

# HYDROGEN GAS FROM VACUUM Part III

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## Foreword

"Extraordinary Results Reported by Reputable Scientists  
Continue to be Ignored by the Scientific Establishment."

I believe that the above headline is as appropriate now as it would have been in the time of Copernicus, when the establishment insisted on the Earth-centered universe.

In both cases, new discoveries required more and more complicated explanations, which were "understood" by fewer and fewer intelligent people, in order to retain incorrect basic assumptions.

As in earlier times, the scientific establishment will continue to ignore experimental results which do not conform with their basic assumptions, until their position becomes obviously absurd.

Suggestions of string theories, ten dimensions, etc. are symptoms of the problem. When the house of cards finally falls, *Infinite Energy* will deserve much of the credit.

I believe that discrediting the ether concept led directly to the current debacle. This paper proposes that the knowable universe is permeated with a concentrated matrix of protons and electrons (the ether?) and attempts to explain many physical phenomena on this basis.

Reprints of speeches which were digests of this paper and two other pertinent papers were included in *Infinite Energy*, No. 17.1

## Introduction

Part I<sup>2</sup> of this paper attempted to demonstrate that many experimenters have produced hydrogen gas in and from partial vacuum. Several experiments were described in which the author produced considerable quantities of hydrogen from such a vacuum. It was concluded that vacuum might be a matrix of the components of hydrogen: protons and electrons.

Part II<sup>3</sup> included a brief history of the ether concept. It attempted to show that a concentrated matrix of protons and electrons conforms to many of the ether suggestions of some of the great scientists of the past.

This paper (Part III), is highly speculative and should be considered as somewhere between pseudo science and science fiction. It is an attempt to explain various phenomena assuming such a matrix. Some portions of Part III may approach truth, while other portions may be fantasy.

## The Ether

The classical radius of the electron is  $3 \times 10^{-15}$  meters. This is about 1/1000th. of the radius of the hydrogen atom. The radius of the proton is believed to be the same order of magnitude as the radius of the electron<sup>4</sup>. Protons and electrons have opposite charges and attract each other. For this reason, one might expect a group of protons and electrons to form a matrix in which each electron is surrounded by protons, each proton is surrounded by electrons and the particles are effectively touching. This is analogous to common salt, in which each positive sodium ion is surrounded by negative chloride ions and each chloride ion is surrounded by sodium ions. This is true whether the salt is in the solid or the liquid state.

In either case, the proposed matrix would permeate the salt and be distorted in the vicinity of the charged ions. Light being carried by the matrix would be affected by the distortions.

Although salt is made up of positive and negative charges and appears to be neutrally charged, it has a dielectric constant. That is, it is able to store electrical energy when placed between the plates of a capacitor. The dielectric constant has to do with the polarizability of the medium between the plates of the capacitor. Polarizability, in turn, is a measure of the tendency of positive charges in the medium to move slightly toward the negative plate and negative charges in the medium to move toward the positive plate of the capacitor. This permits more electrons to be stored on the negative plate and removed from the positive plate at a given voltage.

If vacuum contained no charges, one might expect vacuum to have no dielectric constant and a capacitor containing only vacuum to be unable to store electric charge.

Maxwell's equations, which quite accurately predict reflectivity of electromagnetic radiation at interfaces between media, require that vacuum have a definite dielectric constant and a definite magnetic permeability. It is difficult (if not impossible) to understand how a void can have such properties. The proposed matrix of protons and electrons would be expected to be distorted when between opposite charged plates and, therefore, to have a definite dielectric constant.

Magnetic properties of materials are attributed to unpaired electrons which they contain. The proposed medium contains unpaired electrons and would be expected to have a magnetic permeability. A void would be expected to have no magnetic properties.

The mass of the electron and the mass of the proton are known. If one assumes the protons and electrons of vacuum are effectively touching and their radii are close to the classical radius of the electron, one may calculate the density of vacuum to be about one thirteenth the density of the nucleus of a heavy atom. This seems ridiculous, but let us examine the possibility further: An intelligent crab who had spent his life on the ocean floor would assume that sea water had no weight. He would consider the weight of a stone to be what we consider the weight of the stone less the weight of water it displaced. If there were no swimming creatures and ocean water had zero viscosity, he would have no reason to believe in water. If he was particularly intelligent, he might believe that sound was a "field" phenomenon (whatever that means). He would try to explain various other phenomena on the basis of these misconceptions.

