce Cathie - Harmonics; Bruce dePalma - "N" machine; Shiuji Inomata - "N" machine; Stefan Marinov - Perpetuum Mobile; Harold Puthoff - Zero Point Energy; Prof. John Searl - Anti-Gravity*; Paramahansa Tewari - Space Power Generator; Dennis Weaver - Ecology/Economics.

* Invited

Some of the speakers will present concurrent workshops on the evenings of May 12, 13 & 14, from 6:30 to 9:30 p.m. The Banquet will be held Sunday at noon.

In addition to invited papers, **Abstracts for papers to be considered** should be sent to the above address. Abstracts submitted before March 15, 1994, will be considered for presentation at the conference. Submitters will be notified of the acceptance of their papers by March 30, 1994 and be provided with complete details for the preparation of their papers. The papers will be printed in the Proceedings of the Conference and be provided for attendees at the beginning of the conference.

Subjects to be presented at the conference will include all types of **New Energy** topics such as those covered in each issue of *New Energy News*. Specifically, papers are solicited covering both theory and practice of energy producing devices and systems such as cold nuclear fusion, rotating N-Machines, Solid-State energy systems, Magnetic over-unity machines, Tapping Space Energy (Zero-Point Energy), gravity control techniques, energetic transmutations (nuclear reactions), and other new energy research.

FOR MORE INFORMATION:

The Fusion Information Center manages the publication of two newsletters: *Fusion Facts & New Energy News*. In addition FIC has published a book, Cold Fusion Impact in the Enhanced Energy Age. This book is available in English, Russian, and Spanish. In addition, FIC is assisting in the editing and publication of a SOURCE BOOK on cold fusion and space energy. FIC also maintains the world's best database on cold fusion and other enhanced energy topics (especially, space energy.) If any of this information is important to you please call, write, or fax as follows:

Fusion Information Center, Inc.

P.O. Box 58639

Salt Lake City, UT 84158

Telephone: (801) 583-6232

FAX: (801) 583-6245

Fusion Facts to Universities and corporations \$300 per year. *New Energy News* is \$30 per year for individuals and \$60 for corporations. Both publications are published monthly. The Impact book (good for both cold fusion and space energy) is \$25 and includes a 1200-reference diskette of articles.

WRITTEN ARTICLES ACCEPTED

Both *Fusion Facts* and *New Energy News* publish factual articles about inventions, experiments, theory, relating to cold nuclear fusion and space energy. Call for further information.

CORRECTIONS - PLEASE NOTE

We were informed that Bruce dePalma had begun his N-machine experimental work at BYU. (*NEN*, p. 3). Bruce informs us that we were mistaken. Our apologies.

In *NEN* for January, 1994, on page 11, the statement is made that to produce one cubic foot of hydrogen requires 140 kWh of electricity. According to Dr. Igor Goryachev, the Faraday equation is

$$F = 0.108 \text{ ft.}^3 \text{ of H}_2 \text{ per kWh.}$$

Therefore, 1 cu. ft. of H₂ at standard temperature and pressure requires 9.25 kWh of electrical input power for electrolysis of water.

The **New Energy News** is a monthly newsletter for the Institute for New Energy, and is mailed free to its members. Yearly subscription rate to individuals is \$35 in the U.S., \$40 to Canada & Mexico, \$50 world wide first class. Rate to corporations, libraries and universities is \$60 anywhere. Contact **New Energy News** for subscription and submissions information at P.O. Box 58639, Salt Lake City, UT 84158-8639. Phone 801-583-6232, Fax 801-583-2963.

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CONTENTS FOR FEBRUARY 1994

THE CENTURY'S MOST IMPORTANT THEORETICAL PAPER.....1	ROTATING SPACE-ENERGY MACHINES... 11
SPACE ENERGY - PEER REVIEWED.....2	ELECTROMAGNETIC & GRAVITY FORCES ANOMALIES..... 11
FUSION BRIEFINGS..... 6	LETTER FROM DR. ASPDEN..... 13
ELECTROCHEMICAL MICROSCOPY..... 6	TWO MORE REPLICATIONS..... 14
SPACE ENERGY COLLAPSES BUBBLE..... 8	LETTERS..... 15
SPACE-ENERGY..... 8	Wolfram Bahmann from Germany..... 15
FARADAY EXPERIMENTS 8	Lee Trippett from Oregon..... 15
	MEETINGS..... 18

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