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COSMIC EVOLUTION AND THE ORIGIN OF LIFE
[Part I]

by

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INTRODUCTION

Cosmogony is the study of ideas about the origin of the cosmos. The term is closely related to **cosmology**, which is the study of the cosmos in all its aspects. Cosmogony purports to be that division of cosmology having to do with its beginnings. The cosmos, in the simplest terms, is the space-mass-time universe and all its arrays of complex systems.

The popular, fundamental evolutionary cosmological model, the Big Bang theory, does not really allow an **absolute beginning** of the cosmos. In this system, the cosmos is the ultimate reality, self-existent from eternity. Thus, the evolutionary cosmogony starts with the cosmos already in existence. Cosmogonists then attempt to explain how the cosmos developed into its present form from some primordial aspect, assumed or inferred. With only two rare exceptions, one now relegated to the relic heaps of the historical past (the Steady-State theory) and one now being suggested by opponents of the Big Bang theory (the "inflationary model" of the universe), evolutionary models of the universe simply begin with matter already in existence in some form, and go from there. No attempt is made on the part of the evolutionary cosmologist to explain the **origin** of that from which the universe came.

The biblical cosmogony, on the other hand, is quite the opposite. According to this cosmogony, the universe had a beginning. It is not eternal. God alone is the only eternal reality. Space and time, as well as matter/energy, had a beginning; they did not exist prior to being brought into existence by God Himself. This primeval act of special creation is recorded in the very first verse of divine revelation. God created the heavens ("space") and the earth ("matter") in the beginning ("time"). The cosmos is a continuum of space, matter, and time, with all three entities essential to a meaningful cosmos and with all three therefore coming into being simultaneously. It is of interest to note that we **are inhabitants of a universe, not a multiverse**.

THE ORIGIN OF THE UNIVERSE

Further, man's choices regarding the origin of the universe are extremely limited. Consider, if you will, the only three choices available for attempting to explain the origin of the universe. And remember in so doing that since true science is based on observation (whether direct or indirect), and since no scientist was there "in the beginning" to observe and record what did occur, no theory of origins can be "proved" scientifically. Further, these events which are now under discussion are once-only, never-to-be-repeated singularities. They are not reproducible in the laboratory, and cannot be simulated to any degree. As Dr. Paul Weisz, the eminent biologist, has well stated in his book, *Elements of Biology* (McGraw-Hill, St. Louis, Missouri, 1965, p 4), "One time events on earth are outside the realm of science." Amidst all the hoopla from some scientists of our day that they have "proved" this or "proved" that regarding the origin of the universe, we would do well to remember Dr. Weisz's comment. Singularities are outside the realm of science.

What, then, are our options regarding the origin of the universe? They are as follows:

1. The universe (matter/energy) is eternal; it has always existed.
2. The universe is **not** eternal; rather, it created itself from nothing.
3. The universe is not eternal; it was created by something (someone) anterior to and superior to itself.

These are the only three options regarding the origin of the universe. The problem for the evolutionist arises when these three are examined in light of basic laws of science. Two of the three options are unacceptable, since they violate fundamental, cherished laws of science. As proof of this, we offer the following.

Is The Universe Eternal?

Until recently, the concept of an eternal universe that had neither beginning nor end was very popular.

Only in the early 1960's did scientists finally begin to realize that this option, popular as it might be, was scientifically unacceptable. Evidence had begun to mount, from a variety of unexpected sources, which documented the non-eternality of the universe. Today, the scientific evidence is overwhelmingly in support of the position which states that the universe is not eternal. Dr. Robert Jastrow, founder and former Director of the Goddard Institute of Space Studies at NASA (and a self-acclaimed agnostic in religious matters) has discussed this very point in two of his most recent books. His comments are these.

