CHAPTER 8

Creation: Stars and Planets

Introduction

There is something that cosmologists who theorize about what we see in outer space have yet to learn. There are two very basic errors in the scientific foundations on which they build their understanding of stars.

Firstly, they ignore completely the fact that hydrogen as the gas from which stars are formed will, upon compression to a mass density of the order of 1.4 gm/cc as shown in Appendix IV, experience overlap of the electron shells, the K-shells of the atomic structure of hydrogen. This means that the star will be partially ionized, which means that many protons and electrons will roam free. In turn this means that, since the mutual rate of gravitational acceleration by two interacting protons is 1836 times that of two interacting electrons, the star must adopt a uniform mass density throughout its core and have a positive electric core charge density enclosed in a surface shell of negative charge density. The electrostatic repulsion of the core charge will balance exactly the internal gravitational attraction of the star as a whole. That electrical core charge density will be $G^{1/2}$ times that mass density 1.4 gm/cc. This happens to be the mass density of our sun but this fact is surely not a matter of coincidence!

Secondly, there is the quite ludicrous assumption that starlight in its passage through the aether for billions of years as it traverses vast distances is not subject to frequency attenuation. Because cosmologists know that light waves of different frequency travel at different speeds through a material medium

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they see 'dispersion' as the telltale property of a medium in space and assume, incorrectly, that no frequency dispersion in the vacuum means no frequency attenuation and so no aether medium. One can but deplore the cosmological blunder that has ensued and bequeathed us with the nightmare syndrome of the Big Bang, an expanding universe and, in respect of that first error, 'Black Holes'.

Moreover, by ignoring that positive electric core charge possessed by a star one has not seen how Mother Nature, in interacting with a quantum aether, will develop a state of spin importing energy from that aether and so cosmologists have missed something of vital importance to our understanding of Creation.

It does not need a genius to see the obvious and one can but wonder if the cosmological fraternity is composed of the blind leading the blind, which means that I address what I now have to say to the general reader rather than seeking to 'enlighten' those who see themselves as specialists in cosmology. Such is my strength of feeling on this matter, especially as my earlier published work on this theme has not been heeded.

This is my introduction to this chapter 8. Apart from the discussion concerning 'space domains', a subject addressed in my books '*Modern Aether Science*' (1972) and '*Physics Unified*' (1980) I base much of this chapter on a lecture I delivered to the Physics Department of Cardiff University in Wales in 1977 and an extended revision of the subject of a peer-reviewed paper of mine published by the Italian Institute of Physics in 1984. The latter paper was entitled: '*The Steady-State Free Electron Population of Free Space*', Lettere Al Nuovo Cimento, **41**, 252-256 (1984). The Cardiff lecture was the subject of a paper entitled '*Space, Energy and Creation*

Deriving the Hubble Constant

I believe that what astronomers see as the basis of the Hubble constant, the shift of the frequency of starlight towards the red end of the spectrum as a function of distance from a star, is a phenomenon associated with proton creation. Nature's ongoing attempts to create protons everywhere in space must fail if there is inadequate energy available for a proton to materialize in a permanent form. In lending energy momentarily to test the water, as it were, and see if proton creation is possible, the aether is constantly experiencing failure, given that almost all of its surplus energy has already been deployed in the creation of matter. The aether is vast and those attempts at proton creation are occurring in a very small proportion of its units cells at any instant and so its overall transparency is only slightly blemished by this activity. So, you see, in now mentioning those blemishes that arise from proton creation, we are holding firm to the theme of this work *'The Physics of Creation'*. In summary, the proton creation activity already discussed in chapter 4 is ongoing everywhere in its failure mode on a universal scale where there is no energy surplus feeding the creation of protons that can survive, but yet is effective in a way that does reveal itself by determining the value of what we refer to as the Hubble constant.

In physics one has the choice of believing that the vacuum is a true void or that it is a real aether medium. There is no halfway house in which one can shelter, as by inventing a geometrical multi-dimensional fabric and dressing accordingly as one plays a part on an imaginary stage and so pretends that the universe is a mere illusion.

