Quest for a Creatorless Origin of Life - 10

The Miller-Urey experiment was an attempt to simulate conditions thought to exist on earth four billion years ago. Although it was successful in producing some primary chemical building blocks of life, not all scientists accepted that it was valid.

In addition to the geologists disagreeing about the composition of the atmosphere, another serious objection was raised by biochemists. They pointed to the known fact that the very large molecules which exist in living organisms are also very delicate. These molecules easily break apart when exposed to high energy such as strong sunlight.

The consequence of this is that the same energetic conditions which produced the chemical building blocks in the Miller-Urey experiment, also tend to destroy the super-sized molecules which are required for life. These objections sent some of the scientists who were seeking the origin of life to look for a place away from the sunlight.

Remarkably, they discovered life in the hostile conditions at the bottom of the ocean, where sunlight never reaches. Others found microbes far below the surface of the earth, living in solid rock! More than 2¼ km below the waves, they found single-celled vent organisms, which obtain energy from the mixing of hot sulphurous water with the surrounding cold ocean. From this some scientists proclaimed that hydrothermal vents were the likely place where life spontaneously generated.

A sequence of chemical steps were outlined which began with ocean chemicals and ended with living organisms. Problems with this idea were soon forthcoming. Hydrothermal temperatures, which rise above the sea level boiling point of water, would have broken down the intermediate complex molecules before they had time to be combined in further chemical steps to produce life.

Another serious objection was concerning the assumption that the ocean water, in what they believe to have been in the ancient ocean, contained a similar proportion of oxygen as in modern oceans. But current belief is that such an ancient ocean would have very little oxygen.

Despite these objections, many origin of life researchers refused to be put off by them. It appears they found encouragement in the subsequent discovery of more and more hydrothermal communities of organisms around the world's oceans, and support for the idea grew.

Since the discovery of life around deep sea volcanic vents, scientists were on the look-out for more signs of life deep in the earth. Drilling deep into subterranean rock, they found living microbes in all the classes of rock: igneous (volcanic), sedimentary (formed by the deposition of sediment) and metamorphic (igneous or sedimentary rock transformed by means of heat, pressure, or other natural agencies).

This raised the question in some, whether life on earth had originated in these depths. Those who were particularly concerned with finding a Creatorless origin of life now began some highly focused research. They were convinced that to decide which theory was correct, it would be demonstrated by chemical experiments. These tests could not be conducted in the commonly occurring rooms or buildings which have been set aside and equipped for scientific experiments. A lab was needed to imitate the conditions of high pressure and temperature deep in the earth.