

Chapter 13

NUCLEAR FUSION

When our energy resources in the form of coal, oil and natural gas are unable to sustain our needs, as is inevitable as the world's population continues to grow, we will no longer need to worry about the pollution and damage to our atmosphere caused by these forms of fuel. Instead, our worry will be how to power our industries and our agricultural machines besides transporting the food we need. The memory of vacations involving air travel will be the least of our concerns.

Today's worry, that of June 3, 2005, according to news reports here in U.K. is the problem of the damage to health caused by overhead electric power lines. We worry also about the environmental consequences of expanding our airports and the traffic congestion on our roads, all of which arise from consuming energy at an escalating rate.

So long as those of us who are old enough not to survive past the evil day find comfort with things as they are, we will do little if anything to face up to the reality that lies ahead.

Since our government has to be seen to do something on the alternative energy front, we pin our faith in windmills and just hope that one day a 21st century Don Quixote will come along, tilt his lance at a windmill, and conquer it by introducing us to a new and far better revolutionary something that will allow us to tap energy from that mysterious medium that I call the aether.

Meanwhile, the real experts of the power industry urge more emphasis on nuclear power, even though existing atomic power plants are in decay, ever hoping that nuclear fusion will one day prove possible. What then is 'nuclear fusion'? Scientists will tell you that

it is the energy source that powers the Sun and that nuclear fusion is the process that accounts for the hydrogen bomb, a proven weapon of enormous explosive power well exceeding that of the atomic bombs which, in World War II, destroyed Nagasaki and Hiroshima.

I have, in Part I of this work, made it quite clear that the Sun is not powered by a nuclear furnace. I well know that if the nuclei of hydrogen atoms fuse together, they will form heavier particles and shed a little mass, enough, according to the formula $E = Mc^2$, to account for the vast heat output of our Sun, if that were a possible scenario within the body of the Sun. However, the truth is that the Sun's energy comes from the aether itself by activity at the Sun's surface as hydrogen atoms pulled tightly together by gravitation experience collisions between their electrons, the result being ionization, radiation of energy and then recovery as the quantum underworld restores the lost energy in rehabilitating the electrons with their parent atoms.

The Sun is not a fusion reactor that is controlled in some unknown way so as avoid a mammoth explosion. Indeed, the only guiding light for nuclear fusion as the Sun's energy source, short of the suggestion by Jeans in *Nature*, **70**, 101, June 2, 1904 who first seeded the thought of mutual annihilation of oppositely charged particles converting mass into energy, is the explosive power of the hydrogen bomb. Surely wisdom then says that we should look elsewhere for our future source of power, if only for reasons of safety.

Wisdom also says that we should rethink some of the assumptions scientists have made in their rush to understand the secrets of the atom. For example, once they found by experiment that they could accelerate atoms to high speeds and, by their collision, produce a new particle which they called the 'neutron', they assumed this to be a neutral constituent of the atom and discounted their earlier ideas about atomic nuclei containing electrons. The neutron has no electric charge but, curiously, it does have a magnetic moment and so must comprise a combination of electric charge such that when it spins it will produce a magnetic field.

Given then that we know that all atoms other than hydrogen have atomic nuclei that have masses as if they contain N proton-sized nucleons but an electric charge as if they contain less than N protons, the proton being the single-nucleon nucleus of the hydrogen atom, atomic physicists jumped to the conclusion that neutrons accounted for the difference.

Where, however, is there any proof that this assumption is correct? The neutron seen in our experiments has a short lifetime. It decays in minutes to create a proton and an electron. Where is the theory that explains this decay? If the theory exists, does it tell us why neutrons in an atom do not decay? We seek a *Theory of Everything* but admit to knowing little or nothing relevant to this problem, even though our atomic physicists tell us that their research will lead to viable nuclear fusion reactors that can solve the world's future energy problems.

Well such theory does exist but it requires neutrons to decay once created whether or not they exist within the atom. This theory has been ignored by particle physicists. See my paper on the neutron lifetime, *Lettere al Nuovo Cimento*, **31**, 383-384, (1981). It has been ignored even though, by pure theory, it indicated a neutron lifetime of 898 seconds, a value which was exactly the median of the recommended value as listed in measurement data used by particle physicists. So I am able to say, with confidence, that there are no neutrons, as such, in atomic nuclei. All you have, other than aether charge, is protons and/or antiprotons combined with some leptons, particularly electrons and positrons.

So why has this any bearing upon nuclear fusion, the fusion of two protons to create a particle of mass a little less than the combined mass of two protons by shedding a particle or particle group having the positive electric charge e ? Why, given that I see no future in high energy nuclear fusion reactors as our ultimate power source, am I even discussing this subject in Part III of this work?

The reason is that there is mounting evidence of developments concerning what has come to be known as 'cold fusion', laboratory bench-type experiments that generate heat anomalously by a process

which utilizes heavy water, water the atoms of which have deuterons as their nuclei.

It was some few years before news of such findings became public that my theoretical endeavour to understand the structure of the proton, of the neutron and of the deuteron succeeded and culminated in the publication of my paper in *Hadronic Journal*, **9**, 129-136 (1986).

It shows that the deuteron has three states between which, subject to energy fluctuations attributable to the underlying quantum state of the aether, it flips constantly, spending a portion of the time in one or other of those states. The statistical factors governing the transitions allowed determination of the mass-energy of each state and the time apportionment of each state and so allowed the mass of the deuteron to be calculated in terms of proton mass. The result was in full agreement with measurement data. Moreover, since it was found that in one of these states the deuteron had split momentarily into a neutral core particle form with a positron as a satellite, it was seen that its core could not, for the one-seventh of the time that it spent in that state, contribute to the deuteron's magnetic moment. As a result I was able to calculate, by pure theory, the expected value of that magnetic moment in units of nuclear magnetons. My theory gave the result as 0.857439, whereas the measured value of record was 0.857438. So you can begin to understand why I am so sure of my ground in writing this account.

As to the fusion theme in relation to the proton, this comes into perspective when I note that the analysis showed that the deuteron mass-energy is at its highest during that one-seventh period, thanks to the quantum energy fluctuations involved. In contrast, as I had shown earlier in my published work, the proton, once created in its stable state as matter, flips between three states, one of very short duration where it has the bare form P discussed in Chapter 11, and two of very nearly equal duration where it comprises either a positive charge form P combined with an electron-positron charge pair or a negative charge form P combined with two positrons, one on either side of P . This picture of the three-state proton seemed relevant to the ideas being

mooted about the proton having a three-quark structure, but for my part the proton mass was definitely the energy quantum I had calculated leading to the 1975 publication mentioned in Chapter 10 and all that was involved to account for the electron and positron components was quantum energy fluctuations. The proton was, in the main, flipping between a slightly higher mass state and a slightly lower mass state in relation to P .

The point of interest then is that, though the mass norm of the proton is higher than one half of that of the deuteron, there are intervals of time when the proton has a mass a just a little greater than half that of the deuteron. Given a background of quantum energy fluctuations at the Compton electron frequency that account for electron-positron pair creation, this is a recipe for the creation of protons from the fission of deuterons. Then there is the converse situation, with intervals of time when a group of protons can convert into deuterons in their lowest energy state so that proton fusion has a statistical chance of occurrence leading to creation of deuterons.

It is then an easy task to work out the likely relative abundance of protons and deuterons that results from such a process. However, do note that the transmutation between protons and deuterons involves imbalance of one unit of electric charge. This means that the rate of transmutation is governed by external influences which somehow can take up the charge imbalance.

Proceeding on this theme, it was only after I heard about the cold fusion discovery of Martin Fleischmann and Stanley Pons that I actually did the relative abundance calculation. In its full detail it is of record in my 1994 publication *ENERGY SCIENCE REPORT No. 5* entitled *Power from Water: Cold Fusion..*

I there derived the formula:

$$H^1/H^2 = (S_1)^N(P_1)/(S_2)^n(P_2)$$

which gives the proton/deuteron abundance ratio predicted by my theory. Here S_1 is 2, the proton being in its least energy state half the time, S_2 is 7, the deuteron being in its highest energy state 1/7th of the time, P_1 is 18, P_2 is 16, N is 35 and n is 8, these values being calculated by considering interaction of collective groups of protons

and deuterons on the basis of conservation of energy, charge volume and charge parity.