The sensible approach is to say that the aether exists and functions as a kind of workshop that accepts energy shed by matter and recycles it by fabricating protons and electrons which can be drawn back by gravity into the real world. This is the vision of an everlasting universe, a steady-state universe in the

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overall energy sense, but one which evolves by creation and decay of its component parts.

At the very least, however reluctant one might be to accept this proposition, one should explore its implications theoretically before accepting the alternative, a universe in which protons and electrons were created at time zero and which then ceased their manufacture in favour of a slow death. Indeed, ask yourself why would our universe start creating protons and electrons and then stop suddenly or is one to believe that God operated a switch called 'Creation' and, alarmed by hearing the 'Big Bang', immediately opened the switch and adopted a low profile just to watch events from then on?

So I have envisaged an aether which is ongoing and trying all the time to create protons and electrons, succeeding only by using any surplus energy that finds its way into its system. Then, supposing there are vast regions of space where there is no such surplus energy, that aether in those regions would at all times exhibit a kind of haze as it tries, using its own latent energy resource, to create protons and electrons, only to find that they promptly decay, but yet their transient existence provides a permanent but very faint haze throughout space which can obstruct the passage of electromagnetic waves.

We have, in chapter 4, seen how the muon activity of the aether can create a proton. This is, I believe, a process in which nine muons act in concert by attacking a quon in the time interval of one oscillation at the Compton electron frequency or in an immediate succession of such time intervals. The chance of such an event occurring is found as follows

Quoting from the above-referenced paper in *'Lettere al Nuovo Cimento'*:

> "We look to the event when four muon pairs plus one muon of charge opposite to q all combine within the volume of q in the same cycle of

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migration. The muon pairs have a random chance of movement and are not confined to a particular cell. The chance of one muon entering the q volume is $(1/N)^{1.5}(m_e/2m_\mu)$. Therefore the chance of nine muons entering this same volume is this factor raised to the power 9. The logic of this supposes that each muon arrives independently and simultaneously and that the chance of four negative muons appearing is the factor raised to the power 4, whereas the chance of five positive muons appearing is the factor raised to the power 5, the total chance being the product of the two. We find that the overall effect is that at any time the chance of a q element converting according to the equation:

$$q = N(e^-, e^+)$$

is $(1/N)^5(m_e/2m_\mu)^9$. It is supposed that the reverse transition occurs at the end of each cycle when the muons migrate to new positions. In effect, however, the condition just described is ever present and is a steady-state condition."

Here, I interject a comment that qualifies what is said above. Arising from the discovery claimed by Dr. Paul Rowe (see chapter 9), I now believe that the transient state left even by one muon impact upon q, the quon, will hold the energy just long enough to carry the action into the next muon cycle. This means that the numerical factor still applies but to a sequence of successive impacts on the same quon target. The odds of a quon being hit by nine muons in the unit time interval are the same as that of a sequence of single muon hits on the same quon target in a succession of unit time intervals. This reverts the aether model to that for which a muon pair is confined to each unit cell of the

aether, given that their combined energy is the mass-energy of a unit cell of the charge continuum.

Note that N, as 1843, the number derived theoretically in our earlier analysis of photon theory in chapter 7, is the charge volume of the quon in terms of the charge volume of the electron.

To complete the quotation from that 1984 paper:

"The formula for d, the lattice dimension of the cubic cell of aether, as $72\pi e^2/m_e c^2$, can be used to evaluate d as 6.37×10^{-11} cm, meaning that there are 3.87×10^{36} cells per cubic metre of space. With N as 1843 and m_μ/m_e as 207 it is evident that one cell in 2.2×10^{33} is subject to the transition just discussed. There are, therefore, approximately 1,760 excited electron cells in each cubic metre of space.

The state of excitation involves a q charge becoming an electron and the nine muons shedding energy and creating 921 electron-positron pairs to leave the residual energy nucleated in a positive charge of larger energy content, but physically very much smaller in size than the electron. The question then is whether 1760 such systems in each cubic metre of free space might be detected owing to the disorder they represent in what is otherwise a transparent and wholly ordered medium.

The electron-positron pairs will not obstruct the passage of electromagnetic waves because they have a mutual inertial balance and are collectively neutral in their response to electric fields. This leaves the electrons, 1760 per cubic metre, as the dominant factor presenting a scattering cross-section to radiation."

