

The Double Helix Theory of the Magnetic Field

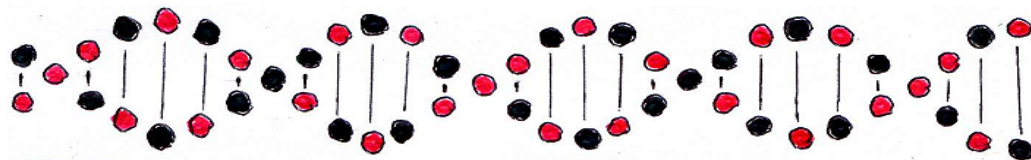
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Abstract. In 1856, Weber and Kohlrausch performed an experiment with a Leyden jar which showed that the ratio of the quantity of electricity when measured statically, to the same quantity of electricity when measured electrodynamically, is numerically equal to the directly measured speed of light. In 1861, in his paper entitled 'On Physical Lines of Force', James Clerk-Maxwell equated the above ratio with the ratio of the dielectric constant to the magnetic permeability. In the same paper, Maxwell modelled Faraday's magnetic lines of force using a sea of molecular vortices that were composed partly of aether and partly of ordinary matter. He linked the dielectric constant to the transverse elasticity of this vortex sea, and he linked the magnetic permeability to the density. Since Newton's equation for the speed of sound involves the ratio of the transverse elasticity to the density, Maxwell was able to insert the 1856 Weber/Kohlrausch ratio into this equation and show that light is a wave in the same medium that is the cause of electric and magnetic phenomena. It will now be suggested that Maxwell's molecular vortices are more accurately represented by rotating electron-positron dipoles that are aligned in a double helix fashion with their mutual rotation axes tracing out the magnetic lines of force.



Introduction

I. The idea that space is a dielectric can be inferred from Kepler's second law of planetary motion. This law, which is essentially the law of conservation of angular momentum, can be used to show that centrifugal force is an outward radial pressure that obeys the inverse

cube law with reference to any arbitrarily chosen point in space. This inverse cube law suggests an electric dipole pressure field.

The dielectric nature of space might also be inferred from the electric capacitor circuit. It is unlikely that a magnetic field will discontinue in the region of a parallel plate capacitor. This suggests that during the dynamic state, an electric current will actually be flowing in the space between the plates. When the space between the plates is filled with a dielectric material, we acknowledge the existence of a polarization current. There is no reason to assume that the situation is any different when the dielectric material is removed.

Since a wave requires a medium of propagation, and since light exhibits wave behaviour, it is reasonable to assume that a dielectric luminiferous medium pervades all of space.

The Aether

II. ET Whittaker writes “ - - - All space, according to the young [John] Bernoulli, is permeated by a fluid Aether, containing an immense number of excessively small whirlpools. The elasticity which the Aether appears to possess, and in virtue of which it is able to transmit vibrations, is really due to the presence of these whirlpools; for, owing to centrifugal force, each whirlpool is continually striving to dilate, and so presses against the neighbouring whirlpools - - -” [1]

In 1861, James Clerk-Maxwell attempted to explain the magnetic field in terms of a sea of such excessively small whirlpools. In his paper ‘On Physical Lines of Force’ [2], he uses such a concept to explain magnetism on the basis that these vortices are aligned solenoidally with their rotation axes tracing out magnetic lines of force. He explains magnetic attraction between unlike poles on the basis that a tension exists along the lines of force that connect directly between the two poles. In the case of magnetic repulsion, magnetic field lines spread outwards in the space

between the two like poles. Maxwell explains the repulsion on the basis that a centrifugal pressure exists in the equatorial plane of the vortices.

Maxwell's model can be better understood if we replace his molecular vortices with rotating electron-positron dipoles, each which consist of an electron in a mutual circular orbit with a positron. [3] Such an arrangement will then double for both an electric dipole and a magnetic dipole. Electrons will be considered to be sinks in the aether. An unknown force pulls the aether into these electron sinks, hence causing a tension in the surrounding aether which will cause a 'pull force' to act on other particles. A positron is an aether source from which a pressurized fountain of aether emerges. Once again, the force which pushes the aether out of these positron sources will remain unexplained. The aether itself is a mysterious substance which is dynamical, compressible, and stretchable. There will be a vector \mathbf{A} equal to $\rho\mathbf{v}$, where ρ is the density of the aether, and where \mathbf{v} is the velocity of an element of the aether. The vector \mathbf{A} represents both gravity and electric current. Electric current is also commonly denoted by the symbol \mathbf{J} . Maxwell identified this quantity \mathbf{A} with Faraday's *electrotonic state*. If we keep the aether density constant in time, we can expand the force term $d\mathbf{A}/dt$ to obtain,

