## THE PHYSICS OF PERPETUAL MOTION © HAROLD ASPDEN, 2004

# HAROLD ASPDEN Energy Science Ltd P.O. Box 35 Southampton SO16 7RB England

# **INTRODUCTION**

Although scientists in general regard the notion of perpetual motion as being too absurd to contemplate, if we exercise a little common sense based on what those same scientists teach, then perpetual motion is a reality. Once the science student learns that atoms consist of an electrically charged nucleus about which electrons are kept in sustained motion thanks to their interplay with the quantum underworld, that which determines their orbital distance from the nucleus and the angular momentum of their motion, he or she has been introduced to perpetual motion. Every atom whether in us or in surrounding matter embodies the proof that perpetual motion is a reality and stands as evidence showing that if those electrons shed energy as by radiation then somehow that enveloping quantum underworld that we used to call the aether has a way of feeding in energy as needed to sustain that motion. The aether is therefore an energy source and the challenge we face is how to tap into that source before we become wholly dependent upon rain and wind, the sources that provide hydroelectric power and power from windmills.

# **AN INVENTION**

An historical feature of patent law denies the grant of patents for what are seen by the Patent Examiner to be perpetual motion machines. Wheels that turn for no apparent reason are outlawed. Thus I was not surprised upon reading a short account of the Borman Permanent Magnet Motor that appeared at pp. 22-23 of the December 2003 issue of Space Energy Journal. It explains how, in 1954, an Electrical Engineer named Carl C. Lienau on a visit to California witnessed Lee Borman's motor in operation and was duly impressed. No electric power was supplied to drive the assembly, a set of 8 Alnico magnets mounted on a central rotor disc coupled by a non-slip pulley drive to two smaller rotor discs, each carrying four Alnico magnets, rotating at twice the speed in the opposite direction. The axes of the cylindrical magnets were parallel to the rotor axes and the arrangement was such that, at diametrically opposite positions near the rim of the central rotor disc, pairs of magnets would have a passing face-to-face encounter 8 times per revolution. This means that the powerful magnetic flux of the overlapping magnets would experience a substantial pulsation and, Alnico being a metal alloy that has the high conductivity property of metal, the spin of the magnets at their rotor frequency means that a radial EMF is induced in each magnet, thereby, owing to conduction, displacing a substantial measure of electric charge from the core of the magnet to its cylindrical surface. Then, because that flux pulsation implies pulsating charge deployment, this can be seen as a recipe for importing energy steadily from the aether, as I will explain below after quoting a few words from that account in Space Energy Journal:

"The machine continued to rotate for 15 minutes before Bowman terminated the operation and inspection by Mr. Lienau, who was much impressed and unable to account for the phenomenon. It is understood that Bowman had applied to patent the device, but was refused because the Patent Office considered it 'an unpatentable perpetual motion machine'. ..... At the time of the demonstration Bowman was 75 years old. He decided, according to one report to have his

device taken apart and after his death to have the parts buried in different locations in California."

This was a sad ending, bearing in mind that the Patent Office exists to aid the advance of technology for the benefit of mankind.

#### **AN OBSERVATION**

On the question of energy being fed to us from the aether, one must wonder why scientists have missed something that is so obvious once it is pointed out. Again it is thanks to our discovering that the hydrogen atom has a heavy positively charged nucleus around which a negatively charged electron has motion sustained by a quantum interplay with something hidden in space that we have insight into one of the great mysteries of Nature - the Sun's energy source.

Just because we discovered that the fusion of hydrogen atoms triggered, one assumes, by temperatures in excess of 100,000,000 degrees can release vast amounts of energy in forming heavier atoms, that does not mean that the Sun is a nuclear furnace. Surely, we should learn something from the teachings of quantum theory dating back some 97 years when Neils Bohr led us to accept that those electrons in hydrogen move in orbit at a radius of  $5.29 \times 10^{-11}$  cm about the proton nucleus. From this we know for sure that when gravity compacts hydrogen atoms tightly together to reach a mass density of 1.41 gm/cc, based on one atom per cube of side distance equal to the diameter of those orbits, then electrons of adjacent atoms will collide and there will be ionization and so energy radiation. That happens to be the average mass density of the Sun, a telling point! What it really tells us is that, because two free protons are pulled together by gravity at an acceleration rate that is 1836 (the proton/electron mass ratio) times the corresponding action between two electrons then so there will be more protons than electrons inside the body of the Sun, enough to set up a positive core charge and assure equilibrium and uniformity by balance of gravitation attraction and electrostatic repulsion within the body of the Sun.