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Here is the cause of that 'haze' mentioned above. The approach I now take is to assume that the wave must shed some of its energy in passing through this 'haze'. As a self-propagating oscillating wave it will shed energy during both the up and down parts of its lateral displacement cycle. During its ups it will move the distance required to match the amplitude of its electric field, not travelling quite as far as it would were there no loss of energy. However, during its down periods it must traverse the same displacement distance before beginning the next up and down cycle, albeit in the opposite direction, but, ask yourself: "How can it then reveal that it has lost energy?" The answer, given that we are considering a system in which electric field energy is being exchanged by oscillation into kinetic energy, which Clerk Maxwell would say is magnetic energy, is that we must look to a reduction in speed, given the same distance of travel, and so a frequency reduction. By 'speed' is meant the speed of the quon charge oscillations in a direction lateral to the wave propagation direction.

In summary, to the extent that the electron 'haze' absorbs energy from the wave, half of the energy loss will mean amplitude attenuation, even for a plane wave, with the other half of the energy loss producing frequency attenuation. This is why light from distant stars suffers a loss of frequency.

Upon encountering an electron as an obstruction in the path of an electromagnetic wave, the wave sheds some of its energy density W and also suffers a related loss of frequency f. Since, for a given oscillation amplitude of electric field intensity in a medium where charge displacement is subjected to a linear restoring force, W is proportional to frequency squared, the relationship between these two quantities, expressed as a function of distance s, travelled can be formulated thus:

$$(1/f)df/ds = (1/2W)dW/ds \quad \ldots\ldots\ldots\ldots\ldots (8.1)$$

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However, since the attenuation of frequency occurs only during half of the wave cycle, this equation needs to be further modified to become:

$$(1/f)df/ds = (1/4W)dW/ds \quad \ldots\ldots\ldots\ldots\ldots (8.2)$$

Now, when I wrote the 1984 paper from which the above quotations are taken, I proceeded upon deriving this equation (8.2) to show that this implied a value for the Hubble constant determined by estimating the energy dissipation in the aether as if each of those 1760 transiently-created electrons per cubic metre presented the electron scattering cross-section according to the standard Thomson formula. Unfortunately, I misquoted the value of this quantity by a factor of π and so derived a Hubble time factor of 11,400 million years, whereas the theory based on such assumption indicates a lower value of the order of 4 billion years. I am now somewhat hesitant about relying on such a formula and would rather simply make the point that an electromagnetic wave travelling through such an field of electrons must suffer a loss of energy and a reduction of frequency.

That frequency attenuation is scaled as a function of frequency exactly as it would be if it were due to the Doppler effect. Inevitably therefore, the notion of an expanding universe is unsound and it becomes of interest here to denote the empirical value of the Hubble constant as N billion years, this being the relevant exponential decay time constant, and deduce from this the scattering cross section of those electrons. 4% energy absorption corresponds to a 1% frequency reduction over 1% of the distance travelled at the speed of light and so 1% of the Hubble time constant.

Suppose the scattering cross section of each electron to be β times 10^{-25} sq. cm. To achieve 4% energy absorption this means that the wave travels a sufficient distance to encounter 4 times 10^{23} times $(1/\beta)$ electrons per sq. cm. of wave cross-sectional area. At 1,760 electrons per cubic metre this means

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that the wave must travel over a distance of $(1/\beta)$ times 2.27×10^{26} cm to suffer a 1% frequency reduction. Since 1 billion light years is a distance of 9.45×10^{26} cm we then find that the 1% frequency reduction occurs in a period of $(1/\beta)$ times $0.24N$ billion years. This gives the relationship between N and β as one for which βN is equal to 24.

On the basis of the electron scattering cross-section according to the J. J. Thomson formula of 6.65×10^{-25} sq. cm, the Hubble time period should be 3.6 billion years, which seems too low. We must remember, however, that this is not a measure of the age of the universe. It is merely the time constant of an exponential frequency reduction curve. It is reasonable to suppose that the process by which we have explained the successful creation of the proton in chapter 4, as attributable to nine muons coming together within the space occupied by quon charge, may, even so far as unsuccessful events are concerned fall short of achieving that 1760 transient electron level per cubic metre. A one in five chance would enhance the Hubble time period by a factor five. Also, one can even question the merit of using the Thomson radiation scattering formula for reasons to be discussed in Appendix II and readers who need to know more about this before delving into the creation of stars should pause here to read through Appendix II.