## Bose-Einstein Condensation

The January 1982 issue of *Scientific American* contains an excellent article by I. F. Silvera and J. Walraven.<sup>5</sup> It discusses the possibility of atomic hydrogen forming a Bose-Einstein condensed gas at a temperature above absolute zero. In a perfect Bose-Einstein condensed gas all of the atoms are in the ground state (*i.e.* in a state of minimum energy at temperatures well above absolute zero). The article states that the temperature at which the condensed gas would be stable increases with the  $2/3$  power of the density. At the density proposed for the ether, the condensed gas would be stable to about  $10^{24}$  degrees Kelvin. That is, once formed, the medium would be quite stable.

The article points out that liquid helium (4) at temperatures below 2.18 degrees Kelvin has quite strange properties and may be Bose-Einstein condensed. It is a superfluid. That is, it appears

to have zero viscosity. Once set in motion in a sealed tube, it continues to flow indefinitely. It flows through densely packed powders as if they were not present.

The spaces between the atoms or molecules of any material are about a thousand times the radii of individual particles of the proposed matrix. Matter, then, is a very open sieve to such a matrix. A Bose-Einstein condensed combination of protons and electrons might be expected to have zero viscosity and present no friction to matter flowing through it. A force would be required to change the velocity of an object in the ether but, if there is no friction, the object would continue at the same velocity until another force was applied.

#### Missing Mass or Dark Matter

Scientists are searching for missing mass or dark matter required to explain the stability of galaxies. They calculate such a mass must be at least ninety times the mass they can see with their telescopes. Doesn't the proposed medium more than satisfy their requirements?

#### Star Formation

There is considerable evidence that hydrogen gas is being formed in various parts of the universe. The hydrogen gas may be pulled together by gravity until the agglomeration attains sufficient size, density and temperature to initiate a fusion reaction and turn the agglomeration of hydrogen into a star. Where does all this hydrogen come from? If experimenters can convert the ether into hydrogen in their laboratories, should one be surprised if nature performs the same conversion in deep space?

#### Mass and Velocity

Physics defines mass as the ratio of the force applied to the acceleration produced and assumes that mass is a constant. At velocities close to the speed of light, mass appears to increase with velocity. That is, as the velocity of an object approaches the speed of light, a greater force is required to give it a given acceleration. It is believed that as the velocity nears the speed of light, the force required nears infinity. Even at such high velocities no deceleration would be expected unless energy could somehow be transferred to the ether.

Dilantac suspensions have similar properties. Generally, they are very concentrated suspensions of certain tiny solid particles in low viscosity liquids. Their viscosities increase with the velocity of solids moving through them. A concentrated aqueous suspension of glass microballoons (1 to 10 microns in diameter) is a good example. When one slowly drops ones finger into the suspension, it appears to have a viscosity similar to that of water. When one pokes the finger at the surface of the suspension, it resists and feels like a solid. I have no doubt that one would break his finger if he poked the surface hard enough. Could the ether have similar properties? It seems to behave as a zero viscosity liquid to matter moving well below the speed of light but its properties approach those of a solid to matter which approaches the speed of light. If this is the case, electromagnetic radiation, which moves through the ether at the speed of light, must be a wave phenomenon. Even when moving at speeds close to that of light, objects would retain their velocity, unless there was a mechanism for them to transfer their energy to the matrix.

If one defined mass based on a standard kilogram weight at rest relative to the ether matrix, mass could not vary with velocity. The force required to accelerate the mass would simply increase as the mass approached the speed of light.

#### The Magnetic Field

In dealing with electromagnetic phenomena, scientists and engineers employ the concepts of electric and magnetic fields in

vacuum. That is, they assume that different parts of a vacuum have different properties when subjected to different electrical and magnetic forces. Can this be true if vacuum is a void? A medium of protons and electrons would be expected to be affected differently in the neighborhood of different electrical and magnetic forces.

When a direct current is passed through a coil of wire encircling an iron bar, the bar becomes a magnet. The current produces a magnetic field in its neighborhood. Could the moving electrons in the wire cause neighboring ether electrons to align, producing a magnetic field? The aligning ether electrons, in turn, might cause some of the unpaired electrons in the iron to align, giving the iron bar magnetic properties.

