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ENERGY - DEMAND AND SUPPLY

By Hal Fox & Richard A. Youngs

Considerations of energy demand and supply differ greatly in the United States and in other countries where per capita energy use is relatively low. The per capita use of electrical power in the United States was 12,308 kilowatt hours in 1993 and 10,781 kilowatt hours in 1985. In China in 1993 the electrical power usage was 719 kilowatt hours per person and 396 kilowatt hours in 1985 [1]. In the United States the per capita demand for electrical power increased by 14 percent in eight years or about 1.5% per year. In China the per person demand for electrical power increased by 82 percent or about 10 percent per year. **If the entire population of the world enjoyed the same per capita energy consumption as the U.S. and obtained that energy by the burning of fossil fuels THE POLLUTION WOULD SOON KILL MUCH OF THIS PLANET'S LIFEFORMS.**

By extrapolating the current rate of usage of electrical power ten years into the future, we obtain the following figures:

	Population by millions	1985 Use mil kW/hr	1993 Use mil kW/hr	2003 Use mil kW/hr
China	1,072	411,750	844,653	1,951,000
U.S.	244	2,586,127	3,174,638	3,905,000

Therefore the ten-year demand, **under current conditions**, will require the construction and distribution of an additional 2,837 megawatts (average of 284 megawatts per year) of electrical power production just for the two countries of China and the U.S. For the entire world about five times this amount of electrical energy will be the demand or about 20,000 megawatts over the next ten years. **How can we possibly produce electrical power for such a rapidly-growing demand?**

It is not rational for governments nor industry to require or expect a growing population **to use less energy**. As loving parents and grandparents, we all want our children and the children of China (and every other country) to enjoy the benefits of a high-energy standard of living. **The problem is to supply the energy required to meet that forthcoming (and deserved) demand.** Studies in the United States have shown that to meet the stringent pollution control requirements of the Environmental Protection Agency would significantly increase the cost of energy production [2]. With oil supplies forecast to be consumed in 50 years, natural gas in 60 years, and coal in about 225 years [3], new energy sources are essential.

Electric power production from nuclear-fission energy is environmentally and politically unacceptable. We need neither another Chernobyl nor more improperly handled radioactive slurries. Tide, wind, sunlight, biomass, and geothermal are technically feasible but economically impractical. **Fortunately, there are three demonstrated alternative technologies.**

First is new hydrogen energy which is now demonstrating the production of clean, relatively inexpensive, and abundant energy. The best, publicly-announced device is the **Patterson Power Cell™** which is producing kilowatt levels of thermal energy at more than 20 times the input electrical energy. Commercialization has begun with patents issued and licenses sold.

Second is solid-state devices (such as high-density charge cluster devices - U.S. Patent 5,018,180). These devices have demonstrated the ability to produce more than 20 times as much output electrical energy as input electrical energy. Work is being done to make these kind of devices and circuits commercially practical.

Third are super motors based on super magnets. Nine such motors claim (two have demonstrated) extraordinary Coefficients of Motor Performance (COMP). Where a COMP of one means a 100% efficient motor, some of these motors have a COMP of four to eight. This means that these devices can produce four to eight times as much mechanical energy as input electrical energy.

All three share a common dilemma -- the results are unexplained by standard, traditional scientific models. Because of the scientific anomalies, all these technologies are dismissed by many in the scientific community. **But they work! However, all three can be made acceptable to the scientific community by two simple changes in current physical models:** First: change the concept that nuclear reactions catalyzed on or in a metal lattice in an electrochemical device must be the same as nuclear reactions occurring in ultra-high temperature plasma physics (the environment for the physics of hot fusion power production). Second, high performance super motors and solid-state devices **do not violate the Law of Conservation of Energy (and are not perpetual motion machines) if one recognizes the existence of an energetic aether.** The existence of an energetic aether is now a proven fact and, therefore, these two technologies are merely examples of **energy transformers!** These devices transform energy from our surrounding all-present energetic environment into practical useful forms of energy.

The development of all three of these new-energy technologies **within the same decade** is one of the most interesting examples of synchronism in the history of science! Not only have all three devices been invented and/or developed in the 1990s, but versions of all three devices are geographically dispersed and have been independently developed. For example, the work on new hydrogen energy devices has proceeded in over 200 laboratories in thirty countries with eight different effective methods being invented. The Fusion Information Center has collected over 3,000 papers detailing much of the experimental, and theoretical, efforts being made in the development of these three new energy technologies.

It is not fully apparent, as yet, how these new technologies will provide substantial energy sources for the 21st Century. However, we can

approach some understanding by considering the penetration of other new technologies into our societies. For example, it took about 100 years for the telephone to be in half of the homes in developed countries. The personal computer will achieve this distinction in 15 to 20 years. However, in both cases, these new devices had to generate their own markets. There was no pre-existing demand for telephones nor for personal computers. **In the case of energy the demand is already there and is expected to markedly increase as the world population grows and national economies improve.** Although current fossil-fuel energy resources do have substantial reserves, those reserves are declining and are expected to continue to decline. A major result of increased demand and decreasing supply is that energy costs will increase exponentially **unless the cost of energy from new-energy sources is less than the cost of energy from traditional sources.**

Does the commercialization of new-energy technologies mean that oil producers need to worry about this pending new competition? The answer is **absolutely not!** Oil that is now worth \$20 a barrel will be worth \$60 a barrel for chemical feedstocks. None of the new energy devices can replace oil for chemical products. In addition, by the time the new energy devices can begin to curtail the use of fossil fuels, the oil will have provided the transportation fuels during the transition. The same scenario is true for natural gas. Our children and our grandchildren will need the hydrocarbon reserves for chemicals ranging from fertilizers to perfumes. Only the coal miners and the nuclear power industry need be concerned about the **ultimate** impact of new-energy devices. However, the nuclear power industry is in the hands of high-tech companies like General Electric and Westinghouse who can easily make a highly-profitable transition from a radioactive polluting industry to a much cleaner and much more profitable new-energy industry.

In nearly all developing countries, the increase in demand will be so rapid that the existing energy-producing utilities and industries will not be seriously threatened in the next ten years. **However, there will be enormous opportunities for existing energy-related industries to take advantage of the production and/or marketing of these new-energy devices and systems.** Energy-related companies should become involved in these

emerging technologies now. There will, eventually, be considerable downsizing in some of the older fossil-fuel-powered, energy-producing industries. The next fifteen to twenty years will be a time of transition from fossil fuels to new-energy technologies and will provide both opportunities for diversification or loss of market share.

Projecting New-energy Systems for the Future

The reader deserves to understand the assumption made in making future projections. The following assumptions are stated and the authors welcome comments on these assumptions. Assume that new-energy products are to existing energy-production facilities as personal computers are to main-frame computers. Just as the proliferation of personal computers has replaced much of the computer main-frame industry, assume that new-energy technologies will be consumer oriented and that a new-energy unit can be placed directly in the home, office, or factory where energy is needed. With this assumption, our plans can be much simplified as we do not have to consider the expenses of establishing an energy distribution infrastructure.

Assume that we must provide 20,000 megawatts of new energy, non-polluting technology during the next ten years. Assume that it requires \$1 of manufacturing infrastructure to produce each \$10 worth of new energy products per year for ten years. Assume that a clean, inexpensive (to operate) energy-producing device costs \$500 per kilowatt to manufacture. Assume that we have \$100 million available for 1996 to begin and that each following year we can manufacture and sell energy devices and systems **and make 20 percent return on sales to reinvest to increase the following year's production.** The goal is to provide, within ten years, about 20,000 megawatts of electricity generated by new-energy devices and systems. **The question is: To what extent (using these assumptions) can a 1996 investment of \$100 million be used to achieve this objective?**

You may want to check these calculations. The figures show that if the 20% is reinvested in further production equipment that will produce energy devices and systems the following year we can expect the following results:

Year	1996	1997	1998	1999	2000
MW Produced	0	2	6	14	30
Cumulative MW		2	8	22	52
Year	2001	2002	2003	2004	2005
MW Produced	6	126	254	510	1,022
Cum. MW	114	240	494	1,004	2,026
Year	2006	2007	2008	2009	
MW Produced	2,046	4,094	8,190	16,382	
Cum. MW	4,072	8,166	16,356	32,738	

If one assumes that local governments will allow new-technology pioneering organizations to keep 20% profits after taxes and reinvest and build additional plants **within one year**, then it would take twelve years to produce 16,000 megawatts. Therefore, in thirteen years, the world could be enjoying a considerable increase in **clean, non-polluting, non-radioactive, abundant new energy.** The total cost of the manufacturing facilities would approach \$400,000,000,000. The sales of energy devices and systems in the twelfth year would exceed \$4,000,000,000,000. This \$4 trillion is approximately the current annual cost of **the world's total energy in this decade.**

This enormous effort to produce new energy would increase the energy standard of living of much of the world's population. To assess the impact of this type of energy-producing effort on the world's economy is an exercise we will leave to the economists. **In conclusion: We have the technology. We have the money. Do we have the will?**

REFERENCES

- [1] Encyclopaedia Britannica Book of the Year, 1988 and 1996 editions.
- [2] R.A. Cornog, "Cheap Electric Power from Fusion?", Proceedings: Fourth International Conference on Cold Fusion, Vol 4, pp 37-1 to 37-18, 12 refs, 1 table, 6 figs.
- [3] Personal Contact, Gordon B. Moody, Editor, *Global Energy Outlook*, March, 1996.

Fusion Briefings

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 issue of *NEN*, 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.

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NEW PATENTS ISSUED

JP 07,287,085 (95,287,085), "Cold nuclear fusion apparatus," Toichi Chikuma. 31 Oct. 1995, 18 Apr. 1994. 5 pages. The title apparatus is equipped with a means around an absorbent (such as Pd or ceramic) which absorbed a material (such as D) which starts the nuclear fusion to prevent the absorbed material from escaping from the absorbent. The means is a magnetic coil. The means may comprise an absorbent (which is a cathode), an electrical conductive layer (which is used as an anode) is formed around the absorbent via an electrical insulator, and voltage is applied. The efficiency of the nuclear fusion is improved.

