FUSION facts

A Monthly Newsletter Providing Factual Reports On Cold Fusion Developments

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

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A. THE LIBRARY OF SCIENCE "SELLS BOOKS"

By Hal Fox

In a capitalistic society, I have no quarrel with a company that has established itself as a bookseller. Somehow, over the years of being a member of the "Library of Science", I have been under the delusion that somehow my "science books" were representing a true picture of science. I was a bit miffed that a book that is hopelessly outdated on the topic of cold fusion would get a listing in the library of science selection. Most damaging to the credibility of my favorite book club was the following statement in the "blurb" about Huizenga's paperback version of his Cold Fusion, The Scientific Fiasco of the Century:

"Cold Fusion isn't kind toward Pons, Fleischmann, the University of Utah, or others more interested in financial gain than good science."

This statement by the Library of Science advertising writer verges on accusations of fraudulent behavior on the part of Pons, Fleischmann, the University of Utah, and those of us who have worked so hard to maintain a U.S. interest in the cold fusion technology. This type of statement should never again appear in any kind of a professional publication. We regret that such a statement, so contrary to fact, has been foisted off on the Library of Science.

I called the Director of the Library of Science to complain. He assured me that Huizenga's book had been sent to two reviewers and had been favorably reviewed. He also stated that they had previously listed two other books on cold fusion for sale to their club members, Gene Mallove's, Fire From Ice, and Frank Close's Too Hot to Handle. "We are in the book selling business,"

stated Mr. William Frucht (the director of Library of Science), "and we are willing to provide differing views to scientific controversy."

I was able to inform Director Frucht that contrary to popular belief and contrary to the unwarranted attacks on cold fusion by Huizenga and Close, cold fusion was a highly-replicated, much expanded (from the original Pons-Fleischmann announcement), viable science. We have sent Director Frucht a copy of Cold Fusion Impact in the Enhanced Energy Age, along with the latest bibliographic diskette containing over 1500 references to the engineering and professional literature on cold fusion. We do not expect the Library of Science to list any positive books on cold fusion, at this time. The future will handle that task most adequately. We do suggest that when there is such an enormous literature available, that Director Frucht add to his stable of reviewers a couple of scientists who have, at least, read the literature on the subject of cold fusion.

There have been three publishing fiascoes on cold fusion: Huizenga's Cold Fusion, the Scientific Fiasco of the Century, Frank Close's "Too Hot to Handle", and perhaps the least competent, and most selective of facts is Gary Taube's, Bad Science, The Short Life and Weird Times of Cold Fusion. We wish to thank the Library of Science for having offered, so I'm told, Eugene's Mallove's Fire From Ice, which has provided the least biased and fairest treatment of the development of cold fusion. The best book on cold fusion is yet to be written, because the wrap-up of this enormously interesting story is yet to come.

Meanwhile, for the engineers and scientists who are interested in the latest publication on cold nuclear fusion, *Fusion Facts* would like to suggest that you acquire the Cold Fusion Source Book, which includes selections from the International Symposium on Cold Fusion and Advanced Energy Sources, held in Minsk, Belarus on May 24-26, 1994. This book was prepared and published by the hard-working staff at Fusion Information Center (the same wonderful people that bring you *Fusion Facts*, each and every month.) This book, together with the latest bibliographic diskette (now over 1500 references), can be purchased for $100 and airmailed anywhere. Subscribers to *Fusion Facts* receive a 25% discount.

B. EDITORIAL

By Hal Fox

IMPORTANT ENERGY CONFERENCES

There were two important energy conferences during May, 1994 with more conferences coming. The Minsk International Symposium on Cold Fusion and Advanced Energy Sources is being held May 24-26 in Belarus. It will be small, but with many recognized authorities on cold fusion attending and presenting papers.

The second International Symposium on New Energy was held in Denver, Colorado at the Hilton South Hotel during May 12-15, 1994. About 250 attendees plus the many speakers provided many new insights into the rapidly-developing field of cold fusion and other enhanced energy systems.

Some of the most famous names in new energy systems were flown in from various parts of the world to participate in the Denver conference. The conference was sponsored by the International Association for New Science and the Institute for New Energy and was financially supported (for the second year) by Lynda and Bill Beierwaltes. This combination of planning and financial support has provided a powerful stimulus that has long been missing in the field of new energy. As a result, new energy researchers from various parts of the world are exchanging information and working more effectively.

The term "new energy" has come to mean those systems of producing usable energy from non-standard sources. At the first conference (during April, 1993) there were several papers given on wind, solar, and hydrogen energy. During the May, 1994 conference these topics were not stressed. It appears that the term new energy is almost solely devoted to systems or devices that appear to utilize the energy of space. Therefore "new energy" is becoming almost synonymous with "space energy."

It is well to review "space energy." What is it and where did it come from? Nearly all of the foundations of the science of electromagnetism, and all its branches, were formulated during the nineteenth century. At that time, the idea of an energetic, all-pervading ether was almost universally accepted. If there is an ether, then spaceship

earth must travel through such an ether. Therefore, there it should be possible to measure the difference in the speed of light in the direction of the earth's motion through the ether as contrasted to the speed of light in a direction perpendicular to the direction of the earth's travel through the ether. Thus was the famous Michelson-Morley experiment specified, equipped, and performed in 1887. **The results were negative, perhaps the most famous negative experiment until 1989 when groups of professors at MIT, Harwell, and Cal Tech all found that the Pons-Fleischmann measurements of cold fusion excess heat was also negative.** Albert Michelson was awarded the 1907 Nobel prize for this negative ether-finding work. However, many years later Michelson (who doubted the correct result of his experiment) worked with Gale [in vol 1 of *Galilean Electrodynamics*] on a much more elaborate experiment which did not have negative results. In addition, it has now been shown that the experimental design was flawed and could not have measured the difference in the speed of light [Hal Fox, "Book Review of Divine Electromagnetism, by Stefan Marinov, *FF*, vol 5, no 9, March 1994, p 23, col 2, par 3]. Nevertheless, at the time, the scientific leaders, first grudgingly, and later, almost unanimously, accepted the flawed experiment and the speed of light, in vacuum, became a universal constant **contrary to fact.**

The result of the acceptance of this flawed "speed of light" experiment was the concept of a pure vacuum of space, no ether, no energy, no nothing. As a result, the leaders of the scientific community, the peer reviewers, no longer accepted papers that would deal with phenomena that provided contrary evidence, theory, or opinions. **Thus was the energetic space around us denied to inventors, engineers, and scientists as a source of energy to be used.** Meanwhile, Einstein, and many others, accomplished a prodigious feat of mathematics. They were able to construct a model of the universe that explains many of the observed scientific facts with using the speed of light as a constant (in vacuum) and using the concept of an empty, non-energetic space.

Quantum mechanics, especially as interpreted by the Copenhagen school, was devised and developed to explain many of the phenomena of nature and to predict phenomena that was later proved to be correct. As is well known by students of scientific history [2, 3] these efforts were only made possible by shunning certain non-conforming experimental evidence. Nevertheless, the prodigous development of modern science has been predicated mainly on the development of Einsteinian physics and, partially, on the later development of quantum mechanics. Therefore, for over a half century, science has made great progress based, to some extent, on a flawed experiment.