If a permanent bar magnet is moved into a coil, a direct current is produced in the coil. An electrical current is considered to be movement of electrons in the coil. Possibly the aligned electrons in the magnet cause some of the electrons in the wire to align and, in the process of aligning, each affected electron moves a very short distance. The overall effect is a current in the wire. As long as the magnet remains stationary in the coil, electrons effectively retain their orientation and there is no further current. As the magnet is removed (in the direction from which it entered) the oriented electrons in the wire return to their original orientations (on the average) and there is a temporary current in the opposite direction.

If a direct current is passed through an empty coil in a vacuum, a weak magnetic field is produced in the vacuum. This is easily explained if one assumes that the vacuum contains unpaired electrons, some of which are caused to orient by the oriented electrons in the current carrying coil.

A transformer consists of two separate coils on a common iron core. If an alternating current is passed through one of the coils, a continuing alternating magnetic field is produced in the iron core, causing a continuous alternating current in the other coil.

The hum on an AM radio in the vicinity of high tension wires carrying alternating current may be due to a similar effect. Some of the electrons in the medium may orient along with the current carrying electrons in the wire. These electrons may, in turn, cause some electrons in the antenna to orient and produce an alternating current in the antenna.

#### Electromagnetic Radiation

The above may bear a certain resemblance to electromagnetic energy being passed from one dipole antenna to another. In the case of the transformer, the transmitting agent is unpaired electrons in the iron. In the case of the dipole antennas, the transmitting agent may be the unpaired electrons of the ether.

Picture a metal rod attached to a signal generator set to produce an alternating current of such a frequency that the wave length (in vacuum) of the electromagnetic radiation produced is twice the length of the rod. At frequencies where electromagnetic radiation is produced, it is believed that current moves along the surface of the rod at the speed of light. This suggests that the effect is a wave phenomenon. Now, picture the rod immersed in the proposed ether. The current may be the result of a line of ether electrons along the surface of the rod orienting (a magnetic field?). As suggested above, such orientation would cause each affected ether electron to move toward one adjacent ether proton and away from another (an electric field?). Each affected electron may transfer its energy to a neighboring ether electron. The overall result may be a line of electromagnetic energy (photon?) moving through the ether in a plane defined by the length of the rod. If the ether can not absorb electromagnetic energy, the effect will travel through space until it encounters something which can absorb it (*i.e.* a similar rod parallel to

the transmitting antenna).

Some scientists picture photons as spherical. The following test indicates that this is unlikely: A foam polystyrene sheet, one face of which is covered with thin parallel aluminum wires one half centimeter apart, is inserted between polarizing transmitting and receiving horns operating at a wave length of two centimeters. When the sheet is perpendicular to a line connecting the centers of the horns, the amount of radiation which is transmitted depends on the orientation of the wires. If the wires are parallel to the electric field (equivalent to parallel to the rod of a dipole antenna), practically all of the radiation passes through the sheet. If the wires are perpendicular to the electric field, almost no radiation passes through the sheet. Perhaps photons may be considered as lines of electromagnetic energy moving through the ether. Each line contains ether electrons at their maximum orientation and displacement (for that frequency). The number of orienting electrons in the photon and the rate at which they are orienting depend on the event which produced the photon. The more photons of a given frequency in a given volume of ether, the greater the intensity of radiation at that frequency. The more rapid the orientation of the electrons, the higher the frequency of the radiation and the greater the extra energy of each orienting electron.

#### Planck's Constant

Planck's constant is the ratio of the energy of the radiation to the frequency of the radiation. It may actually be the ratio of the extra energy in a line of affected ether electrons (photon) to the frequency of the radiation and have to do with the inertia of an ether electron toward angular rotation. The following is an attempt to explain Planck's constant on this basis:

The extra energy on an activated matrix electron would be

$$E_e = 1/2 I_e \omega^2.$$

Where  $I_e$  = moment of inertia of the electron to that type of spin and  $\omega$  = the extra rate of rotation of an activated electron.

The energy of a photon would be

$$E_p = N_e 1/2 I_e \omega^2$$

where  $N_e$  = the number of activated electrons which make up the photon at any given instant. The extra rate of rotation of an activated electron would be expected to increase linearly with the frequency of radiation or,  $\omega = A f$  where  $A$  is a constant and  $f$  is the frequency. Then:

$$E_p = N_e 1/2 I_e A^2 f^2$$

$$\text{or } E_p = [1/2 I_e A^2] [N_e f] f$$

but we believe that  $E_p = h f$  where  $h$  = Planck's constant.

$$\text{Then } h = [1/2 I_e A^2] [N_e f]$$

This suggests that:

- 1)  $I_e$  is a constant, indicating that the dimension of an electron does not change as its rate of rotation varies.
- 2) The number of electrons involved in a photon at any given instant must be inversely proportional to the frequency of the radiation or  $h$  would not be a constant. This is expected, since the number of matrix electrons adjacent to a 1/2 wave antenna reduces linearly with the wave length and inversely with the frequency of the radiation.