JP 07,244,176 (95,244,176), "Cold nuclear fusion apparatus," Megumi Myake. 19 Sept. 1995, 4 Mar. 1994. 2 pages. The apparatus is composed of putting D-absorbing Pd in a D bath and highly heat conductive Cu is connected to it.

US 5,494,559, "System for Electrolysis," James A. Patterson. 27 Feb. 1996, 8 Jun. 1995; 52 claims. A system for electrolysis and heating of a liquid electrolyte comprising:

an electrolytic cell including a non-conductive housing and an inlet and an outlet; a first conductive foraminous grid positioned within said housing adjacent to said inlet; a second conductive foraminous grid positioned within said housing spaced from said first conductive grid and adjacent to said outlet; a plurality of conductive microspheres of substantially uniform size and density in electrical communication with said first conductive grid and electrically isolated from said second grid; said plurality of microspheres each including: a conductive metal flash coating of uniform thickness formed by chemical combination with a cation exchange surface of a spherical cross-linked polymer microbead from a metal cation which will chemically reduce with hydrazine; a nickel plating of uniform thickness formed atop said flash coating; a metallic hydride forming plating of uniform thickness formed atop said nickel plating, said metallic hydride plating being readily combinable with hydrogen or an isotope of hydrogen; a metallic support plating of uniform

forming plating, said support plating having a relatively high hydrogen diffusion rate and a relatively low hydride formation ratio; means for pumping said liquid electrolyte into said electrolytic cell through said inlet, said electrolyte having a conductive salt in solution with water, said electrolyte exiting from said electrolytic cell through said outlet; said pumping means maintaining said electrolytic cell substantially filled with said electrolyte; an electric power source having terminals operably connected to said first and second grids.

JP 07,174,878 (95,174,878), "Porous metal cathode for cold fusion chain reaction, its manufacture, and electrolyte for reaction," Reiko Notoya. 14 July 1995, 29 Oct. 1993. 6 pages. The cathode consists of a porous metal (voids 0.5-80 volume %) selected from a transition metal, Al, Sn, and stainless steel. The cathode is manufactured by shaping a metal powder with grain size 10nm - 100µm at room temperature or high temperature and high pressure, or shaping and heating. The electrolyte comprises a hydroxide, carbonate, sulfate, phosphate, nitrate, halide, perchlorate, and/or B compound of an alkali metal, alkaline earth metal, Group IIIB elements or transition metals.

NEWS FROM CHINA

By Professor Xing Zhong Li
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March 2, 1996 there was a national symposium on "normal temperature nuclear fusion" in China. The terminology "Normal Temperature Nuclear Fusion" reflected the Chinese view about the "cold fusion" phenomena. Most of us believe that it is a kind of nuclear fusion reaction, but it happens in the "normal temperature." In the Chinese language, "Normal Temperature" means that it is not high temperature (as high as that in the "hot fusion"); it is not low temperature (as low as that in the cryogenics for low temperature super conductor). There were a series of national symposiums on "cold fusion" phenomena since 1989, but this one had a special task to review the progress of each Chinese group supported by a special fund in the past year. Since 1995 the State Science and Technology Commission, and the Natural Science Foundation in China set up a special fund to support this particular research. Everyone knows that if this "cold fusion"

phenomenon was true and reproducible, it would alleviate the serious contradiction between the energy sources and the environment in the next century.

Nevertheless, everyone knows also that it is very difficult to reproduce this phenomenon for sure. There are a lot of Chinese scientists who do not think there would be any chance for this phenomenon. They have not looked at any of the data since November 1989, and they veto any proposal on this research. Since the Natural Science Foundation in China operates on the basis of vote, it has been very difficult for "cold fusion" research to win the vote. However, a few judicious senior scientists with high reputation became aware of this situation, and made a suggestion to the Natural Science Foundation in China and the State Science and Technology Commission. Based on this suggestion, a special fund was set up to support this research. Although the funding level is very low, it does help this research survive in China. This March Symposium was just for reviewing the progress after the establishment of this special fund in 1995.

There were about 30 conferees attending this symposium. Among them were the sponsors from the State Science and Technology Commission, and the Natural Science Foundation in China, a few senior scientists, the leaders of each research group, and some participants from each group. About one third of them were young graduate students and post-doctors. After the keynote speech, nine talks were delivered in the morning session and afternoon session. Each talk was limited to 30 minutes with 5 minutes for questions and answers. In the evening, a three-hour session allowed full discussions in detail. The senior scientists addressed their comments on this symposium as well.

A major feature of this symposium was that the "excess heat" detection appeared in almost every research group. In the past five years, Chinese scientists paid more attention to nuclear signals (the charged particle detection, neutron, X-ray, and Gamma ray). Since we had very little financial support, and we believed at that time that the nuclear signals should be commensurate with the "excess heat;" then, the nuclear methods had higher research funding priority than the calorimetric methods. Gradually, we understood that "Thunder without Lightning" might be the feature of this "cold

fusion" phenomenon, and the conventional nuclear signals might not be commensurate with the excess heat. So the calorimetric measurement might be the more suitable technique to identify this phenomenon. The preliminary results showed that there were some features which could be explained as the evidence of the "excess heat" (the turning point in the cooling curve, the sudden change of the temperature, etc.); however, more careful work is necessary before it becomes compelling evidence.

The electrical discharge work has been improved since the Nagoya conference. Although the neutron energy was found to be 2.45 MeV (normal), the yield of neutrons was still found to be higher than normal (abnormal). In order to reduce the yield of the normal neutron, a careful study on electrical discharge was done to identify a set of operation parameters with which the abnormal neutron yield became more apparent. A new set of Si-Li detectors was used to refine the X-ray detection. A fine structure of X-ray spectrum was found definitely, and the difference between the discharge in deuterium gas and in hydrogen gas has been identified (the energy and the intensity of the X-ray for Nb-D system was higher than that for Nb-H system).

An interesting "X-ray radiation after death" was found after shutdown of the electrical glow discharge. It may last as long as 1,000 seconds. More careful work should be done before any possible explanation on this phenomenon is given. But the similarity to "heat after death" surprised all the attendees.

A careful theoretical study was done to analyze the X-ray spectrum. It was found that among the nearly 200 spectra, about 100 spectra were abnormal. None of the applicable theories could explain the strange features in the X-ray spectrum. It was considered as evidence of the abnormality in the electrical discharge tube.

A calorimetric measurement was done with the electrical discharge tube. A sudden change of the slope of the cooling curve (temperature versus time) was found in a series of discharges with different electrodes and gases. Ni-H system had been studied with the emphasis on "excess heat," however, a different conclusion was found. Although the Italian results had been reproduced, different explanations were given about this similar phenomenon. Based on the new explanation, the

careful work proved that the "excess heat" in the Ni-H system disappeared.

In some institutions, the research had not reached the final stage to have some new data; but they expected that some new results might be obtained before the ICCF-6. Some institutions presented their plan for improving their previous results. The dynamics on the D-Pd interface were addressed, and the nano-meter material was suggested for future studies. The Ti-D system showed interesting results after analyzing the mass spectrum on the titanium surfaces above or under the heavy water level in an electrolytic cell. The ionic crystal was suggested for future studies. The new idea to use proportional counter technique in detecting the trace of the charged particles was interesting; and the idea of using pressurized fission reactor technique to run the electro-analytical cell had been realized in a laboratory with particular designing to guarantee the safety.

The gas-loading technique had been studied for more than five years in China in combination with the nuclear signal detection. At this symposium, a preliminary study on "excess heat" in a gas-loading system introduced interesting discussion. Since the "heat after death" phenomenon and other gas-loading experiments in Italy and in India revealed the possibility of observing the excess heat in a gas-loading facility, the advantages of being more cost effective, and safer in a gas-loading system became attractive. Besides, it had the feature of accumulating the reaction products in the reaction vessel which might be detected later, after a long period of operation. A pair of twin systems had been manufactured to see the difference between the deuterium-palladium system and hydrogen-palladium system. A sharp contrast had been observed already. More results were expected after further operations.

One of the senior theoreticians presented his new results on the mechanism of "cold fusion" after intensive study for more than two years. His unique feature was that he collected the evidences through the careful scrutiny of astronomy and astrophysics. He solved the Schrodinger equation for the three-body problem in a better way, and obtained the energy level for the proton-electron-proton system and for the deuteron-electron-deuteron system. He claimed that the 12.5 keV or 25 keV X-ray should be found as an evidence of the energy level in the p-e-p

or d-e-d system, respectively. "Thunder without Lightning" was a natural result in his theory, because it was not a nuclear reaction at all. An additional 20 minutes was assigned to him by the session chairman to facilitate his presentation because he had more than 46 transparencies to be presented. His enthusiasm in this study was clearly observed by every attendee, although it was very difficult to agree or disagree with his point of view in such a short period. His results were similar to that of professor Baruit of Colorado University, but his derivation was different and more strict in mathematics.

Due to the time limit, not all of the results had a chance to be presented at this symposium, such as the preliminary study on sonoluminescence and "cold fusion," and the new theoretical result of resonance tunneling in a crystal lattice, the "self-lock" mechanism in the narrow resonance phenomenon, the comments on the Italian Ni-H system, etc. Some preprints were distributed instead of the oral presentations.

The collaboration between institutions, the publication of internal reports in China, and the preparation for the ICCF-6 were discussed in the evening session also. Since additional funds were necessary for those subjects, no real solutions were found yet.