The strange development was that the convolutions of scientific theory, that were constantly revised to conform with many unassailable experimental discoveries, predicted that space was highly energetic. At first, this theoretical finding was labeled as being "virtual". Later, the evidence became increasingly strong that this space energy was real. The term zero-point energy (soon to become ZPE) has been used extensively in the peer-reviewed scientific publications to discuss this **space energy**. One of the best summary publications about ZPE is Moray King's book [4] which cites over 400 peer-reviewed articles dealing with this enormously energetic ZPE that surrounds and pervades all space.

For about seventy years, the effects of energetic space had been denied because, according to the accepted scientific dogma, space energy did not exist. Now that space energy is well established in the peer-reviewed literature [4] and has been used by Nobel-prize winners [5] to explain new scientific phenomena and by others to explain many other phenomena, **we can now use space energy as a source of power.** See especially the writings of Dr. Harold E. Puthoff et al. published in *Physical Review* [6].

Shunned by **science**, those stubborn inventors, engineers, and scientists who were self-assured that their findings were correct, either gave up, died, or worked in isolation from the scientific community. Some, like Harold Aspden, managed to span both worlds, reality and the current scientific acceptance of reality. Others, like dePalma, left the U.S. and went abroad where their work was not so unacceptable. Others, like Dr. Peter Graneau of MIT, worked in some of the world's most prestigious academic institutions and published their experimental discoveries, which were ignored. Thus, the culmination of the story.

By sponsoring two retreats followed by two well-advertised International Symposia on New Energy, the isolation of **space energy experimenters and theoreticians** has been removed. True science cannot

long remain in error, therefore, there has been a gradual revelation of the enormous energy of space and many peer-reviewed publications on ZPE. This combination of bringing the developers of space energy devices together to share information and experimental data coupled with the rigorous and peer-reviewed papers on the energetic space is now changing our view of reality.

Just as the proponents of cold fusion have had their rapid exchange of information through the monthly publication of *Fusion Facts*, so, also, do the **space energy workers** now have their "voice" in the year-old monthly publication of *New Energy News*. These publications, buttressed by the increasing number of cold fusion and "space energy" articles appearing in the accepted "peer-reviewed" literature, are tracking the rapid development of **enhanced energy systems.** In addition, popular publications such as *21st Century Science and Technology*, *Popular Science*, the MIT alumni publication *Technology Review*, and latest on the scene, Wayne Green's *"COLD FUSION,"* are the predominant U.S. publications adding to the light of truth.

ERRATA

In the abstract, "Coherent Nuclear Reactions in Crystalline Solids," by S.N. Vaidya, *FF*, vol 5, no 9, Mar. 1994, p 13, the following changes need to be made. Please excuse the misprint.

Page 13, col. 2, between equations 2 and 3:
R depends on the rate constant, A, nuclear overlap wavefunction $\Psi(O)$, Debye-Waller term and the structure term S^2.

Same col, middle of next to last paragraph:
...excited nuclei ^{n+1}A for **graser** action. Its large scale application...

Page 14, col 1, first paragraph, line 8:
...experiments, even if the **tunneling** criterion, eq. (6), is not...

C. NEWS FROM THE U.S.

CALIFORNIA - REFUTING OBJECTIONS

Robert W. Bass (reg. pat. agent, ENECO, F.I.C.), "**Is the Coulomb Fusion-`Barrier' a Resonantly-Transparent Mirror?** - Refutation of the Conventional Cold-Fusion `QM-Impossibility' "Proof," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, pp 45-60, 6 figs.

AUTHOR'S ABSTRACT

The University of Utah announced the millennial advent of a potentially unlimited, cheap, clean, non-polluting new energy source on March 23, 1989. The alleged discovery of a room-temperature electro-chemically induced form of nuclear fusion power by Dr. Martin Fleischmann, *FRS*, and Dr. Stanley Pons stunned the high-energy physics Establishment and the controlled thermonuclear fusion Establishment. Many other scientists and engineers throughout the world were electrified at the startling news. Frantic efforts to duplicate the **FP** Effect were initiated at numerous laboratories, in some cases by reluctant scientists more interested in previous ongoing activities than in their interruption to satisfy demands for confirmation or refutation. After some well-publicized `failures-to-confirm' at highly reputable, well-equipped laboratories, a discussion panel of the American Physical Society voted 9-to-l that the subject of cold fusion (CF) was `dead'. Subsequent commentary by Establishment physicists was almost universally dismissive, based on the proposition that "cold fusion *contradicts* the Laws of Physics!" with the obviously mandatory qualification "as those Laws are presently understood" often negligently omitted.

The initial dismissive skepticism, among sincere if possibly hasty or underinformed critics, was based upon two principal objections:

Objection 1. Deuterium fusion (as elucidated for the past half-century in the *H-bomb* and in the international quest for *controlled* civilian thermonuclear power) **either** produces *neutrons* **or** *tritium* in copious amounts with roughly equal probability, or (in extremely rare cases) energetic gamma-ray photons, but neither of these three *SUPPOSEDLY `DIAGNOSTIC'*

SIGNATURES was present in the FP Effect in amounts even remotely proportional to the excess heat allegedly generated.

Objection 2. Deuterons in a palladium lattice are not significantly closer together than in a molecule of deuterium gas, where the amazing but well-established phenomenon of quantum-mechanical `**tunneling**' can bring two positively-charged `heavy' hydrogen nuclei to overcome their electrostatic repulsion and move near enough for the **strong nuclear force** to bring about their fusion into an excited helium-4 nucleus; but in deuterium gas such an event is never observed.

The second objection is much more fundamental, and the exposure of the fatal fallacy in this *sole* objection is the central purpose of this article, which slights many other important questions in favor of focusing upon a single issue: was the initial *theoretical* skepticism truly justified?

CALIFORNIA - MEASURING HEAT & HELIUM

B.F. Bush and M.H. Miles (Chem. Div., Research Dept., Naval Air Warfare Ctr., China Lake, CA), "Practical Aspects of Heat and Helium Measurements in Deuterated Palladium," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 6 mms pages, 3 tables.

AUTHORS' ABSTRACT

Metal flasks were used to collect electrolysis gas samples in Pd/D_2O + LiOD and Pd/H_2O + LiOH experiments in order to minimize effects due to helium diffusion through glass. For five control experiments yielding no excess power, the mean value for the background helium concentrations in our system was 4.4 ± 0.6 ppb (parts per billion) or $5.1 \pm 0.7 \times 10^{13}$ ^{4}He/500mL. For five experiments producing excess power, the measured helium concentration was higher than the background level in each case. Three different laboratories have been used for measurements of the helium concentrations in various electrolysis gas samples from our experiments during the past three years. The helium measurements from all three laboratories yield helium production rates of 10^{11}-10^{12} ^{4}He/s*W.

CALIFORNIA - LIGHT WATER FUSION

Robert D. Eagleton (Phys. Dept., Cal. St. Polytech. Univ. and ENECO, Inc., Salt Lake City, Utah), "Experimental Details for Light Water Cold Fusion Research at Cal. Poly.-Pomona," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 10 mms pages, 8 refs, 6 figs, 4 tables.