Had we used instead the cross-sectional area of the electron as based on the Thomson electron form discussed in the early chapters of this work then that Hubble time period would be longer by a factor of 6, meaning that it would be of the order of 20 billion years. Such a step would, however, need theoretical justification as to precisely how the physical interception of an electromagnetic wave extracts energy from that wave. Also, it seems illogical to ignore the physics underlying the derivation and experimental support for the conventional theory of the scattering cross-section of the electron.

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Given the Hubble constant the theory which involves the Big Bang notion of creation with the universe expanding from the moment of Creation, necessarily involves theoretical assumptions that are difficult to verify but suggest that the age of the universe is somewhat smaller than that measured as the Hubble time period.

Our uncertainty here in our theory concerns the effective cross-sectional area of an electron obstructing passage of an electromagnetic wave in outer space populated by a mere 1,760 electrons per cubic metre of mass density 1.6×10^{-27} kg/m^3. This, incidentally, is of the same order as the mass density of the so-called 'missing matter' that cosmologists say should be present in space to give account of certain features of their theories.

I feel, however, that enough has been said to show that we need not belong to an expanding universe with its Big Bang scenario. It seems far more preferable to accept that the facts of record support the case for a steady-state universe, thanks to our understanding based on this work of how protons are created and the ongoing role of our aether in that activity. This is especially the case as we now address the problem of how a star is created, but go on from there to show how the space domains that feature in this star creation role define boundaries which must one day be traversed by the star at a very acute angle. This means that the star will be located astride that boundary and be partially in domain and partially in an adjacent domain. Since, as we shall see, the force of gravity does not act between matter in different space domains, there are then conditions which arise that may cause the star to explode and disperse, as by a supernova event. Accordingly the cycle of life and death of a star becomes part of the syndrome of a steady-state universe rather than one exhibiting the one-off Big Bang scenario. It is one thing to accept that the universe exists and for us to try to probe its secrets, but quite another to say when it came into existence and confront the

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mystery of what was there before that event. We can never know the answers to these questions but the picture we can form has more clarity if founded on the notion of a steady-state universe.

The Creation of a Star

Why are there so many stars and not just one large star that sits at the centre of the universe? What causes a star to rotate? How is the energy which it radiates sustained? Cosmologists have answers. It all happened in the Big Bang and within a fraction of a second what had appeared blew apart as its numerous fragments interacted one upon the other to impart angular momentum in opposite spin directions and so form stars that rotate in their ever-expanding distribution in space. They supposedly feed on energy, nuclear energy as they transmute their hydrogen into inferior lower forms of matter such as helium and so emit their radiation. The aether is not a part of this picture of Creation.

The source of their expert knowledge on these matters is their observation of what they see in distant space using high powered telescopes plus laboratory analysis of that pattern of radiation as it reaches Earth. The reason that the energy has to be nuclear is because they can conceive of no other source adequate to sustain the sun's radiation for billions of years.

So you may ask how it is that I can claim any special insight into these matters. What have I seen in a telescope that others have missed? As to 'insight', is that what is needed to ask the obvious question: "Why cannot the energy radiated by a star come from the collisions of those electrons of its adjacent hydrogen atoms, given that their energy is sustained by interaction with the quantum underworld of the space medium, the energy of the aether itself?" As to that 'telescope', my answer is that I was looking instead at a situation one can see by looking through a microscope, not at a crystal ball but at the

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surface of a crystal of iron. My experimental Ph.D. research concerned an energy anomaly found in iron and I spent a great deal of time one summer supplementing that effort by trying to develop a theoretical model justifying the ferromagnetic state of iron, as based on electrostatic and electrodynamic interaction of 3d state electrons in iron atoms. Those atoms are arrayed in a body-centred cubic lattice and I was exploring the trade-off between the negative energy potential of the interactions versus the accompanying mechanical strain energy to explore, not only the ferromagnetic condition, but property dependence upon mechanical stresses as I had measured the loss anomaly factor as a function of such stress.