> "Now three lines of evidence—the motions of the galaxies, the laws of thermodynamics, and the life story of the stars—pointed to one conclusion; all indicated that the Universe had a beginning" (*God and the Astronomers*, W.W. Norton Co., New York, 1978, p 111).
>
> "And concurrently there was a great deal of discussion about the fact that the second law of thermodynamics, applied to the Cosmos, indicates the Universe is running down like a clock. If it is running down, there must have been a time when it was fully wound up. Arthur Eddington, the most distinguished British astronomer of his day, wrote, 'If our views are right, somewhere between the beginning of time and the present day we must place the winding up of the universe.' When that occurred, and Who or what wound up the Universe, were questions that bemused theologians, physicists and astronomers, particularly in the 1920's and 1930's" (*God and the Astronomers*, pp 48,49).
>
> "Most remarkable of all is the fact that in science, as in the Bible, the World begins with an act of creation. That view has not always been held by scientists. Only as a result of the most recent discoveries can we say with a fair degree of confidence that the world has not existed forever; that it began abruptly, without apparent cause, in a blinding event that defies scientific description" (*Until the Sun Dies*, W.W. Norton Co., New York, 1977, p 19).

In spite of evidence such as that marshalled by Dr. Jastrow and others, most evolutionists today still persist in clinging tenaciously to the so-called Big Bang theory of the origin of the universe. According to this theory, about 20 billion years ago [by evolutionary estimates] all of the matter and energy of the universe was concentrated in a single point, about the size of the head of a pin, in which the density was 10^{25} grams/cubic centimeter and the temperature was about 10^{16}°K (ten million billion degrees Kelvin). For some as yet unexplained reason, this primeval atom exploded, sending matter in all directions, with the fastest traveling material being farthest from the center at any given time. Out of this matter condensed all the cosmic features that we see today (galaxies, stars, etc.).

However, while the Big Bang is in vogue throughout almost the whole of the scientific community, it has begun to fall on hard times of late. As Dr. Jayant Narlikar, a prominent astrophysicist, stated in 1981 after examining the evidences upon which the Big Bang is supposedly based, "These arguments should indicate to the uncommitted that the big-bang picture is not as soundly established, either theoretically or observationally, as it is usually claimed to be—astrophysicists of today who hold the view that 'the ultimate cosmological problem' has been more or less solved may well be in for a few surprises before this century runs out" ("Was There A Big Bang?", *IN: New Scientist*, July 2, 1981, Vol. 91, p 21).

Five years later, the renowned cosmologist, Dr. John Gribbin, was reiterating the same point. He said, "...many cosmologists now feel that the shortcomings of the standard (big bang) theory outweigh its usefulness...." Dr. Gribbin went on to say that "...new models are based on the concept that particles (of matter) can be created out of nothing at all...under certain conditions" and that "...matter might suddenly appear in large quantities" ("Cosmologists Move Beyond the Big Bang," *IN: New Scientist*, Vol. 110, p 30).

Indeed, cosmologists are beginning to "move away" from the popular but apparently doomed "Big Bang" theory. And for good reason. First, the concept demands the eternality of matter—an idea which can no longer be conscientiously defended in the scientific arena. Second, evidence is now coming to light which is totally inconsistent with the Big Bang hypothesis. Third, alternative explanations are now available which better explain what was once thought to be good evidence for the Big Bang theory. Consider the following.

(1) The primordial explosion of the Big Bang should have propelled all the matter/energy of the cosmos out radially from its center, and by the principle of conservation of angular momentum, none of it could ever thereafter have acquired any kind of curvilinear motion. Yet there are all kinds of curving and orbiting motions of the stars and galaxies of the cosmos—a situation that is quite impossible if the universe began merely as a "big bang."

(2) Sensitive measurements in recent years have increasingly shown that the so-called "background radiation" which is allegedly the remnant of the Big Bang explosion is not homogeneous and isotropic (i.e., equally spread out in all directions) as it should be if it had been produced by the Big Bang. In 1965, Drs. Penzias and Wilson of Bell Laboratories won a Nobel Prize for their discovery of this so-called "background radiation" from the Big Bang. Now, that radiation is known to be "anisotropic" in all directions. This is a serious problem for the proponents of this cosmogony.