#### Quantization of Energy Transfer

- 3) Since  $N_e$  is an integer, only specific quantities of energy can be transferred by the matrix. There are no fractional matrix electrons. As the frequency increases, the difference between possible energies increases.

I believe that the above observations agree with scientific observation.

Since an ether electron either is involved in transmitting ener-

gy or it is not, the proposed photon could transfer only energies which involve integer numbers of electrons. An event can occur only if the energy involved can be removed or supplied. The fewer electrons in a photon, the greater the energy difference between possible photons. This may explain the observed quantization of energy.

#### More on the Photon

Let us consider the production of electromagnetic energy from a half-wave antenna in more detail. Each rotating electron might be expected to transfer its rotational energy to a neighboring matrix electron. As pointed out above, this may result in an effect which is 1/2 wave length wide moving parallel to the antenna. When the current in the antenna changes direction, a similar effect would be produced but not necessarily in the same plane. The overall result could be energy passed through the matrix in packets.

Could such a packet of energy be what we call a photon? A half wave is efficient because the direction of the current changes just as the photon leaves the antenna.

#### The Dual Nature of Light

All of the electrons which are part of the photon at any instant are spinning at the same rate and in the same direction. In alternate photons, electrons are likely spinning in the opposite direction. At a given frequency, all activated electrons would have the same spin energy and all half wave length photons carrying a given frequency would have the same energy. The concentration of photons would decrease with distance from the antenna but the energy of each photon would remain the same.

If a photon near the antenna can produce a given photoelectric effect, a similar photon far from the antenna can cause the same effect. This leads to a simple explanation of the, so called, dual nature of light. That is, although light is a wave phenomenon, it can appear to be a particle phenomenon.

#### The Heisenberg Uncertainty Principle

The effect can be considered as a line crossing a checkerboard. Picture the lighter squares as ether electrons and the darker squares as ether protons. Energy from the first electron of a photon can just as readily pass its energy to either of two neighboring electrons. In three dimensions, there are still more matrix electrons with an equal chance of receiving the energy. Even if one knew the past history of the effect and which matrix electron had the extra energy at a given instant, one could not know to which neighboring matrix electron the energy would be passed. This may remind some physicists of the Heisenberg Uncertainty Principle.

#### Annihilation

If one calculates the energy produced when a positron and electron combine to lose all their mass and assumes that all of the energy is given off as a single photon, one obtains a wave length of  $12.1 \times 10^{-13}$  meters. If two photons were given off, photons having a wave length of about  $24.2 \times 10^{-13}$  meters would be produced. Scientists have found radiation of these two wave lengths under conditions where positrons would be expected to be combining with electrons. The proposed ether has a fine enough structure to carry such photons.

#### The Positron?

The above process is called annihilation because it is assumed that the positron and the electron involved combine to form nothing. Later in this paper, I will picture the electron as a disk or ring spinning about one of its diameters (much as a coin or a wedding ring spins on a table). If it also spins about its center and this spin contributes to its electrical charge, the only difference between a positron (which has the same weight as an elec-

tron but the opposite charge) and an electron may be the direction of this spin.

If an electron was flipped 180 degrees in the ether field, would it become an positron?

#### The Neutrino?

Combination of such a positron and electron might be expected to release considerable energy and result in a particle which has very little mass and is neutral in charge. Could the particle thus formed be the neutrino? It may be pertinent that electrons and positrons mysteriously appear in the presence of gamma photons. Could they result from absorption of the proper gamma radiation by a neutrino?

Recently, it has been reported that flashes of gamma radiation appear to be impinging on the Earth. Surprisingly, the concentration of flashes is about the same in the direction of the Milky Way (Earth's galaxy) as toward deeper space. Could the flashes be energy released from the formation of neutrinos from positrons and electrons in space? We would only note the combinations which happened to send off gamma photons in the direction of our detectors.