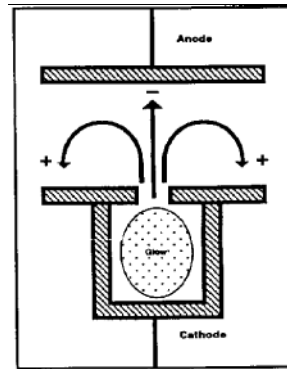
Space Energy

PLASMA TUBE COHERES ZPE

Moray B. King (Provo, Utah), "The Super Tube," courtesy of the author.

AUTHOR'S ABSTRACT

Combining the results of four areas of plasma research yield the principles for developing the "super tube," a plasma tube that 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 Super Tube

The areas of plasma research include:

1. **Abnormal Glow Discharge** (Correa, US Patents 5,416,391 and 5,449,989). The abnormal glow discharge is a glowing, cold plasma located just above the cathode that occurs just before a vacuum arc discharge (spark)

whenever the tube is charged slowly. It is characterized by a voltage buildup where the glow plasma polarizes yielding a large effective capacitance for the tube. When the voltage reaches a certain threshold, the plasma suddenly snaps from this highly polarized state causing abrupt ion motion and a negative resistance voltage-current characteristic. The abrupt ion surge coheres the zero-point energy. In normal tube operation the tube continues to draw current and proceeds into the high loss, vacuum arc regime. Correa's patents demonstrate how to limit the current using an appropriate capacitance in parallel to the tube to quench the arc discharge and allow recovery back to the voltage build-up phase. By appropriately adjusting the capacitor recharging circuit, Correa can tune the abnormal glow discharge cycle to a frequency of choice, and the tube outputs an over unity energy gain. It appears that Correa has discovered the principle with which T.H. Moray tuned his ion oscillator tubes.

2. **Hollow Cathode Discharge** (Pseudospark, Thyatron). In the mid 1960's scientists in the USSR discovered that a plate cathode with a small hole backed by an attached metallic cylinder could yield a tremendously powerful arc discharge whenever the back cylinder contained a pre-excited, glowing, cold plasma. Applications of this effect focused on the abrupt switching of large currents where the switching could be triggered by a small external excitation (e.g. a light pulse in the back lighted thyatron). The descriptions of the hollow cathode discharge note anomalies, and its behavior is similar to the abnormal glow discharge. Moreover, during the transient toward vacuum arc discharge, a portion of the hollow cathode plasma surges through the hole producing a vortex ring circulation (akin to forcing smoke through a small aperture to create smoke rings). The transient appears to manifest the

inception of a ball lightning plasmoid which could further amplify the zero-point energy interaction. A hollow cathode discharge tube tuned to cycle in the abnormal glow discharge regime forms the basis of the super tube.

3. Radioactive Cold Cathode. Pre-ionizing the hollow cathode plasma greatly reduces the firing voltage. It is well known that coating a radioactive material on a cathode causes pre-ionization and avoids the need to heat the cathode (e.g. McElrath, US Patent 2,032,545). Many inventors of free-running energy machines used this principle, e.g. T.H. Moray, Papp (below), Brown (US Patent 4,835,433). Coating the interior of the hollow cathode with radioactive material pre-ionizes the cathode plasma, augments the negative resistance, and lowers the voltage needed to operate in the abnormal glow discharge regime.

4. Noble Gas Mixture. Papp (US Patent 4,428,193) discovered tremendous energy gains by creating plasmas in a mixture of the inert gases. Also mixing inert gases with water anomalously increases the energy output during sonoluminescence. In a normal, unenergized state there is negligible interaction between inert gas molecules. However, in the plasma state the ions tend to form into clusters. If mercury vapor is also added to the mixture, then plasmoid clusters packing anomalous energy similar to Shoulder's EV's (US Patent 5,018,180) might occur. Papp produced an explosive event from his noble gas mixture sufficient to drive an engine. Such mixtures could dramatically augment the output of the super tube.

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. The output of each is rectified onto capacitors which gradually charge to become the mutual input current source for the tubes. Once the principles for the two stage device are understood, a multi stage machine can be designed.

FARADAY'S EFFECT IN SPACE

By Dr. S.X. Jin

Why was the tether connecting the space shuttle Columbia and the satellite blown apart? One of the possibilities, I think, is the following:

When a conducting bar moves vertically to the bar with velocity V in a homogeneous magnetic field B , according to Faraday's Law or Lorentz Force Law, an electromotive force, emf, will be induced between the two ends of the bar:

$$e = L V B \sin \theta, \sin \phi,$$

here, L is the length of the bar, θ and ϕ are the angles between magnetic field and the bar and the velocity, respectively.

In the case of the space shuttle Columbia, the B is earth's magnetic field, V the space shuttle's velocity, L the length of the tether (made from copper, nylon and Teflon)* connecting Columbia and the satellite, and θ is the angle between the tether and the earth's magnetic field. Let's roughly estimate the approximate value of the generated emf:

when $L = 12.8 \text{ mile} = 20 \text{ Km}$

$B = 0.1 \text{ to } 0.4 \text{ Gauss}$

$V = 17,500 \text{ mi/hr} = 7.7 \text{ Km/sec}$

and assuming $\theta = \phi \approx \pi/2$ (This is really possible at some position on the orbit of the shuttle), then the maximum emf could be:

$$e = 1540 \text{ V to } 6160 \text{ V.}$$

When the space shuttle enters the sunshine region where ionosphere can be formed, the electrically conducting plasma in the ionosphere and the space shuttle-tether-satellite will constitute a closed loop and a large current will flow through the tether. The current will be strong enough to melt and blow apart the tether.

* *NEN*, March 1996, p 1.

IN QUEST OF VACUUM ENERGY

"The Potential of Vacuum Energy," *Nexus*, vol 3, no 2, 1996, p 42, reprinted from the *Sunday Telegraph* (London), 31 Dec. 1995.

SUMMARY

Loopholes in the Law of Conservation of Energy (if based on an empty vacuum) have been realized by many new energy researchers. The "Big Bang" theory would certainly violate it. But we now know that the vacuum is not empty by a long shot. The Casimir force was demonstrated in 1957 by scientists at Philips Research Labs, proving something existed in the vacuum. Daniel Cole and Harold Puthoff published a paper in 1993 on the energy that could be extracted from the Casimir force, even though it was extremely small.

And research has kept progressing, spreading with free energy researchers around the world. Now Arthur C. Clarke, the noted scientist and science fiction writer, is developing his own vacuum-energy extraction device. Details on it are scant, but Clarke was quoted as saying, "It's too big to talk about... The world as we know it, the fossil fuel era, is coming to an end. If we can make this breakthrough, it will be the story of the century. All hell will break loose."

Miscellaneous

SOLAR ENERGY FROM WATER

Courtesy of Peter Graneau

Peter Graneau (Ctr. Electromag. Res., Boston, MA), "Gaining Solar Energy from Ordinary Water," accepted for presentation at the World Renewable Energy Congress IV, Denver, CO, June.

AUTHOR'S ABSTRACT

The paper deals with the liberation of intermolecular bonding energy stored between H₂O molecules in liquid water at room temperature. This bonding energy derives from the thermal motion of vapor molecules in the atmosphere and is, therefore, largely solar energy. The conversion from kinetic (thermal) to potential (bonding) energy occurs in the process of condensation. Part of the bonding energy

can be liberated with an electric arc current flowing through water. The current generates cold fog and mist droplets. Fractions of a gram of fine droplets created in microseconds have been found to explode violently. Pressure and kinetic energies freed by the explosion have been measured. Prospects are good for harnessing the internal water energy for electricity generation.

RECONSIDER PHYSICS?

Josef Hasslberger (Italy), "Reconsider Physics? Physics--At the End of a Blind Alley?" *Explore*, vol. 3, no. 5, 1992, pp 73-78, 7 figs.

SUMMARY & EXCERPTS

Josef Hasslberger says that physicists who deny the action of a creator limit the scope of investigations. Becoming "inversely religious"... is no less limiting than the stand of the dogmatic religionist." He further suggests that "progress in our time has become dependent again on philosophy, on that science of thinking, of looking at basics and drawing conclusions that are unencumbered by the specialization so prevalent in the physical sciences." Then he gives several examples of basic workings of the universe.

The first example is the paradox of the duality of light as a wave or a particle. "Electromagnetic waves are caused by magnetically induced oscillation of a fluid medium contained in space. . .It is, in fact, this space background that gets excited in wave like motions by the emitter of radiation. These waves propagate in spheric form, in all directions from the source.

"Electromagnetic waves cause interference patterns and separate into colors when sent through a prism, indicating that they are waves, not particles. However, when light is directly observed, it is always in the form of tiny particles called photons. The paradox is resolved if we assume that light, as long as it travels, is an electromagnetic wave and that this wave, when it hits a solid object causes the formation of tiny tornadoes in the background field which we call photons.

"The vortexes that form photons are of a relatively high stability. Their spin determines mass and

energy. It is these tiny 'basic particles' that combine to form all matter. . .all particles of matter are vortexes in the space substratum.

"High energy particle physics is, in fact, doing nothing else than smashing up these aggregates with ever larger and more potent particle accelerators and inventing names for each different fraction observed. These subatomic particles are so unstable that we can never observe them in nature. They are simply bits and pieces of particles and since they are no longer complete, they dissolve into energy in a matter of nanoseconds."

Like the photon, "all atomic and subatomic particles seem to have their own spin and the electrons orbit the atomic nucleus in precise paths, just as the planets in our solar system."

"All of these expressions of form as we might call the accumulations of matter are thus nothing else than trapped or frozen energy, 'solidified' space background medium.

"If energy is contained in the background medium of space and can be converted into matter through the process of 'solidification' of that medium, we must ask ourselves where space and energy come from.

"Space itself is an independent reality. It may contain energy and matter, but space has to exist before these latter two can be introduced. Thus, space itself, as well as the energy contained in its background medium, are the result of creative action.

"It is useless to delude ourselves and to ascribe original creation to a nebulous 'big bang,' because even such a hypothetical big bang would have to start at least from a concentration of matter and an ever so tiny amount of space, which in that case would already have to have existed and so we see the cat bites its own tail. Without an original act of creation, no universe can come into existence.