This formula then gave that abundance ratio as $9(16/7)^8$, which is

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telling me that there should be 1491 deuterons for every ten million protons. I then found on page 65 of section 9 of a reference book, the 1967 second edition of the McGraw-Hill *Handbook of Physics* edited by Condon and Odishaw, that in every ten million hydrogen atoms there are 1492 nucleated by deuterons. This therefore is another really wonderful result that gives substance to this *Theory of Everything*.

Consider what it tells us. The water molecule comprises two hydrogen atoms plus one oxygen atom. The hydrogen atom may have a proton as its nucleus or a deuteron as its nucleus. This means that the oceans of the world contain vast numbers of protons and deuterons. Those transmutations as between protons and deuterons therefore must occur on an ongoing basis as a surface phenomenon on body Earth. Instead of looking at the Sun and seeing it as a nuclear fusion reactor, we should look instead at the sea and the clouds in the sky and imagine the ongoing nuclear fusion and nuclear fission taking place as between protons and deuterons. That raises the obvious question: "Does that guide us in our search for a new source of power?"

It may well because, as mentioned above, it needs something extraneous of an electrical nature to help things along, because electric charge is shed when two protons fuse together to create a deuteron.

We well know that water evaporates from the oceans and disperses through the atmosphere where it forms clouds that acquire electrical charge which periodically discharge in a flash of lightning? Here is the stimulus that can stir the reaction, if it so happens that the proton/deuteron abundance ratio has become different from the norm. On the other hand, assuming that abundance ratio is at that norm, can it be that an electrical discharge from a cloud having a charge polarity

that is, say, positive overall can trigger transmutations in one sense, deuteron to proton, whereas a negative discharge would trigger proton fusion to enhance the abundance of deuterons? I do not know the answer to this and am not a Benjamin Franklin ready to fly a kite in wet weather to see if I can induce heavy water to fall as rain.

However, heavy water is so-called because it consists, almost exclusively, of water molecules which include deuterons rather than protons and I do know that heavy water is manufactured as a by-product of electrolysis of normal water. I also know that Fleischmann and Pons in the experiments by which they discovered cold fusion, used electrolysis to inject deuterium ions into a palladium cathode. The anomalous phenomenon of excess heat generation resulted but the energy involved could not have come from a natural adjustment of the deuteron-proton abundance ratio. Instead we have to consider fusion of two deuterons resulting in two particles having the combined mass of four nucleons, accompanied by release of energy, there being two such possibilities. Either we create a proton plus a triton, the nucleus of tritium, the third isotope of hydrogen, or we create an isotope of helium He^3 plus a neutron.

It is known that the first such reaction releases energy amounting to 4 MeV, whereas the second delivers 3.3 MeV. Nuclear physicists, however, believe that such reactions cannot occur unless a very high temperature is involved. As Sir Harrie Massey puts it in the 1966 edition of his book *The New Age in Physics*:

“No nuclei can react with each other unless they possess sufficient energy of relative motion to overcome electrical repulsion between them. If one is concerned only with the study of nuclear reactions and not with their large scale generation, the required energy of relative motion can be obtained by using particle reactors. Far more energy must be expended in accelerating the particle beams than can be obtained from the reactions they initiate. The only other possibility is to use energy of random motion, in other words, heat energy. This can only be effective if the

mean energies of the particles are of the order of 1,000 eV, which means a temperature of 100,000,000 degrees C.”

So, you see, the Sun on this basis must have such a temperature at its core if it is kept alive by nuclear fusion and cold nuclear fusion is therefore impossible. Yet, I can say that Sir Harrie Massey did not understand how protons are created by energy drawn from the aether, as was proved in Part II of this work, and so he was unaware that the virtual muons of the aether could intrude in the nuclear energy game and play a part which triggers the cold fusion reaction. Nor did Sir Harrie Massey know that theoretical progress would reveal that the deuteron is constantly exchanging energy with other deuterons or the aether as it cycles between its three energy states.

However, nuclear reactors produce neutrons in the second stage of the deuteron fusion reaction mentioned above, and so the nuclear physicist tells us that without neutrons appearing in so-called cold fusion experiments, there is no evidence of a nuclear reaction having occurred. But, surely, if the reaction is occurring within a metal cathode, in palladium in the Fleischmann and Pons experiment, rather than in a particle accelerator, it might be that the deuteron fusion is restricted to the reaction creating protons and tritons, without there being any neutron production. Tritons have a mean lifetime of 12 years and so the heat developed would not come from triton decay but would be simply that generated by the release of 4 MeV per fusion reaction within the palladium cathode.

As to the triton, does our *Theory of Everything* tell us anything about that? Well, yes, it does. It can even show how to derive that 12 year lifetime, as is of record at pages 41-43 of my *ENERGY SCIENCE REPORT No. 5*, already mentioned. The paper there referenced was, I may mention, presented by me at a conference held by ANPA, the Alternative Natural Philosophy Association, in Cambridge, England, during 9-12 September 1993.

So how do we view the future from the point of view of generating energy using nuclear fusion? I first heard of the experimental attempts to tame the inward pinch action of an electrical

discharge in a reactor sufficiently to trigger a hot fusion reaction in 1958, some 47 years ago. Since then the vast sums of money spent on research in trying to develop a workable reactor have been wasted. The Sun worshippers, meaning the nuclear physicists who really do believe the Sun is a nuclear reactor, may just as well revert to the 1837 philosophy of the Reverend William Whewell that was mentioned in Chapter 1 of this work. As to cold fusion that is another matter, but little progress on that front is likely until physicists have a better grasp of the theory involved and can see what might be possible.

That problem I mentioned concerning the mystery as to why overhead power lines are proving to be a health hazard is another example of physicists having a problem with theory. They have based their understanding of electrical current interactions solely on experimental data arising from interactions where electric current invariably flows around a closed path through metal, meaning it is carried by electrons. Yet they apply the theory also to interactions where current may be conveyed not by electrons, but by heavy ions. Is there a difference? Well, just go and sit under an overhead power line which conveys electric current oscillating at 50 or 60 Hz, through spaced-apart cables, carrying current in opposite directions at any instant. You may feel nothing, but what about your body fluids, your blood for example?

Water dissociates naturally into positive and negative ions and so must your blood. Those ions are not electrons. They have a mass that is tens of thousands of times greater than the electron. They are in constant motion, if only that of thermal motion, and so, since our Earth has a magnetic field, they will move about in circular arcs between collisions as they react to oppose that magnetic field. Then consider the aggravation owing to the intrusion of the magnetic and electric pulsations that stem from that overhead power line. If you are a physicist, ask yourself what happens to an electron moving in a strong magnetic field if it is subjected to electrical pulsations at the particular frequency of the resulting orbital reaction and is to avoid collision with other electrons. There can be resonance leading to an escalating charge acceleration. Very high frequencies are needed in

that electron case owing to the strength of the controlling magnetic field required and the small mass of the electron. However, by theory, standard theory, you should then be able to show that the much greater ion mass, that of the hydronium ion or the hydroxyl ion present in aqueous solutions, and the much lower strength of the Earth's magnetic field, bring the resonance frequency into the 50 Hz - 60 Hz range. Might you then think that over exposure to the action of that overhead power line could, conceivably, set up unwanted activity or pressures across membranes in your body that might prove harmful?

You surely would, after reading about the medical evidence that proves the cancer risk is significantly higher for those who live quite close to such power lines.

However, this is a subject where physicists admit they are baffled, even though standard theory offers the answer, so it is no wonder physicists are even more baffled when it comes to finding a new way of generating the energy that flows through those power lines, the way forward depending upon theory that they have yet to embrace, *The Theory of Everything*.

Yes, one day they will solve the power line problem by transmitting high voltage power as d.c. current rather than a.c., but will they find the new energy resource, one that involves drawing power from the aether, before it is all too late?

For the record here I draw attention to my *ENERGY SCIENCE REPORT No. 10* entitled *CYCLOTRON RESONANCE IN HUMAN BODY CELLS* published in 1997 which is of record on my web site www.aspdn.org.

Chapter 14

FORCE ACTION OF THE AETHER

It was in 1966 that I first published my theory concerning electrodynamic action. The historical development of electrical theory is almost entirely founded on empirical evidence, the facts of experiment, from which the laws of electromagnetism that we now rely upon emerged. I say 'almost' because there is one very important aspect that lacks empirical support and relies solely on assumption.