#### The Neutron?

The energy from our sun is believed to be the result of the fusion of hydrogen atoms to form helium atoms. The overall effect is the combination of four protons and four electrons to form an atom made up of two protons, two neutrons and two electrons. This suggests that a neutron may, somehow, be produced from a proton and an electron. The helium nucleus is much more dense than the proposed ether, which I have suggested is a matrix of effectively touching protons and electrons. If one pictures protons and electrons as hard spheres, the above statements are difficult to reconcile. If, however, one pictures the ether particles as disks or rings, which are spinning in such a way as to sweep out a spherical volume, the statements are compatible. The higher density of the helium nucleus could result from part or all of this spin being overcome by the mutual attraction of the particles and the energy produced being carried away by the ether as electromagnetic radiation. It is interesting that individual neutrons have half lives of about 12 minutes<sup>6</sup>. They decompose into protons and electrons. The helium nucleus is stable indefinitely. Could it be that the helium nucleus is four proton disks and two electron disks oriented in such a way as to form a stable arrangement? If so, other nuclei may be more complicated arrangements of protons and electrons and all atoms (and, therefore, all materials) may be made up only of the ingredients of the ether.

The proposed medium has considerable mass and would be attracted to other masses. The portion of the medium in the vicinity of the Earth would be expected to move with the Earth and spin with the Earth as do all the other masses near or on the Earth. If this is the case, the results of Michelson and Morley's ether drift experiments (referred to in Part II of this paper) would be expected.

#### Transmutation

Recent papers<sup>7,8</sup> give strong evidence that nuclear transformations take place under surprisingly mild conditions. Sir J.J. Thompson and others reached a similar conclusion based on experiments performed prior to 1930.<sup>9</sup>

The mass of a free neutron is  $1.67482 \times 10^{-27}$  kg, and the mass of a hydrogen atom is  $1.67343 \times 10^{-27}$  kg.<sup>10</sup> If, as suggested above, each is made up of a proton and electron, proper addition of energy may temporarily convert a hydrogen atom into a neutron. As noted above, a free neutron has a half life of 12 minutes but it is typically absorbed in less than  $10^{-3}$  seconds when passing through materials.<sup>6</sup> Absorbed as what?

Physicists believe that free neutrons have wave properties and

that the wave length of a free neutron is much too great for it to fit into a nucleus. I propose that a free neutron is too large to fit in the nucleus but if its proton and electron disks lose the spin that makes them appear spherical, a neutron can become part of the nucleus. Indeed, a nucleus may be the catalyst for the change. The overall result may be the formation of one or more new nuclei and the evolution of considerable energy.

The masses of the hydrogen atom and the neutron are similar but the energy difference is considerable. How could the energy needed to convert a hydrogen atom into a neutron be supplied?

Conversion of the ether at the cathode surface into hydrogen appears to require considerable energy. The reverse reaction would be expected to produce considerable energy in an extremely small volume. Perhaps in the presence of a high concentration of hydrogen atoms, the energy produced may convert a hydrogen atom into a neutron.

#### Astronomy

I have no clue as to whether the quantity of ether is finite. If it is finite, the knowable universe might be expected to be a sphere surrounded by void. The ether-void interface would be a perfect mirror and there would, likely, be no way of knowing whether observed radiation had been reflected from that interface. Perhaps, some of the radiation believed to be from great distances originated in our own galaxy and has been reflected back to us.

#### The Red Shift

Spectral lines in light from distant stars are shifted toward lower frequencies (*i.e.*, to lower energy). The greater the distance the light has traveled, the greater the shift in frequency. The shift is usually explained by assuming that the stars are moving away from us and the farther they are from us, the faster they are moving relative to the earth. Most astronomers conclude that the universe is expanding.

If one defines the size of the universe as the volume of the ether, expansion means an increase in the separation between ether particles or an increase in the number of ether particles. Either prospect seems unlikely. An alternate conclusion is that objects in space are, on the average, moving away from each other and filling more and more of the ether.

The shift of light to lower frequencies can be explained, just as readily, if one assumes that light slowly loses energy as it travels through the ether. A partial loss of energy can be equivalent to a decrease in frequency.

If, as suggested above, hydrogen is produced in space, the energy required may be removed from photons traveling through space. The hydrogen and other particles in space may remove energy from photons, producing a red shift. If this is the case, the universe is, likely, not expanding.

#### Particle Physics

Most of our information on the various particles of physics comes from particle accelerator experiments. Those who analyze the results of these experiments assume that the collisions they study take place in a void. If they actually take place in a matrix of protons and electrons, conclusions which have been drawn may be incorrect. The extremely short-lived particles detected may not have come from the atoms or particles being studied. They may merely be fleeting combinations of ether particles in the vicinity of the collisions.

