AN ANALYSIS OF THE ELECTRON

There are at least two factors which would justify an analysis of the electron. One factor would lie in the theoretical framework outlined in the paper, An Intensive Scrutiny of the Atom. Parts of this paper provide new insight into the nature of the electron. A second, and more important reason for implementing an analysis of the electron would lie in the following argument.

If the reader has read the paper just mentioned in the first paragraph, then you would be cognizant of something. I am of the firm and unequivocal opinion that there is a substantial flaw in rudimentary atomic theory. However, it seems like I am the only one who has ever seriously viewed this as a flaw. In a similar way, there seems to be a substantial flaw in electromagnetic theory, even if I am the only one to have realized the existence of this flaw. It should be pointed out that although it is with electricity that this idea most frequently "manifests" itself, this flaw in our theoretical perspective exists whenever an electron is continuously producing any form of energy of one kind or another. It is simply with electricity that electrons are most frequently utilized to produce energy. Since this problem does exist whenever electrons engage in some type of interaction and produce energy, it may be easier to convince the reader of the validity of the precept (the flaw in existing theory) by first delving into another phenomenon which is not so common to our every day lives but which also exhibits this problem. We will analyze the aurora borealis (northern lights).

The northern lights are produced as a result of the following interaction. The earth's magnetic field accelerates free electrons. As the reader is well aware, an accelerating electron will emit photons whose frequency is directly proportional to the magnitude of the electron's acceleration. In proceeding with our analysis of the aurora borealis, let's focus our analysis on a singular electron. What enables the electron to emit photons "forever"? The reader would naturally be inclined to state the earth's magnetic field. However, when a photon is produced, the earth's magnetic field is only one factor involved in the production of that photon. The magnetic field accelerates the photon. But the electron *itself* must be involved in the production of that photon. Since the photon is a form of energy, the electron must get "degraded" in some way when that photon is produced. Since this explanation is obviously not clear, a silly analogy may serve to elucidate its meaning. Let's assume we have a stick that has a tiny little engine (that operates on the basis of a chemical propellant) attached to it. The engine is ignited and the stick becomes airborne. The stick flies with a reasonably high velocity through the air and creates friction as it moves through the air. Since the velocity is reasonably high, heat, which is obviously a form of energy is generated via the friction. What is required in order to attain the production of this heat? *Two* forms of energy are required. One form of energy comes from the chemical propellant of the little engine. As the stick proceeds through the air, more and more propellant is being utilized. However, the stick is *also* being degraded as the heat is generated. If this continues for a sufficient period of time, eventually there will be no stick left. It is a similar type of situation with the northern lights. One form of energy that is required to produce the photons is the earth's magnetic field in order to accelerate the electrons. But the electron itself must also lose some form of energy when photons are produced (exactly what is being lost will be discussed in this paper, but suffice to state that the electron is *not* gradually vanishing in the same way that our hypothetical stick is vanishing). This is the similar situation with electricity. When electricity is being produced, there are two *different* forms of energy that are being "given up" to produce this energy. One form of energy is, of course, the burning of coal. This heats the water, produces steam, and causes a conductor to rotate in a magnetic field. Therefore, when it comes to the running of electrical

appliances, coal being burnt is one form of energy that is "given up". However, there is a second form of energy that is given up when electricity is produced. The electron itself is losing an incremental amount of its energy when an electric current is produced. Since it has already been stated that the physical electron is *not* "becoming smaller" (i.e. giving up a part of itself to produce the energy), the natural question would be, what element of the electron is being lost? This paper will address that issue. The critical elements from some of the papers from this web site which have bearing on this issue will be briefly reviewed. (It is most judicious if the reader reads these papers for himself. This all too brief review will be opaque unless the papers have been previously read.)

In the paper on magnetism, the repulsion and attraction of a magnetic field was attributed to certain lines of force. Energy was an intrinsic element of these lines of force and the equation E=BH(CONSTANT) was presented. In the paper, An Intensive Scrutiny of the Atom, the electron was presented as being comprised of two primary sub-components. Lines of force which are similar to the lines of force on a magnet are present on each of these sub-components. There is no repulsion between the sub-components (even though the lines of force are propagating in opposite directions) as the sub-components are so "delicately aligned" that the lines of force from each component slide over and past each other. For the purpose of this paper, certain points pertaining to how these lines of force make contact with each other should be clarified. In the paper An Intensive Scrutiny of the Atom, it was emphasized that the lines of force *do not* meet at the point where the lines begin to close back on themselves and establish the closed loops. Consequently, repulsion is prevented. It is important to state that the reader should not misinterpret this as meaning that the lines of force *cannot* make contact at any point. When the lines of force slip over and past each other, *given the provision that certain conditions prevail* it is possible for there to be direct contact between the lines of force. It is entirely possible for the lines of force to make contact *on condition* they do not make "head on" contact directly where the closed loops begin to form.