AUTHOR'S ABSTRACT

This paper presents a detailed description of the construction and operation of the two types of electrolytic cells employed in the experimental light water cold fusion research of R. Bush and R. Eagleton at California State Polytechnic University - Pomona.

Electrolytic cells of the Fleischmann and Pons type using light water with nickel cathodes and alkali carbonates were first employed at Cal. Poly - Pomona in August of 1991 following the announcement of excess heat production in light water by Mills and Kneizys. Cell design and protocol was partially driven by considerations based upon the theoretical work of R. Bush. Since that time a total of 27 light water cells have been run with alkali carbonate and alkali hydroxide electrolytes using two different cell and calorimeter configurations. These configurations and other details are described in this paper. The experimental results obtained with these cells are not discussed in this paper but are presented elsewhere.

CALIFORNIA - SHIFT IN RATIO

Robert T. Bush (Phys. Dept., Cal. St. Polytech. Univ. & ENECO, Salt Lake City, Utah), "Evidence for an Electrolytically Induced Shift in the Abundance Ratio of SR-88 to SR-86," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 10 mms pages, 13 refs, 1 table, 6 figs.

AUTHOR'S ABSTRACT

Compelling preliminary strong evidence is presented for an electrolytically induced shift in the ratio of Sr-88 to Sr-86. Since the natural abundance ratio of these two

isotopes is constant, this shift would, if corroborated, constitute a unique signature of cold nuclear reactions.

Since the natural abundance ratio of Sr-88 to Sr-86 is a constant, it is of some interest that compelling preliminary evidence strongly suggests the achievement of electrolytically stimulated shifts in the ratio of these isotopes amounting to many standard deviations as determined from mass spectrometric analyses. Such shifts, if confirmed, constitute a unique "signature" of cold nuclear reactions in the condensed matter environment of the cathode. Mass spectrometric evidence (SIMS and ICPMS with the latter preceded by an ion-exchange column separation of strontium and rubidium) provide strong preliminary evidence for the electrolytically stimulated production of the strontium isotopes Sr-86 and Sr-88 resulting in a shift in the natural abundance ratio. The two electrolytic cells employed nickel mesh cathodes and light water based 0.57 M rubidium salt electrolytes. The fact that the SIMS analysis yielded a ratio of Sr-88 to Sr-86 approximately equal to the natural abundance ratio of Rb-87 to Rb-85 provides support also for the author's CAF Hypothesis ("Cold Alkali Fusion"), which seeks to unify the heavy water and light water excess heat effects. The author's LANT Hypothesis ("Lattice Assisted Nuclear Transmutation"), which is a generalization of CAF, also receives support from the calorimetric and mass spectrometric results.

CALIFORNIA - C.F. MODELS

Robert T. Bush (Phys. Dept., Cal. St. Polytech. Univ., CA and ENECO, Salt Lake City, UT; Proteus Processes and Technology, Inc., Denver, CO) "An Interpretation of the Piantelli Effect Based upon the LANT Hypothesis and ECFM Model for Cold Fusion," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 6 mms pages.

AUTHOR'S ABSTRACT

The recently announced (January, 1994) Piantelli effect of anomalous heat production in a hydrogen-loaded rod located in a hydrogen-pressurized chamber provides an important challenge for hypotheses and models on "cold fusion." The present author's hypothetical LANT Hypothesis ("Lattice Assisted Nuclear Transmutation"), a generalization of his earlier CAF Model ("Cold Alkali Fusion") and an attempt, like the latter, to unify the heavy water/excess heat effect (Fleischmann/Pons) and the light water excess heat effect, is applied to the Piantelli Effect hypothesized to be an example of light water "cold fusion." For the Piantelli Effect, LANT predicts which metals should be most effective. A theoretical basis for LANT is hypothesized to be the author's ECFM ("Electron Catalyzed Fusion Model").

ILLINOIS - ENERGY AMPLIFIER

G.H. Miley, E.G. Batyrbekov, H. Hora, J.U. Patel, J.W. Tompkins, R.K. Zich (Fusion Studies Lab., Univ. Illinois, Urbana), "Energy Amplifier with Multilayer Thin Film Electrodes," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 4 mms pages, 8 refs, 2 figs.

AUTHORS' ABSTRACT

The application of the "swimming electron layer" theory [1-4] to the design of multilayer thin film electrodes is discussed. A key advantage of this approach is that the enhanced reaction rate at interfaces between select metals is predicted to produce a high power density throughout the volume of the multilayers. Initial experimental studies of heat production by electrolysis, using a multilayer thin-film cathode specially designed on the basis of this theory, are presented.

INTRODUCTION

The excess heat during heavy or light water electrolysis using Pd cathode with LiOD (LiOH) electrolyte has been reported by several groups [5]. To date, heat production equal to as much as ten times the input energy has been reported from some of these experiments [6]. Many theoretical explanations have been offered to explain these exciting experimental results. Most of these theories explain the reaction as a quantum mechanical tunneling effect in the presence of a solid lattice. This does not, however, explain the high reaction rates observed in the experiments which are thought to involve surface or intersurface effects [7]. Thus the "swimming electron layer" theory was developed to address that issue [1-2]. This model is based on the effect of surface tension on

an exotic plasma at metallic interfaces, resulting in enhanced reaction rates.

In the present research, we have concentrated on the experimental investigation of excess heat production phenomena, using a unique multilayer electrode design that is predicted to increase reaction rates by increasing the electrode interface area and by using select metals with large Fermi-energy-level differences. Initial experimental studies of heat production by electrolysis, using a multilayer thin-film cathode specially designed on the basis of the "swimming electron layer" theory is described.

MINNESOTA - RESEARCH SUPPORT

Received in a fax from Dana Rotegard:

On April 30th, 1994, the delegates to the Democratic Farm Labor Party (DFL, a branch of the Democratic party) 5th (Minneapolis) congressional district convention adopted by a 60+% margin the following addition to the permanent DFL party platform:

"Be it resolved that the Minnesota DFL urge the appropriate legislative bodies to support cutting edge energy research at the University of Minnesota and the Mission of the Minnesota Cold Fusion Alliance." (Mission statement previously published in *Fusion Facts*.)

Variations of this resolution had been introduced in a number of precincts in Minneapolis in the March 1, 1994, caucuses and percolated up through the 61st Senate District conventions on March 20, 1994. This "plank" should be on the ballot for the full DFL state convention June 2-4, 1994. The Minnesota Cold Fusion Alliance will have a table for lobbying and live CF demonstrations off the main floor. The main business of the convention is nominating a candidate to run for the open U.S. Senate seat now held by the retiring Dave Durenberger and nominate candidates for Minnesota Governor and other statewide offices.

The platform is the grassroots policy document to which all elected DFL federal and state officials are responsible. The DFL was founded in 1944 by Hubert Humphrey, then a political science professor at St. Paul's MacAlester College. It was a union of the populist Farmer/Labor party that dominated Minnesota public life during the depression and WWII and the moribund Democratic party. The current ranking DFL elected official is U.S. Senator Dr. Paul D. Wellstone on the Senate Energy Committee.

