

## Quest for a Creatorless Origin of Life - 7

Science, by its very name, speaks of the pursuit of knowledge, of verifiable facts. In recent times much knowledge has been gained in the physical sciences. One of these concerns the relationship between heat and other forms of energy, such as mechanical and electrical - the branch of physical science called thermodynamics.

One fundamental fact of this relationship is called the First Law of Thermodynamics, which concerns the principle of the conservation of energy. This fact is that the total amount of one kind of energy - say the electricity coming from a hydroelectric power station for one hour - does not change, even though that electricity has been used to produce the heat of a cooking stove, the lights in a house, and the mechanical energy of a food processor.

Of direct interest regarding the origin of life is the Second Law of Thermodynamics, which observes the restrictions on how energy can change from one form to another. In the case of heat, the energy flows in one direction only: it always flows from a hotter place to a colder one - never in the other direction.

As an example, the heat energy flowing from a warm radiator takes the path of least resistance into the cold air of a living room. But the air will never become as hot as the radiator - some of the energy from the radiator does not warm the room. That energy is wasted, however it still exists, but it cannot be put to any practical use.

Putting the Second Law another way - all natural systems spontaneously tend to become disordered. Any grouping of atoms, which took energy to assemble it in that form, gradually deteriorates over time. For example, the energy from the sun was used to produce the leaves of a tree in springtime. After the leaves have fallen they gradually disintegrate back into the soil, and the atoms which were in the green leaves become less ordered in the rotted leaves. That disorder is referred to as the entropy of a system.

Modern science, now dominated by Aristotle's rejection of deity, have noted that living things are ordered systems which appear to defy the Second Law, that entropy - disorder - naturally increases. Examples of this are seen in the growth of many leafed trees from seedlings, and of many-feathered birds from eggs.

Some scientists believe, again like Aristotle, that there is some additional law of nature that describes the emergence of increasingly complex systems, like the production of a living cell by the random combination of naturally occurring chemicals. A great deal of effort has been expended to formulate such a law.

Chemist and physicist I. Prigogine concluded that emergent systems can form when energy flows through a collection of interacting particles. He saw the natural energizing of structure in the multitudes of stars which formed the spiral arms of galaxies. Sand dunes naturally formed from random grains of sand. He believed that the formation or emerging of living things followed the same principle in a series of chemical steps from non-living chemical components to the highly complex structures of living organisms.

It has been admitted that no trace can be found of those imagined spontaneously generated intermediate steps which led to the formation of the first single-celled organism. The entire process resides in its entirety in the minds of those who believe it - and nowhere else.