(3) The Big Bang theory requires a uniform, homogeneous universe. But instead, the universe is full of huge agglomerations of matter in some regions and vast empty spaces in others, scattered around the cosmos in what is far from any kind of uniform manner.

(4) Paul Steidl, in his book, *The Earth, the Stars, and the Bible* (Presbyterian and Reformed, Phillipsburg, New Jersey, 1979, p 195), raises an interesting question which no one seems as yet to have been able to answer. If all the observable matter/energy in the universe were in such a condensed state to begin with, why did this not then constitute a black hole? According to current definitions, that is exactly what a black hole is. And likewise, according to current definitions

of a black hole, nothing (not even light) can escape. Yet we are being asked to believe that in this one instance, a black hole was not formed and matter/energy did escape. How so?!

(5) In the context of the primeval fireball, it is difficult to justify the accumulation of any amount of matter in any one location such as a star. If the explosion is driving all galaxies apart in the resulting expansion, how could it fail to drive all atoms apart before they came together in galaxies?

(6) George Lemaitre, who originally postulated the idea of the Big Bang, suggested that the universe started out in a highly contracted state and initially expanded at a rapid rate. The expansion slowed down and came to a halt, during which time galaxies formed and gave rise to a new expanding phase that then continued indefinitely. The difficulty here is that the universe is supposed to be all there is. It is self-contained. But "somehow" it conveniently starts moving again, after the galaxies have had time to form in a non-moving, static universe. However, according to Newton's first law of motion, an object will continue in whatever state of motion it is in, unless acted upon by an unbalanced external force. That is to say, if it were sitting still, it would have to remain like that (in other words, no further expansion!). But in Lemaitre's Big Bang, the universe just "picks up" and continues to expand after the galaxies finally get formed. Sir Fred Hoyle, writing on this very point, put it very succinctly when he referred to the Big Bang model as a "dull-as-ditchwater expansion which degrades itself adiabatically [without loss or gain of heat—BT] until it is incapable of doing anything at all. The notion that galaxies form, to be followed by an active astronomical history, is an illusion. Nothing forms; the thing is dead as a doornail" (*New Scientist*, Nov. 19, 1981, p 523). Enough said.

(7) Explosions produce disorder, not order. A primordial superexplosion of the nature of the Big Bang would most assuredly have produced absolute chaos. If the universe is indeed a closed system as evolutionary cosmogonists insist, then how in the name of common sense and science could this primeval, chaotic disorder have possibly generated the beautifully organized and complexly ordered universe in which we now exist?! Steidl phrases the problem in these words: "The first problem is the formation of galaxies. The issue is simple. In the case of the big bang, all the matter is flying apart at tremendous speeds. How, then, could substantial portions of matter come together to form galaxies? It is the same as exploding an atomic bomb in a lumber yard and having the pieces fall together in the form of a house!" (*op. cit.*, pp 200,201).

(8) As late as 1979, scientists were shocked to learn that two of the methods which had been used to derive many of their measurements regarding age and distances of the universe (the Hubble constant and redshift measurements) were in error. In fact, the Hubble "constant" was recently almost doubled, resulting in a universe that is only one-half the size and one-half the age previously recorded for it, at best. Dr. Halton Arp of the Mt. Palomar Observatory recently reported that the redshift measurements may be virtually useless for calculating the recession speed of distant galaxies. This would then destroy one of the main pillars of the expanding universe idea, and render the Big Bang impotent. [See *Creation Science Research Quarterly*, June, 1987, p 30 for additional information on these points.]

This is just a sampling of the many "problems" associated with the Big Bang theory. It is now not uncommon to hear in the halls of science calls for a total abandonment of the once-popular Big Bang concept. Sir Fred Hoyle, the eminent British astronomer, recently stated the matter like this:

> "As a result of all this, the main efforts of investigators have been in papering over holes in the big bang theory, to build up an idea that has become ever more complex and cumbersome.... I have little hesitation in saying that a sickly pall now hangs over the big bang theory. When a pattern of facts become set against a theory, experience shows that the theory rarely recovers" ("The Big Bang Under Attack," *IN: Science Digest*, Vol. 92, May, 1984, p 84).