With this background, we can now proceed with the analysis of what is being "lost" by the electron when electricity (or the aurora borealis) is being produced. As has already been stated, when the lines of force slip over and past each other, the lines of force can potentially make contact with each other. The condition that would have to prevail to enable the lines of force to make contact would be the acceleration of an electron such as is achieved when an electric current is generated or when an electron is directly subjected to a magnetic field. Once there is direct contact, there would be friction between the lines of force. Heat is derived from friction. In the paper on light, the equation $E = I_{(c)}(fh)$ (CONSTANT) was presented showing that light is a source of energy and not merely a form of energy. From this point, the analysis is lacking in details. There are certain questions from this analysis which I will have to answer in the future. Through some type of reaction, whether it be via the internal "mechanism" of the electron and/or the acceleration of the electron (or some other unknown factor) a photon is created and emitted. However, when this photon is created, the lines of force have lost an *incremental* amount of energy (this would also apply when an electric current is being generated to produce energy). If some degree of energy has been lost, how will this manifest itself with the electron? Although the electron is not a magnet, it could be argued that the electron could be viewed in a similar capacity to a magnet given the fact that (a) the electron has a magnetic moment and, (b) the analysis in the paper An Intensive Scrutiny of the Atom has shown that there are strong correlating factors between magnets and quantum entities such as protons and electrons. Given these factors, then it is possible to view an electron in a somewhat similar capacity to a magnet. That entails that when analyzing the magnetic moment of the electron the equation E=BH(CONSTANT) could be applied to the electron.

(Obviously it would not be a complete equation for the electron as $E=mc^2$ would also have bearing. Nevertheless, E=BH(CONSTANT) is, to one extent or another, applicable to the electron.) Consequently, if the lines of force are losing some degree of energy, then the electron's "magnetic induction" (if such a term could be applied to the electron) is slightly decreased. Therefore, the electron's magnetic moment would be slightly reduced. At this stage, the reader may feel that if this theory is correct, then every time an accelerated electron produces a photon, or an electric current is utilized for the production of energy, then there should be a *clearly measurable* change in the electron's magnetic moment. This would not necessarily be true. Although the specifics will *not* be delved into in this paper, there is reason to believe that there would be an *inordinate* amount of time prior to this loss of energy becoming effectively measurable (vis-a-vis the electron's magnetic moment). Precise calculations cannot be rendered as the constants in the equations for magnetism and light (as outlined at this web site) remain to be established. Another unanswered question which prevents precise calculations as to when an electron's magnetic moment becomes *measurably* reduced pertains to the *exact* mechanism by which a photon is created by an electron. Suffice to state that it may be years, even decades, (conceivably even centuries) prior to the reduction of an electron's magnetic moment being rendered clearly measurable. If there is an attempt to measure an electron's magnetic moment subsequent to it emitting a myriad of photons, it is virtually guaranteed that our current level of technology would be incapable of measuring the incremental reduction in the electron's magnetic moment. It was stated that explicit details would not be delved into in this paper as to why there is a legitimate belief that electrons would require an inordinate amount of time before their magnetic moment was significantly reduced. However, the reason will be briefly alluded to. (It should be stated that the following would be of far greater interest to an astrophysicist/astronomer than a chemist.)

Stellar evolution is an integral aspect of astronomical theory. A component of stellar evolution entails the eventual death of stars. Stellar evolutionary theory dictates that it may require billions of years prior to a star's death. In the astronomy section under the paper of The Primary Source of Stellar Energy, an alternative primary energy source is theorized for stars. Although the details will not be delved into here, suffice to state that electrons have a role to play in that primary source. Therefore, it is through a combination of this paper, some of the work in the astronomy section, and the paper on light in the physics section, that there is a strong belief that there would be an inordinate amount of time before an electron loses its magnetic moment. I realize that this is rather vague, but since this paper is meant for the chemist, it would be inappropriate to expound upon astronomical theory. Besides, if the reader is so inclined, he can feel free to read those papers at his leisure.