I refer to the interaction force set up between two isolated electric charges owing to their motion. Forces are measured only where the interaction involves a closed circuital current flow around a wire circuit or its equivalent, the electron currents within the body of a magnet that set up a magnetic field.

As a result we have an electrodynamic force law that tells us that two current elements, such as those due to two moving electrons, will interact electromagnetically by setting up forces on one another that act at right angles to charge motion. This means that, in the general case where the charges are not both moving along the same straight line, their interaction forces will not be in balance. So our laws of physics tell us that, collectively, those two electrons are being pushed by something or are themselves pushing something, as otherwise they would defy the law of action and reaction that we have accepted since the time of Isaac Newton.

Where is the experiment that measures the force interaction between two, and only two, moving electric charges? A little consideration shows that the law of electrodynamic action that we use in the teaching of physics requires that imbalance of force to set up a turning couple such as would cause that pair of charges to develop a

spin motion about their mutual centre of gravity. Energy would need to flow in or be shed to sustain the force action and, since physicists have rejected the notion of the aether, that poses a mystery needing a solution.

So how did the great minds of science get around this problem? Well, Ampere simply decided that action must equal reaction and devised a law that satisfied that assumption, a law we never use as it has no practical application. Lorentz, three-quarters of a century later, devised the law we do use, one which, for integration of action of current flow around a complete closed circuit, assures force balance. Yet it is a law that still leaves us with the problem when applied to the interaction of two electric charges in motion.

I became interested in this theme when I tried to link the gravitational interaction of two electrons with electrodynamics, the fundamental challenge that is the aim of a so-called *Unified Field Theory*. I was open minded compared with my fellow physicists, because I believe the aether has a real existence and has a part to play in this scenario. Furthermore, I was aware that there was a long-standing unsolved problem as to why what are called 'cold-cathode' electric discharges result in an inexplicable reaction force on the cathode of the discharge tube. That force is proportional to the square of current and that tells us that it is an electrodynamic force. The feature here that differs from conventional electric circuit theory is that the current circuit involves electron current flow in wires external to the discharge tube, but a discharge current in the tube carried by positive ions that are much heavier than electrons.

To me this meant that charge mass plays a part in the electrodynamic interaction, even where current flow was circuital, provided current in one part of that closed circuit involved electron flow with current in the other part involving heavy ion flow. So, by 1966 I had worked out the new theory involved, accepting that the aether might intrude by asserting a force accounting for the imbalance indicated by such experiments but not accepting that such two-charge electrodynamic interaction could develop a turning couple on the system.

The result was a new law of electrodynamics that came within the empirical ambit of possible laws suggested Sir Edmund Whittaker, a Fellow of Trinity College, Cambridge. See page 87 of the first volume, *The Classical Theories*, of his *History of the Theories of the Aether and Electricity*, 1951 edition. The point of relevance was that the formulation included three terms, two of which in combination represented the Lorentz force law that we use, but the other term of which posed the problem. This third term, for electron interaction attributable to flow around a closed circuit, integrates to zero. However, my theory introduced a mass ratio factor, ion mass/electron mass, into the third term for the cold-cathode discharge application, and this does not integrate to zero for closed circuit current flow. I had therefore a physical explanation for the anomalous forces observed, but equally I was looking at a situation that must involve energy inflow from the aether.

I well knew that action has to equal reaction but this is subject to the rider 'for a complete system', whereas if the aether is part of that system there can be action and reaction involving force as between aether and matter.

In 1966 my interest in this was not 'energy' in the context of tapping energy from the aether, but rather one of understanding the nature of the force of gravity. My new law of electrodynamics with that mass ratio as unity but without closed circuit flow of electrical charge had the necessary form, it being an inverse square of distance force law acting directly between the interacting elements.

That is why the law is presented in a book entitled: *The Theory of Gravitation*. Also I did manage in 1969 to get this new law published in *The Journal of the Franklin Institute*, **287**, 179-183 under the title: *The Law of Electrodynamics*.

It did not miss my notice when, in 1978, researchers involving high energy plasma discharges found:

".. experimental evidence for an anomalous electron-ion energy transfer in a relativistic-electron-beam-heated plasma that is 1000 times faster than can be predicted by classical processes."

The authors, J. D. Sethian, D. A. Hammer and C. B. Wharton, *Physical Review Letters*, **40**, 451 (1978), suggested at the end of their paper ‘without particular justification’ that the anomalous factor might be the hydrogen ion to electron mass ratio. I find it very curious that those intent on finding a way to generate energy from controlled nuclear fusion triggered by powerful electrical discharges miss seeing an alternative way forward when anomalous cathode reaction forces on this scale are encountered. Something had to account for what was observed. Yet it was left unexplained, even though I had already drawn attention to the subject in that paper published in USA some nine years earlier.

Just remember that action is equal to reaction and so if electrons pushing on a heavy ion can assert a force that is far greater than the reaction force on the electrons there has to be something else contributing to the action. In so doing it will deliver energy. That something can only be the aether and the way I had arrived at the correct law of electrodynamic interaction between moving electric charges had been based on the assumption, not that the action and reaction as between those charges had to balance, but that interaction between any pair of charges could not, of itself, set up a turning couple. For interaction between moving charges of different masses, the latter assumption led to a law of electrodynamics that explained the force anomaly observed but also implied energy exchange as between the aether and those charges.

So it was indeed gratifying when, in due course, I was contacted by a Canadian scientist Paulo Correa who, in his experiments involving electrical discharges in a rarified gas, had discovered an anomalous gain in energy. His apparatus was delivering more energy output than was supplied as input, as verified by using two separate batteries of storage cells, one which received its charge from the discharge tube as the other fed charge to the tube. What was particularly gratifying was that Paulo Correa had seen that what I had published concerning the law of electrodynamics in that 1969 paper could explain this seemingly incredible discovery.

The Correa inventions were the subject of three U.S. patents, Nos. 5,416,391 and 5,449,989 issued in 1995 and No. 5,502,354 issued in 1996 and my *Journal of the Franklin Institute* paper was duly referenced.

Paulo and Alexandra Correa are to be commended for their successful research efforts on a project which defies explanation in terms of standard electrodynamic theory. Unlike prior researchers who have encountered anomalous results in the plasma discharge field and reported their findings, albeit with an expression of surprise, the Correa's have gone further and drawn attention to the link with the alternative theory that must apply.

Seeing this as clear evidence that energy can be tapped from the aether, I was so impressed that I then, in that year 1996, wrote *ENERGYSCIENCE REPORT No. 8: THE CORREA INVENTION* and this, along with most of my other publications, is now of record on my web site www.aspdn.org. Now, having regard to the overwhelming scientific attitude that is locked into the theme of thermonuclear fusion and its supposed relevance to the Sun's energy source, I feel I should say a little more about the aether in that context. I have tended to avoid speculation that does not lead to confirming evidence in the form of theoretical evaluation of physical constants as a check on the theory. However, given the incredible efforts of research effort aimed at detecting neutrino emission from the Sun, to confirm what scientists believe is its energy source, I must pose the suggestion that the aether has some interplay in absorbing solar radiation.

As I see the aether it does not comprise electric charge in electron form, but it does contain tau-particles, as gravitons, and muons. The electron in company with its antiparticle, the positron, can emerge from the aether by a process of creation which taps energy from the aether. Particle physicists refer to this as Q.E.D., quantum electrodynamics, but accept that electron-positron pair annihilation must follow unless there is an independent source of energy of the right amount. The photon energy quanta involved have the frequency

of the aether, namely the mass-energy of the electron or positron as divided by Planck's constant.

So when some of the energy of solar radiation is absorbed by matter here on body Earth it adopts a lower grade heat energy form but is eventually onwardly radiated into enveloping space in photon quanta that cannot of themselves induce the creation of electrons and positrons. Do keep in mind that analogy I presented in Chapter 8 concerning money transfer in the banking system. Energy as such may well be absorbed into the aether close to the radiating source but momentum imparted to the aether coupled with a frequency factor can convey a message that unlocks aether energy in the far distance.

Maybe momentum is the overriding factor once the frequency falls below a certain threshold and the regeneration process that then absorbs that momentum creates the particle form that is prevalent in the aether, namely that of virtual muons. This would mean that energy radiated into outer space finds itself intercepted and deployed in creating the very particles that, in turn, create the proton in company with the electron, thereby producing hydrogen.