"We have to assume that this act was accomplished by an entity or a force that is not part of our physical universe and that existed before the universe was created.

Another example is gravity and inertia. ". . .gravity and inertia are two manifestations caused by one and the same phenomenon. This common cause

could be a resistance of matter to movement against the background of space."

"Every accumulation of matter attracts the background field of space towards itself. The result is a flow of space background towards the mass and in the case of planets and suns, this inflow reaches a considerable velocity. In this way, gravitation comes about. Objects near the surface of the mass will 'fall' towards that mass. Two bodies close to each other will be mutually attracted, always because of the flow of background field towards each one of them.

A final case is magnetism. "Magnetism is associated with a movement of the space background field in vortex form. This movement may be caused by the spin of a particle or a mass, such as a planet. The magnetic force is caused by a dual macroscopic vortex in the background of space, converging on the particle or mass, which stresses and polarizes two separate regions of space into a difference of potential.

"Polarity of magnetic stress is determined by the direction of spin of the vortex. Let us assume for convenience that a left turning vortex causes a magnetic potential 'N' and that a right turning vortex instead makes an 'S' magnetic potential.

"Thus, it becomes obvious why opposed magnetic poles attract each other and why identical poles repel. If we bring two magnetic poles of identical potential next to each other in space, their sense of rotation is opposite and thus we have repulsion. Two opposed magnetic poles instead, brought into proximity, rotate in harmony and so they attract each other.

"We must use the term magnetic potentials, not magnetic field. **What we call magnetic field lines are not field lines at all, but simply the intervening space between two magnetic poles of different potentials.**

"The electric current that is induced in a conductor which **'cuts the magnetic field lines,'** that is, which moves in the space between two opposite magnetic potentials, is caused by the alignment of the spin of free electrons in the conductor. This alignment is caused by the magnetic potential difference and is a partial alleviation of the stress of space background. The alignment of electron spin reverses if the

direction of the conductor with respect to the magnetic potentials is reversed.

"Vice versa, an electric current in a conductor can form a magnetic vortex around the conductor. We thus get a magnetic effect that depends on the electric current.

"Planetary systems, contrary to what is widely believed, are not held together exclusively by gravitation. The orbits of planets are determined by magnetic potentials built up by the central body.

"The magnetic vortex, just as the gravitational inflow, causes an accumulation of energy. Due to the properties of vortex motion, this accumulation is much greater than that of the simple linear inflow associated with gravity.

"The central point, where the dual gravitational vortex meets, oscillates and thus excites the background field into a wave motion. This is the cause of electromagnetic waves. And those waves, if in the right frequency, are what we perceive as light.

"I do not need to stress that, if this hypothesis should get confirmed, our current view of hydrogen based fusion as the source of the sun's energy would need radical revision.

"Thus we can trace electromagnetic and gravitational phenomena to a single cause with different manifestations.

"Light is an electromagnetic wave or a wave-like agitation of space background caused by magnetic oscillation. The wave proceeds through space in a spherical, shell like pattern and generates photons at the point of impact.

"Gravity and inertial forces are caused by resistance against linear motion of matter relative to the background of space.

"Magnetism is a stress phenomenon, caused by a macroscopic vortex motion of the space background itself, polarizing the background field into opposite poles.

"Electricity is an alignment of electron spin in a conductor caused by two opposite magnetic potentials.

"The radiation emitted by the stars is a consequence of the stars' dual magnetic vortex and the oscillation caused by this vortex.

ELECTRIC SPACECRAFT JOURNAL

Jan./Feb./March 1996

This issue contains an excellent review of small, specialized publications in the new energy research field. Titles reviewed include: *The Journal of Scientific Exploration*, *Galilean Electrodynamics*, *The Physics Teacher*, *The Bell Jar*, *Tesla Coil Builders Assoc. News*, *The Geo-Monitor*, *Electrostatics Newsletter*, *Fusion Facts*, *New Energy News*, *Infinite Energy*, *The Space Energy Journal*, *Planetary Assoc. for Clean Energy Newsletter*, *IPS Newsletter*, *Untapped Technology in Review*, *"Cold Fusion," Fulcrum*, *New Science News*, and *Borderlands*. All reviews include prices and contact information. See the Commercial Column on page 26 for the address of the *ESJ*.

GUNNERMAN FUEL TESTED

Courtesy of Reed Huish

Ken Miller (Gannett News Service), "New Fuel Powers Past Technical Hurdles in Tests," *Tribune*, February 09, 1996, pg A11.

A Reno inventor, Rudolf Gunnerman, spent eight years finding a way to keep water and fuel blended. The result was a breakthrough fuel, A-21, that is more than half tap water, a discovery that could power the nation's vehicles, trains, and gas powered aircraft by century's end. Tests on A-21 not only show that it works, but they also show a 60% drop in EPA-monitored emissions of pollutants. The fuel is made of Naptha and can be interchanged with today's conventional fuels.

Other benefits listed of the A-21 fuel are:

- elimination of up to 90% of refinery pollutants,
- easier extraction of Naptha from hard-to-work sources such as oil shale and sand bars,
- lower vapor pressure than gasoline, eliminating the need for vapor-recovery systems at the pump,
- usable in any diesel or spark-ignited engine.

Concerns about the fuel:

1. With so much water, A-21 might be prone to freezing or cold-start problems. Tests have proven the fuel to have no problems with freezing if some antifreeze is added. Industry analysts say it may require a small amount of ethanol in the blend for storage in tanks to winterized it for temperatures of at least 40° below zero.

2. The major hurdle before the fuel will start showing up at gas stations is Department of Energy certification that it qualifies as a clean alternative fuel.

3. Conversion of engines in Gunnerman's earlier technology required modifications of the engine's cylinder head, while later developments required a simple change of spark plugs.

Gunnerman is optimistic about the new fuel reaching its potential as a low-cost replacement for conventional fuels.

Summary by D. Winter

KAWAI MOTOR PATENT

This patent has been discussed in two articles in past issues, but we haven't until now printed the abstract. [1]

US 5,436,518; Motive power generating device; Teruo Kawai (Nihon Riken Co., Ltd.); 25 July 1995, 17 June 1993.

A motive power generating device comprises a permanent magnet disposed around a rotational output shaft for rotation therewith, the output shaft being mounted on a support member for rotation, a magnetic body disposed in concentric relationship with the permanent magnet for rotation with the rotational output shaft, the magnetic body being subjected to magnetic flux generated by the permanent magnet, a plurality of electromagnets fixedly mounted to the support member in such a manner that they are spaced at predetermined distances around the periphery of the magnetic body, each magnetic circuit of the electromagnets being adapted to be independent of one another, and excitation changeover means for the electromagnets, the excitation changeover means being adapted to sequentially magnetize one of the electromagnets which is positioned forwardly with regard to a rotational direction of the rotational output shaft, so as to impart to the particular

electromagnet a magnetic polarity opposite to that of the magnetic pole of the permanent magnet, whereby magnetic flux passing through the magnetic body converges in one direction so as to apply a rotational torque to the rotational output shaft. No force opposing movement of a rotor or movable element is generated. (with 16 claims, 19 drawing sheets)

One key paragraph is this:

"Pure steel was used as a magnetic material. The magnetic material was 30 mm in thickness and formed to have magnetic teeth of 218 mm diameter and notches of 158 mm diameter. A ferritic magnet was used as a permanent magnet. The magnetic force of the magnet was 1,000 gauss. Electric power of 19.55 watts was applied to the electromagnets at 17 volts and 1.15 amperes. Under the above condition, a rotational number of 100 rpm, a torque of 60.52 Kg-cm and an output of 62.16 watts were obtained." [That is about 317% output/input.]

[1] Illustrations for this patent were published in *NEN*, Jan. 1996, p 19, in a letter from Harold Aspden concerning the patent. It was first written about in *NEN*, Nov. 1995, p 1-2.

KEIRETSU, SPACE ENERGY STYLE

Wingate Lambertson, "Proposal for an American Keiretsu," *Space Energy Journal*, vol 5, no 4, Dec. 1995, p 26-32.

AUTHOR'S ABSTRACT

It is recommended that the Japanese industrial network or *keiretsu* be replicated in America in the new energy field. This will involve starting with one new venture company with a zero-point energy conversion method and then expanding to 14 through the assignment of market segments. This process will then make it possible to raise the capital needed at the lowest cost. [Dr. Lambertson references Hedrick Smith's book, *Rethinking America*, c 1993, which explains this concept.]

WORLD ENERGY CRISIS

Courtesy of Mark Goldes

Jessica Mathews (staff writer), "World's Two-Alarm Energy Crisis," *Santa Rosa Press-Democrat*, Feb. 21, 1996, p B5 (reprinted from *Washington Post*).

SUMMARY

Concern about rising or falling prices of oil is once again being circulated. Iraq may be selling oil again soon, causing concern. Iraq and the U.N. may agree to permit Baghdad to sell \$2 billion worth of oil every six months, which may cause the price of oil to drop another dollar or two per barrel. Iraq could also pump more oil to meet its dollar quota, and if the rest of OPEC refuses to cut production to maintain oil prices, the action could cause further price drops. But OPEC colleagues will be reluctant to exercise such restraint.

Resource specialists have a different view. They think the world is close to its year of peak output, and therefore, to the years when production will decline with accompanying price increases. These specialists say that because most oil is found in large deposits, the major possible finds have already been investigated, and that the world's recoverable oil is estimated at 2,000 billion barrels.

James MacKenzie with the World Resources Institute will soon release an analysis that finds that global production is likely to peak between 2007 and 2016. And L.F. Ivanhoe, a petroleum geologist, calculates that the oil shortage causing tight markets and large price increases would begin between 2000-2010. **MacKenzie also concludes that between now and the beginning of any large price increases in oil, should be a time for developing responses and introducing replacement energy sources.**

Because oil is the current transportation fuel, the new question is when and if a good electric vehicle battery or other power source could be developed. Alternatives being worked on range from a European battery that uses zinc and air (running several hundred miles on the charge and refueling by switching batteries), to a U.S. prototype of an electric car being developed by General Motors, which will require improved batteries.