So you see, we look at a Sun that radiates energy owing to those electrons colliding and sustaining its capacity to radiate thanks to the quantum underworld of space, the aether, replenishing the energy to get those electrons back into their Bohr quantized state of motion once they are recaptured by a free proton to reform the hydrogen atom. Really, before we pretend that the Sun owes its energy source to it being a 'fusion reactor', somehow controlled and not being an unstable hydrogen bomb, we should explain why it does not conform, as explained above in the introduction, with the same physics that governs the atoms that make up our body form.

Also, and bearing in mind that the Sun exhibits a magnetic moment as if it were itself a magnet, and further, owing to its ionization, is an electrically conductive medium, do we not see something in common as between the Borman perpetual motion machine and the Sun itself, namely the mystery of their sustained source of energy?

### **ANOTHER INVENTION**

This brings me to the main message of this contribution. Being professionally skilled in securing the grant of patents in the electro-technological field, I well know how to navigate a patent application to avoid confrontation such as posed by the 'perpetual motion machine objection'. One merely describes what one builds or aims to build and avoid assertion as to how it performs. Even with the Borman machine, set running by an initial manually applied torque, if given enough push to overcome the cogging action of the magnets, plus some, it can be

expected to run under its own inertia for a few moments. It could be argued that it demonstrates something useful, if only as an education tool in the realm of magnetism, and, being a machine and something one can manufacture, it is, if new and not obvious, proper subject matter for a patent. Once the patent is granted it surely could not then be invalidated on the basis that what it covers really is a machine that surprises us by running without power input. At least it would be a fascinating law case for an infringer who sells a workable perpetual motion machine to then challenge the validity of the patent on the basis that it should never have been granted because the law says perpetual motion is impossible.

Meanwhile, however, one must avoid the words 'perpetual motion' in making patent applications, but I have to admit failure in dealing with the U.S. Patent Office in a patent application of my own, one concerned with 'cold fusion'. I can but say that I erred in not realizing that the Patent Examiner involved would, in a sense, adopt his own version of the relevant law in regarding 'cold fusion' as synonymous with 'perpetual motion' and so 'unpatentable'. I should not have used the expression 'cold fusion' at a time when so much publicity and vested interest was involved in that realm of invention or, as I later found in securing grant of U.S. Patent No. ...., I should have avoided the problem by writing the specification as if it were directed at a applying technology concerned with thermoelectric power, rather than nuclear power so as to guide it into a different examining sector of the Patent Office.

In spite of all this I am currently seeking the grant of a patent in U.K. which is more open in declaring its technical foundation in spite of its objective aimed at tapping energy from the aether and, as the specification has now been published prior to it being subjected to what in U.K. we call 'substantive examination', I present below the relevant sections of its text. I refer to Patent Application GB 2390941 A as published on January 21<sup>st</sup> 2004, its initial filing date being March 9<sup>th</sup> 2002, some three months before I was due to speak on the subject at an Energy Symposium held in Berlin in June of that year.

As to the details of the invention claimed they can be inspected on the public record via ......., my purpose here being to present the case by which I hope to justify the prospects for tapping energy from the aether as a matter of physics. Essentially, the apparatus involved is a combination of two capacitors having concentric cylindrical electrodes such as one finds in Leyden jars. The two inner electrodes are connected together and to a high voltage d.c. source, whereas the two outer electrodes are connected through a primary winding of a high frequency transformer, the winding being earthed at its centre and the secondary winding of the transformer delivering power output. The aim of the circuit design is to set up oscillations of electric charge as between the two capacitors so as to exploit the effect of the aether in enhancing capacitance upon capacitor discharge in comparison with the regular capacitance that applies during the charging stage, whereby excess energy tapped from the aether is delivered as output. The underlying physical principle involved is the same as that exploited, unknowingly one assumes, by the above-mentioned Lee Borman but, knowingly of course, by Mother Nature in creating the remainder of this section which is now quoted verbatim from the Patent Specification:

This invention relates to a new and non-conventional means for the generation of electrical power. The energy source is the quantum underworld of space, the aether medium of the vacuum state, long recognized for its ability to allow the storage of electric field energy by reacting as its intrinsic charge is displaced, a process understood by physicists by reference to the research findings of Clerk Maxwell.