In other words one could say that matter, the stars, our Earth and our very selves are mere catalysts by which energy shed by the aether is absorbed, given material form and then eventually dispersed by decay, only to materialize once again elsewhere in atomic form in a never ending cycle of evolution.

The challenge we face in accepting this scenario is that of finding a way in which to influence this aetherial process just a little so that, putting it rather bluntly, we intercept some of the energy and use it to advantage without waiting for it to materialize as atoms of high atomic mass that can be harnessed in a nuclear fission reactor or as atoms that form hydrocarbons and so petroleum or natural gas which we can then burn.

Plasma gas discharge technology may become the solution but there is the alternative prospect of so-called 'cold fusion' that warrants further mention, the subject of the next chapter.

Chapter 15

POWER FROM THE AETHER

There is now little time left in which we can be rescued from the impending energy crisis by the discovery of a new non-polluting source of energy. We look to our scientists and particularly those expert in physics to seek and find the answer. This is not a time for amusement and the shaking of one's head when confronted by the claims of the would-be pioneers who struggle to find what might prove to be the 'breakthrough'.

I can but point my finger at the aether as a source of energy, well knowing that this will evoke a smile from those who bow to the mathematical four-space doctrine of Albert Einstein and so cannot see the aether as something real.

But I can point my finger particularly at two properties of the aether which I see as emerging in experimental efforts by those few who risk ridicule for going in search of what is now called 'free energy'.

A good summary starting point for readers interested in such efforts is the 2001 book *The Search for Free Energy* by Keith Tutt (published by Simon & Schuster). It includes an introductory commentary by Sir Arthur C. Clarke, who is quoted on the back cover as saying:

"I do not believe any unbiased reader will put down this book without feeling that something strange is happening at the fringes of physics; exactly the same thing happened just a century ago, when a new and totally unexpected source of energy was discovered."

Clarke referred here to Becquerel's 1896 fogged photographic plate discovery which heralded radioactivity and was destined to lead to nuclear power. However, the 'strange' activity in today's frame of

reference is far from being comparable with the situation a century ago. Today's scientists rely on their research projects being very heavily funded by the governments of the nations to which they belong and there is powerful resistance to the suggestion that there might be a new and alternative energy path to follow.

Just read what Keith Tutt has to say about the discovery by Stanley Pons and Martin Fleischmann concerning 'cold fusion' and the reaction of Eugene Mallove upon witnessing how M.I.T. scientists responded to protect their vested research interests. It is extremely sad that Mallove, such an enthusiastic pioneer interested in the 'free energy' theme, has been murdered since that book was written.

Read also what Keith Tutt has to say about U.S. government interests being asserted to revoke an already granted U.S. patent. The patent which concerned a new method of generating energy, seen as linked to cold fusion, had been granted because 'it met the criteria that it is new, useful and non-obvious, and was fully disclosed as to how it works'. Yet someone with influence had asserted it involved 'perpetual motion' and, that being heresy and by definition impossible, so the powers that be were quick to declare the patent (U.S. Patent No. 6,024,935) needed reevaluation and so grant should be withdrawn.

Imagine therefore the task of obtaining grant of a U.S. Patent that dares to claim a method of tapping energy from the aether, an aether outlawed by Albert Einstein and so deemed to be nonexistent.

Dare one then remind the scientific world that the President of the United States is composed of numerous perpetual motion machines, since each atom in his body has electrons in perpetual motion about their atomic nuclei? All I am saying is that it is the quantum underworld we call the aether that provides the energy needed to sustain that motion and so it is a viable technological objective to research and duly patent methods of borrowing energy from that omnipresent aether that we all inhabit.

Now what are those aether properties to which I point my finger? One is the property I see at work when a star is created and is caused to spin about its axis. Gravity pulls the hydrogen atoms into

contact. They ionize and the free protons sense gravity in stronger measure than do the electrons in relation to their electric charge and so what results within the body of the star is a radially directed electric field. It is that of a positive core charge enveloped in a concentric negative surface charge.

Although energy deployment within the aether governs the electrodynamic action between two moving electric charges it cannot develop a turning couple effective on those charges, whereas a radial electric field from a core system of charge can induce rotation. This causes electric displacement in the aether itself and this affects the underlying quantized motion (Heisenberg jitter) of the quons in the aether, which, to conserve synchronism with the motion of adjacent quons, must then rotate bodily as a group about the axis to which that electric field is radial. This imports energy from enveloping aether owing to the inter-quon phase lock, energy which cannot be returned if the electric field were to subside, unless, that is, the star is ruptured as in a supernova event.

However, the message is one which says: "Focus attention on technology which involves setting up an electric field inducing aether charge displacement radial from an axis appropriately orientated in space."

Then look at those diagrams and photographs pertaining to the free energy generators of the Methernitha community in Switzerland, the scientists of which are withholding the secret of their operation. Keith Tutt devotes the whole of his 30 page Chapter 5 to this one subject. One sees a Wimshurst-type machine for separating positive and negative electric charge and what can best be described as high voltage capacitors having Leyden jar configuration for storing that electric charge. A high voltage set up between concentric cylindrical electrodes is surely replicating the radial electric field conditions that exists within stars. No doubt this induces aether spin and so energy inflow. Somehow those Methernitha scientists have contrived to stimulate an oscillatory condition that imports energy at a steady rate, whereas in the case of a star the action is a one-off event. Maybe they have incorporated some feature in their apparatus which triggers its

operation and they do not understand precisely how it functions and so are being more secretive as a result.

Consider also what Keith Tutt tells us in his Chapter 4 under the title *The N-Machine - Michael Faraday's Mysterious Legacy*. Several researchers have claimed to have evidence of excess power generation when spinning metal rotors having a magnetic field directed along their spin axis. Some use rotating magnets and others use an iron rotor within a current-carrying concentric winding to produce the magnetic field. Here again, there is charge displacement radially with respect to axis of spin, but the mystery prevails in how to sustain the occasional anomalous 'over-unity' energy performance seen in such systems. Again, somehow one has to contend with the need for a feature that can trigger and then sustain onward pulsations so as to have a steady inflow of energy from the aether spin induced.

Even I, as already mentioned, in my own research pursuits involving the rapid rotation of magnets about their axis of magnetization, have found anomalous inertial effects that point to aether sharing the spin involved. The physical orientation of the spin axis is a factor affecting operation.

Our long term future energy salvation may well depend upon the serious undertaking of government sponsored research in this field, remembering also the efforts of Nikola Tesla, the subject of Keith Tutt's Chapter 2. Such research is far more important than embarking on projects based firmly on the false notion that our Sun is powered by nuclear fusion. It would be research founded on the correct notion as to how stars are created by the aether shedding energy both by matter creation and imparting spin motion.

However, in the shorter term, an interim, if not alternative, solution is in sight, this being the other property of the aether to which I point my finger, namely the vacuum energy fluctuations arising from the aether's virtual muon activity. Government sponsored research must be directed at understanding the aether and its activity in creating protons and deuterons and bringing about their fusion in shedding energy whilst forming particles of greater mass.

Let us seek to understand what underlies the messages we already have from the ‘cold fusion’ scenario. We then come back to the physics by which the proton is created from the merger of virtual muons.

I have already, in Chapter 13 of this work, explained that my interest in the cold fusion theme led me, in 1994, to publish my theory accounting for the relative abundance of the hydrogen isotope H_1 (proton) and the hydrogen isotope H_2 (deuteron). As there mentioned, it appeared in my *ENERGY SCIENCE REPORT No. 5* which was entitled *Power from Water: Cold Fusion*. In Appendix C of that publication I included the text of the paper I had read at a conference in Cambridge during 9-12 September 1993.

Now, I must not underestimate the importance of something that featured in that paper, and so I repeat it here. I had introduced the subject by referring to an item of mine published in the American Institute of Physics journal *Physics Today*, **37**, p. 15 (1984), long before the announcement of the Fleischmann-Pons cold fusion discovery.

There I drew attention to the P and Q scenario where a proton of energy P was attracted to an oppositely-charged partner of smaller energy Q . If each has a charge e bounded by a sphere of radius determined by the Thomson charge formula, the total energy of the P and Q charges in surface contact is:

$$P + Q - 3PQ/2(P+Q)$$

The term preceded by the minus sign is the binding energy involved and for this to be a maximum, P and Q must have a certain relationship. This is when $1 + Q/P$ is the square root of $3/2$. The reader may then verify that with P as 1836 the value of Q is 413, the latter being the combined energy of two virtual muons, that is two mu-mesons, given that we are here using electron mass-energy units.