BRITISH GREEN 'EXPO' PARK

Courtesy of Remy Chevalier

Fred Pearce, "Green Circus Comes to Town," *New Scientist*, Jan. 6, 1996, p 33-34.

A field research/trade exhibition/green "expo" park costing £120 million and funded by Millennium Commission and corporate sponsors will be built in Northern England during the next five years. Jonathan Smales, the project's founder, is planning to build three giant "millennium pavilions"--an ark, which will be partly embedded in a hillside to conserve heat, a futuristic construction in the shape of a hovering butterfly, and a 100-bed hotel, including a 200-seat restaurant and conference center. Surrounding the pavilions will be fish ponds and hatcheries, walking paths through the Denaby Ings wetland, an organic "millennium farm", reed beds to purify sewage, a wind farm, a research center, an electric library, and teleconferencing facilities.

The idea for the park is to attract the public with education and inspiration. A green message and futuristic architecture are meant to celebrate the new postindustrial world. Smales wants the center to become a national showcase for energy efficiency and waste recycling technologies, and a resource center for both education and science.

But there are controversies concerning the building of the park. Conservationists think that the size of the park alone offends. The Council for the Protection of Rural England (CPRE) also objects to the traffic the center will generate the year it opens in 2000.

On the other hand, the research community is enthusiastic to get involved and has already formed a science council. Jacqueline McGlade, a member of this council and an ecosystems analyst at the University of Warwick, sees the construction of the park's projects as research resources in and of themselves such as cleaning water with reed beds, converting biomass to biogas and energy and sustainable aquaculture. McGlade also expects the park to promote green industries and clean technologies. She hopes the park could be turned into a field university with ties to local educational institutions. The park is also expected to bring up to 800 jobs.

Summary by D. Winter

EDITOR'S COMMENTS

We hope they will accept some of the forthcoming commercial prototypes and/or production models of new energy devices for "show and tell."

LETTERS

LETTER FROM REMY CHEVALIER
March 7, 1996

The mainstream press can't seem to get a handle on the revolution brewing beneath its seat. You, Hal, are even guilty of this. I worked very hard with Carl Frankel to get a story published on F/E in *Tomorrow Magazine*. I provided him with the story idea, all the contacts and the groundwork research. It was the first time a bonafide "environmental" publication actually gave notice to such "rumors" of new energy breakthroughs. My name was credited in the piece along with Carl's. But when you printed a synopsis for *NEN* [June 1995, p 4], you left my name out, even though I am a subscriber and regularly contribute items through the mail when I feel them appropriate. It's very frustrating.

EDITOR'S COMMENTS

Our apologies, Remy. We try to give credit to every contributor. In this case we made an error of omission.

LETTER FROM GREG HODOWANEC

This may be of interest to you.

I. Speculations on the Gravitational Constant, G.

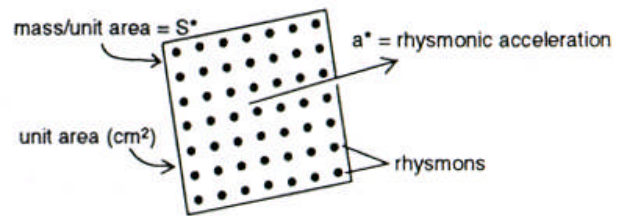
There are many interpretations for the gravitational constant, G, the value of which is presently determined largely from various experimental tests. I have shown in some past Notes that this value was also determinable from dimensional analysis using

the Planck Natural Units. However, it intrigued me to know just what this constant really stood for. I knew that it was related to the 'force' of gravity in terms of Rhysonic Cosmology, but past attempts to evaluate it always resulted in some extra terms in mass, length, or time. In some analyses these extra terms showed up as an acceleration, cm/sec², or as a surface density, gm/cm². I finally realized that both these relations could be directly obtained from the dimensional analysis of the units of the value of G! For example:

$$G = \frac{L^3}{MT^2} = \frac{cm^3}{gm \ sec^2} = cm/sec^2 \times cm^2/gm = \frac{cm/sec^2 *}{gm/cm^2 **}$$

* acceleration, a ** surface density, S

In terms of Rhysonic Cosmology, this could be considered as follows:



$$a^* = \frac{L_*}{T_*^2} \approx \frac{1.616 \times 10^{-33}}{29.06 \times 10^{-88}} \approx 5.56 \times 10^{53} \text{ cm/sec}^2.$$

$$S_* = \frac{M_*}{L_*^2} \approx \frac{2.177 \times 10^{-5}}{2.611 \times 10^{-66}} \approx 8.34 \times 10^{60} \text{ gm/cm}^2.$$

Therefore, $G = \frac{a^*}{S_*} \approx 6.67 \times 10^{-8} \text{ cm}^3/\text{gm sec}^2$

, this being the same value obtained in experiment and this rhysonic determination! Therefore, G may be a measure of the acceleration of rhysonic flux through a unit area, something like the Poynting Vector in EM work. However, this measure may also be expressed as a surface force or a pressure gradient as follows:

$$P^* = S^* a^* \approx 4.64 \times 10^{114} \text{ dynes/cm}^2.$$

II. Some comments on this interpretation of G.

1. Rhysonics implies that there is a very dynamic but highly localized structure in the rhysmoid (aether) which exists in the order of Planck Length dimensions in the 4th Dimension. Thus, when I speak about rhysonic 'flux flow,' I do not imply a movement of rhysons over any extended lengths, which we do in the third dimension where flux flow usually means an actual movement of

particles, both microscopic and macroscopic. Both result in a pressure per unit area, but in rhysonics only the effect is transported over space, very much like sound waves or water waves are transported and where there is little relative movement of the air or water molecules. Another difference here is that the rhysonic effects are 'transported' essentially in an instantaneous fashion as pointed out in my Cosmology.

2. The universal gravitational 'flux' energy vectors are omni-directional in free 'undisturbed' space but due to the rhysonic structure of space these vectors cancel and thus no 3rd dimensional effects are seen. Moreover, these energetic basic 4th dimensional vectors cannot be 'tapped' directly with most present day technology techniques. However, it is possible to 'tap' the energy in certain other existing scalar gradients in this field (or those which can be created with the use of certain field modifying techniques). The main gradients are well known: E-fields, H-fields, EM-fields, and g-fields. There may be many other field gradients which contain much energy, but most of these are as yet 'unknown' and must be 'discovered' before man can use them as an energy source. There are already hints of these in some 'free energy' experiments and energy 'machines.'

3. Much of the potential energy of the universal gravitational field has been 'captured' in particles and various radiation fields, and these provide much of our present day useful energy using the technology of today. However, as we learn more about our rhysonic (aether) we should eventually be able to utilize this very basic energy through direct means and highly efficiently (more than 100%). That day is now approaching.

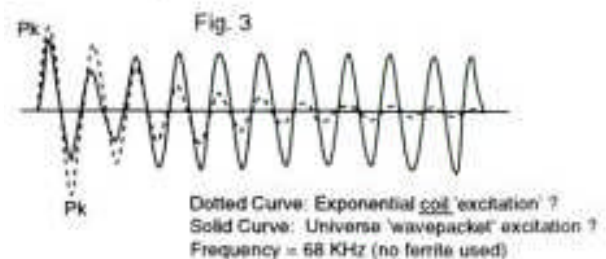
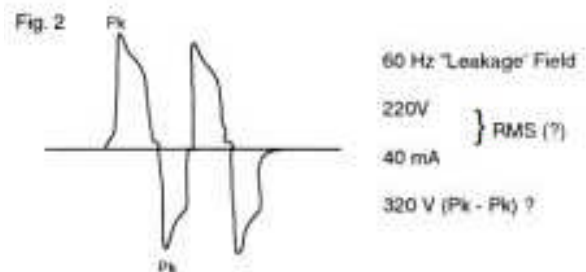
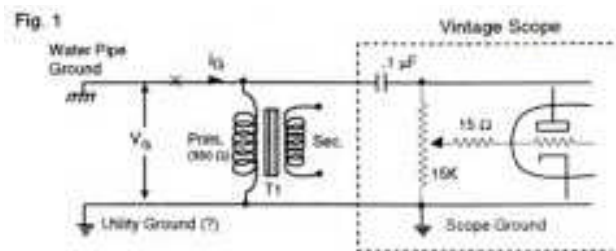
III. Conclusions

Rhysonic cosmology is continuing to develop into a simple but sound approach to cosmology and thus increasing expectations in both the theoretical and technological fall-out. Within my very limited time here, I will continue to report to you on any further thoughts or discoveries. I will not be able to do much in terms of experiments in the near future and it would be nice to have a little more help (ala Bill Ramsay) in these lines, as well as more comments on the theory. I wish all the best regards and good experimenting.

Later observations. Is this real or just possibly a 'local' phenomenon, a product of our local power company?

More on the simple coil test of 11/26/95.

While some personal problems have limited my research activity here in recent months, I did find some time to briefly follow a simple coil test a bit. I used a coil taken from a 120 to 12.5 volt miniature Radio Shack transformer, Part No. 273-1385. The primary was connected to the home water pipe system and the vintage (tube type) oscilloscope was used for qualitative tests only. The 12.5 volt secondary winding was connected to a frequency meter. With this setup (shown in Fig. 1) the sharp input pulse was readily seen as well as its exponential decay, see Fig. 3. Moreover, the non-decaying 'wave-packet' type of traces also showed up well, as is seen in Fig. 3.