The current state of the art of electrical power generation does not recognize the possibility of ultimately tapping energy from the aether. Physics is taught on the basis that energy cannot be created or destroyed, inasmuch as it is conserved in all physical processes,

though it can be degraded in its usefulness, as by burning of hydrocarbons and conversion into heat which dissipates as by radiation into outer space. The aether as a source or as an absorber of energy is not deemed to serve any specific role in the physics of energy deployment, it having been dismissed from consideration by invoking the notion of 'field energy' without admitting the specific physical reality of something in space that accounts for the properties involved.

Theoretical physicists have, however, come to suspect that space devoid of matter is nevertheless a seething sea of activity subject to sporadic energy fluctuations which can create electron-positron pairs that exist momentarily before decaying back into their quantum underworld. Yet those same physicists deny all possibility that this energy resource of space itself can be exploited to provide useful power on a scale large enough to rival the role played by atomic power plants and fossil fuel generating installations.

Curiously, they do subscribe to the belief that one day they may be able to generate power on a viable commercial scale from fusion reactors by processes replicating what they believe sustains the Sun's heat output as hydrogen is transmuted into different atomic forms. In contrast with this rather elusive objective, it having proved beyond reach even after half a century of effort, this invention is based on success in generating power by replicating, not the Sun's onward energy decay, but rather a process akin to that by which the Sun itself was created from energy drawn from the enveloping aether medium.

The invention to be described below has emerged from an in-depth theoretical investigation into the properties of the aether and quite independently of any of the well known claims of published record which feature at the fringe of mainstream scientific literature. A recent and very well presented account of what amounts to a century of relevant energy history is the book 'The Search for Free Energy' by Keith Tutt, published in 2001 by Simon & Schuster (ISBN 0-684-86660-9). Here in this book is a comprehensive background of information concerning the energy devices of several researchers but the references to Nikola Tesla and T. Henry Moray are particularly pertinent to the subject of this invention and, though imposing a limitation on what can be legitimately claimed by this patent application, they serve also as a basis for a very important lesson to those engaging in this field of invention.

The lesson is that it is not sufficient to build and demonstrate something that works, if you do not fully understand why what you have devised actually does work. This is especially the case here where one is claiming a source of energy hitherto unknown. The invention to be described below will, in its broadest sense, appear to be quite similar to what Henry Moray is said to have demonstrated in showing that substantial electrical power could seemingly be drawn from the aether using a simple wire antenna strung between two poles. However, as will be seen, the antenna is not needed and the reason is that the energy source is not the radiant emission by some process involving radio wave propagation through the aether, but rather what can best be described as a phase-lock that couples the apparatus with the quantized motion of electric aether charge. There is a technique, to be described below, by which it is possible to exploit this phaselock condition by setting up an energy oscillation involving an apparatus component and its enveloping aether, the result being that energy in an immediately useful electrical form is imported into the apparatus from that aether.

The invention draws energy from the aether. To understand why the invention works one needs to understand the process by which the aether stores energy when an electric field is set up across the dielectric separating two capacitor plates. Moreover, one needs to understand the means by which the aether determines the quantum of action, specifically in the form of the Bohr magneton and the unit of angular momentum linked to Planck's constant.

It is not sufficient to imagine that electric charge in the aether is displaced from a rest position in a background continuum of opposite charge polarity to which it is attracted by a restoring force. Indeed, one must consider such action to be superimposed on a system of charge that has an underlying jitter motion, a quantum theory theme associated with the German physicist Heisenberg (Zitter-bewegung, which has the dictionary meaning 'Circular fluctuation movement, of spin'). When these two factors are combined, and the constraint added of there being a phase-lock which keeps that jitter motion in synchronism as between the charges, one finds that the physical theory involved has some very interesting consequences.