Getting this addition made to the permanent state party platform will be an important advance for the cause of New Energy research and Cold Fusion.

MINNESOTA - CONFERENCE VIEWPOINT

Dana Rotegard (Irish Holdings Ltd.), "International Conference on Cold Fusion IV," *Future Trends*, vol 25, no 2, Mar.-Apr. 1994, p 3-4.

AUTHOR'S INTRODUCTION

The Electric Power Research Institute (EPRI) sponsored International Cold Fusion Conference IV, 5-9 Dec. 1993, had 260 attendees and 155 papers. EPRI is a private, international research consortium based in Palo Alto, California. Its members include most American utility companies including NSP of Minneapolis. EPRI funds cold fusion research at Stanford Research International in Menlo Park.

Minnesotans in attendance included Dr. Richard Oriani of the Materials Science Dept. of the University of Minnesota Institute of Technology, Dr. Rolf Engel, an M.D. who has assisted the U's research, Mark Hugo, a senior engineer with a local utility, and this author. Dr. Oriani keynoted the final Thursday full session of the materials aspects of cold fusion, and Mark Hugo presented a home lab replication of the original Fleischmann/Pons effect in the Wednesday night poster session.

AUTHOR'S CONCLUSIONS

I came away from this gathering with several impressions and judgements about the future of this field: the race to commercialize cold fusion is, at this point, between Toyota and ENECO. Both are well funded, focused, and having major talent on-staff. I had a close talk with Dr. Pons about how soon we could expect to see a "Mr. Fusion" prototype from the Toyota/IMRA labs outside Nice. All he would say was that, "We are further along than most people realize."

A whole new realm of low-energy nuclear science is opening up (or being rediscovered?) which has practical implications for nearly every level of human technology, but especially energy production and nuclear waste disposal.

The best pure science in this field is in academic labs in California, Russia, and in Sapporo, Hokkaido (North Japan). Funding and interest from the Japanese, Chinese, and Indian national nuclear establishments is increasing. Adequate corporate resources have been deployed in both the USA and Japan to assure early private commercialization.

The international consortium that organizes hot fusion research based in Switzerland (CERN) is increasingly alarmed by cold fusion activity and is escalating its press attacks. Critics in the media have targeted Dr. John Bockris from Texas A&M. ["Transmutation of Elements," Jerry Bishop (from Wall Street Journal), *FF*, vol 5, no 8, Feb. 1994, p 11; "Bockris Exonerated," Eugene Mallove, *FF*, vol 5, no 10, April 1994, p 4; Bockris' paper printed in same issue, p 11.] The planned BBC/CBC 3/21/94 broadcast should present a more accurate picture of cold fusion and its critics. A major intellectual and political shake-up of first world nuclear science is underway and 1994 should see much turmoil due to this epochal paradigm shift.

NEW JERSEY - PUT OUT OR SHUT DOWN
Courtesy of Samuel P. Faile

Christopher Anderson, "Fusion Research at the Crossroads," *Science*, vol 264, pp 648-651.

SUMMARY

The hot fusion boys have fallen on hard times. After 40 years of feeding the U.S. hot fusion program over $7.4 billion (overall), Congress is finally looking for a payback. As one congressional aide was quoted as saying, "It's time to put up or shut up." The legislators are asking for a focus on generating useful power, instead of the interminable research that has failed to generate any lasting or commercially useable results. Not to say that plasma research in worthless; any scientific knowledge is worthwhile. But the relative current usefulness is the problem, coupled with continued expenses and upgrades, that congress isn't going to continue funding.

Even after 10 December '93's record breaking short power burst of 6 million watts and its current successful experiment run, the Princeton Tokamak Fusion Test Reactor (TFTR) will be shut down in late 1994 or early 1995. This is just a part of the sweeping changes coming for hot fusion research, whose budgets have been shrinking steadily. The focus is changing from pure research to engineering development, from university centered to industry centered, becoming more international.

Obviously this upsets some important apple carts, leaving the hot fusion camp, from the DOE down, with some "major, major problems," in the words of Anne Davies, who runs DOE's fusion program. The withdrawal of hot fusion funding from non-Tokamak projects 4 years ago was the beginning of a series of changes that will not end before the turn of the century. Even if Princeton gets the funding for the new superconducting Tokamak Physics Experiment (TPX), with costs in the $700 million range, its size and staffing are going to continue to dwindle. And this in turn affects other projects.

The International Thermonuclear Experimental Reactor (ITER) has four equal sponsors (U.S., Japan, Russia, and the European Union) and a price tag of $8-10 billion. Its research is an extension of the results of the proposed TPX project among others, hopefully demonstrating continuous power production at high levels. The U.S. is tentatively committed both in manpower and money, but the hurdles are immense. The DOE is beginning to realize cooperation just may be much more expensive than domestic research, even in the short run. Due to these considerations in funding, facilities such as Princeton may have to cut their scientific staff as much as 20%. And even then, they aren't assured of having projects fully funded.

Since President Clinton reportedly supports ITER and fusion in general, where the money is coming from is a point for consideration. The "nightmarish complexity of international negotiations" concerning ITER is another big factor for turmoil. On both domestic and international fronts, the hot fusion contingent seems to be dabbling in anti-gravity: up in the air.

[Fusion Facts would like to suggest that some of these scientists should take the time to look into Cold Fusion and find out what is really going on there. They could then possibly change their research emphasis and apply for future research grants in this allied branch of science. --Ed.]

NEW MEXICO - SEARCH FOR NEUTRONS

D.G. Tuggle, T.N. Claytor and S.F. Taylor (Los Alamos Nat. Lab., NM), "Search for Neutrons from Deuterated Palladium Subject to High Electrical Currents," Proceedings of the Fourth International Conference on Cold Fusion, 1993, 10 pages, 7 refs, 7 figs.

AUTHORS' ABSTRACT

Tritium has been detected evolving from samples of deuterided palladium wires and powders subject to pulsed high voltage at Los Alamos. We wanted to measure whether these samples were emitting neutrons. The idea of pulsing current through the wires and powders was to drive the deuterium in and out by rapid electrical heating. With promising tritium results in hand, the experiments were prepared at Los Alamos, and then taken to BYU and run in our neutron detector located in a tunnel in Provo Canyon under 35 m of rock and dirt overburden. The neutron detector and sample setup are described. Results including total neutron counts, time distributions, and an indication of the energy distributions are discussed. The results do not provide compelling evidence of neutron production, but are not inconsistent with earlier measurements of neutrons and tritium. Difficulties in explaining the difference in tritium and neutron measurements are also discussed. Plans for further work are presented.

NEW YORK - ESSAY ON INSULT

Anne Eisenberg (teacher at Polytechnic Univ., Brooklyn, N.Y.), "The Art of the Scientific Insult," *Scientific American*, vol 270, no 5, June 1994, p 116.

SUMMARY

In this very interesting essay, there is reference to a swipe at cold fusion you may have missed:

"In the present age of litigation, scientists are usually more circumspect than Edison. [the example just previous] They consult attorneys before they talk, as did Steven E. Koonin, then chairman of the nuclear physics division of the American Physical Society, before speaking out on cold fusion at a meeting of that society in 1989. Advised to avoid the "F-word" (fraud), Koonin summed up Stanley Pons and Martin Fleischmann's cold fusion work with the deadly phrase "incompetence and perhaps delusion." Nathan S. Lewis, who also spoke, provided a list of pointed questions the press might want to ask Pons and Fleischmann, adding that if the two scientists were going to have publication by press conference, he would institute peer review by press conference."