$$\mathbf{F} = \partial\mathbf{A}/\partial t - \mathbf{v}\times\mathbf{B} + \nabla(\mathbf{A}\cdot\mathbf{v}) \quad (1)$$

where $\text{curl } \mathbf{A} = \mathbf{B}$. See **Appendix A**. Equation (1) then becomes recognizable as the Lorentz force. The terms in the Lorentz force were of course found in equations (5) and (77) of Maxwell's 1861 paper, which was written when Lorentz was only eight years old. Taking the curl of equation (1) leads us to a total time derivative extension of the partial time derivative equation (54) in Maxwell's 1861 paper,

$$\nabla\times\mathbf{F} = \partial\mathbf{B}/\partial t + (\mathbf{v}\cdot\nabla)\mathbf{B} = d\mathbf{B}/dt \quad (2)$$

See **Appendix B**. Oliver Heaviside always referred to Maxwell's equation (54) as Faraday's law, even though it is not strictly speaking

Faraday's law. Maxwell's equation (54) is similar to Faraday's law, but it doesn't cater for convectively induced electromotive force.

Modern textbooks refer to the vector \mathbf{A} as the 'magnetic vector potential', but it more accurately constitutes a momentum per unit volume. The first term on the right hand side of equation (1) represents the force due to tension or pressure in the aether. Around a sink or a source, this tension or pressure can be split into a radial (irrotational) component and a transverse (angular) component. The irrotational radial component can be represented in the form $\nabla\psi$, where ψ is a scalar potential function. The second and third terms on the right hand side of equation (1) can each be either the Coriolis force or the centrifugal force. These inertial forces can manifest themselves in a number of fashions. The transverse Coriolis force arises in cyclones and non-circular planetary orbits in conjunction with the conservation of angular momentum. The axial Coriolis force arises when bodies rotate about an asymmetrical axis or when the rotation axis is forced to precess. Centrifugal pressure in the electron-positron sea keeps the planets from falling down, while differential centrifugal pressure between air molecules, above and below a wing, keeps aeroplanes in flight. The inertial forces are also behind the magnetic force on a current carrying wire, and the induced electromotive force in a wire that is moving in a magnetic field.

The Double Helix Alignment

III. Lenz's law can be understood on the basis that any stretching of the aether will have a tendency to tighten the electron sinks and to widen the positron sources. This will result in the generation of aether pressure which will oppose the tension that has created it. Tension in the aether may be caused either by stretching the dipoles linearly, stretching the dipoles torsionally so as to create vorticity, or by causing the dipoles to precess. Linear stretching causes the electron orbit and the positron orbit to become like two intersecting circles. This effect is called polarization.

The two angular acceleration effects lead to magnetization. When a dipole is caused to precess out of its solenoidal alignment, it will be forced back into line again by induced aether pressure, and during this process, the circumferential motion of the electrons and the positrons will be deflected at right angles into their axial direction. This is the most fundamental Coriolis force of all, and it underlies Ampère's Circuital Law. In the solenoidal equilibrium state, the electron-positron dipoles will be aligned in a double helix fashion with their rotation axes tracing out magnetic lines of force. A tension will exist along these lines of force due to the fact that the electrons and the positrons will be alternately stacked. There will of course be a flexibility in that the electrons do not need to be positioned exactly above the positrons. See Fig. 1 below,

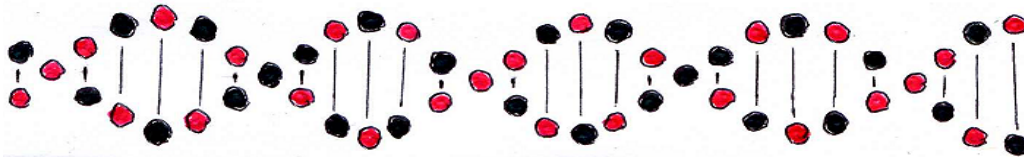


Fig. 1 Close-up view of a single magnetic line of force. The electrons are shown in red and the positrons are shown in black. The double helix is rotating about its axis with a prodigious angular speed, and the rotation axis represents the magnetic field vector H . The diagram is not drawn to scale since the relative dimensions remain unknown.

The tension in the lines of force is the cause of magnetic attraction between unlike magnetic poles. The double helix lines of force will behave like helical springs and pull the two unlike poles together.