One of these consequences is that a spherical or cylindrical volume of aether, if spinning bodily about a central axis, will acquire a magnetic moment and set up an electric field inside that sphere or cylinder that is directed radially with respect to the spin axis. A summary analysis is presented in the Appendix to this specification, being in part a quotation from pages 31-33 of a booklet entitled 'The Theory of Gravitation' which the Applicant of this invention, Dr. Harold Aspden, authored in 1959 and duly published early in 1960.

The induction of electric charge by 'aether spin' was there shown to give a physical basis, both qualitative and quantitative, for the geomagnetic moment, the property of body Earth of setting up a magnetic field which created magnetic North and South poles at latitudes offset from the geographic poles, with the geomagnetic polar axis precessing slowly around the Earth's spin axis at a rate of several hundred years per revolution. By identifying its source as a rotation of a sphere of aether coextensive with body Earth, a volume of aether relative to which the Earth could have a component of motion even though the aether spin frequency is equal to that of the Earth, this axial tilt of some 17 degrees has a physical explanation. However, that aspect of the aether's role was not seen at the time as offering anything of promise technologically. The physics involved is nevertheless very relevant and directly pertinent to the experiments on which this invention is based, the findings of which would otherwise be quite baffling scientifically.

The applicant has, over the 40 or so years since the theory was first published, given a great deal of consideration to the theoretical implication that, just as aether spin can set up electric charge displacement inside coextensive matter, so the setting up of an electric field directed radially with respect to an axis can induce aether spin about that axis and with it develop angular momentum. Indeed, in the author's onward publications on this subject, as, for example, 'Physics Unified' published in 1980 by Sabberton Publications, P.O. Box 35, Southampton, England (ISBN 0 85056 0098), it is shown how the onset of the force of gravitation when a disordered aether consolidated into an orderly structured form caused protons to accrete more rapidly that electrons, owing to their higher mutual rate of gravitational acceleration. This created stars with an initial positive charge and the associated aether spin resulted in the stars acquiring their spin states and shedding matter which consolidated into planets which share the angular momentum so generated. The aether with its property of spin as related by its electric charge density according to the formula presented in the Appendix is therefore the key factor if we attempt to account for the creation of the stars which populate our universe.

That same formula, however, is equally valid if applied to the circumstance where a radial electric field is set up between the concentric cylindrical electrodes of a capacitor formed around a hollow dielectric cylinder. It tells us how fast the aether within that dielectric will spin. The related theoretical analysis shows that the quantum phase-lock feature of the aether imports from the external aether world an amount of energy equal to that supplied in setting up aether charge displacement, this imported energy being the dynamic energy corresponding to the acquired aether angular momentum. Guided by the argument concerning stellar creation one can see that this aether angular momentum can be transferred to matter and this process also has its energy transfer implications.

However, one can wonder what happens if, after setting up a radial electric field in that capacitor having concentric electrodes, the applied voltage is reduced, thereby withdrawing electric field energy from the capacitor. The imported energy present in kinetic energy form as a cylindrical shell of aether spins about the central axis of the capacitor will tend to sustain

electric charge displacement. To conserve energy, since the aether phase-lock cannot force the expulsion of energy by obliging the enveloping aether universe to keep in step, this energy can only be shed by augmenting that released electrostatically. In other words the net result is that an up and down fluctuation of the electric charge condition of the capacitor must give rise to an electric energy output that is, for the lowest dielectric constant (the permittivity of the vacuum), double the input in each cycle of change. One can then envisage an oscillation escalating in energy content powered almost wholly by aether input before one taps into that source of power to draw off energy at a rate consistent with stable operation.

This is, of course, a bewildering prediction that no physicist could imagine as being at all possible and yet, given the relevance of the theoretical argument involved, as applied to the phenomenon of geomagnetism and stellar creation, which are supported by strong evidence in that book 'Physics Unified', once such a notion is conceived it surely has to be put to the test by experiment.