UTAH - LITHIUM FISSION

Billings Brown (Salt Lake City, UT), "Lithium Fission to Fuse Deuterium?" Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 1 fig, 16 refs.

AUTHOR'S ABSTRACT

The excess enthalpy generated in some Pd/LiOD/D_2O electrochemical cells can be explained by invoking fission of the ^6Li followed by $T(D,n)\alpha$ in a chain reaction. Initiation occurs haphazardly by a cosmic ray. Initiation on demand might be accomplished by use of a commercial neutron source. Tritium and neutrons formed are largely utilized in maintaining the chain.

WASHINGTON D.C. - ICCF4 REPORT

Carol White (editor), "Cold Fusion 5 Years Later, Report on the 4th International Cold Fusion Conference," *21st Century Science & Technology*, vol 7, no 1, Spring 1994, pp 62-75.

A extremely thorough look at what happened, who spoke, what research was presented, and what conclusions were reached at this important conference. [FIC does have some copies of this issue of *21st Century* available for those who missed it.]

D. NEWS FROM ABROAD

BELARUS - UNDERSTANDING C.F.

V.A. Filimonov, V.A. Lishnevskii (Inst. Physicochem. Prob., Belarus St. Univ., Minsk), "Cold Fusion and Superfast Low-Temperature Chemical Processes in Solids: Common Basis for Understanding," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 7 pages, 16 refs, 1 fig, 1 table.

AUTHORS' ABSTRACT

It is obvious that cold nuclear fusion (CF) isn't similar to the thermonuclear "hot" fusion, etc. There are dozens of theoretical models but their abilities to describe CF qualitatively and quantitatively are poor. Even now, five years after the memorable Utah News Conference, it is not clear what CF is similar to. We claim that there are certain analogies between CF, on one hand, and various fast chemical reactions and physico-chemical processes in solids, on the other hand.

In both classes, the processes do not obey the exponential dependence on activation energy/temperature (Arrhenius's law for chemical reactions) and seem to be a similar but more gently sloped function. The most exciting case of solid state chemical processes under consideration is superfast (explosion-like) cryo-chemical reactions in frozen gas mixtures at phase transition temperatures as has been studied by one of us (V.A.L.) during 1968-1978. Rates of such reactions differ from extrapolated gas phase reaction rates of the same components by 10-10. [sic]

Both the first and second processes are likely to be described by the synergetic activation model [3]. After this consideration, one more type of cold fusion process, namely CF under chemical detonation of solids, is suggested.

BRITAIN - POWER FROM WATER REPORT

Harold Aspden, Energy Science Report No. 5, Power from Water: Cold Fusion: Part I, 1994, self-published report, includes 5 appendices containing relevent complete papers, each with its own references, etc.

AUTHOR'S INTRODUCTION

This Energy Science Report draws attention to the relevance of theoretical work pursued by the author over many years before the advent of the now well-known cold fusion discoveries reported from Utah in 1989.

It will be followed by a Cold Fusion: Part II Report, which will be more specifically directed to the author's patented technology which is emerging from this theoretical base.

The object of this Report is to show how the cold fusion scenario is destined to impact the whole field of fundamental physics, ranging from cosmology generally to the pursuit of energy generation techniques that are so fundamental that they can harness the still-latent and ever-present forces which brought about the creation of the universe.

These Energy Science Reports are all connected with that underlying groundwork in energy physics that the author has surveyed, driven by his interest in magnetism. Thus Energy Science Report No. 1 concerned "Power from Magnetism" and described three of the author's experiments which point the way forward to what many term `free energy'.

We are assuredly destined to see rapid strides in this technological field in the months and years ahead and we will enter the 21st century with a whole new vision of our energy future.

Only today, 15th April, 1994, as the author writes the first words of this report, a communication was received which draws attention to what is termed `UDT' - Unidirectional Transformer - which Paul Raymond Jensen of Santa Barbara, California claims to have invented. When readers of my Energy Science Report No. 1 become aware of Jensen's UDT and compare the transformer with that shown in Fig. 4 of that Report they will see how the solid-state free energy ferromagnetic device can now emerge on the free energy scene.

With the same prospect evolving on the magnetic reluctance motor using permanent magnets, as championed, for example, by New Zealander Robert G.

Adams, this author has planned an Energy Science Report concerned with motor technology. However, here also, whilst currently in the throes of experimentation, it has come to light that a researcher named Frank F. Potter has, for many years, been urging university professors in U.K. to work on the prospect of tapping the energy field that powers a magnet. He has challenged them to do the calculations on specific field coupling involving magnets to prove the case one way or the other.

In spite of the interest engendered, the usual establishment reserve about the so-called perpetual motion machine has kept the Potter issue private and not brought it into open forum. However, this author, having now heard of this, has responded to the challenge and has brought ahead of schedule "Energy Science Report No. 4: The Potter Debate" which was completed on 10th April, 1994. That Report provides a mathematical basis which will help critics of the free energy field to come to terms with what is now bound to disturb the world of those experts who know how to design electrical transformers and chokes but appear not to know how close they are to a new technology that can provide an energy bonanza.

The intervening Energy Science Reports Nos. 2 and 3 are captioned "Power from Ice," and relate to experimental work on a thermoelectric energy converter in which the author is involved as inventor. These Reports exist only in confidential draft form at this time but that technology does spill over into something that will be said about the cold fusion research, particularly in the Part II Report.

This introduction, therefore, explains how this text fits into the series of Energy Science Reports by which the author has chosen to update his published research findings prior to incorporation and consolidation in a more formal book form. The free energy scene is now evolving so rapidly that it is better if such a book is written once the author has possession of his own working free energy generator and can provide full test data on a practical system.

BRITAIN - JOINT EUROPEAN TORUS (JET)

Courtesy of Samuel P. Faile

Michael Cross (freelance journalist, London), "Europeans Launch Effort to Extend JET," *Science*, vol 264, p 649.

Abingdon, England, near Oxford, is the location of the world's biggest hot fusion reactor, the JET. Its scheduled closure in 1996 is not a sure thing, since it has just resumed experiments after a 2 year hiatus and because it is the nearest thing running to the proposed International Thermonuclear Energy Reactor (ITER). JET has been operating since 1993, to the tune of about $100 million per year, and has had more than modest success on the hot fusion research stage. Changes made to the JET during their recent remodification will be used in the design of ITER, pending their successful continued operation.

JET's problems are political and financial also. It is sponsored by 14 nations, the European Union, Sweden and Switzerland, and so must win over the European Council of Ministers and then the European Parliament. This may not be too easy, considering budget cuts and the European elections in June. In addition to that, a labor dispute concerning the disparity between the salaries and conditions of British and other European scientists on JET's staff, makes the outlook even bleaker. If the dispute is solved for now, the union involved will not rule out further strikes over related issues. Times are tough all over.