There will be a centrifugal aether pressure in the mutual equatorial plane between two adjacent dipoles. Their mutual transverse speeds will torsionally stress the aether, hence leading to vorticity. This will widen the positron sources and generate centrifugal aether pressure. Aether pressure will be considered to be positive charge, whereas aether tension will be considered to be negative charge. Charge will be dependent on aether density and it can manifest itself in a number of guises including electrostatic, gravitational, and magnetic charge. In the absence of externally applied tension, natural tension will dominate in the universe, which is why we have gravity. In order to generate the aether pressure that is needed to overcome the dominance of aether tension, work must be done. Applied tension will induce a pressure which will oppose the

cause of the applied tension. In the steady state magnetic field, there will be an equilibrium between the pressure that exists between electron-positron dipoles in the equatorial plane and the tension that exists between electron-positron dipoles along the double helix rotation axes. Any attempt to alter this equilibrium will induce positive charge. The electron-positron sea will be referred to as 'The Electric Sea' in order to distinguish it from the pure aether itself. The electric sea will therefore be somewhat reminiscent of the striking surface of a safety match. If we disturb it, it will cause an ignition of energy. The electron-positron sea can be disturbed by magnetization, linear polarization, linear motion, or rotational motion.

Mass-Energy Equivalence

IV. Let us consider the elasticity of a single rotating electron-positron dipole of radius h . Hooke's law appears at equation (105) in Maxwell's 1861 paper in the form,

$$R = - 4\pi E^2 h \quad \text{(Electric Displacement Equation)} \quad (3)$$

where R is electromotive force, E^2 is the dielectric constant, and h is displacement. We will now define the absolute mass of a system as the amount of aether in that system. This definition does not however tie in exactly with the understanding of inertial mass as is used in Newton's laws of motion. In the latter case, mass is the capacity to absorb aether pressure or aether tension, and as such it would tend to be more a measure of the elasticity of the body, weighted for the amount of particulate matter contained within it. Although these two ways of understanding the concept of mass bear a certain similarity, they are not necessarily identical concepts when it comes to considering the charge to mass ratio. Since electrons and positrons are elementary particles, we will use the aethereal mass concept. In a circular electron-positron orbit, the total transverse kinetic energy in the orbit will be mv^2 , where m is the average mass of the two particles, and where v is their circumferential

speed. This transverse kinetic energy will be equal to the maximum simple harmonic linear kinetic energy as resolved along a diameter, which will in turn be equal to the maximum potential energy that we obtain from Hooke's law. The maximum potential energy will be $2\pi E^2 h^2$. Hence,

$$mv^2 = 2\pi E^2 h^2 \quad (4)$$

and hence,

$$v^2 = 2E^2/\mu \quad (5)$$

where μ is the areal density of the electron-positron dipole. Maxwell demonstrated at equation (108) in his 1861 paper that the dielectric constant E^2 must be equal to πm where Maxwell used the symbol m to denote the rigidity or the transverse elasticity. In order to avoid confusion with mass, the symbol T will be used in this paper instead of m in order to denote transverse elasticity. Maxwell also showed from equation (1) in the same paper that μ equals $\pi \rho$, where μ is the magnetic permeability, and where ρ is density. Hence,

$$v^2 = 2T/\rho \quad (6)$$

From 'escape velocity' theory, we know that the energy required to liberate an electron and a positron from their bound circular orbit will be equal to the amount of transverse kinetic energy which they already possess. We also know that this energy is the 1.02MeV gamma ray energy which is equal to $2mc^2$. [4] Hence,

$$v^2 = 2c^2 \quad (7)$$

and hence from (6) and (7),

$$c^2 = T/\rho \quad (8)$$

This is Newton's equation for the speed of sound, now applied to the speed of light and the luminiferous medium. At equation (128) in his 1861 paper, Maxwell identified E with the ratio of electrostatic units of charge to electrodynamic units of charge. He then used the experimental results that were obtained by Weber and Kohlrausch in 1856 to show that E is equal to the speed of light. On replacing T/Q with E^2/μ in equation (8) (equation (132) in the 1861 paper), and equating μ with 1, Maxwell stated " - - - we can scarcely avoid the inference that light consists in the transverse undulations of the same medium which is the cause of electric and magnetic phenomena - - -". The speed of light is therefore the root mean square (rms) value of the circumferential speed of the electrons and the positrons in rotating electron-positron dipoles, and hence it is the rms speed of the electrons and the positrons in the electric sea. The gamma ray wavelength that can split the electron-positron dipole probably gives some indication of the order of magnitude of the diameter of these fundamental dipoles. They are probably about one thousandth the size of the average atom.