This then, after decades of effort before this realization has dawned, is the basis on which the Applicant has only now come to appreciate the amazing technological possibilities that lie before us and is asserting by this patent specification that energy can in fact be tapped from the aether on a commercially viable scale.

Given that aether theory indicates that the special form of capacitor described above will, if subject to an oscillatory charge condition, generate an excess of energy, a question to consider is why such a phenomenon has not manifested itself in bench-type experiments performed in numerous electrical laboratories over the past one hundred years. Ostensibly the implication is that the capacitor will exhibit a negative resistance if used with an inductor as a component in what would become a self-resonating circuit. The answer to this may be that if such a phenomenon has occurred it has passed unnoticed or been regarded as spurious or noise-related, being something connected with radio interference etc. Alternatively, and as a function of the size and scale of the apparatus, the effect may have lacked an exciting trigger needed to overcome an energy threshold set by such factors as circuit contact resistance or contact potentials as well as the basic resistance of the inductors which, with the capacitors, form the resonant circuit.

Note that, even for a capacitor of quite large physical dimensions, having regard to its accommodation on top of a laboratory bench, the actual capacitance is necessarily quite small, being of the order of a billionth of a farad. This means that a capacitor charge fluctuation of the order of a volt would only imply energy fluctuations that are of the order of a billionth of a joule per cycle. The situation is quite different if, perchance a d.c. bias voltage of, say, 5,000 volts is applied to the capacitor. Then a small superimposed voltage fluctuation makes the related energy fluctuations very much larger with much greater prospect of an escalating self-resonance being triggered.

With this in mind the applicant perceived a possible prior art link with the experimental claims reported by Dr. Moray who, in 1929 is said (see pages 46-50 of the above-referenced recently-published book by Keith Tutt) to have powered six 100 watt light bulbs plus a standard 575 watt electric flat iron, merely by providing an earth connection and coupling an input lead to an overhead wire antenna. The apparatus involved had no other source of input power but included a special arrangement of capacitors and presumably some kind of high frequency inductor/transformer unit.

In spite of the attention given to the Moray demonstrations it seems that the secrets involved in the design and construction of the apparatus remain unknown and so cannot feature in the prior art of published record. Nor, indeed, can the anecdotal evidence of Moray's efforts serve to show that the subject invention has been put to prior use. The technology as to how to replicate the Moray device, always assuming it did perform as claimed, has therefore to be

rediscovered and, indeed, given that there is reference to his detectors incorporating some special substance which was referred to as 'Swedish stone', possibly the dielectric he used in his capacitor construction, there is a considerable mystery to unravel. More to the point, however, one is led to believe that Moray was implying that the energy he was tapping was radiant energy drawn from the aether, with that antenna featuring prominently because, without it being connected, the energy output fell to zero. However, as he surely may well himself have known, one just cannot draw power on such a scale from a simple overhead wire strung between two poles and so, without know how, he would have suspected that the energy inflow was coming into his capacitors via the action of that mystery substance he called 'Swedish Stone'.

The applicant here suggests that, based on an insight into the quantum workings of the aether medium as outlined above, the curious discovery demonstrated decades ago by Dr. Moray may have been attributable to setting up an oscillation in a resonant circuit including a concentric cylindrical electrode capacitor which had a voltage bias of the order of a thousand and more volts fed from a connection to that overhead antenna but drawing no significant current from that antenna other than enough to prime his capacitor with charge and stimulate a high frequency fluctuation which could initiate an escalating circuit oscillation tapping aether energy from the aether spin induced in the capacitor dielectric.

This is speculation, but it is sufficient to justify the Applicant's interest in constructing a capacitor and seeking to verify the assumptions just made.

Notwithstanding the reference above to Dr. Moray and the note below concerning Nikola Tesla, what it leads to is new invention by virtue of full disclosure of details of operation and manufacture of something hitherto unknown, the actual means by which to harness a source of energy latent in the aether medium and deemed by those familiar with state of the art knowledge to be beyond man's reach. Furthermore, there are supplementary inventive features of a special nature because of the way the subject invention exchanges energy between two capacitors and also because the optimization of aether power output from the capacitors is found to be a function of the orientation of the capacitor axes relative to the cosmic background owing to the Earth's rotation.