Evolutionist Don Page expressed in very simple terms what creationists have been trying for years to get over to those who hold to such scenarios. He said, "There is no mechanism known as yet that would allow the Universe to begin in an arbitrary state and then evolve to its present highly-ordered state" ("Inflation Does Not Explain Time Asymmetry," *IN: Nature*, Vol. 304, July 7, 1983, p 40). He is exactly right.

Did The Universe Create Itself?

Now that the Big Bang theory has begun to fall on hard times, and the evidence is so overwhelming that the universe is not eternal, it is not uncommon to hear suggestions that perhaps the universe simply created itself out of nothing. Speaking scientifically, of course, this is a novel concept. Dr. George Davis, prominent physicist, once stated that "No material thing can create itself," and then went on to note that this statement "cannot be logically attacked on the basis of any knowledge available to us" (*The Evidence of God in an Expanding Universe*, John Monsma, Editor, G.P. Putnam's Sons, 1958, p 71).

Today, however, we are being told just the opposite. Dr. Edward P. Tryon, Professor of Physics at the City University of New York, was one of the first to propose such an idea in modern times when he said, "In 1973 I proposed that our Universe had been created spontaneously from nothing as a result of established principles of physics. This proposal variously struck people as preposterous, enchanting, or both" ("What Made the World?" *IN: New Scientist*, Vol. 101, March 8, 1984, p 14). And indeed, Dr. Tryon's proposal did strike scientists as "preposterous, enchanting, or both." He was asking that we accept creation of something out of nothing by purely naturalistic mechanisms.

But as strange as all of this may seem, now on

the horizon we see defenders of this strange new theory. In fact, Drs. Alan Guth and Paul Steinhardt have stepped forward to become the theory's champions. In the May, 1984 issue of *Scientific American*, they penned an article entitled "The Inflationary Universe," in which they stated:

> "From a historical point of view probably the most revolutionary aspect of the inflationary model is the notion that all the matter and energy in the observable universe may have emerged from almost nothing.... The inflationary model of the universe provides a possible mechanism by which the observed universe could have evolved from an infinitesimal region. It is then tempting to go one step further and speculate that the entire universe evolved from literally nothing" (Vol. 250, p 128).

So there you have it. The entire universe evolved from "literally nothing." James Trefil, writing in the pages of *Science Digest*, outlined the scenario that explains all of this.

> "Our present understanding leads us to the belief that sometime around 10^{-35} second the rate of expansion underwent a dramatic, albeit temporary, increase, to which we apply the term inflation. The physical processes that took place during the unification of the strong force with the others caused the universe to expand from a size much smaller than a single proton to something approximately the size of a grapefruit in about 10^{-35} second" ("The Accidental Universe," Vol. 92, June, 1984, p 54).

Now 10^{-35} second is one hundred millionth of a billionth of a billionth of a billionth of a second, whatever that can possibly mean. These inflationary cosmologists are telling us that, at the beginning, the entire universe was an infinitesimal particle about the size of an electron, with all force systems (gravity, electromagnetic, nuclear, and weak forces) unified as a single type of force. This "universe" suddenly "inflated," by which time the four forces had become separate forces, and the universe was ready to enter its "normal" expansion phase. As Tryon has said, "Our universe is simply one of those things which happen from time to time" (see Trefil, *op. cit.*, p 101).

Tryon is also on record as stating in this regard: "So I conjectured that our universe had its physical origin as a quantum fluctuation of some pre-existing true vacuum, or state of nothingness" (Tryon, *op. cit.*, p 15). In other words, our vast, well-designed, orderly, complex universe began as a point of something-or-other which evolved as a fluctuation from a state of nothingness!