Radiation Pressure

V. Light exerts a force on a physical target. Maxwell calculated the force associated with radiation pressure to be,

$$F = dp/dt = (1/c)dE/dt \quad (9)$$

Where E is energy, c is the speed of light, and p is momentum. By substituting $p = mc$ into equation (9), where m equals aethereal mass, we obtain the relationship,

$$c^2dm = dE \quad (10)$$

which implies that electromagnetic radiation is a net flow of aethereal mass which is related to energy by the equation,

$$E = mc^2 \quad (11)$$

This approach to mass-energy equivalence was first published by Gilbert Lewis in 1908. [5] The combined implication of this section and the preceding section is that a gamma photon with an energy of 1.02MeV contains the amount of aether pressure that is needed to split an electron-positron dipole apart. The speed of light is the Mach number for the electric sea, and it is only in connection with electromagnetic radiation in the electric sea that the famous mass-energy equivalence equation, $E = mc^2$, possesses any physical significance.

Electromagnetism and Kepler's Second Law

VI. The 1887 Michelson-Morley experiment confirmed that the gravitational field of an object entrains an extended region of the luminiferous medium while it is undergoing translational motion. It is now being proposed that the luminiferous medium is a sea of tiny aethereal whirlpools called the electric sea. The entrained region of electric sea which surrounds a moving object will constitute the gravitosphere, and it will extend to the shear region which exists at the boundary with neighbouring gravitospheres. An object and its surrounding gravitosphere move as one, in like manner to an egg yolk and its surrounding egg white.

When an object and its gravitosphere are in motion through the wider electric sea, there will be a compression of the electron-positron dipoles on the windward side of the motion, and a rarefaction of the electron-positron dipoles on the leeward side of the motion. This will result in a vorticity gradient, and the rarefaction on the leeward side will cause a tension that will open the positron sources wider, and hence induce aether pressure (positive charge). In the case of two-body planetary motion, there will therefore be pressure acting on both the leeward side and the windward side of the transverse motion. These two pressures will cancel out mathematically, hence giving rise to Kepler's law of areal

velocity and the law of conservation of angular momentum. But this mathematical cancellation does not correspond to a physical cancellation of the two transverse effects. The two transverse effects are both pressures which cannot physically cancel each other, and neither does the mathematical cancellation have any bearing on the vorticity gradient in the dipoles of the electric sea.

In a non-circular orbit, these two transverse pressure components can be individually observed. Consider a comet in the downward stage of an elliptical orbit. The pressure on the windward side of the motion will cause a Coriolis force to act. This Coriolis force will cause the inward direction of the radial motion to be continually deflected into the leeward transverse direction. The induced transverse pressure that is pushing from the leeward side will meanwhile cause an angular acceleration in the windward direction. This leeward transverse pressure appears like a transverse component of gravity, although it is actually an electric force. Ultimately it is sourced in gravity, in that gravity which is a purely radial force causes kinetic energy to accumulate. The aethereal pressure that is associated with this accumulated kinetic energy, in turn sources the transverse inertial force, $\partial\mathbf{A}/\partial t$, which creates the angular acceleration at the expense of the downward radial acceleration. The increasing transverse speed then gives rise to an increasing outward radial centrifugal force which eventually exceeds the inward radial gravitational force, hence causing an outward recoil effect. The Keplerian orbit will therefore be characterized by a constant transfusion of aether from positrons to electrons. The fine-grained swirling motion of the aether is therefore acting like cog-wheels in the mechanism.

In the case of an electron and a positron which are spiralling inwards in a positronium orbit, the accumulated aether pressure does not cause them to recoil at the moment of closest approach. Instead, they take their place inside the double helix magnetic field structure, and the accumulated aether pressure itself recoils in two opposite directions in the form of gamma photons. The angular momentum is transferred into the fine-grained angular momentum of electromagnetic radiation. No

actual electron-positron annihilation takes place as is commonly believed. The electron and the positron are still physically present in the magnetic lines of force.

When a wire moves at right angles through a magnetic field, the input force generates aether pressure from the positrons on the leeward side of the wire, due to rarefaction of the aether. This aether pressure gives rise to an electromotive force, $\partial\mathbf{A}/\partial t$. The aether pressure on the windward side of the motion will be due to compression of the electron-positron dipoles. The resulting vorticity gradient in the electron-positron dipoles around the wire will therefore cause a Coriolis force which will deflect the newly generated leeward aether pressure at right angles along the wire, giving rise to an electric current. Convectively induced electromagnetic induction is therefore closely related to Kepler's second law of planetary motion. The general equation for both Kepler's second law and convective electromagnetic induction is,

$$d\mathbf{A}/dt = \partial\mathbf{A}/\partial t - \mathbf{v} \times \mathbf{B} = 0 \quad (12)$$

As stated earlier, \mathbf{A} is equal to $q\mathbf{v}$. In the Keplerian case, the vector \mathbf{B} will therefore be equal to $2q\boldsymbol{\omega}$, where $\boldsymbol{\omega}$ is the angular velocity, since the electric sea within which the planets move is a rigid solid, albeit that it contains within it an aether juice. This aether juice lubricates the shears in the electric sea when motion occurs.

