AN EXPLANATION OF MATTER

By virtue of the rather unusual title of this paper, the reader may be confused as to what this paper could pertain to. Previous papers at this web site (most specifically An Intensive Scrutiny of the Atom) have provided far more insight into the fundamental nature of atoms and their constituents (electrons, protons, and neutrons) than contemporary theory provides. Working within the parameters of these principles, the purpose of this paper will be to outline the exact role that electrons, protons, and neutrons play in establishing various forms of matter and their individual properties. There should be further clarification of this point since what has just been stated may be strongly conducive to misinterpretation. This paper will not delve into specifics such as what would account for a two degree difference in the boiling point of certain substances. An example of what this paper will explain is as follows. What is the role of the neutron in atoms/matter? The reader may state that it's a part of the nucleus. Yes, but what *function* does it serve within the nucleus, and subsequently, matter? Prior to the establishment of this web site, nobody could effectively answer this question. This paper will provide the answer to questions of this nature as it pertains to the electron, proton, and neutron and their function in atoms/matter. If the reader has read An Intensive Scrutiny of the Atom (and it would be most judicious to do so otherwise this paper would be essentially incomprehensible) some of this material has already, to one extent or another, been addressed in that paper. However, this paper will be far more explicit in outlining the details of the function of an atom's (primary) constituents.

We will start with the neutron. The neutron is responsible for establishing the binding force of the nucleus. It is the neutron that enables an atomic nucleus to exist. As stated in An Intensive Scrutiny of the Atom, the opposite poles of two different protons do not come together as a result of the repulsive effect of the muon neutrino and antineutrino on the exterior poles of the protons. Therefore, there must be some force between them that would, via this intermediary force, enable protons to "coexist" and establish an atomic nucleus. The neutron constitutes this intermediary force as it is “forced” between protons during the course of high energy reactions. When dealing with the neutron, it is the two sub-components of the proton which attract the two other protons. Furthermore, the electron neutrinos on the exterior poles of the sub-components of the electron (on the neutron) attract each other (albeit in a weak manner) and cause one neutron to be attracted to another. Therefore, the function of one of the atom's three primary constituents has been established.

The function of the neutron is to enable the atomic nucleus to exist by (predominantly) constituting the attractive force between protons and, on a secondary level, exerting an attractive force on other neutrons.

The proton will be analyzed next. When the proton is "established" within the nucleus (or simply exists as in the case of a hydrogen atom) it enables an electron to assume a designated orbital within the atom. Once again, this was mentioned in An Intensive Scrutiny of the Atom. When it comes to the lighter elements, every proton added to the nucleus serves in the capacity of functioning as an attractive force that enables another electron to assume a designated orbital. (For the heavier elements the protons still function in this capacity, but not in the exact same direct

manner). Without these positive charges in the nucleus, negative charges could not be established outside of the nucleus.

> *The function of the proton is to provide a positive charge within the atom and enable the electrons to assume designated orbitals.*

Singular functions have been established for the proton and neutron. This is not the case with the electron. The electron serves various functions in establishing certain properties of matter and even in establishing fundamental forces. One of the primary factors which determines the different properties of elements/compounds pertains to the electrons. One of the factors is simply the number of electrons and their state of movement. As one example of this, why are some of the lightest elements gases (barring of course very low temperatures) while the heavier elements are solids? The other paper previously mentioned provides a degree of insight into this question but did not explicitly address the issue. The electrons (or more explicitly the neutrinos associated with them) have a primary role to play in the establishment of solids and liquids. If there are an insufficient number of electrons on an atom, there would be an insufficient "surface area" (speaking *very* loosely) by which the electrons/neutrinos from one atom would be able to bond with the electrons/neutrinos from another atom. A certain minimum number of electrons may be required to induce the requisite bonding forces for the establishment of a solid. If that minimum number is not met, solids would not be able to form (unless such factors as pressure and temperature were taken to an extreme). However, the potential establishment of solids is only one of numerous other properties which would be affected by the number of electrons. (It has already been stated that this paper will *not* delve into elaborate details of all properties of substances. Only vague precepts will be presented in order to provide a general concept of the primary functions of these particles). However, the number of electrons is not the only factor to have bearing on certain properties. *The state of motion* of electrons will also have bearing. The state of motion can be affected by various factors. One is whether certain valence electrons are covalently or ionically bonded when compounds are formed. Another factor pertains to nuclear charge. Atoms with a high atomic number possess larger nuclei. Consequently, the inner electrons will be more strongly attracted to the nucleus and possess less freedom of movement. Conversely, the higher the atomic number, the greater the overall number of electrons. Therefore, there will be greater repulsion among the electrons and a much greater freedom of movement for the *outer* electrons. Since explicit details were not developed, these various concepts can be summarized via the following.

> *The primary factor which will decide certain properties of elements/compounds is the number of electrons and their state of motion.*

As outlined in An Intensive Scrutiny of the Atom, it is electrons/neutrinos which enables matter to exist at all. Without the "binding force" of the neutrinos the electromagnetic repulsion among atoms would be more than sufficient to prevent the formation of *any* solids or liquids. Secondly, as outlined under the paper, The “Groundwork” for Answering Some of Physics Most Confounding Problems it is the neutrino which is responsible for gravity. Therefore, the neutrino associated with the electron is also responsible for gravity. At this stage, the reader may feel that it is not the electron which is responsible for these two phenomena (the formation of liquids and

solids as well as gravity) but rather, the neutrino. However, keep in mind that it is the neutrino that is *associated* with the electron which is responsible for these phenomena. Secondly, under the astronomy section when the missing matter is addressed, it is pointed out that if the universe were comprised of nothing but neutrinos, there would be no gravity. Matter is required for gravity to exist. (This principle will not be expounded upon in this paper as it is fundamentally irrelevant to the purpose of this paper).

> *The electron and its associated neutrino is responsible for the binding force between atoms that enable solids, and liquids to form. It is also largely (but not exclusively) responsible for gravity.*

When dealing with the higher elements, the outer electrons cannot be attracted to the nucleus because of the shielding effect and the distance from the nucleus. Therefore, the electrons (or more specifically their associated neutrinos) in one shell ("m","n", etc.) would constitute the force which would attract the electrons in the next shell and enable them to establish themselves in their designated orbitals. Again the reader may feel that this function should be attributed to the neutrino and not the electron itself. However, the similar previous argument comes into play. Namely, neutrinos are intricately linked with electrons.

> *In the higher elements, electrons and their associated neutrinos function in the capacity of an attractive force and enables electrons at a distance from the nucleus to establish themselves in their designated orbitals.*

As the reader can see, the protons and neutrons have very little to do with the properties of matter. Their primary function is to establish the nucleus. It is predominantly the electrons which have bearing on the properties of matter. We now possess a superior knowledge of the precise function(s) of the proton, neutron, and electron than previous theoretical knowledge provided.