It seems here appropriate to mention something described by Nikola Tesla in his U.S. Patent No. 685,958. This was filed on 21 March 1901 and granted on 5 November 1901. It was entitled: 'Apparatus for the Utilization of Radiant Energy'. By installing two metal plates, one high above the ground and the other at ground level, with wires connecting the plates to separate electrodes of a capacitor, it was stated that the capacitor became charged to a very high potential, the energy input being that radiated to Earth from outer space. This may well have motivated the efforts of Henry Moray, but, so far as this Applicant's invention is concerned, no such input from overhead components is necessary as a quite different energy source is at work, namely the zero-point vacuum energy activity of our quantum underworld.

#### **APPENDIX**

Extract from pp. 30-31 of 'The Theory of Gravitation', 1960 printed publication by the Applicant. Note that the earlier pages explained that the aether comprises a system of electric particles in a cubic crystal-like distribution set in a uniform background continuum of opposite charge polarity, the particle system and the continuum both sharing a common circular orbital motion of radius r and the relative velocity between the particles and continuum being the speed of light.

#### The Effect of Aether Rotation

Consider what happens when a large volume of the aether is rotating bodily. The continuum and particle system rotate together. There will be no resultant magnetic moment

unless the particle distribution is disturbed. An evident disturbance is the centrifugal effect arising from aether rotation, but for the angular velocities of magnitude found in the solar system this effect is of negligible consequence. A much more important effect arises from the synchronizing interaction between particles in the rotating volume. This requires that the particles shall move about their neutral points at the same angular velocity. Thus if a particle is to have a velocity component V directed in the plane of its orbit, whilst retaining a mean velocity c/2, its speed along its orbit must be of the form c/2+Vcos $\theta$ , where  $\theta$  is the angle subtended by a line joining the particle and the centre of its orbit relative to a fixed reference datum in the inertial frame. To satisfy the above requirement the cntre of the orbit cannot be the neutral point. Evidently the particle is distant from this neutral point by  $r+(2Vr/c)\cos\theta$ . As V is much less than c the effect of this is that the particle is moving around a circular orbit whose centre has been displaced a distance 2Vr/c perpendicular to V in the plane of the orbit. If V is much less than j xcosA, where j is the angular velocity at which the aether rotates, x is the distance of the aether particle from the axis of rotation, and A is the angle of tilt of the axis to the common axial direction of the aether particle system, this displacement distance is 2(j xr/c)cosA. Consider a disc-like section of the rotating aether of radius x and unit thickness. Then, the effective charge displacement arising from the effective physical displacement of the particles is  $2\pi x\sigma(2\omega xr/c)\cos A$ . The disc has acquired a uniform charge density of  $4(\omega r\sigma/c)\cos A$ esu/cc. The polarity of this charge depends upon the direction of rotation of the aether.

When evaluated from the aether data already presented the charge density is found to be:  $4.781 \ \omega cosA \ esu/cc.$ 

This charge density represents a charge component which rotates with the aether.

## Calculation of the Geomagnetic Moment

For Earth,  $\omega$  is 7.26 10<sup>-5</sup> rad/sec and A is 23.5°. Thus the earth's charge density is, from the above expression, 0.000319 esu/cc. The rotation of this charge gives rise to a magnetic moment of:

## $(0.000319)(4\pi/15)\omega R^{5}/c$

where R is here the radius of the earth's aether. If R is greater than the earth radius  $(6.378 \ 10^8 \ cm)$  by a small factor k, the earth's theoretical magnetic moment becomes  $(1 + 5k)6.8 \ 10^{25}$  emu. This may be compared with the measured value of the earth's magnetic moment of  $8.06 \ 10^{25}$  emu.

An upper limit of 0.035 is imposed on k, suggesting the earth's aether terminates at a mean height of about 140 miles above the earth's surface. This suggests that the ionosphere may be a phenomenon arising at the aether boundary.