In the case of electromagnetic induction, q refers to the magnetic permeability μ which is the areal density of a cross section of magnetic lines of force. The velocity vector \mathbf{v} that is contained within the \mathbf{A} vector then becomes the circumferential velocity of the electrons and the positrons. The vector \mathbf{B} then becomes $\mu\mathbf{H}$, where \mathbf{H} is the vorticity of an electron-positron dipole. We call the vector \mathbf{H} the magnetic field strength and we call the vector \mathbf{B} the magnetic flux density.

Maxwell's Displacement Current

VII. Maxwell's displacement current is used in connection with Ampère's circuital law in order to derive the electromagnetic wave equation. In order for this to be possible, the electric field must obey the relationship $\mathbf{E} = \partial\mathbf{A}/\partial t$ where $\text{curl } \mathbf{A} = \mathbf{B}$. Since \mathbf{B} is equal to $\mu\mathbf{H}$, where \mathbf{H} is a measure of vorticity, it follows that $\partial\mathbf{A}/\partial t$ must be an angular acceleration. Therefore, at any point in space where electromagnetic radiation exists, there must be a state of angular acceleration. A vacuum cannot supply this state of angular acceleration. We need to have something physically present at every point in space which can undergo angular acceleration. A rotating electron-positron dipole would be adequate for the purpose.

When we derive the electromagnetic wave equation, we are working on the premises that \mathbf{E} will equal $-\partial\mathbf{A}/\partial t$ as per Faraday's law. As such,

$$\partial\mathbf{E}/\partial t = -\partial^2\mathbf{A}/\partial t^2 \quad (13)$$

We will now look at equation (13) in relation to Ampère's Circuital Law. Ampère's Circuital Law is,

$$\nabla \times \mathbf{B} = \mu\mathbf{J} = \mu\mathbf{A} \quad (\text{Ampère's Circuital Law}) \quad (14)$$

If we define displacement current as,

$$\mathbf{J} = \varepsilon\partial\mathbf{E}/\partial t \quad (\text{Displacement Current}) \quad (15)$$

then it follows from (13), (14), and (15) that,

$$\mathbf{A} = -\varepsilon\partial^2\mathbf{A}/\partial t^2 \quad (16)$$

This is a simple harmonic equation in which ε is the inverse of the elastic constant. Displacement current can therefore be justified on the grounds of the existence of some kind of oscillatory disturbance in the aether,

with the electric permittivity ϵ being related to the elasticity. It further follows that since,

$$\nabla \times \mathbf{A} = \mathbf{B} \quad \text{(Maxwell's Second Equation)} \quad (17)$$

and since,

$$\nabla \times \mathbf{B} = \mu \mathbf{A} \quad \text{(Ampère's Circuital Law)} \quad (18)$$

that we are dealing with interlocking solenoidal lines of electric current and magnetic force at every point in space. This state of affairs could only come about if the aether were to be rendered into a state of tiny vortices as per Bernoulli, Maxwell and Tesla.[6]

The Electromagnetic Wave Equation

VIII. Combining equations (16), (17), and (18), we obtain,

$$\nabla \times (\nabla \times \mathbf{A}) = -\mu \epsilon \partial^2 \mathbf{A} / \partial t^2 \quad (19)$$

This expands to,

$$\nabla (\nabla \cdot \mathbf{A}) - \nabla^2 \mathbf{A} = -\mu \epsilon \partial^2 \mathbf{A} / \partial t^2 \quad (20)$$

Equation (20) reduces to the electromagnetic wave equation when $\nabla \cdot \mathbf{A}$ is equal to zero. The zero divergence of the vector \mathbf{A} means that the electromagnetic wave equation is describing a propagation of fine-grained angular acceleration. While aether pressure and net aether flow must be involved in the propagation mechanism, equation (20) does not yield any information regarding this mechanism. The propagation mechanism needs to be guessed.