There are two serious problems associated with this kind of thinking. First, there is a direct contradiction in regard to the First Law of Thermodynamics, which plainly states that a natural process cannot bring into existence something out of nothing. In other wolds, the First Law states, in effect, that the universe could not have created itself. Neither matter nor energy may be created or destroyed, naturally speaking.

Second, inflation does not explain time asymmetry. That is, it still contradicts the Second Law of Thermodynamics—the principle of increasing entropy, or disorder. As evolutionist Don Page notes,

> "The time asymmetry of the universe is expressed by the second law of thermodynamics, that entropy increases with time as order is transformed into disorder. The mystery is not that an ordered state should become disordered, but that the early universe was in a highly ordered state" (*op. cit.*, p 39).

It is indeed a mystery to explain just how something arose from nothing, in contradistinction to the First Law of Thermodynamics, to which we know not a single exception. And it is indeed a mystery to explain just how it is that this "nothingness" had a "quantum fluctuation" which produced an "infinitesimally small" region that later became the entire universe. And it is indeed a mystery to explain how this "infinitesimally small" region which was structureless came to be so highly ordered.

The endless speculation on this issue could be avoided if theorists would simply examine, logically, the options available to them regarding the origin of the universe and life in that universe. The option that the universe is eternal is totally without scientific support. The option that the universe created itself out of nothing is likewise without a shred of scientific evidence. Both concepts violate the cherished laws of thermodynamics, which are among the best-tested laws in all of science. But there is a third alternative.

[– To Be Continued –]

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[EDITORS' NOTE: This is the second of a two-part series, the first part of which appeared in the November, 1987 issue of *Reason & Revelation*. The reader may wish to re-read that article before continuing with this second of two parts.]

Was The Universe Created?

It is a self-evident truth, confirmed by the First Law of Thermodynamics, that nothing produces nothing. In view of that fact, since something now exists, it must logically follow that something has existed forever. The argument set forth is this:

1. Everything that exists is either matter or mind.
2. But something eternal exists, since something now exists.
3. Therefore, either matter or mind is eternal.

A. Either matter or mind is eternal.
B. But matter is not eternal, as per evidence cited above.
C. Thus, it is mind that is eternal.

Some, of course, have attempted to reduce the mind to nothing but matter. This is scientifically impossible. The Nobel Prize-winning work of Sir John Eccles (*The Self and Its Brain*, Springer-Verlag, New York, 1981) has demonstrated beyond the shadow of a doubt that the mind is more than just physical. Dr. Eccles has shown that the supplementary motor area of the brain is fired by mere intention to do something, without the motor cortex of the brain (which controls muscle movement) operating. So, in effect, the mind is to the brain what an archivist is to a library. The former is not reducible to the latter. To reason somewhat differently, let us suggest the following:

1. Everything that is, is either dependent (i.e., contingent) or independent (i.e. non-contingent).
2. If the universe is not eternal, it is dependent (contingent).
3. The universe is not eternal.
4. Therefore, the universe is contingent.

A. If the universe is dependent (contingent), it must have been caused by something that is independent (non-contingent).
B. But the universe is dependent (contingent).
C. Therefore, the universe was produced by some eternal, independent (non-contingent) force and/or Being.

Creationists, and believers in God, are not the only ones "awakening" to this startling conclusion. Evolutionist Dr. Robert Jastrow, in an interview in *Christianity Today* (August 6, 1982, p 18) stated, "That there are what I, or anyone would call supernatural forces at work is now, I think, a scientifically proven fact."

The universe is not eternal. And it did not create itself. The only possible conclusion is that the universe was created. It did begin in a state of high order, and it is slowly moving toward disorder. It began in a state of perfection, just as the biblical record notes (Genesis 1:31). But that perfection is a state of the distant past. Now, the Second Law of Thermodynamics is in force, and energy is becoming less and less available for use. Randomness, disorder, and unstructuredness are becoming the rule, not the exception. The only possible conclusion is that the universe was created. Neither of the other two options is viable, considering the knowledge now available to us.