Accordingly, when I came to write about cold fusion involving union between pairs of protons owing to bombardment by virtual muons in the ongoing energy activity of the aether, I was able to report in the following words quoted from that Cambridge text:

“The algorithm which the reader may keep in mind in the analysis which follows is the curious mathematical fact that $4Q$, meaning four mu-meson pairs, if combined with the energy released by creating two $(P:Q)$ systems from two bare P components will be exactly that needed to create a new proton or antiproton P .

To prove this write:

$$P = 4Q + 3PQ/(P + Q) - 2Q$$

and then rearrange this algebraically as:

$$P(P + Q) = 2Q(P + Q) + 3PQ$$

$$\text{or: } 3P^2 = 2P^2 + 4PQ + 2Q^2 = 2(P + Q)^2$$

which is the above relationship between P and Q as calculated from minimization of energy potential.

It follows, therefore, that if a particle containing two P nucleons is bombarded by the mu-meson vacuum energy background there is a condition where 8 mu-mesons will create a third P . This is tantamount to a fusion process occurring at room temperature which adds a nucleon to a deuteron.”

Note also that in that *Physics Today* account I drew attention to the fact that the energy represented by the $(P:Q)$ combination is exactly half that of the heavy lepton, the tau-particle, so one might wonder if the creation of two $(P:Q)$ systems can capture an electron or positron to create such a tau-particle or four such systems might become a tau lepton pair.

All this amounts to is the recognition that the aether is ever active in effort to create protons and in then encouraging them to combine with muons to develop other particle forms, subject to energy being conserved, but on a limited scale set by statistical factors.

Cold fusion is not forbidden and, in water, given the existence of ions in the form of protons and deuterons, with statistical factors influencing their abundance ratio, but subject to extraneous electrical

action, we may see a way in which to tap the aether's vast energy resource.

For example, suppose we put ordinary water in an electrolytic cell between a cathode and an anode, with the voltage difference being less than is needed to trigger electrolysis. There will be some ionic dissociation and so the positive ions will migrate towards the cathode. The cathode might then absorb a proton into its metal structure. Should there be an adjacent cell which shares the same electrode but has a second electrode at a lower voltage, maybe that proton will emerge to find itself part of a positive ion in that adjacent cell. So, assuming that deuterons are less inclined to penetrate through that cathode of the first cell, we will find the water in the adjacent cells changing in composition. One cell will decrease in its proton/deuteron abundance whilst the other cell increases in its proton/deuteron abundance. Then, given the presence of a suitable catalyst, there will be forces at work by which the aether seeks to recover the natural abundance condition, a process involving cold fusion.

Maybe this will import heat energy drawn from the muon activity of the aether, notwithstanding the fact that the process is at room temperature. It is only by experiment that such possibilities can be explored but we should not declare such speculation as impossible owing to having categorized nuclear fusion as confined to the realm of catastrophic explosions and very high temperature.

So when I read what Keith Tutt has to say in his book about the research of Stanley Pons and Martin Fleischmann using heavy water in their cells, about Dr. James A. Patterson's cell which operates on ordinary water, and then about Randell Mills and what is referred to as *Blacklight's Power Struggle*, I can but be hopeful that there are prospects for our energy future.

Prospects, however, which can only be realised once particle physicists who think they know all that one needs to know about nuclear power and seek only to create Big Bang sounds in their particle colliders, wake up to their ignorance. They do not understand quantum theory sufficiently to be able to derive from first principle

theory the value they measure as Planck's constant or its dimensionless formulation as the fine-structure constant. They do not know how to derive G , the constant of gravitation, in terms of the charge/mass ratio of the electron by pure theory. They do not know how Mother Nature creates the proton and determines the proton/electron mass ratio. Yet all these feature in *The Theory of Everything* presented in this brief account, an account which explains how stars are created and how our Sun is powered by an energy source other than nuclear fusion.

Certainly, as I further stress in the next chapter, there is no wisdom in giving more and more government funding to advance the research interests of nuclear physicists until those physicists study what is said in these pages and, if they can with any justification, have disproved this case for restoring belief in a real aether medium.

Chapter 16

POWER FROM WISDOM

The Theory of Everything will not of itself solve the energy problems that the future will bring. It needs wisdom and the exercise of common sense. Scientists and those in government who sponsor research by investing enormous sums of money to fund projects pertaining to space exploration, high energy particle colliders and fusion reactors aimed at replicating the Sun's heat source need to heed what *The Theory of Everything* is saying.

It says that to understand gravitation, how the stars were created and how the smallest particles of matter were created, as well as the power source that feeds the Sun, is just a matter of deciphering the coded messages that are already of record from past experiments.

In the immediate future the priority for investment of research funding should be directed specifically at finding the best way of harnessing alternative energy resources, guided by the one certain fact that emerges from *The Theory of Everything*, namely that that source is the omnipresent quantum underworld, the aether.

The 'aether' is a reality we cannot ignore. It is not, as a modern dictionary declares, merely 'a substance formerly believed to fill all space and to be responsible for transmitting electromagnetic waves'. It is, as an older dictionary, one I had in 1939 when at school, describes as the 'subtle elastic fluid permeating space and filling interstices between particles of air and other matter'. That fluid, in trying itself to expand owing to self-repulsive electrostatic force action, is what pushes those particles together and so accounts for the phenomenon of gravitation. But that fluid also sustains the quantum jitter motion of those particles and thereby is a source of

energy, one that powers our Sun, as was explained in Part I of this work.

The 'Golden Experiment' mentioned in that Part I was a landmark experiment along the pathway towards our understanding of the factors which govern the creation of our universe. Nobel Laureate Blackett expected the experiment to confirm the hypothesis that matter of higher than normal mass density, when rotating, produces a magnetic field as if it contains a higher than normal measure of electric charge dependent upon G , the constant of gravitation. When the experiment gave a null result, Blackett did not see what that meant, namely that the aether itself has a hand in this and the aether itself is not more concentrated within that block of gold that he used.

I really referred to that experiment to make the point that a 'null' finding in an experiment does not rule out the existence of a real aether, but can point to its very existence. The 'null' outcome of the famous Michelson-Morley experiment was deemed by physicists as disproving the existence of the aether. Yet it merely proved that a structured component of the aether is dragged along by the Earth's matter, but the aether, being a kind of electrical fluid crystal composition, has a way of avoiding imbalance and so a momentum problem. As to how it does this I can but speculate. The quons, in their quantum jitter motion, move at the speed c of light in circular orbits relative to the graviton-cum-continuum system. Their speed in the inertial frame is $c/2$ and so, upon crashing into quons at the forward boundary of an aether region in motion, they may well be freed from their cubic lattice formation and seek to relocate in that lattice by travelling at speed $c/2$ through the lattice to its rearward boundaries where lattice sites are freed by quon separation.

The proof that the aether exists lies in the success of our being able to derive the precise values of the main constants of physics by analysis of aether structure. However, physicists are ever sceptical, particularly if acceptance means having to alter course and admit that one's past efforts have been somewhat futile. Therefore, we will have

to await the dawn when further proof comes from generating our power needs by tapping energy from the aether itself.

I hope that what has already been recorded in this work will help those who take up the challenge to look for the best ways of tapping energy from the omnipresent aether. Hopefully those advising governments as to the funding of such projects will give this subject particular attention.

However, for the interest of the general reader, I wish now to devote the remainder of this chapter to a cynical insight into what I see as a dying struggle to preserve the notion that the Sun is powered by a nuclear furnace.

My source of reference is an up-to-date account written by Dave Wark of the Imperial College in London and the Rutherford Appleton Laboratory here in U.K. It appears in the June 2005 issue of *Physics World*, the monthly journal for members of the U.K. Institute of Physics.

It ends with the words:

“Neutrino mass is important in our understanding of the universe as a whole, and, furthermore neutrinos may have generated all the matter of which we are made. Not a bad pay-off for a tank of cleaning fluid and some wonky backgrounds in a proton-decay experiment.”