Every forced angular acceleration or precession of an electron-positron dipole will induce excess aether pressure from the positron. This

pressure will exert a torque and hence propagate the same effect to a neighbour. The induced excess aether will move across to that neighbour. When the cycle repeats in relation to a third dipole along the line, the excess aether pressure in the second dipole will sink into the electron during the deceleration stage. Hence electromagnetic radiation is a propagation of angular acceleration as well as being an in and out flow of aether from sinks (electrons) and sources (positrons). It is a transverse wave, a longitudinal wave, a rotational wave, an in/out wave, and also a coherent net flow of mass, energy, aether pressure, and positive magnetic charge.

Universal Stability

IX. Gravity is an all prevailing aether tension that is associated with the radial and irrotational flow of aether through the electron-positron sea, and into the sinks of atomic and molecular matter. It is therefore a monopole field which obeys the inverse square law.

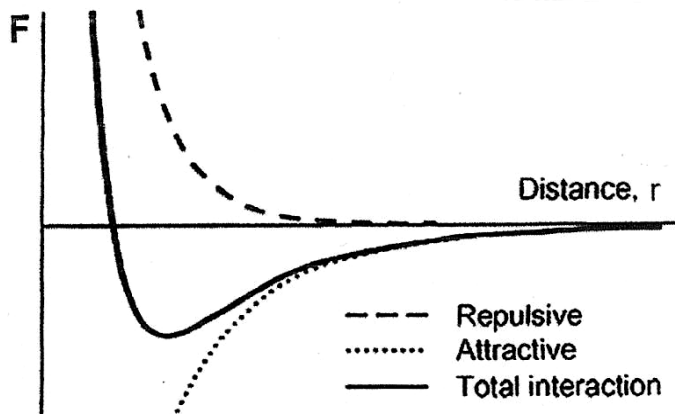


Fig. 2 Graph showing the stability node which exists when a repulsive force acts in tandem with an attractive force, providing that the inverse power law of the repulsive force is not equal to the inverse power law of the attractive force. In a planetary orbit, the repulsive force is an inverse cube law, whereas the attractive force is an inverse square law. A graph of this shape also arises in connection with intermolecular forces.

The repulsive forces of nature on the other hand are all due to aether pressure which can often be traced to centrifugal force in the electric sea. On the large scale, the centrifugal force obeys the inverse cube law,

which means that when it operates in conjunction with the attractive force of gravity, there will be a stability node which will prevent the planets from spiralling inwards towards each other. See Fig. 2 on the previous page.

In the special case when a planet is undergoing a circular orbit, the gravitational tension will exactly cancel the centrifugal pressure both mathematically and physically. The centrifugal force is induced convectively by absolute transverse motion, whereas it is believed that gravity is dependent only on mutual charge and radial distance. It is nevertheless possible that the induction of centrifugal pressure at the shear region will alter the leakage of the aether through the electrons of the electric sea in the vicinity. The leakage is related to the universal gravitational constant. Hence transverse motion, in addition to undermining gravitational tension by inducing centrifugal force, may also have an effect on the magnitude of that gravitational tension itself.

It is generally believed that magnetic force obeys the inverse square law despite the fact that magnetic levitation is possible. Although magnetic levitation may be explained away on the basis that the point of origin of the gravitational field and the point of origin of the magnetic field are different, its existence still nevertheless casts a question mark over the common belief that magnetic force obeys the inverse square law. As regards the electrostatic repulsive force that is involved in intermolecular stability, it definitely does not obey the inverse square law, despite Coulomb's law.

Both magnetic and electrostatic forces are rooted in aether pressure in the magnetized or the linearly polarized electric sea. In the case of electrostatics, the aether tension or the aether pressure in a body will linearly polarize the surrounding electric sea. The opposite polarizations associated with negative or positive charge will polarize the electric sea in opposite directions. Hence, the electric field lines in the space between two like charges will spread outwards and meet each other laterally. The two like charges will therefore repel each other on the basis of the centrifugal aether pressure which exists in the equatorial planes of the

electron-positron dipoles. The mild negative charge that is associated with the large scale gravitational aether inflow will work in opposition to the mutual repulsive force that exists due to the fine-grained centrifugal aether pressure in the electric sea. Hence as we increase the mutual negative charge between two bodies, a reversal threshold will be reached where the mutual attraction is overridden by a mutual repulsion. The existence of this reversal threshold further suggests that electrostatics does not obey the inverse square law.

