## $\sqrt{116}$ Understanding the Bible

protons, electrons, and various other atomic and sub-atomic particles.

It has been estimated that the entire observed universe contains  $10^{80}$  particles (i.e., 10 followed by 79 zeros). For most of us, this is an inconceivable number! And yet God has created them from nothing, by the Word of His power. Incidentally, by way of comparison, the entire earth contains  $10^{50}$  atoms (10 followed by 49 zeros), and a single cup of water contains  $10^{25}$  atoms (10 followed by 24 zeros, or 10 trillion trillion atoms).

With respect to the age of the universe (and thus the age of primal matter), a number of astrophysicists, computing back from the present rate of expansion of the universe to the beginning of the expansion, have arrived at a figure of 10-13 billion years. In addition, astronomical evidence indicates that the energy emitted by certain galaxies (whether in the form of light waves or radio waves) left those galaxies several billion years ago.

**Event #2** (included in Genesis 1:1) -- God's Mediate Creation of the basic structure of the universe, a process which began after the creation of primal matter-energy, and continued for a vast period of time of indefinite duration.

This process, which proceeded during the long phase of the universal expansion of the universe, refers to the formation, out of the original gaseous agglomerate of energy and matter, of the various elements; and to the condensation of enormous amounts of galactic gas into the large groupings of galaxies and stars which form the essential structure of the physical universe.

**Event #3** (included in Genesis 1:1) -- God's Mediate Creation of our own galaxy (the Milky Way Galaxy), a process which occupied a long period of indefinite duration.

The Milky Way Galaxy, as it presently appears to us, is a vast aggregate of star clusters, stars, interstellar gas, and interstellar dust, arranged in the shape of an enormous disk somewhat bulged in the middle (viewing it edge-on) or in the shape of a pinwheel, containing spiral arms winding outward from a central nucleus (viewing it from the top). The size of our galaxy is almost beyond comprehension. The distance from one edge to the opposite edge is roughly 100,000 light years, i.e., the distance light