It was noticed that the wave-packet traces were seen with different amplitudes during the course of the day, and at times, the amplitude would vary

more rapidly at a frequency of less than 1 Hz to a few Hz. These fluctuations may be related to the variations in the earth-ionosphere complex which is largely 'excited' by the solar wind and thus may be more active during daylight hours. At other times, a fairly high-level response was seen, generally around 40-50 KHz or so. This response was slightly distorted (and at times asymmetric) compared to the more normal response. This seemed to be due to some other man-made 'excitation,' as it was seen to be suddenly turned on and off, and apparently was not present on weekends! Outside of the work-week or HAARP? An attempt was made to identify some 'resonances' in the normal type resonances. To enhance the output, a ferrite core was placed within the coil. The responses were now more sinusoidal and easily showed their multiple 'excitations.' A limited test showed possible resonances at 3, 10, 18, 24, 32, 47, 68, 90, and 130 KHz. Moreover, some of these frequencies are quite close to those noted in some Mini-MRA tests which developed fairly decent sinusoidals and over-unity operation! Therefore, there could be a relation here?

Conclusions

If more of you colleagues would look into this experiment, then perhaps we could learn if this was a factor in free energy devices? The effects here appear to me to be related to some persistent 'Universe' excitations (using 'modulation' by various scalar fields) and which I had reported to you in various Notes and papers. In this particular case, the initiating scalar impulse (Pk) may be from the 60 Hz 'leakage' fields as developed between the water pipe system and the utility line return (neutral). This impulse (loaded only by the scope input) is shown in Fig. 2. This is 60 Hz (plus some harmonics) and it is very high in voltage but very low in current. The primary was opened at point Z for the measurement of Fig. 2. When the 60 Hz leakage input is 'driving' the low resistance primary coil winding (no ferrite used), the response is low-level and largely as shown in Fig. 3. However, when a ferrite core is used and 'tuned' to about 17.2 KHz, the responses are more equalized and increase to about 1.2 V AC (rms) at about 40 μ A (rms), and the waveforms are quite sinusoidal now. Some other resonant points showed similar responses! I will have more on these particular aspects as time permits. Good experimenting.

Greg Hodowanec

[During World War II, Amateur Radio broadcasts were forbidden. The Hams turned to wired-wireless and used the electrical utility lines as the carrier for their communications. It may be that some utilities use wired-wireless communication for either voice or control purposes. Check with your local utilities. -- Ed.]

LETTER FROM BEN IVERSON

The dialog between Gregory Hodowanec and Raymond Nectoux was interesting in what is implied as much as what is said. The one prosaic paragraph by RN says quite a lot in *"All the words and files on any computerized nets cannot change that! Increasing the papers and files with inadequate methods and measuring devices leads to increasing number of ingenious mystified people, seduced by wonderful things."*

I cannot say it better. One does not better understand matter by studying matter. One must study energy. Further, one does not better understand energy by studying energy. One must understand Music and sound. One does not better understand Music and sound by studying Music. One must study the mathematics which lies behind the music. It seems like a long road to take, but one can travel that road much more rapidly than anticipated, if they have the map, which is laid out here. That is what it means when one says, "The gate is narrow. The path is straight." It is also implied when one says "As above, So below."

The science of science is so deficient that an education from kindergarten through PhD is only the kindergarten of ultimate knowledge. There is so much to relearn and put it all into perspective. There is a very large field of mathematics which is wide open to original research. What I have accomplished, in Quantum Arithmetic, is only an opening. Others are picking up and shall expand it in 1996.

One can almost say that there probably will be no New Energy devices developed from the present course. However, some are more gifted, and through synergy, will be able to produce a machine. "Synergy" is what Nectoux calls "dreamful concepts." That is where our first machines will occur. Those machines have already come to us from Orffyreus, J. Keely, N. Tesla, T. Marray, and even F. Sweet,

over the present and past centuries. It is almost assured that it will appear in the same way, before this century ends, through synergy. Quite possibly it will appear in 1996.

Our search is real and the machines are real but not yet realized. There is a partial realization that the energy graphs are not sinusoidal. The mathematics says they are probably elliptical curvatures which also produces square waves, triangular waves, sawtooth waves which science has not encountered.

There are so many shortcomings in conventional science that it is amazing that we have made the progress which has occurred. Conventional science has no basic foundation what-so-ever. It is all theory piled upon theory. Each theory is the result of personal interpretation of "wonderful things." Almost never does theory go back so far as Euclid in mathematics. We have become insolent in our pride. Many theories are often, only an attempt to satisfy the ego and greed. These are unwanted parts within our present equation.

The Hodowanec/Nectoux dialog is an important contribution. New Energy is non-linear devices. It is metaphysical, and must be treated as such. However, never has the future seemed so bright.

Ben Iverson

LETTER FROM RAYMOND NECTOUX

France, February 20th, 1996

In *NEN* Feb. 1995 (p 13), I have noticed a good article about Micro Inductive Array by Nicholas A. Reiter and Dr. Samuel P. Faile.

High efficiency and broad band of Faile-Reiter Circuit seems the most important features. Bifilar coils and "caduceus" structures have already excited many.

Hooper's famous experiments (US Patent 3,610,971) are also of the most interest. **Electric Motional Field** is very important because it raises the problem of current inertia (detection, production, use). Usually, coils create inductance and show current inertia. In bifilar coils and the Hooper device (multi-bifilar, or alternate lines) inductance is minimized but not zero. Really, there are two kinds of inductance: near and far. In bifilar, far is very

weak, but near is kept and can't be suppressed, else threads go and back should be shortened.

The near inductance is called distributive inductance and is considered with distributive capacitance for **calculation of specific impedance and delay time of transmission lines**. Distributed C and L are not located and measured with linear values: Farad/m and Henry/m. They are measured in LF or low frequency versus 1/4 wavelength resonance. End of line shorted for L measuring, whereas termination open for C measuring. I'm interrogative about the point for opening the structure: probably last turn near half wavelength.

All these devices with distributed L and C are line-like and they have similar features, especially many resonances parallel and series. Some of them may be found with a grid dip meter (used by radio hams). Using this way, I found a resonance in a bifilar line input/output connected (a little Moebius-like): resonance was half frequency, so cheaper and smaller.

Star polygon structures by Bill Ramsay (*NEN*, Feb. 1996, p 20 and Dec. 1995, p 11) may also have antenna behavior but with more L and less C versus solenoid. Grid dip measurements may be interesting to know bandpass and resonances.

Returning to the Faile/Reiter article, I noted about "Cad Braid" the importance of size and volume. That's similar for broad band antennas or receiving frames. Knotted and knitted devices are broadband and omnidirectional. So, whereas a usual circuit has one sharp band pass, and selects only small energy, a broad band picks up all waves (short waves, industrial noise, perhaps magnetic telluric or stellar storms). Engineers using amplifier and transmissions know noise signals: noise power proportional to bandpass. Then, broadband permits it to pick up more energy, especially with strange wiring structures which pick up many modes, directions and polarizations.

We must notice 2 diodes for rectifying: under Threshold (>1V), no signal is detected. So, voltage upper with Schottky diodes because fast diodes and small threshold. Fig. 1, p. 14 shows folded twisted dipole floating over D1/D2. Optimizing RL value is a test of impedance for the antenna (max power).

The influence of knotting and knitting has to be determined, with the same place of turn in plane structure. If knots bring small gain, each turn may be replaced by several and the voltage could be increased and perhaps a toy may be made with a twinkling LED in the artistic structure. Of course, big models may also be used for serious studies in Physics.

LETTER FROM WAYNE POWELL

Montana, 12 March 1996

Thanks for talking with me last week re: Cold Fusion and sending me the *New Energy News* newsletter. In trying to get other people interested in Cold Fusion I'm finding out about the parable of the seeds instead. Eyes quickly glaze over when I launch into an explanation of QM; or, "I'm busy," or "I'll get back to you later," or "WOW - please send it to me FREE," or, it's just weird chemistry and CF'ers are just kooks." So, where is the "good soil" that brings forth abundantly? Has it ever truly dawned on you that CF'ers are a minor religious sect? Think about it: Pons/Fleischmann are driven-bitched out of Utah (Mecca) and find refuge in France (Medina). CF researchers have found the true word of God in small electrochemical cells = fusion energy forever; and yet are totally mystified that nobody cares. The Hebrews in Egypt/Puritans in England/Dukabors in Russia/Mormons in Illinois... have all felt the same way. Here is the true answer to all our problems (as they are currently conceived); however, can it be that nobody cares? (the H.I.P. response = Hypocrisy. Indifference. Pharisees.) The historic answer then has been to pick up sticks, emigrate somewhere and start a new colony. Think about it: this is how great religions begin, and shape the destiny of the world. A few dedicated people get together in a focussed situation and exemplify a new way of doing something.

So, if growing frustration in the CF community reaches a certain point, then a colony, but where? Since you have virtually unlimited energy at your palladium fingertips perhaps the best place is a bleak and barren place that no one else wants but with intense energy input can become a fruitful land. So, Greenland? Start with a hardscrabble colony on the coast of the Davis Strait, melting glaciers as you work inland (Mallove's [Fire from Ice](#)); and 20 to 40 years later you have a fat, happy and prosperous

land something like a Norwegian kind of Switzerland. Or, for the snowbirds, pick some arbitrary spot out in the middle of the Pacific, and start building artificial islands with ocean bottom mud (pelagic clay). This means a vast industrial processes of producing some type of bubble-buoyant glass, by the mountain. With the vast energy available from Cold Fusion you could be banging out an area equal to one Utah per year; your very own sovereign continent, in this biosphere.

And so, as a Cold Fusioner are you a kook or religious fanatic? Can you accept the fact that you might get crucified for your beliefs? And do you know that revolutions often eat their own young? Changing the historical direction of the world is more than flipping the switch on an electrical cell. The earth is 25 orders of magnitude bigger than a Cold Fusion Cell...