THE ORIGIN OF LIFE

According to mechanistic, naturalistic views of the origin of the universe, the whole of reality is evolution—a single process of self-transformation. Everything in the universe has thus evolved from a primordial, chaotic, random state of matter. By definition, the evolutionary continuum thus requires that life arose on this planet (or at least some planet) via chemical and physical processes still operating (at least in some form) today, in keeping with the dogma of uniformitarianism.

The immensity of the problem of first getting inorganic to give rise to organic, and then non-living to

give rise to living, is rarely appreciated by the general public, and is in large part even ignored by many evolutionists themselves. On occasion, however, in a burst of somewhat blunt candor, one will hear evolutionists admit the seriousness of the problems to be faced in this area. For example, Dr. J.D. Bernal, who himself has done much of the research in this area, reviewed a paper on the origin of life by Dr. Mora, and stated that "...Dr. Mora has shown that the principles of experimental science do not apply to discussions on the origin of life, and indeed cannot apply to any problem of origin" (*The Origins of Prebiological Systems and of Their Molecular Matrices*, S.W. Fox, Editor, Academic Press, New York, 1965, p 52).

This, of course, is certainly true, since there were no human observers, and since it is impossible to reenact the process(es) involved. There is no way to know for certain what conditions prevailed at the time, and there is thus no way to accurately and adequately test or observe any postulated evolutionary origin of life. Further, the extreme improbability of life originating on its own has not escaped certain evolutionists. J.W.N. Sullivan, a brilliant physicist of the past generation, put it like this:

> "The beginning of the evolutionary process raises a question which is as yet unanswerable. What was the origin of life on this planet? Until fairly recent times there was a pretty general belief in the occurrence of 'spontaneous generation.' ...But careful experiments, notably those of Pasteur, showed that this conclusion was due to imperfect observation, and it became an accepted doctrine that life never arises except from life. So far as the actual evidence goes, this is still the only possible conclusion. But since it is a conclusion that seems to lead back to some supernatural creative act, it is a conclusion that scientific men find very difficult of acceptance" (*The Limitations of Science*, The Viking Press, New York, 1933, p 94).

Sullivan plainly admitted that "so far as the actual evidence goes," the only possible conclusion to which one can come is that life comes only from preceding life. Drs. Green and Goldberger, in their classic work, *Molecular Insights into the Living Process* (Academic Press, New York, 1967, pp 406,407), echo that very same conclusion. They state:

> "There is one step [in evolution] that far outweighs the others in enormity: the step from macromolecules to cells. All other steps can be accounted for on theoretical grounds—if not correctly, at least elegantly. However, the macromolecule to cell transition is a jump of fantastic dimensions, which lies beyond the range of testable hypothesis. In this area, all is conjecture. The available facts do not provide a basis for postulation that cells arose on this planet."

But the attitude of some evolutionists is that the facts of the case do not seem to matter in the least. In fact, we are told to ignore the facts and accept whatever "fits" evolutionary dogma. Dr. George Wald of Harvard is on record as stating exactly that. In an article first published in 1958, and then again in 1979, he reviewed the extensive work of Pasteur which showed spontaneous generation to be completely untenable, and then suggested to the reader that the concept be accepted anyway. His words were:

> "We tell this story [of Pasteur's experiments—BT] to beginning students of biology as though it represents a triumph of reason over mysticism. In fact, it is very nearly the opposite. The reasonable view was to believe in spontaneous generation; the only alternative, to believe in a single, primary act of supernatural creation. There is no third alternative" ("The Origin of Life," *IN: Life: Origin and Evolution*, W.H. Freeman, San Francisco, 1979, p 47).

And so Dr. Wald informs us that there are times when it is clearly unreasonable to follow the evidence where it leads. When? At those times when the evidence leads to belief in the supernatural. This is an example of metaphysical commitment to naturalism in the face of contradictory evidence.

What Is The Evidence Regarding The Origin Of Life?