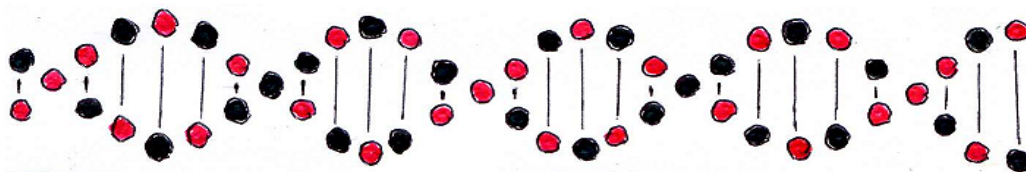
Electric Current

X. The aether has very important implications for electric current. When electric current is understood in terms of a flow of pressurized aether, it then becomes clear that a wire loop that is rotating in a magnetic field is actually screwing aether out of the electric sea. Aether will be pumped outwards from the generator and into the circuit during both halves of the cycle. The thing that changes during each half of the cycle is the direction of the circulation of the current. Electric current is a solenoidal flow of aether which begins at a source and ends in sinks that are dotted all along its path. If the input pressure is greater than the outflow tension, then the electric current circuit will expand. This expansion often occurs between two wires, with a connecting bridge of current joining the two wires. This joining current is referred to as 'linear displacement current'. The name 'displacement current' is a hangover from the days when it was still believed that it only arose in conjunction with the linear polarization of a dielectric, and that belief was of course correct. The joining current causes a linear polarization of the electron-positron dipoles in the electric sea, and this in turn causes an impedance. The aethereal current will therefore advance laterally in order to circumvent this impedance. When the electric current has totally expanded within a conducting circuit, the aether pressure will then flow entirely within the conducting material, and it will wash the free electric particles along with it.

A purely particle model of electric current does not work, because it implies that alternating current is a symmetrical backwards and forwards motion of particles in a wire. Such a symmetrical situation would fail to address the net input of energy to an alternating current circuit. That is why there was such confusion when Tesla first advocated alternating current (AC). His opponents couldn't see how there could be a net movement of energy into the circuit, and so they thought that rectification to direct current (DC) was essential. The correct understanding of electric current has been yet another important casualty in modern physics as a consequence of the abandonment of the aether. The aether is in fact the original vitreous electric fluid.

Conclusion

XI. Maxwell's sea of molecular vortices was abandoned prematurely. Space is densely packed with electrons and positrons which act as sinks and sources for the aether. These electrons and positrons are mutually paired in dipole orbits, and they form double helix chains around their mutual rotation axes. These double helix chains constitute magnetic lines of force. Hence space is an electric sea of tiny aethereal whirlpools, and the aether pressure that emerges from these whirlpools when the electric sea is disturbed, accounts for both the electromagnetic forces and the inertial forces. Magnetic lines of force are solenoidal, yet they are riddled with sinks and sources. In the dynamic state, these magnetic field lines are breaking and rejoining, with the sinks of one line re-connecting with the sources of another line. The aether has been sacrificed in modern physics to make way for the foolish theories of relativity.



Appendix A

The gradient of the scalar product of two vectors can be expanded by the standard vector identity,

$$\nabla(\mathbf{A}\cdot\mathbf{v}) = \mathbf{A}\times(\nabla\times\mathbf{v}) + \mathbf{v}\times(\nabla\times\mathbf{A}) + (\mathbf{A}\cdot\nabla)\mathbf{v} + (\mathbf{v}\cdot\nabla)\mathbf{A} \quad (1A)$$

Let us consider only the vector \mathbf{A} to be a vector field. If \mathbf{v} represents arbitrary particle motion, the first and the third terms on the right hand side of equation (1A) will vanish, and from the relationship $\text{curl } \mathbf{A} = \mathbf{B}$, we will obtain,

$$\nabla(\mathbf{A}\cdot\mathbf{v}) = \mathbf{v}\times\mathbf{B} + (\mathbf{v}\cdot\nabla)\mathbf{A} \quad (2A)$$

Hence,

$$(\mathbf{v}\cdot\nabla)\mathbf{A} = -\mathbf{v}\times\mathbf{B} + \nabla(\mathbf{A}\cdot\mathbf{v}) \quad (3A)$$

Since,

$$d\mathbf{A}/dt = \partial\mathbf{A}/\partial t + (\mathbf{v}\cdot\nabla)\mathbf{A} \quad (4A)$$

it then follows that,

$$d\mathbf{A}/dt = \partial\mathbf{A}/\partial t - \mathbf{v}\times\mathbf{B} + \nabla(\mathbf{A}\cdot\mathbf{v}) \quad (5A)$$

Appendix B

The curl of the vector product of two vectors can be expanded by the standard vector identity,

$$\nabla\times(\mathbf{v}\times\mathbf{B}) = \mathbf{v}(\nabla\cdot\mathbf{B}) - \mathbf{B}(\nabla\cdot\mathbf{v}) + (\mathbf{B}\cdot\nabla)\mathbf{v} - (\mathbf{v}\cdot\nabla)\mathbf{B} \quad (1B)$$

Let us consider only the vector \mathbf{B} to be a vector field. If \mathbf{v} represents arbitrary particle motion, the second and the third terms on the right hand side of equation (1B) will vanish. If we consider the vector \mathbf{B} to be solenoidal, the first term on the right hand side will also vanish due to the fact that the divergence of \mathbf{B} will be zero.