# [End of quotation]

**Footnote:** The term  $\sigma$  used in the above Appendix denotes charge density of the positive charge continuum which provides the background medium of the aether, this being neutralized overall by the discrete charge forms which define the structure assuring the synchronized state of motion that characterizes the aether's role as a regulator in quantum physics.

# FIFTY YEARS ON

Fifty years on from now it seems possible, as I see it, for the capacitor technology discussed above to be the world's primary source of electrical power. Each cubic foot of space in what I may describe as the Capacitor Power House could account for the generation of 10 kw of power delivered as 50,000 V d.c. output, based a charge oscillation frequency of the order of 100,000 Hz.

This, however, assumes that history will not repeat itself, bearing in mind that the year 2004 is fifty years on from that 1954 demonstration of Lee Borman's machine, which is now dead and buried and virtually forgotten, not to mention the ghost stories, for such they may seem, that keep our interest in Tesla and Moray alive.

For my part, I can only speak from my experience, based on the fifty years I have lived since being awarded my Ph.D. in that year 1954 for research on magnetism in connection with an energy loss anomaly that affects power transformers. By my research I discovered that I could trace factors affecting the anomaly and enhancing it so that as much as a factor of 6 represented the ratio of the actual loss to the value which electrical theory predicted as eddycurrent loss. I could not really fathom the true cause at the time, because, in proper scientific spirit I had been well educated into believing that perpetual motion is impossible and accepting the laws of thermodynamics. It did not occur to me that much of the heat I was generating in the iron cores I was using could actually be regenerating electricity in a way which defied the Carnot criterion. I now know that heat in its passage outwards through the magnetic field in a transformer core lamination was inducing an EMF which caused current to flow that was effective in augmenting the applied magnetizing field. In effect, under the specific control conditions I was using, this elevated the effective magnetic permeability of the core almost to the point of instability, making it so large that the eddy-currents induced were governed by an enormous amount of so-called 'skin effect', the flux density being greatly distorted across the core cross-section. This means excess loss - all because heat energy has a way of converting back into electricity, in defiance of the second law of thermodynamics.

30 years on from my early university research years I retired from my professional vocation in industry and resumed my academic research, having in those years been ever active on my hobby interest in theoretical physics, though lacking enlightenment as to what has now come to be known as 'free energy'.

However, I then engaged on certain experimental projects and found, with time, that I was drawn into the 'free energy' fray, magnetism being the route I was exploring, but by initial contact with others I was diverted into a thermodynamic project and distracted by the advent of cold fusion all about the same time 1988-1989, not to mention warm superconductivity, which I saw as another story of heat energy regenerating electricity and reaching a breakthrough threshold in enhancing current flow. It was that thermodynamic diversion that gave me the answer I needed to satisfy the hangover problem from my Ph.D. research, whereas the magnetic theme led me on to motor research, including a homopolar type of motor, the latter revealing an anomaly that has bearing upon something I wish to tell you that bears upon the capacitor power generation theme.

Now, much but not all of these efforts have been reported in a series of Energy Science Reports that I published. They all may be read by accessing my website <u>www.aspden.org</u> in which I plan to concentrate records of my work. There is even one such Report, No. 10 in the series, that may seem a misfit in the collection. It is entitled 'Cyclotron Resonance in Human Body Cells'. It bears upon the claims that overhead power lines can affect the health of those who live nearby, a theme which has now diverted into concern about the use of mobile phones. I mention it here because scientists find it hard to accept that 50Hz or 60 Hz electromagnetic radiation can be harmful, whereas they are open minded on high frequency radiation. The overhead power line concern can be met by increasing the use of d.c. transmission, seen anyway as more economic for high voltage transmission. So if, as I believe, the ultimate in power generation is the capacitor technology discussed above, then power houses operating with well-spaced power lines at a 100,000 Hz frequency might arouse concern for those who live nearby, whereas its d.c. conversion for transmission would overcome the more general concern.

In summary, therefore, there is much that I have to relate in my onward account of the topic raised here, essentially the details of two experiments that help to confirm what I have proposed, and I shall report on these in the near future.

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