Well, Hal, you said you were always looking for new ideas. A Mormons-to-Utah type of colony for Cold Fusioners is one way of looking at it. The age of steam and horses didn't just quietly fade away, in the face of the hydrocarbon age, it went kicking and screaming; and teamsters are still teamsters. All of industrialized society is Big Oil's TURF, they are not just going to quietly fade away either. That's why you go somewhere and do your own thing, out of the world's way. That's how history is made.

Inventors are cautioned not to write to automotive or aircraft companies as they are the most resistant to innovative ideas. This is certainly true of U.S. companies but I thought I might be able to spark some interest in the Czech Republic. Thus the enclosed letter. I haven't heard from them, probably never will; but you said Ken Shoulders is working on an electric car, perhaps he will see the value of this concept. All it really amounts to is aerodynamic propulsion of a ground vehicle. But, because aerodynamic forces only are about 10% of car energy then the losses are also in that range. The real beauty of this aero propulsion is that the air mass to be moved (in the 1/2 wave T-C vs. 1/2 wave C-T) is lineal per unit velocity vs. exponential for standard vehicles. This makes a tremendous energy difference in larger and faster vehicles. Of course, this will work (airplanes DO taxi on runways) but my main problem is the hinge joint on the blade to belt connection, just how to do it. [Ken Shoulders' works with the EV = Electrum Validum (strong electrons) not Electric Vehicles. Ed]

Finally, you said time, mass, energy are scalars. Now, is that so? There is no such thing as time, per se. Time is, as you perceive it, kinetic energy. Which is of course inertial or gravitational mass. But mass is actually unity of quantum areas = xh . The Quantum is defined by particle velocity times wave energy (abscissa and ordinate). But, a particle's velocity is magnitude and direction, which is a VECTOR. At relativistic speeds "time" (which is energy which is mass which is area) is very definitely direction-dependent. Einstein explained that long ago. The confusion comes in momentum. Mass is a 2 vector (determinant) and change-of area; momentum is a no-change-of-area LINE. Thus, the steady tic-tic-tic of a clock seems magnitude-lineal but tell me; is there such a thing as 2 clocks that keep perfect (unlinked) time? Doesn't happen does it? "Time" is found in Riemann Geometry and the (corrected) Uncertainty Principle, it isn't a straight line-magnitude (no time), it's squishy-squashy AREA. I explain this in the enclosed letter.

Well, it's been fun talking to a kindred soul, but tomorrow is a long distance travel day (magnitude AND direction). Where does one buy small quantities of Palladium for research? I don't need 100 oz. on the futures market.

Just, Wayne Powell, Architect

LETTER FROM BERT SCHREIBER

December 11, 1995

This will be the last letter I will write to *NEN* concerning your policies which are very selective and does [sic] not follow what you preach.

I have sent numerous papers, albeit some counter intuitive, and none have been printed nor even mentioned in *NEN*. In the December 1995 issue, I read a paper from John C. Chappell, Jr. yet I have been informed that such papers are rarely published. [That is true.] Who makes such decisions to do so? Editor - President - Board of Directors? [The Editor.]

I'm going to ask you one more time to do the following: Print the challenge to all of those ZPE or space-vacuum-energy believers to prove that such exists using the cgs system and not using the mks

system. Furthermore, I will furnish those mks ones with the mks SINGULAR values to show that it can be converted to the singular cgs system which has no Permeability and Permittivity of Vacuum and G anymore!

[Permeability is the property of a magnetizable substance that determines the degree in which it modifies the magnetic flux in the region occupied by it in a magnetic field. Permittivity is the ability of a dielectric to store electrical potential energy under the influence of an electric field measured by the ratio of the capacitance of a condenser with the material as dielectric to its capacitance with vacuum as dielectric. The permeability of vacuum is defined to be $4\pi \times 10^{-7}$ tesla meters per ampere (cgs system) or henrys/meter (mks system). Permittivity is defined as a ratio of one measurement (with dimensions) to another definition (with same dimensions) of vacuum. Dimensionless numbers are extremely important, especially in developing scaling parameters. Just ask any expert in fluid dynamics if the Reynolds Number is important.]

They cannot do so. Furthermore, every one I have written to and thrown out this challenge to, Puthoff, Aspden et al., have totally ignored my challenge because they KNOW IT CANNOT BE DONE as it is only based on Constants of Proportionality which is theory, but not in practice for convenience, are *just numbers* and have no units of measurement or dimensions as they are sometimes called. [Perhaps Puthoff and Aspden expected you to do your homework first.]

Lastly, I am sending you two more papers. The first is against Push Gravity and the second is proof that there are only three possible forces which can exist. If JCC, Jr. et al. can push Push Gravity then as true scientists, you should present any opposing viewpoints with the same UNBIASED approach (WHICH YOU DO NOT DO). [The best current paper on gravity, **in my judgement**, is the paper by Harold E. Puthoff, (*Phys. Rev. A*, Vol 39, pg 2333 (1989)). *NEN* is an energy newsletter, we are not a publication that seeks to indulge in balancing opposing viewpoints. We like best reports on successful energy experiments, **especially those that can be replicated by our readers**. If you have articles of that nature to publish, please let us know.]

From my logical and *unassailable* paper on the three forces, it is obvious that there is [sic] NO RELATIONSHIPS between the Electric-Magnetic Forces and Gravitational Force. There is no UNIFIED FIELD THEORY nor GRAND UNIFIED THEORY nor GRAND UNIFIED FIELD THEORY nor the THEORY OF EVERYTHING. [Anyone who would limit the boundaries of science to three forces has studiously neglected the study of science.]

I will donate \$100 to *NEN* if anyone can show that there is any missing parameter(s) which I have overlooked in my three forces paper. That does not include any speculated or science fiction 'talked into existence' parameters. It also eliminates just putting a negative sign in front of or ahead of such (time' to create negative time, or time running backwards or other such nonsense which I have already sent *NEN* and been likewise ignored on). [For those readers who have the time and the talent to take up Bert's challenge, please write to him at the address provided below.]

[The second page of Bert's letter is not reprinted, in fact some portions are not printable. We apologize to anyone who feels that *NEN* does them a disservice by not publishing their work. Please take your articles to another publication. *NEN* is not for everyone. We try to make this newsletter the best in the world in its limited range of publishing experimental (mainly) new energy discoveries. Bert, we appreciate your letters and articles. You are bright and are doing something you believe in. Expand your horizons and don't stop learning from others. Hal Fox, Editor.]

BERT SCHREIBER
4519 Holly St. Bellaire, TX 77401-5802

LETTER FROM DONALD WALTON

In December 1992, I had a description of my Acoustic Fuel Cell design - "Don Walton's Wasser-Brennstoffzelle" by Elisabeth Lehmann published in the *Swiss Association for Free Energy* magazine, it was also presented at the Dutch Cosmic Energy foundation in Rotterdam and a little later at a conference in Zurich.

More recently interest was shown by an American entrepreneur who was quite specific about

non-disclosure documents. These were drafted and verbally approved but the documents were not signed and returned and the correspondence contravened international maritime law. Under those circumstances the contract is now **Null and Void** and I would feel quite justified in sharing this information with one or two of your readers who may have interest and in addition be technically and theoretically competent.

The design incorporates Electrolysis; Ultrasonics and that part of Worrell-Keeleys work relating to conversion of water to energy. The experiment described by Dan A. Davidson: "T" Field Energy Research is also relevant.

Initially the object was to create rapid disassociation of water into combustible gases, however, it would appear that we may have a phase conjugate system within a liquid by means of four wave mixing or, an instantaneous conversion to energy. Amongst other things we are working with the Keeley frequency for water disassociation and scalar waves within a cell.

The following disclaimer is applicable:

I ACCEPT NO RESPONSIBILITY FOR ANY ACCIDENT, INJURY OR DEATH ARISING FROM INVOLVEMENT BY ANY PERSON ENGAGED ON THIS PROJECT. In the first instance, correspondence is invited but it would be appreciated if correspondents would initially write for a brief overview. If subsequently, detailed documentation and photographs etc. are required requests should be accompanied by an international pre-paid postage voucher to the value of \$4.00. The information is provided for experimental purposes only and no proprietary rights for commercial manufacture are given or implied other than by mutually agreed contracts in accordance with international maritime law.

Yours sincerely, Donald P. Walton
12, Chatsworth Road
Charminster
Bournemouth BH8 8SW
Dorset, England

LETTER FROM E.G. LEEK

Where did you hear of producing fifty times as much thermal power as consumed electrical power. Are plans available? This article is on page 3 in your December issue.

I disagree with using electric cars. I think using Stan Myers ideas are much better. Burning hydrogen we can get rid of our pollutants while clean air comes out the exhaust. Stan says he can also change our jet engines on our planes to run on water. Try running our planes on electricity.

Each car can be changed over in just a few hours, but it will take time to change them all. When will we stop burning gas? Who knows.

Just my thoughts. Thank you. E.G. Leek

[We have been awaiting the results of Stan Myers' work "within about six months" for several years. We wish him the best. Until that "in six months" occurs, there are some excellent new, non-polluting technologies available. --Ed.]

Meetings

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.

The Orgone Biophysical Research Lab
presents
**THE ORGONE ENERGY ACCUMULATOR:
History, Construction & Experimental Use**

20-21 July 1996
Saturday & Sunday; 10:00 am to 6:00 pm
Greensprings Center, Ashland, Oregon

Preregistration is required as space is limited, \$150. To register or for further information contact:

O.B.R.L.

Greensprings, P.O. Box 1148
Ashland, OR 97520

Phone/Fax: 541-552-0118

e-mail to: demeo@mind.net

ICCF6

Sixth International Conference on Cold Fusion

will be held 13-18 October 1996

Hotel Apex Toya, Hokkaido, Japan

sponsored by

New Energy & Industrial Technology
Development Organization (NEDO) (Mr. K. Matsui)

Tel +81-3-35-08-8901

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)

The Dead Line for abstracts is May 1996.