Hence,

$$\nabla \times (\mathbf{v} \times \mathbf{B}) = -(\mathbf{v} \cdot \nabla) \mathbf{B} \quad (2B)$$

The differential operator d/dt can be expanded as follows,

$$d/dt = \partial/\partial t + (\mathbf{v} \cdot \nabla) \quad (3B)$$

Hence,

$$d\mathbf{B}/dt = \partial\mathbf{B}/\partial t + (\mathbf{v} \cdot \nabla) \mathbf{B} \quad (4B)$$

Since $\text{curl } \mathbf{A} = \mathbf{B}$, it follows that equation (4B) is obtained by taking the curl of equation (5A),

$$d\mathbf{A}/dt = \partial\mathbf{A}/\partial t - \mathbf{v} \times \mathbf{B} + \nabla(\mathbf{A} \cdot \mathbf{v}) \quad (5B)$$

References

[1] ET Whittaker, A History of the Theories of Aether and Electricity; The Classical Theories (London; New York, American Institute of Physics, 1987) p.6

[2] Clerk-Maxwell, J., "On Physical Lines of Force", Philosophical Magazine, Volume 21, (1861)

http://vacuum-physics.com/Maxwell/maxwell_oplf.pdf

[3] The idea that space is densely packed with electrons and positrons was originally conceived in 1982 in an attempt to explain Maxwell's

displacement current without altering Ampère's Circuital Law. The idea did not come about in relation to any considerations of the concept of the Dirac Sea. It has since come to light that quite a number of other scientists are advocating such an approach. Since 2004, with the advent of the Internet, discovery has been made of the works of Dr. Menahem Simhony in Jerusalem, and Dr. Allen Rothwarf in the USA, both of whom advocate that space is densely packed with electrons and positrons, and who are referenced at [4] and [7] below. Ian Montgomery and Peter Whan in Australia are jointly working on a model in which gravity is caused by the flow of a sea of electron-positron couplets into matter, and in which the electron-positron sea, which they term 'The Norton Sea', acts as the luminiferous medium. Arden Barker (Monitek@aol.com) advocates a sea of electron-positron dipoles to act as the carrier of electromagnetic radiation. Ray Fleming in Texas advocates that space is filled with electrons and positrons, and John Polasek advocates an electron-positron lattice theory along similar lines to that of Dr. Simhony. Polasek's website can be accessed below.

<http://www.dualspace.net/>

[4] Simhony, M., "The Electron-Positron Lattice Space, Cause of Relativity and Quantum Effects", Physics Section 5, The Hebrew University, Jerusalem (1990)

<http://web.archive.org/web/20040606235138/www.word1.co.il/physics/mass.htm>

[5] Lewis, G.N., "A Revision of the Fundamental Laws of Matter and Energy", *Phil. Mag.* **16**, 705-17, (1908)

[6] John J O'Neill said "*Long ago he (Tesla) recognized that all perceptible matter comes from a primary substance, or tenuity beyond conception, filling all space, the Akasha or luminiferous ether, acted upon by the life giving Prana or creative force, calling into existence, in never ending cycles all things and phenomena. The primary substance, thrown into infinitesimal whirls of prodigious velocity, becomes gross matter; the force subsiding, the motion ceases and matter disappears, reverting to the primary substance.*" (Grotz, 1997)

The 1937 Encyclopaedia Britannica article on 'Ether' discusses its structure in relation to the cause of the speed of light. It says, "POSSIBLE

STRUCTURE. __ The question arises as to what that velocity can be due to. The most probable surmise or guess at present is that the ether is a perfectly incompressible continuous fluid, in a state of fine-grained vortex motion, circulating with that same enormous speed. For it has been partly, though as yet incompletely, shown that such a vortex fluid would transmit waves of the same general nature as light waves _i.e., periodic disturbances across the line of propagation_ and would transmit them at a rate of the order of magnitude as the vortex or circulation speed - - -"

It was not made clear from the article whether or not they were referring to Tesla's theory.

[7] Rothwarf, Dr. Allen, "An Aether Model of the Universe" (1998)
<http://arxiv.org/abs/astro-ph/0703280>