CHINA - 5 YEARS OF RESEARCH

Xing Zhong Li (Dept. Phys., Tsinghua Univ., Beijing), "Searching for Truth with High Expectations - 5 Year Studies on Cold Fusion in China," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 6 mms pages, 22 refs.

AUTHOR'S ABSTRACT

The "cold fusion" research in China is reviewed for the past five years. Emphasis is focused on the attempt to set up the Chinese-based reproducible experiments and the study on the key parameter which is supposed to control the reproducibility. Theoretical effort in understanding these phenomena is described as well.

CHINA - INTERNAL CONVERSION MECHANISM

Chuan-Zan Yu and Yi-Fang Chang (Dept. Phys., Yunnan Univ., Kunming), "Internal Conversion Mechanism in

Cold Fusion," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 3 mms pages, 6 refs.

AUTHORS' ABSTRACT

By using the internal conversion mechanism inside the nucleus, a possible solution for cold fusion is discussed. When a target nucleus reacts with the pellet nucleus (P^+, D^+, or T^+, etc.), an internal conversion electron emitted from the target nucleus is absorbed by the pellet nucleus, which becomes a neutral nucleus, so the Coulomb barrier of the target nucleus can be passed through easily, then a nuclear reaction happens. Since the internal conversion coefficient is $\alpha \propto Z^3$, it will be favorable to those heavy nuclei. The mechanism can solve the difficulty of the barrier penetration and a part of the fusion energy is transformed to the electromagnetic radiation. Further, some results may be detected by the experiments.

RUSSIA - ARC DISCHARGE STIMULATION

V.P. Afanaseyev, G.A. Dyuzhev, A.A. Logatchev, B.I. Tsirkel, S.M. Shkolnik. (A.F. Ioffe Phys.-Tech. Inst., RAS, St. Petersburg), N.M. Kazarinov, L.M. Solin (V.G. Khlopin Radium Inst., St. Petersburg), "On the Possibility of D-D Fusion Stimulation by a High-Current Arc Discharge in Gas-Filled Metal," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 6 mms pages, 9 refs, 4 figs.

AUTHORS' ABSTRACT

Beginning in 1989 there appeared many publications on the study of the so-called "cold nuclear fusion" (CNF). Some of the reported results affirm the existence of the CNF phenomena, while others deny it. Distinctive peculiarities of the experiments where the CNF has been observed include poor reproducibility, a sporadic character of the corresponding signals and the observation only under the non-equilibrium conditions in the metal-deuterium system. A generally accepted view on the CNF mechanism up to the present is absent. One widespread hypothesis is the assumption of an "accelerating" or "accelerating-fracture" mechanism, which actually suggests not a "cold" (as in μ-catalysis) but a "microscopically hot" fusion [1,2]. Of interest is the quest for the ways in which CNF initiation can be reproduced to observe the same reactions proceeding under definite conditions. In [3] the initiation of the nuclear reaction was carried out by impact destruction of a monocrystal LiD. In the present study we tried to initiate the CNF by means of a high-current low-voltage pulse arc discharge in a vacuum with palladium or titanium cathodes loaded with deuterium.

RUSSIA - ELEMENT-PHASE TRANSITIONS

A.M. Durachenko, E.Ya. Malinochka (Lenin All-Rus. Electrotech. Inst., Moscow), "Element-Phase Transitions with the Cold Nuclear Synthesis (CNS) Type Reactions in Metallic Alloys of Glass-Forming Systems," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 4 mms pages, 5 refs, 2 figs.

AUTHORS' ABSTRACT

In spite of great interest in the mechanisms of CNS (cold nuclear systems) and its ecological and material science application aspects, the information up to now about such reactions in metallic systems, beside deuterides, is contradictory. The present research is devoted to the analysis of the results of experiments, the foundation conditions and mechanisms of CNS reactions by the examples of metallic alloys of glass-forming systems. The choice of objects under investigation is connected with their nonergodic behavior in all interval of their existence. The last is the necessary condition for the observation of the CNS-reactions when there are strict volume and kinetic limitations on the phase-transition processes.

The investigation of the CNS reactions was carried out by using the glass-forming metallic alloys of "metal-metalloid" system Fe-Ni-P-C and "metal-metal" Cu-Zr system. The essential levels of volume and kinetic limitations, and the corresponding degree of non-equilibrium in phase transition were achieved by electro-impulse compactation of power samples with heating under pressure up to 10JPa.

RUSSIA - TRITIUM GENERATION

V.A. Romodanov, V.I. Savin, V.V. Elksnin (RI of SPA LUTCH, Podolsk, Moscow) and Ya.B. Skuratnik (SRPCI, Moscow), "Reproducibility of Tritium Generation from Nuclear Reactions in Condensed Media," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 4 mms pages, 3 tables.

AUTHORS' ABSTRACT

In this work, based on the proposed model, the results of practical activity in the nuclear reactions in condensed media (NRCM) field are given. We also specify the requirements for these reactions and for the selection of the materials to be used for the purpose of obtaining good reproducible results on tritium generation. In addition, we discuss the limits of the main parameters of the ion bombardment by using a glow discharge as an example.

The nuclear reactions in condensed media (NRCM) have been studied more in breadth rather than in depth. As a result, at present reliable results of investigations of practically all types do not much exceed the background. The powerful glow discharge system, that we have used for the similar NRCM investigation, have allowed us to obtain reliable data on tritium and neutron generation and element transmutation. One of the main features of our glow discharge system is the use of higher plasma-generating gas pressures which makes it relatively easy to obtain high flux densities for the deuterium ions bombarding the target sample (cathode).

RUSSIA - DEUTERIUM INTERACTION

Lev G. Sapogin (Dept. Phys., Technical Univ. (MADI), Moscow), "I. Deuterium Interaction in Unitary Quantum Theory," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 5 mms pages.

AUTHOR'S ABSTRACT

A unitary quantum theory (UQT) with a new perspective on the problem of particle interaction was developed in the author's papers [1-8]. According to this theory any elementary particle is a condensed group of some unitary field traveling in a packet of partial waves. Dispersion and nonlinear nature of the process spreads the wave packet periodically across space and assembles it; the envelope of the process happens to coincide with the de Broglie wave. The formalism of the theory amounts to the relativistically invariant system of 32 non-linear integral-differential equations from which relativistic quantum mechanics in the form of Dirac's equation follows. On the other hand Hamilton-Jacobi's relativistic mechanics follows strictly mathematically from the theory. We can solve this problem in a different way, though for this purpose we must sacrifice part of the ideology of the UQT, (refraining from dividing particles or wave packets). As a matter of fact we can do this [accept this restriction] if the energies are low when the interactions are elastic (though there are exceptions.) This paper will show that despite the roughness of the approach the results may be outstanding. Even when using this approximation the approach can provide outstanding results. The approximate solution of some of the UQT equations [7,8] gives the value of the electric charge together with the value of a fine structure constant; the data being in very good agreement with experimental results. This achievement allows one to give a heuristic description of a moving particle as a charge oscillation with the de Broglie wave frequency. In other words, in all macro experiments the effective value of a charge is measured, the oscillation being unnoticeable.