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

International Association of Science and Technology
of Development (IASTED)

International Conference on HIGH TECHNOLOGY IN THE POWER INDUSTRY

4-8 June 1996, Banff, Alberta, Canada

The aim of this conference is to act as a forum for the exchange of information and experience on all aspects of high technology and advances in the power field.

Information:

Contact IASTED at 403-288-1195 or Fax 403-247-6851, e-mail iasted@istd.cuug.ab.ca

**INTERNATIONAL
SYMPOSIUM ON NEW ENERGY**

An Exploration of "Free Energy" Generators

April 25-28, 1996

Denver Hilton South Hotel
Denver, Colorado

Scholarly papers will be presented on topics related to New Energy, and will include one of the following: theories, designs, inventions and research results.

SYMPOSIUM ON NEW ENERGY
International Association of New Science
1304 S. College Ave.
Fort Collins, Co 80524
Phone: 970-482-3731, Fax: 970-482-3120

**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

Book Reviews

QUANTIZED MASS - A BOOK REVIEW

By Hal Fox

Petar K. Anastasovski & Trevor M. Benson, Quantum Mass Theory Compatible with Quantum Field Theory, Nova Science Publishers, Commack, N.Y., c1995, 44 figs, 30 refs, indexed, 165 pages.

In high school I was taught an atomic model that was like a miniature solar system. With hydrogen it was one central body (the nucleus) and one orbiting planet (the electron). As I and the model grew up, the orbiting electron became variously a wave of energy surrounding the nucleus at some distance; endowed with indeterminacy so that you would never be able to tell exactly where it was; and ultimately a spread-around force moving rapidly in an orbitshell. In this book the electron gets some new attributes.

Consider the following sketch:

N<----- r < h/mc ----->r=h/mc<----- r > h/mc ----->

N represents the nucleus of a hydrogen atom. The electron occupies an **orbitshell** at various distances from the nucleus at a radial distance **r**. The distance is measured by Planck's constant **h**, divided by a mass **m** multiplied by **c**, the speed of light. **r=h/mc** at about 4×10^{-11} centimeters. At larger distances, the normal physics of the hydrogen atom can be used, that is the charge of the electron and the mass of the electron are provided by standard text books.

The remarkable development in this book is the concept that as the electron interacts with a photon **the electron absorbs the mass of the photon**. Therefore, when an electron absorbs a photon it changes its orbit. There is empirical (experimental) evidence for the changes in orbits of electrons around the nuclei and the concept that only certain orbits are permitted. This book provides an explanation. **Mass is quantized**. Therefore, the electron cannot have any mass but only discrete increments (or decrements) of mass. With different mass, the electron occupies a different orbitshell.

Another concept discussed in this book is that the mass of the electron responds normally to gravity at distances **r** greater than **h/mc**. At closer distances

gravity becomes antigravity and the electron is repelled from the nucleus. However, the charge on the nucleus (consisting of one proton for hydrogen) attracts the electron (the well-known Coulomb barrier). The balance between the charge attraction and the anti-gravity repulsion determines the electron's orbit. Remember that when the electron emits a photon or absorbs a photon, it is changing its mass **and therefore changing its orbitshell distance.**

Assume that the authors are correct. Here is one possible application of this new view of the hydrogen atom:

Photons traveling through interstellar space will have a small (but finite) probability of interacting with hydrogen atoms that exist in interstellar space. As small but finite quanta of photon mass is lost to the electrons there is a reduction in photon momentum or energy. When such a photon arrives at our telescopes, we observe this phenomena as a **red-shift**. Currently we accept the red-shift as being due to the velocity of the source of the photons. Nearly all distant galaxies demonstrate the red-shift. Our current explanation is that all of these galaxies, **in every direction**, are moving away from us and the more distant the galaxy the faster it is moving away. **Therefore, we must be living in an expanding universe.** If we accept this simple **and easy to understand concept that photons from more distant stars give up more quanta of energy in their travel through interstellar space than do the photons from less distant stars**, the implications are the following: 1. The universe is not expanding. 2. The velocity of light may not be a constant (in line with experimental evidence). 3. The big bang is not needed. 4. The universe is relatively stable. **Remember that the major reason for the Big Bang is to give the universe the impetus for expanding.** Thanks to these authors, the universe has just become much simpler, more quiescent, and much easier to understand.

This book tells us a lot more about the implications of the Quantum Mass Theory and provides numerous equations (258 are labeled) and explains what are implied by the equations. If you have a reasonable math background, you will find this book to be an exciting adventure into a set of new ideas. The book is expensive, \$87 plus shipping, and is not for the lay person. However, I am convinced that you will see the new ideas and concepts detailed in this book make their way into the forthcoming **paradigm shift** (the big model change) in science. We commend the authors for reporting on new great ideas in a well-prepared, well-written, important book.

GRAVITATION OF THE SUN

A book review by Hal Fox

Pari Spolter, Gravitational Force of the Sun, c1993, 260 pages, 351 refs, illus, indexed, ISBN 0-9638107-5-8, published by Orb Publishing, 11862 Balboa Blvd. #182, Granada Hills, CA 91344-2753, \$29.95.

This is the most readable technical book that it has been my pleasure to review. Dr. Spolter begins every topic with a review of the earliest experimental data and writings. She quotes what the original authors wrote, and what later authors thought they wrote. The topics covered range from **The Universal Law, Relativity** (two chapters), **Fundamental Problems, Gravitational Force of the Sun**, to **The Distance Law, Gravitational Force of the Planets**, and ends with **Eccentricity, Inertia**, and the **Units of Force and Energy**. In every chapter, the author exhibits a readable style, carefully prepared review of the background for each topic, and ends most chapters with a simple statement of her position.

After chapter 1 (**The Universal Law**), the author states factually, "Newton did not need, nor did he estimate the masses of the earth and the moon to deduce the reciprocal square of the distance from the center of attraction--and therefore--there is no basis for inclusion of the term **product of the two masses (m_1, m_2)**, or for that matter, for inclusion of any terms for mass in the equation of the gravitational force. In her evaluation of the universal law, Spolter looks at the dimensions of the formulation:

$$F = ma = G (m_1 m_2)/r^2 \text{ and finds that dimensionally } \text{kg}\cdot\text{m}/\text{s}^2 = \text{kg}\cdot\text{kg}/\text{m}^2, \text{ or}$$

$\text{m}^3 = \text{kg}\cdot\text{s}^2$, and relates that the instructor will tell you that the constant G just happens to have the dimensions that balance the equation. She also reports that other authors throw in a unit vector to explain why the vector F is equated to scalar quantities. It is careful analysis like this that leaves the reader pondering, "Why didn't I question that?"

It was the two chapters on Relativity that was the most interesting to me. Dr. Spolter cites over thirty authors who questioned the validity of the theory of relativity. Two of the most interesting are the following: "General relativity is a splendid piece of mathematics built on quicksand and leading to more and more mathematics about cosmology (a typical science-fiction process)." L. Brillouin (1970).

The quote I liked best: "In spite of its great success in various fields, the present theoretical physics is still far from being able to provide a unified foundation on which the theoretical treatment of all phenomena could be based. We have a general relativistic theory of macroscopic phenomena, which however has hitherto been unable to account for the atomic structure of matter and for quantum effects, and we have a quantum theory, which is able to account satisfactorily for a large number of atomic and quantum phenomena but which by its very nature is unsuited to the principle of relativity." **Albert Einstein** and N. Rosen (1935).

When I was in high school, I read that there were only ten people in the world who could understand Einstein and in my youthful enthusiasm I determined to be no. 11. Since that time, I have read nearly everything Einstein wrote that was published. My conclusion is that Einstein (and, as it turns out, with his wife) did a wonderful job of structuring a partial explanation of reality based on a negative experiment (the Michelson-Morley experiment) but not consistent with physical reality.

Dr. Spolter also demolishes the strongly-held belief that Michelson & Morley proved that there was no energetic aether. She cites Shankland quoting Einstein, "He [Michelson] told me more than once that he did not like the theories that had followed from his work!" Spolter states (page 254), **"In the Michelson and Morley experiment the calculations were based on an assumption of simple additive effect of $c \pm v$ an assumption of a simple additive effect of velocities is incorrect when dealing with electromagnetic radiation."** [It is interesting to consider Zielinski's statement: "Had Michelson and Morley pointed their interferometer in a vertical plane, they would have concluded that the earth is moving in a perpendicular direction to the surface of the earth into space." This quote is from "A New Theory that Unifies the Forces of Nature", to be presented at the Third International Symposium on New Energy, April 25-28, 1996, Denver, Colorado.]

Judging from the covers of most magazines and pocketbooks, sex is the most compelling topic for readers. If you, as a reader, are as interested in science as the typical American reader supposedly is in sex, this book, to you, will be as readable as any of the current best sellers. It is superbly written with painstaking research to quote the original experimenters (or theorists). Each conclusion is buttressed by careful explanation of the facts. Although the author uses the calculus when required,

she ensures that the non-mathematician reader can read between the equations.

The book quotes Newton as saying, "Hitherto we have explained the phenomena of the heavens and of our sea by the power of gravity, but have not yet assigned the cause of this power." *Philosophiae Naturalis Principia Mathematica* near end of Book III. We leave it to the reader to discover why Pari Spolter writes the following: "What is constant for all planets, is the gravitational force of the sun. ... $F_s = a \cdot A$, where a is the acceleration and A is area." It is a challenging conclusion in a book that is a pleasant reading journey. **We promise that you will be much less ready to accept the lecturing of physics instructors or the writers of textbooks as being the sole and ultimate truth!** That questioning attitude lies behind every new-energy invention and development and should be the attitude adopted by every seeker of truth.

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 for *Fusion Facts*, *New Energy News*, and *the Journal of New Energy*. Voice 801-583-6232, Fax 801-583-2963.

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

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

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.

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.

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, 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.

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 *NEN*, P.O. Box 58639, Salt Lake City, UT, 84158.

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