#### Gravity

All particles attract one another. Mass is a measure of this attraction. In the case of charged particles, electrical attractive and repulsive forces are much stronger than mass forces. In uncharged matter and in ether, all charge forces are balanced, so mass forces predominate. Nuclei are denser than ether and are,

technology? How do we "decide on a future-based version of science?"

NASA says, "To begin the search for the solutions to make interstellar travel practical and affordable, it is necessary to search beyond current understanding—go back to the sciences from which technology emerges and search for further scientific advances which will lead to propulsion breakthroughs—the kind of breakthroughs that would make interstellar travel practical."<sup>6</sup>

NASA's goal is very specific, *i.e.* practical interstellar travel. I suggest the other breakthroughs that have been mentioned need nearly the same strategy: go back to the emergent science of the 19th century.

For the theoretical science base we need to return to the historical base and work toward the present, "to go back to the sciences from which technology emerges." If things are not going well now, go back to where they were doing well and work forward from that base. The transition from Faraday to Maxwell is where I started looking.<sup>7</sup>

A subset of science theory should address the problem of models that do not require a Ph.D. in mathematics. Ten years ago (1991), Edward Teller noticed, "Then (four decades ago), as now, Dr. Teller believes that illiteracy in sciences is an increasingly great danger to American Society, not only for our children but also for the growing adult population."<sup>8</sup>

As an example, Chris Hillman responded to a newsgroup question in December 1997: "Searching for 'physical models' for how gravity 'works' has pretty much fallen out of favor. The modern attitude is that all you should hope for is a mathematical model ('as simple as possible, but no simpler') which makes predictions which hold true to sufficient accuracy."<sup>9</sup>

For the alternate technology model, I suggest Vannevar Bush's model of 1940, as exemplified by the results that came out of the war effort and Bell Labs in the 1950's. Eugene Mallove, Sc.D., reports in *Infinite Energy Magazine* (1998), that "we would set up a Tinsley/Schwinger Foundation immediately to channel tens of millions of dollars into grants to worthy scientists and engineers who want to work on New Energy Technologies - several hundred such scientists each year for years to come."<sup>10</sup>

So, we have established the general problem. We are not where we want to be. We have action from a consumer-of-science group (NASA) publicly requesting an alternate path, we have laments from the establishment (Teller and Ehler) reporting in the establishment media undesirable conditions in mainstream science, and we have a major player in the non-mainstream-science area (Mallove) offering a service to society if there was a benefactor providing financial support (money).

To point out the serious need to do something different, I will bring this to your attention: there has been NO new inventions, based on current physics, in 90 years. The normal lead time for inventions after a scientific breakthrough is approximately 20 years. That means that we are 60 to 70 years late for reaping the benefits from 20th century physics.

What I am saying is we need a lot less "progress" and a lot more "success."

NASA says that "To address the most visionary end of this scale, the Marshall Space Flight Center sought out the work of this Lewis Research Center team. Marc G. Millis, the leader of the Lewis team, assembled a group of government, university, and industry researchers to propose the Breakthrough Propulsion Physics Program, as a part of this Advanced Space Transportation Program. In July 1996, this Breakthrough Propulsion Physics program was formally established."<sup>11</sup>

For circumventing limitations, NASA says, "... the pioneer-

ing work style seeks out new approaches for which there is little established knowledge. This requires confronting ignorance and creating new knowledge. It requires imagination to envision future possibilities and the intuition and subjective judgments to navigate in the absence of an established knowledge base. Because of the fledgling nature of pioneering work, there is seldom enough definition to allow accurate measures of potential benefits and risks. Agencies of large companies that are responsible for judiciously apportioning their personnel, facilities, and resources to make measurable progress on their highest priority, clear-cut goals, are not prepared to make judgments based on vague intuitions. It is understandably difficult for organizations to distinguish between the crazy ideas that will lead to breakthroughs, and the genuinely crazy ideas."<sup>12</sup>

What we need is a visionary (or several) who recognizes the clues presented here as a call to provide support for an alternate Plan of Action. Since Plan A has run out of gas (and imagination), we must look to the people with new/old ideas.

We need to support people that will go back and look at the work of the classical (19th century) physicists and pick up the trail from there.

So if you are willing and able to help, or know of someone that can help, please contact one (or more) of the people on the following list. Thank you very much (and our future generations will thank you also).

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