RUSSIA - COLD FUSION MECHANISM

Lev G. Sapogin (Dept. Phys., Tech. Univ. (MADI), Moscow), "II. On the Mechanism of Cold Nuclear Fusion," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 3 mms pages, 3 refs.

Let us try to consider from the viewpoint of Jones's the epoch-making experiments of Fleischmann and Pons' group and others. The results of these works can be briefly summarized as follows: the cold nuclear fusion (CNF) phenomenon exists but nobody knows how to explain it. In spite of the fact that the number of fantastic theories explaining CNF mechanisms increases, only a few believe them. Let us give some estimation of

these experiments. The minimum classical distance X_{clas}, at which deuteron nuclei may approach each other, equals X_{clas} = [unreadable in original] = 14(a)/E(eV). The deuteron nucleus size is about $4x10^{-12}$ cm, the nuclear force range is $4x10^{-13}$ cm (deuteron is very friable [sic]). The solution of equation 5 from (1) for these initial conditions X_0 = 3A and [unreadable in original] = 1.57079632 shows that nuclear reactions can occur with the energy more than 1 eV. If the phase approximates /2 (sic) the energy value may decrease by hundreds of times. A figure shows the dependence of X_{min} on the energy value in some fixed phases.

UKRAINE - LIGHTNING OBJECTS

P.I. Golubnichiy, V.M. Gromenko, Yu.M. Krutov, and N.I. Lysenko (East-Ukrainian St. Univ., Lugansk, Ukraine), "The Investigation of the Mechanism of Energy Accumulation in Long-Living Lightning Objects, Found after a Powerful Impulse Energy Release in Water," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 6 pages, 8 refs, 5 figs.

AUTHORS' ABSTRACT

The long-living lightning objects (LLO), formed after an electric discharge in water, were reported by the authors recently. In the process of researching the spectra of LLO and of the discharge plasma emission, the optical properties of the objects, their dynamics, their interaction with obstacles, the physical fields, and other related phenomena were studied. The whole set of obtained data indicates that the formation of LLO was unknown before our report of this phenomenon. This phenomenon couldn't be explained by such effects as luminescence of the electrode's material, combustion (reactions between hydrogen and oxygen), a cluster of ideal or non-ideal plasma or an association of excited molecules and atoms.

E. NON-FUSION NEWS

The field of new energy research has become much more noticed in the last decade, and is now seeming to advance faster than ever. As the technology is developed to utilize new sources of energy, areas of knowledge begin to overlap in unexpected ways. Just as cold fusion and sonoluminesence appear to have commonalities, other disciplines will discover new ways of using each other's advances. Being informed in similar fields and noticing parallels are good ways to keep research opening up into new areas for investigation.

BELARUS - ENERGY TRANSFER CONVERSION

A.V. Bulyga (Inst. Physico-Chem. Prob., Belarussian St. Univ., Minsk) and A.G. Shashkov (Luikov Heat & Mass Transfer Inst., Belarus Acad. Sci., Minsk), "The Description of Self-Oscillation Processes of Energy Transfer-Conversion as a Linear Approximation," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 5 mms pages, 14 refs.

AUTHORS' ABSTRACT

It is pointed out that the partial direct energy conversion transported by heat conduction in heavily non-equilibrium systems which are characterized by the unattainability of local thermodynamic equilibrium in them is possible. The methods of description of this complex process with the help of the bounds of the applicable law and the expediency of their combined use are emphasized. With heat conduction in non-equilibrium systems taken as an example, one can show the possibility of adequate substitution of the nonlinear heat transfer equation with a limited velocity for a linear differential equation of a higher order. This equation is based on a wider use of dynamic laws which gives the opportunity to describe the complex processes of energy transfer-conversion with the help of a simpler theory.

NEW MEXICO - FREE ENERGY CONVERSION

Courtesy of Don Kelly

P. Chowdhuri, T.W. Linton and J.A. Phillips (Los Alamos Nat. Lab., New Mexico), "A Rotating Flux Compressor for Energy Conversion," work in progress released by L.A.N.L.

The import of this paper is essentially the fact that it is `free-energy' research that comes from a government lab. To quote Don Kelly, also a free-energy researcher, "It now looks as if the various government agencies, i.e. DOE, DOD, DOC, etc., can no longer have it both ways. They cannot deny the reality of `free-energy' [and other

new sources of energy], proceed to prove its reality in a lab, and then expect us [researchers] all to sit still as if it's not happening." Credibility comes from government repeatability? It is a start.

AUTHORS' ABSTRACT

The rotating flux compressor (RFC) converts rotational kinetic energy into an electrical output pulse which would have higher energy than the electrical energy initially stored in the compressor. An RFC has been designed in which wedge-shaped rotor blades pass through the air gaps between successive turns of a solenoid, the stator. Magnetic flux is generated by pulsing the stator solenoids when the inductance is a maximum, i.e., when the flux fills the stator-solenoid volume. Connecting the solenoid across a load conserves the flux which is compressed within the small volume surrounding the stator periphery when the rotor blades cut into the free space between the stator plates, creating a minimum-inductance condition. The unique features of this design are: (1) no electrical connections (brushes) to the rotor; (2) no conventional windings; and (3) no maintenance. The device has been tested up to 5,000 rpm rotor speed. [There has been some indication of over-unity power generation, but this experiment is still in progress.]

JAPAN - N-MACHINE JPI-II

Shiuji Inomata, Ph.D. (Electrotechnical Lab. MITI, Ibaraki) and Yoshiyuki Mita, M.S. (Obayashi Corp, Eng. Dept., Nucl. Facil. Div. 3-5, Tokyo), "Design Considerations for Super-Conducting Magnet N-machine JPI-II," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 16 mms pages, 5 refs, 15 figs, 8 tables.

AUTHORS' ABSTRACT

The successful confirmation of the so-called incremental over-unity phenomena in the JPI-I N-machine (Inomata and Mita, 1993) has led the authors to design the system over-unity machine JPI-II, which is composed of a super-conducting magnet N-machine, and a super-conducting magnet Faraday motor. This combination on the same axle, after being started by the outside electrical power source, is expected to feed some 30 to 40 KW AC power. This power is in addition to the required cooling energy of the vaporized coolant which is essentially negligible if sufficient heat insulation is provided for the super-conducting coils. The N-machine theory, the experimental data (JPI-I) and the design details of the super-conducting magnet N-machine, JPI-II, will be described in this paper.

UTAH - HYDROGEN GENERATION

Igor V. Goryachev and Yan R. Kucherov (ENECO, Salt Lake City), "Utilization of Catalysis in Metals for Hydrogen Generation from Water Consuming Ambient Thermal Energy," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 7 mms pages, 3 figs.

ABSTRACT

Hydrogen is being recognized as ideal energy carrier for use both in power plants and as propeller fuel for automotive and other engines as well as utility fuel.

In the recent book titled "The Adoption of Hydrogen as a Universal Energy Source" the authors Admiral Sir Anthony Griffin of England, Professor M.A. Laughton, and Dr. K.B. Hindly state: "If the appropriate technology of hydrogen fracturing from water could be brought to an economically viable state, then it would offer an energy source of immense significance for many applications with all the advantages arising from abundance of primary resource and cleanliness of use".