This is the wisdom on which our future depends! Dave Wark sees neutrinos as holding the secret to nearly everything and yet I have not included the neutrino in my foregoing account of *The Theory of Everything!*

I claim that no one, not even Dave Wark, really knows what a neutrino is. It was invented as a book keeping exercise in keeping the balance of energy and momentum in certain particle reactions, especially those involving electrons, muons and taons, the key players in my aether theory. There were discrepancies and the accountants who had to ensure the accounts were in balance had not been told about the aether. So the books were ‘cooked’ as physicists invented a ‘ghost’ particle, the neutrino, to account for the loss of momentum and energy in certain particle transmutations. Indeed Dave Wark’s

article is entitled: *Neutrinos: Ghosts of Matter*. That book keeping exercise did not recognize the existence of the aether and the possibility that it might have some interplay with matter, either in exerting or absorbing force or in supplying or absorbing energy.

Neutrinos seem not to have any mass and yet they are quanta of energy that supposedly travel through matter at the high speed of light with only the occasional encounter. If they exist as particles, they are elusive and hard to detect.

My belief is that when physicists talk about neutrinos they are really, but unwittingly, talking about the aether. So look at the first sentence of that statement quoted above and rephrase it by substituting a reference to aether to replace the neutrino. It then reads:

“The aether is important in our understanding of the universe as a whole, and, furthermore the aether may have generated all the matter of which we are made.”

Yes, it is the aether that is the ‘ghost’ world, and, yes, it is possible for the aether to exert forces on matter and transfer energy to matter as well as absorbing energy shed by matter. Do you really think that the energy radiated by all the stars in the universe, energy radiated for countless billions of years, all goes nowhere as it journeys to outer space? Surely, it is absorbed by the aether and this energy input upsets the equilibrium of the aether and so the energy is duly shed by the creation of matter as protons, electrons and their anti-particles.

Now look at Dave Wark’s second sentence in the final paragraph quoted above. What does he mean when he talks about ‘a tank of cleaning fluid’?

Well, let us turn to the beginning of Dave Wark’s article. He tells us the universe began with a Big Bang 13.7 billion years ago and expanded into the cosmos we see today. But there is a problem. ‘The universe is dominated by matter and contains very little antimatter. The laws of physics do allow energy to be converted into matter, but require that almost equal quantities of antimatter are produced in the process’. He then states that ‘it is now becoming clear that the answer

to this puzzle could come from a very unexpected quarter; the behaviour of neutrinos’.

Apparently in the 1930s researchers noted that energy seemed to disappear when one atomic nucleus decayed into another nucleus plus an electron. So ‘Wolfgang Pauli hit upon a “desperate remedy” to explain the situation’ - he invented the neutrino!

A few paragraphs later Wark tells us that:

“For decades astronomers had thought that the most likely power source for the Sun and other stars was thermonuclear fusion, but no direct proof was available.”

“In the 1960s, while other particle physicists were investigating all the newly discovered particles, Ray Davis at the Brookhaven National Laboratory in the US was pursuing the idea of using neutrinos as a probe. In the basic fusion reactions in the Sun, four protons are converted into a helium-4 nucleus, emitting two positrons and two electron neutrinos in the process. These neutrinos have a wide range of energies and vast numbers of them escape from the Sun without interacting with anything, hurtling towards the Earth at close to the speed of light.”

So, here was a ‘desperate remedy’ giving stimulus to an ‘idea’, the idea of Ray Davis being to ‘assemble a large mass of some target atom that will very occasionally undergo a nuclear reaction triggered by a solar neutrino’. The target was an isotope of chlorine ‘which Davis managed to obtain at an acceptable cost in the form of 600,000 litres of cleaning fluid’.

Then comes the statement:

“The first results of this audacious experiment were announced in 1968, and surprised almost everyone. Davis’ team only detected about 30% of the neutrinos predicted by the best solar models available, namely those developed by Bahcall and colleagues.”

This did not deter these experts who really knew that the Sun had to be a nuclear fusion reactor operating at temperature of 100 million or so degrees. Indeed, we are then told that some twenty years later another experiment, the Kamiokande experiment in Japan, confirmed Davis' results. This led to the award of the 2002 Nobel Prize in Physics, shared between Davis and Masatoshi Koshiba of the University of Tokyo. This latter experiment involved several thousand tons of pure water in a deep tank underground, but the measured flux of neutrinos was still much lower than expected and so ideas were needed as to how to account for the discrepancy.

Given then the assumption that neither the solar model nor the experiments were at fault, there just had to be some more 'cooking of the books' to ease the worry and have a satisfying answer. The solution proposed was, quoting again from Dave Wark's article:

“that neutrinos may change from one flavour to another on their journey from the Sun to the Earth. Since the existing experiments were predominantly sensitive to electron neutrinos, rather than muon or tau neutrinos, this could explain why we only detect about a third of the solar neutrinos.”

Then one reads:

“But there was one big problem with this neutrino-oscillation idea: it requires that neutrinos have mass, which they do not in the Standard Model.”

Keep in mind that this all depends anyway upon the basic assumption that the Sun is powered by thermonuclear reactions at the very centre of its core, a mere unwarranted assumption, one that (as I say again) can be easily contradicted by the fact that close to the Sun's surface gravity squeezes hydrogen atoms so close together that some electrons and protons are freed owing to ionization. The mutual gravitational attraction of free protons ensures that within the Sun there is enough positive charge to balance, by its mutual electrostatic repulsion, any further compaction owing to the force of gravity. The Sun just cannot be much different in its central core, either in

temperature or mass density, than it is near its surface, as was discussed in Part I of this work.

However much neutrinos in transit through space might change in flavour, whatever that means, that has no bearing whatsoever on the Sun's energy source. But, in spite of the problem of neutrino mass and conflict with the Standard Model of particle physics, we are told by Dave Wark that physicists of the Sudbury Neutrino Observatory (SNO) in Canada have demonstrated that neutrinos can change flavour. Instead of using pure water in their experiment they used 1000 tonnes of heavy water which, as Wark puts it, 'is not generally found at your local hardware store'.

When I read what followed I was reminded of the prologue I had written for this work, concerning the task of borrowing a large and valuable chunk of gold for use in an experiment. Wark states:

"Luckily, Ontario Hydro uses large quantities of heavy water in its nuclear reactors and was willing to lend us one reactor's worth on the condition that we give it back (it is worth hundreds of millions of dollars)."

That was in 1999, after the detector housing this huge amount of very valuable water was built underground, thanks to 'INCO nickel-mining company being supernaturally tolerant of a bunch of physicists doing rather odd things in its extremely profitable mine'. Then in 2001 and 2002 happiness followed, according to Wark, as the experiment 'confirmed beautifully the neutrino-oscillation hypothesis'.

Such, it seems, is today's world of the particle physicist, who now looks into the future, a future that will bring us 'the neutrino factory'. I am not sure what this means, but Dave Wark is confident when he writes:

"Technological developments should make it possible to build a neutrino factory some time soon, hopefully before I retire in about 20 years time. In today's hyper-competitive funding system, it is very doubtful if Davis could have secured the resources to build the (heavy water) experiment at all. We must therefore be careful

that we do not squeeze out the sense of adventure and curiosity that leads to the entirely new.”

However, while this quest to get government funding to enjoy a ‘sense of adventure’ in proving ideas that allow one to give a further lease of life for unproven and unsupportable false notions goes on, there are those of us who would rather see such funding going into laboratory research aimed at tapping energy from the aether.

A preliminary in this quest is the need to understand the fabric and inner workings of the aether as evidenced by its role in determining the values of the fundamental physical constants. We measure these constants to a very high degree of precision, essentially to satisfy that spirit of adventure which is driven by curiosity as to whether those constants change with the passage of time. They seem not to and so the engine room of space, the aether, is running well and steady and it warrants a visit to see if we can harness it as a power source that feeds our energy needs.

If the aether is merely seen as a ‘neutrino factory’, however, all that will emerge, if we are lucky, is some sporadic, possibly explosive, outbursts of radiation that have no practical use whatsoever. But, as I noted in Chapter 1, if we are unlucky then, as Lord Rees puts it in choosing his book title *Our Final Century*, what we face is a doomsday syndrome.

On the other hand, if the aether is seen for what it is and we correct the errors in our basic knowledge of physics, particularly the error of accepting the nineteenth century findings of the Reverend Samuel Earnshaw, then there is hope for our future.

Let us hope that the quest to find a new energy source, one which captures energy from the aether will not initiate a runaway and uncontrollable chain reaction such as might occur in the oceans of the world if ordinary water were to begin to transform into heavy water. The deuteron is the heavier stable isotope of hydrogen. Atomic scientists are well satisfied that they understand the spectrum of atoms and their different isotopes but they ever hope to harness atomic transmutation as a new source of energy.