That theoretical research convinced me that a phenomenon known as the 'gyromagnetic ratio' was not attributable to electron spin, as theoretical physicists assumed, but was in fact attributable to the existence of a reaction which halved the strength of an applied magnetic field, a reaction that must also be exhibited by the vacuum medium, the aether.

I later realized that my ferromagnetic model of an iron crystal, if adapted to the simple cubic structure, had something to tell me about the properties of the aether, because it had a message concerning angular momentum and rotation.

More than this, however, the iron crystal has an intrinsic structure that is characterized by energy deployment and what one could see in a microscope is what was called 'magnetic domains', regions of the crystal bounded by planar separating walls which divide the iron into parts in which the electron orbital motion accounting for ferromagnetism have opposite directions.

It does not take a genius then to imagine that, possibly, the aether itself might have the characteristic feature of incorporating domains on a large scale and that this might have some bearing on the distribution pattern of stars when born, meaning one star or one binary pair of stars per space domain. I had in mind also

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the great mystery posed by the hope that gravitation might prove to be a phenomenon linked in some way to electromagnetism. So there I was, at Cambridge, having ideas that I dare not express for fear of ridicule, but pursuing in private my hobby of delving into theoretical physics when my formal discipline was connected with electrical engineering.

I was, after all, at the venue where, some two decades earlier Nobel Laureate Paul Dirac had been acclaimed for establishing the case for electron spin by which that gyromagnetic factor of 2 is supposed to come from what I can best describe as pseudo-relativistic mathematical equations. It was a little consolation to think that Dirac had graduated in engineering in his first university, Bristol, and a comfort to think that he saw space as a 'sea' of states from which a missing electron would appear as a positive 'hole', the positron, but the aether was still a 'taboo' subject and I had a living to earn upon leaving academia. I had already spent three years at Manchester University obtaining my first degree and had two years of graduate apprenticeship before entering Cambridge. At least, being at Trinity College, the venue of Isaac Newton and J. J. Thomson, whose portraits overlooked one's dining habits in Hall for some three years, I could hope that that might engender some creative inspiration and, indeed, courage as I quietly pursued my hobby of exploring the aether in the years ahead.

As to the creation of a star, I saw that as an event resulting from the aether 'cooling' from a chaotic state into an ordered state, just as magnetic domains form in iron as its crystalline form sheds extra energy in cooling through its Curie temperature. In the aether, however, that energy is released as gravitational potential of the star or binary star pair so formed within each domain. In other words, we are looking at the situation in which gravity as a phenomenon is switched on by domain formation just

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as the state of ferromagnetism comes into being only when those domains form.

Creation as applied to a star then involves the coalescence of dispersed matter, protons and electrons, which means, once the gravity switch is thrown, that many of the protons rush in ahead of the electrons because their mutual rate of acceleration is 1836 times that of the electron-electron interaction. Here is the trigger causing a star to spin, the initial state of it having a positive electric core charge, and this brings us to the point of primary importance in this work. It is a factor that can explain the spin of a photon as well as the spin of a star and may even explain something I shall reveal in the last section of chapter 9, something having technological implications for the alternative energy field.

I did, at the end of 1959, document this aspect of the theory in printed form [*'The Theory of Gravitation'*, (1960)], but at that time I had not seen the link to any technological implications, as otherwise I might well have changed course much earlier in my career pursuit. The book just mentioned was privately published at that time only to make a break as I changed from a professional role with a major engineering company, English Electric, to a higher management role with IBM in their Patent Operations.

I was sure that a star forms owing to it acquiring a positive core charge density at its creation, a charge which is later sustained by virtue of its hydrogen atoms being crushed together by gravity so as to be close enough for their electrons shells to overlap and so develop the ionized state which leaves enough protons free to move inwards under gravity and so sustain that core charge. The charge density would be the square root of G times the mass density of hydrogen corresponding to that overlap of their electron shells. The result is the mean mass density of our sun, a little over 1.4 gm/cc as I show in Appendix IV.

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