Origin of life theories require a primitive earth model that includes conditions which would tolerate the postulated chemical reactions that are believed to have been involved in processes leading to the origin of life. According to standard evolutionary theory, the primordial earth was a hot ball that gradually cooled over eons of time. It is the general consensus of geologists that the oceans would have formed rapidly and thus early in the earth's history. It has also been rather generally assumed that the pH and temperature of the oceans would always have been approximately the same as at the present time. However, evolutionists are forced to postulate that the primitive earth atmosphere was very different than it is now. Our present atmosphere consists of about 78% nitrogen, 21% oxygen, and 1% other gases (argon, carbon dioxide, etc.).

If the early earth contained free oxygen, however, biochemical evolution would have been completely impossible. As Thaxton, Bradley, and Olsen point out in their book, *The Mystery of Life's Origin*:

> "...the primitive atmosphere could not contain any but the smallest amount of free (molecular) oxygen (O_2). It is necessary to exclude oxygen for two reasons. First, all organic compounds (such as the essential precursor chemicals or basic building blocks that must have accumulated for chemical evolution to proceed) are decomposed rather quickly in the presence of oxygen. Second, if even trace quantities of molecular oxygen were present, organic molecules could not be formed at all. In the words of Shklovskii and Sagan, 'As soon as the net [laboratory] conditions become oxidizing, the organic syntheses effectively turn off.' ...None of the essential molecules of life, e.g., amino acids, could even be formed under oxidizing conditions, and if by some chance they were, they would decompose quickly. Chemical evolution would be impossible" (Philosophical Library, New York, 1984, pp 76,77).

This point cannot be overemphasized. If the earth's early atmosphere contained free oxygen, "chemical evolution would be impossible." Thus, evolutionists have suggested that the earth's early atmosphere was

not an "oxidizing" atmosphere (i.e., one with free oxygen) but instead was "reducing" (i.e., without free oxygen). The suggestion of the evolutionist is that the earth's early atmosphere contained methane (CH_4), carbon monoxide (CO), carbon dioxide (CO_2), ammonia (NH_3), nitrogen (N_2), hydrogen (H_2), and water (H_2O). As Dr. Duane Gish has observed:

> "If the primitive earth atmosphere contained a significant quantity of oxygen, however, an evolutionary origin of life would have been thermodynamically impossible, since all substances would have been oxidized to carbon dioxide, water, nitrogen, and other oxidized products, leaving no organic chemical compounds to serve as precursors for biochemical evolution. Evolutionists are thus forced to assume, *a priori*, that the primitive earth atmosphere contained no oxygen, but rather contained hydrogen, and that carbon existed mainly in the form of methane and/or carbon dioxide" (*Impact*, No. 31, "Origin of Life," Institute for Creation Research, San Diego, California, January, 1976, p ii).

The problem is that there is now abundant evidence that the early earth did have free oxygen in its atmosphere. For example, C.F. Davidson, as early as 1956, delivered an address to a symposium on evolution and argued that the earth's early atmosphere was essentially the same as it is today. He said, "These observations based on the stratigraphical record contradict the belief that a primeval reducing atmosphere persisted for much of the Pre-Cambrian time" (Geochemical Aspects of Atmospheric Evolution," *IN: Proceedings of the National Academy of Science*, Vol. 53, p 1203). Harold Urey, one of the "heavyweights" in origin of life experiments, has noted that early rocks (part of the "stratigraphical record" of which Davidson spoke) have iron in them in an oxidized state (ferric oxide) ["On the Early Chemical History of the Earth and the Origin of life," *IN: Proceedings of the National Academy of Science*, Vol. 38, 1952, p 352]. If iron is oxidized in the rocks supposedly dating to the time of chemical evolution, then the obvious implication is that there was oxygen present to do the oxidizing!