Yet when I began writing this book I thought I understood why atoms having a nuclear charge of Z units could not have a nuclear mass of N units much in excess of 2.5 times Z . Yet, as I mentioned in Chapter 4 we are now informed that atomic physicists have found a way of creating silicon atoms which contain 42 nucleons, some three times the Z value of 14. The creation of such freak atomic forms does seem a very risky pursuit since instability can lead to nuclear transmutations.

So long as research is guided by being based on sound theoretical foundation there is hope that catastrophe can be avoided, but if we seek knowledge from high energy experiments that gamble on discovering what that foundation might be then we may as well read what Lord Rees says in his book *Our Final Century* and then await the inevitable.

May I then say as a final comment: "By definition and by simple English, there is nothing in empty space, so if one seeks to probe the nature of space then one must accept that there is a real aether medium, otherwise there is nothing to probe. Something must exist in space devoid of matter and the challenge is to understand what it is. The *Theory of Everything* that we have been discussing provides that understanding."

An Epilogue

In writing this book I have tried to be brief in outlining how I decoded the key messages that Nature provides as clues concerning the physics which governs the operation of our universe. However, how I advanced step by step in building an overall picture of the aether, that fills all space and accounts for the creation of particles which dance to the tune of quantum theory, is surely not how Mother Nature herself gave birth to her creation.

So, with the benefit of hindsight, I will here offer a little speculation as to what may have happened in the early stages of creation, as a possible guide that might be of help to scientists who research this aether theme in the future.

I see the beginning as a vast expanse of space containing energy seated in electric charge. The energy would have a uniform density and the charges would have unitary form of unit magnitude e , destined later to become the charge assumed by the proton, when the latter emerged at a later stage in the creation process. However, as to the primordial aether, I imagine groups of four such charges defining each unit volume (cell) of space, this group of four comprising a pair of virtual muons, one of positive charge and one of negative charge, these accounting for almost all of the energy in that cell, and there being within that cell a quon charge immersed in a uniform continuum of unit charge of opposite polarity.

Now, although the wisdom of J. J. Thomson and other scientists of a century past had realised that a charge e confined within a sphere of radius a would have an energy $2e^2/3a$, Mother Nature would have been well aware of this when creating the aether and so she would assign this amount of energy to the quon. However, this would mean that the quon would tend to expand unless restrained in some way, as by pressure, and so, avoiding too much speculation, there would need to be the presence of something accounting for a

uniform energy density in that space cell, something having an energy density equal to the energy of the quon as divided by its volume. This is the role assigned to the virtual muon pair, they being subject to sporadic, but later regular periodic, mutual annihilation followed by recreation in a kind of statistical spread of positions within the cell. Whether the quon and continuum charge forms are involved in this transformation of muon states is an open issue, but it seems highly probable in view of the unitary charge factor.

Accordingly, the virtual muons along with the quons and that balancing continuum charge, the latter having energy that is negligible in relative terms, are seen as constituting the aether from which our quantum underworld first evolved.

The key point so far is that the quon is exceptional from the viewpoint of its charge being contained within a definite amount of space owing to the pressure action of those virtual muons. Should other charged particles be created, with the charge e confined within a smaller volume, then their stability would need to be attributable to some other factor. The quon is, therefore, the charge form having the least energy and so the least mass of all possible particle forms.

Of relevance then is the proposition that, in order for a sphere containing charge e to expand, the energy has to go somewhere. Owing to inherent symmetry the charge centre will not move as a result of that expansion and so potential energy released by self-expansion of charge cannot go into kinetic energy. This implies stability subject to other disturbing factors.

Then there is the consideration that if there are two or more charges of identical size in reasonably close proximity, they could exchange energy by one expanding as others contract a little. What this means is that Nature encourages survival by charges that belong to the same family and preferably, for long survival, a primary and dominant family. So the evolution of the aether would surely involve the creation of a dominant charged particle form.

This then suggests that the ongoing creation and decay of the virtual muons could account for the creation of such a particle form, where the quon is the target for attack, leading to conversion to higher

mass form. Now, we have seen in the main text of this work how the merger of virtual muons and onward muon combination creates a unique particle form, the proton, and so I suggest that even in the aether in its very early stage of evolution the proton was being created, but not initially as matter that would survive.

The reason I say this is the consideration that no order had yet come about. The primordial aether was just a system of energy and electric charge with sporadic action, mutual charge pair annihilation and recreation. Those protons themselves would surely sit in a medium so active with failed attempts to create more protons in close proximity that energy quanta of near to proton size would easily upset the stability of existing protons and then use them as a nucleus to fabricate particle forms of even higher mass.

This introduces the process described earlier in Chapter 11, where I explained how a particle having a mass nearly 5063 times that of the electron would be created, this being the *g*-particle. It is a significant component of the early aether and, though later serving in a role linked to gravitation, its initial creation and existence had nothing whatsoever to do with the phenomenon of gravitation.

In spite of this I cannot resist reminding readers that the formulation of *G*, the constant of gravitation, in my *Theory of Everything* has the form:

$$\sqrt{G} = (4\pi)(e/m_e)/(108\pi)^3(g)^4$$

where *g* is 5063 and *e/m_e* is the electron's charge/mass ratio.

I now must admit that I am still quite perplexed as to the actual nature of what I have described as the 'charge continuum'. It provides an electrically compensating background as if its charge density is uniform. Yet the charge density within a sphere enclosing a charge *e* is not uniformly distributed but is distributed within that spherical form in such a way that the electrical energy density is uniform. Also there is another perplexing problem because the evidence I have derived from reactions involving creation of different particle forms indicates that the volume of space collectively occupied by charge in particle form is conserved in the reactions by which they

are created. Does this mean that the continuum medium, whatever it is, has a volume that resists change?

So here is the weakness in my *Theory of Everything* but the fact remains that I do have a theory that explains what the scientific community regards as amounting to everything, namely a theory linking gravitation with electrical phenomena and the field of quantum electrodynamics.

That said let us come back to thinking about Mother Nature as she nurtures her creation, the aether, into the form we owe our existence to today. Those *g*-particles have appeared in an energy inferno comprising virtual muons and quons and so, at least for a while, chaos must prevail. Gradually, however, what emerges is a state of equilibrium, an orderly condition in which the *g*-particles engage in a partnership with the quons, as if performing a waltz in a dance hall. The *g*-particles take up position in the charge continuum and cause it to move in a cyclic motion in counterbalance with the quons, thereby giving the aether, our quantum underworld, a sense of rhythm, a frequency, meaning the emergence of what we call 'time'. In so doing the quons, which repel one another electrically, form into an orderly structure which is bodily displaced relative to the charge continuum and so those *g*-particles which move in counterbalance. That structure is the array pattern of simple cubic form as found in some atomic crystalline structures of matter.

Accordingly, we then have the birth of our quantum underworld, which operates by optimizing its energy deployment but is tolerant of minor energy fluctuations that are an inevitable feature in the vast expanse of space.

Such energy fluctuations will, of course, involve proton creation as matter and related *g*-particle creation but the dynamic balance already prevailing must be preserved. So, how might that occur?

Note that the primary need for dynamic balance is not that of the virtual muon system, but simply that of the quon lattice structure that adopts that cubic configuration and develops what we have termed the 'Heisenberg jitter motion', a harmonious circular orbital

motion at the aether rhythm frequency that we refer to as the ‘Compton electron frequency’. Those g -particles take up positions and move in those orbits in juxtaposition with the quons, thereby ensuring dynamic balance.

Now, as to energy fluctuations and with gravitation in mind, there is that need for the existence of a second particle form sharing the motion of the g -particles. This serves as a partner in providing the dynamic balance for the quons and facilitates energy fluctuations involving charge pair creation and annihilation. In other words our aether needs the presence of another particle form, besides the muon, of the kind physicists refer to as being a ‘lepton’. I am not here thinking of the electron, but rather what proved to be the taon, the tau-particle, which causes one to believe that the g -particle must also be a lepton.

The governing criterion is that the relative abundance of tau-particles and g -particles must be such that the ratio of energy to charge volume is equal to the ratio of small changes of energy to small changes of volume for the g -particle alone.