Numerous processes have been proposed so far for separating water molecules into elemental hydrogen and oxygen components. Electrolysis is one of such processes that can be utilized for fracturing water into its hydrogen and oxygen components. Many inventors have been working since the early 70's on the hydrogen production technology which would allow vehicles, planes, boats, and more to run on any kind of water.

We have undertaken an attempt to solve this problem on a novel basis in order to provide hydrogen production in volumes significantly exceeding those volumes which are conventionally realized for the same amount of electrical energy consumed.

UKRAINE - ENERGY CONVERTER

L.P. Bulat, V.S. Zakordonets (Ternopil Mech. Eng. Inst., Ternopil), "Semiconductor Thermal-Mechanical Energy Converter," Cold Fusion Source Book, Proceedings of Minsk International Symposium on Cold Fusion and Advanced Energy Sources, 24-26 May 1994, 3 mms pages, 6 refs, 1 fig.

AUTHORS' ABSTRACT

Among unusual autonomous systems for conversion of energy, the most interesting is the conversion of low potential thermal energy into mechanical energy. That is why such sources of energy are practically inexhaustible and ecologically clean.

References describe thermoelectric motors (TEM) where an interactional principle of thermoelectric currents appearing in a conductor is used. The conductor can revolve on its axis in a magnetic field. However, because of low efficiency and some imperfection in construction, this kind of motors is not used. As comparative analysis has shown, the best prospect from the energetic point of view could be converters which make use of the advantages of short-circuited [3,4] thermoelectric generators (under small differences of temperatures 0T). We propose that a short-circuited thermoelectric converter of thermal energy into mechanical one can be produced.

F. LETTERS FROM OUR READERS

LETTER FROM DR. ASPDEN

Dear Hal,

THE TRITON FACTOR IN COLD FUSION

In your capacity as Editor of *New Energy News*, I sent you, earlier this month, my ENERGY SCIENCE REPORT NO. 4, which I completed on 10th April. Although that Report concerns the academic interest being shown in U.K. in a `free energy' research theme advocated by Frank F. Potter - one which resembles the Adams motor, in principle, but has a reciprocating movement - you will see from page 2 that I first heard about Potter when I was attending a conference in Cambridge in England to speak about the creation of the three hydrogen isotope nuclei: the proton, deuteron and triton.

Since my experimental research is progressing rapidly on the `free energy' magnetic theme, I have allowed the `Potter Debate' to take precedence by first writing that Report No. 4, but, so as not to neglect what I can offer on the `cold fusion' front, I have now completed ENERGY SCIENCE REPORT NO. 5 entitled `Power from Water: Cold Fusion: Part I'.

My belief is that the physics of cold fusion will never be understood until there is acceptance that these hydrogen nuclei have a close accompaniment of loosely-bound beta-particles. This allows an ongoing transmutation in Nature, one occurring all the time in water on Earth, determining the relative abundance of H^1, H^2 and H^3, the known parameters of which are all calculable from that theory.

In a deuterated metal, and possibly also where there are high current discharges in water, the free conduction electrons can get embroiled in that beta-particle system. Remember that beta-particles are of the electron family. This then must make it easier for those deuterons to become over-active in fusion or fission, meaning that, if we have artificially caused the abundance ratio to differ from its natural equilibrium value, so the recovery process, which means energy and charge redeployment, must escalate.

One wonders how many `cold fusion' experts know that by increasing the triton constituent in water in our body fluid and measuring how fast the isotope abundance ratio adjusts to normal levels one has a way of estimating the water content of our human body weight.

Can it be that, with water playing a primary role and cell transmutation being so important to medical science, the medical field is where we should start in thinking about the physics underlying `cold fusion'?

There is nothing to be gained by trying to placate the well established nuclear physicist by seeking to explain `cold fusion' from his or her `hot' point of view, built as it is on neutron activity in plasma at elevated temperature. The revolutionary route I have followed is to examine how it is that protons and deuterons are actually created in the first place, how they hold their

abundance ratio in steady equilibrium in a cold Earth environment and why it is that tritons are not stable but have a half-life of 12.2 years.

I commend this approach to those researching `cold fusion' theoretically, because one is here not trying to explain experimental findings for which the full facts have yet to clarify. One is, instead, seeking to explain the known and indisputable facts of the water mix of hydrogen isotopes in our Earth environment. With that explanation, if one then translates the findings into the metal host, where the protons, deuterons and tritons can sit as isolated ions in an electrical conductor, a situation indicating enhanced transmutation rates, so one can see a way forward that is immune from the dogma of those who only know the explosive side of nuclear power.

As my Report shows, much of what I have to say on the theory of this subject predates the announcement of the F&P `cold fusion' discovery and so cannot be argued as being a theory invented expressly to give credibility to what many physicists still choose to believe is a sinking venture.

The `Cold Fusion: Part I Report' is a 60 pp. text which includes three original papers of record elsewhere but not generally available in all university libraries. I can supply copies (air mail delivery) followed by later personal notification when Part II becomes available, in return for a $25 check drawn on a U.S. bank and payable to me personally or for £15, U.K. sterling drawn on a U.K. bank, the latter payable to `Sabberton Publications'.

Harold Aspden,
c/o Sabberton Publications
P.O. Box 35 Southampton
S016 7RB, England

LETTER FROM DON KELLY

Dear Hal,

It's a very rare event when a government agency comes along to support the Free Energy cause, as per the enclosed paper (see New Mexico, p 14) from Los Alamos National Lab!

The enclosed description of the "flux compressor" appears to be quite drab, until you get to page 663, and the graph, Fig. 7. Here we see a 2:1 o/u/o relationship, even though the output spikes are out-of-phase. I'm now urging Toby Grotz to make a presentation of this project work at Denver (International Symposium on New Energy, May 13-15), especially when it comes from a government lab.

There is another factor in this "flux compressor" design which is the transfer of the output with no brushes, contacts, etc., as noted in the conclusion.

It now looks as if the various government agencies, i.e. DOE, DOD, DOC, etc., can no longer have it both ways, they cannot now deny the reality of Free Energy, proceed to prove its reality in a lab, and then expect us all to sit still as if it's not happening!

Regards, Don Kelly

G. MEETINGS AND MISCELLANEOUS

SOCIETY FOR SCIENTIFIC EXPLORATION

The thirteenth Annual Meeting for the Society for Scientific Exploration will be held in Austin, Texas on 9-11 June 1994 at the Austin Sheraton Hotel. Their theme areas include Science and Anomalies (Fri.), Water and Memory (Sat.), and Alternative Energies (Thurs.). Scientists from the U.S. and Europe will be presenting their results on many facets of frontier science research. Among the participants will be Prof. John Bockris, Dr. Eugene Mallove, Prof. Robert Bush, Prof. Peter Graneau, Dr. Bernhard Haisch, Dr. Harold Puthoff, Dr. Emilio Del Giudice, and others.

Registration is $100, not including Banquet ($30), and may be sent to the Society for Scientific Exploration, to Charles R. Tolbert, Box 3818 University Station, Charlottesville, VA 22903. Hotel arrangements should be made directly with the hotel, phone: 512-480-8181 or FAX: 512-482-0660.

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