Suppose that there are $2N$ g -particles for every $2n$ tau-particles, and keep in mind something one learns from the study of hydrodynamics, namely that when a spherical body is moving through a medium having the same mass density it exhibits only half its normal mass in its dynamic behaviour. Thus for every unit of energy accounting for graviton mass there will be two units of energy attributable to the system of quons in dynamic balance. So the energy source creating a $(2Ng + 2n\tau)$ combination must be:

$$6Ng + 6n\tau$$

Since the energy source is pairs of leptons, muons and g -particles, this quantity must be very nearly equal to:

$$2S\mu + 2Kg$$

Note that g/τ is determined by the ratio N/n , as was explained in Chapter 5. S and K are integers.

It is then an interesting exercise to verify that the optimum combination of values of g/τ , N , n , S and K for minimal lepton involvement and minimal energy fluctuations is $N=1$, $n=2$, the latter

giving $g/\tau = 1.452627$, $S = 3$ and $K = 7$. With g as 5063 the tau-particle mass-energy is 3485 times that of the electron and, since μ is approximately 207:

$$2S\mu + 2Kg = 6(207) + 14(5063) = 72124$$

which only differs by 0.1% from:

$$6Ng + 6n\tau = 6(5063) + 12(3485) = 72198$$

The aether in its early state therefore comprises virtual muons, tau-particles, g -particles and quons set in a charge continuum and having the quantum jitter motion which underpins quantum theory. It will have vast regions in which that charge continuum has one polarity and other regions in which the continuum has the opposite charge polarity and gradually these regions will emerge as large space domains separated by planar boundaries.

However, at some stage the ongoing energy fluctuations will result in the creation of matter, protons and electrons, which by dynamic interaction with the g -particles and tau-particles will become subject to gravity. Our universe will then be born. Should you wonder how electrons appear in this grand conception of our universe, I attribute this to the onset of order as the quons, owing to their mutual repulsion, took up their positions in a simple cubic array. Given their coordinated quantized motion in dynamic balance with the g -particles and tau-particles, they were conducive to an action which involved their spin as a $3 \times 3 \times 3$ cubic array. Such spin, when in resonance with that of the quantum underworld, the cyclical motion of the whole system of quons, creates the photon energy quantum $h\nu = m_e c^2$ and results in the creation of electrons. The 1843 factor that emerged in deriving the theoretical value of the fine-structure constant, being the charge volume ratio of the quon to that of the electron, suggests that, given a background of such photon activity, a quon might transform into an electron plus 921 electron-positron pairs.

So when protons and antiprotons were created within the orderly state of the aether which had then become our quantum underworld, so electrons were also created as their partners and

atomic matter came into being. Then the stars including our Sun were born.

Such, therefore, is my picture of creation, but before I conclude this message as to the role of the aether in the evolution of the universe I need to say something about so-called neutron stars. Such stars belong to a realm of orthodox physics that has lost sight of reality by introducing notions that are manifestly absurd. Any clear-headed reader will surely see that the following statement quoted from the July 2003 issue of *Physics World*, the monthly journal issued to members of the U.K. Institute of Physics, contains a message that cannot possibly be valid:

"Isolated neutron stars are highly magnetized, rapidly rotating objects that are formed by the collapse of massive stars. Although they are typically only about 10 km across, neutron stars are at least 40% heavier than the Sun and their core density is higher than that of an atomic nucleus."

One is tempted to ask in expletive form: "How on Earth can the core density be higher than that of the atomic nucleus?", but know the answer will be: "We are not talking about anything experienced on Earth!" Instead, one must surely ask: "Without an understanding of the true nature of the force of gravity, what justification is there for assuming that G is the same regardless of the mass density of the interacting matter involved?" If the answer to that is: "Isaac Newton proved that G is a universal constant and so it must apply to neutron stars", then I say it is time to stop dreaming, wake up, and think again.

Another quotation, one from page 598 of the book by Carroll and Ostlie entitled *An Introduction to Modern Astrophysics*, published in 1996 (Addison-Wesley) is:

"At the density of a neutron star, all of Earth's 5.5 billion inhabitants could be crowded into a cube 1 cm on each side."

One surely must wonder how astrophysicists, in their efforts to decipher the information which their telescopes and ancillary

equipment feed to them via electrical means, can reach such conclusions, lacking as they do that answer as to what it is that determines G , the constant of gravitation.

Based on what has been disclosed in the preceding chapters of this work, I suggest that, if we are to assume that a normal star composed of hydrogen can encounter a situation in which it is destroyed, as by an abnormal encounter with a space domain boundary, possibly many of its protons will, in effect, be seen as antiprotons upon entry into an adjacent space domain. It may be that the violence of such an event can cause them to displace the quons in a confined region of space and so adopt the same structured configuration. The mass density of such a body would, however, still be no greater than the mass density of an atomic nucleus.

Under these abnormal conditions the tau-graviton and g-graviton forms cannot be expected to meet the dynamic balance requirements imposed by this concentration of matter and so it seems possible that the virtual muon form will assume the associated graviton role, in which case the effective value of \sqrt{G} will be increased by a factor of the order of 100,000. Possibly the overall size of the stellar object so formed will have the same total gravitational energy as the hydrogen star from which it is formed, in which case its radius will be reduced by a factor also of the order of 100,000. Its mass, however, would be reduced by an enormous factor of the order of 100,000,000. So this relic of the original hydrogen star would have shed many, many protons whilst somehow retaining the gravitational energy.

However, though there is scope for such speculation in trying to interpret such evidence as might infer the existence of so-called neutron stars, it does seem to be a futile exercise, given the kind of data on which it is based.

Clearly, therefore, astrophysicists interested in fathoming the mysteries of neutron stars must first come to terms with the need for an aether that can account for gravitation as we experience it here on body Earth. There is so much in physics that depends upon the aether for its explanation and so I can but urge those who teach physics to

enlighten future students by restoring the aether to its proper role in the teaching curriculum.

Rather than confusing the student by speculation as to stellar phenomena seated far away in remote galaxies, there needs to be more concern for phenomena local to the solar system and the Earth especially. The periodic reversal of the Earth's magnetism is one such phenomenon, which, as has been explained, signifies motion through a structured aether medium.

Also a teaching community should be ever alert to scientific advances that are topical, one such item, as I write these concluding words, has just appeared in the August 26, 2005 issue of the English newspaper *THE TIMES*.

It is a major news item occupying a half page which begins with the words:

“The Earth's inner core is rotating faster than the rest of the planet, scientists have found.”

This has been established by a team led by Professor Paul Richards, of Columbia University in New York, and Professor Xiaodong Song, of the University of Illinois at Urbana-Champaign. The Earth's 'iron and nickel core' is turning through one revolution per 900 years faster than its upper layers.

How can such a phenomenon occur? Are we to assume that the Earth's crust is subject to a retardation in its rotation? If so then why, after a period of 4 billion years since its creation, is it still rotating?

Given the fact that a 900 year period is also the rate at which the Earth's magnetic poles migrate around the geographic poles, the latter is surely an aether phenomenon involving precession owing to magnetic interaction of two rotating aether systems, as suggested at the end of Chapter 4.

The recent observations were connected with disturbances caused by earthquake activity and so one must wonder how the Earth's aether is affected by sudden large scale repositioning of matter in body Earth, besides wondering if there can be progressive slippage as between the Earth's substance and coextensive aether.

I will not dwell on this problem but will quote a few words from something I was invited to write as an addendum to '*The Radioquake Mystery*' by Richard E. Hill, which appeared in the No. 12 issue of *The Journal of the Home Office Directorate of Telecommunications* in U.K. in December 1978. My contribution was entitled *A Perspective on a New Enigma* and referred to the discovery by Mischa Markert in Switzerland that earthquake disturbances, unlike lightning, affected FM (frequency modulated) signal transmission but not AM (amplitude modulated) transmission.

“If the FM signal is affected and not the AM signal this may mean that the interference modified the frequency slightly. For the frequency of a signal propagating from A to B, two fixed points on the Earth’s surface, to be affected, leads one to suspect that the path traversed is not direct and that there is reflection at a moving boundary (the ionosphere) and/or that there is a region of varying length in the path of transmission within which the speed of propagation is different from its normal value. In other words one could suspect a kind of shock wave in the aether which affects the transmission transiently during earthquake conditions.”

I do believe that research with the aether in mind could well be more enlightening as well as being much cheaper than crashing particles into one another with enormous input of energy.

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