Also, if water is acted upon by radiation from the sun or by electrical discharges in the atmosphere, it will dissociate into hydrogen and oxygen. Thus, Dr. R.T. Brinkman argues: "Appreciable oxygen concentrations might have evolved in the earth's atmosphere before the evolution of wide-spread photosynthesizing organisms. It does not seem that early evolution could have proceeded in such an atmosphere" ("Dissociation of Water Vapor and Evolution of Oxygen in the Terrestrial Atmosphere," *IN: Journal of Geophysical Research*, Vol. 74, 1969, p 5366). Interestingly, the oxygen formed by the photolysis of water could also combine with hydrogen to form peroxides which are particularly destructive to chemical compounds.

Thaxton, Bradley, and Olsen in their work, *The Mystery of Life's Origin*, devote an entire chapter to chronicling the vast array of evidence which shows beyond reasonable doubt that the early earth did have an oxidizing atmosphere (cf. pp 76-94). Also of interest is the recent work by Sir Francis Hitching, the renowned evolutionist of Great Britain. In his 1982 book, *The Neck of the Giraffe*, he was highly critical of organic evolution. His comments regarding chemical evolution are especially interesting.

> "It was a Russian biohemist, A.I. Oparin, who in 1936 first suggested how inert chemicals might link together into an organic chain. Although it was impossible to create life from nonlife in our present oxygen-heavy environment, he said (oxygen literally eats up any primitive organic chemical such as an amino acid) this might not have been the case in conditions billions of years ago. He suggested that there was a 'reducing' atmosphere—free of oxygen, and consisting of such gases as methane, ammonia, water and hydrogen. All experiments, including Stanley Miller's, have been based upon this hypothesis.
>
> "Without oxygen, there is no ozone canopy to protect Earth from the sun's ultraviolet rays. Nowadays, as established by NASA's early space probes, this canopy blankets us between fifteen and thirty miles above Earth's surface, effectively shielding us from certain death. So with oxygen in the air, the first amino acid would never have got started; without oxygen, it would have been wiped out by cosmic rays....
>
> "Imaginative and elaborate solutions have been written to this conundrum.... For every suggestion, there is a seemingly insuperable objection: beneath the surface of the water there would not be enough energy to activate further chemical reactions; water in any case inhibits the growth of more complex molecules; unlike conditions in the laboratory experiments, the amino acids and their constituents could not be kept pure and isolated. In other words, the theoretical chances of getting through this first and relatively easy stage in the evolution of life are forbidding" (New American Library, New York, 1982, p 48).

Forbidding indeed! Dr. Hitching is correct when he says that "for every suggestion there is a seemingly insuperable objection." At every turn the evolutionist is confronted with a problem worse than the first. Some examples will document this statement.

First, for the sake of argument, grant that chemical compounds were formed in the primordial atmosphere. According to scientists who have done the work in this area, these compounds would take several years to fall to the oceans where life supposedly eventually formed (see Gish, *Impact*, No. 31, references 36 and 37). During that time, these products would be subject to the destructive effects of ultraviolet light, electrical discharges, and cosmic rays. Any energy source is far more efficient in the destruction of the products than in their production, the quantum yield of destruction being many times the quantum yield of synthesis. Furthermore, the amount of radiation available from the sun at the wave lengths at which these gases (supposedly present in the primordial atmosphere) absorb (below 1500 Angstroms), and thus available for synthesis, is less than one-thousandth of the light (up to 3500 Angstroms) absorbed by the products, and thus available for destruction. In other words, the overall result is that destruction is 10,000

to 100,000 times more effective than production! Practically speaking, none of the products would reach the surface of the earth in significant quantities.

But even if they did somehow fall to the oceans, their situation would be no better. There the rates of destruction would increase. Miller and Orgel have stated that "the rates of depurination of DNA, of hydrolysis of peptide and polynucleotide polymers, and of decomposition of sugars, are so large that it seems impossible that such compounds could have accumulated in aqueous solution and have been used in the first organism, unless the temperature was low" (*The Origins of Life on Earth*, Prentice-Hall, Englewood Cliffs, New Jersey, 1973, p 126). Then these two investigators go on to note that life could not have arisen in the oceans unless this "low" temperature was at least below 24°C, and that a much more desirable temperature would be -21°C (at which the oceans would have been frozen solid!).

Thus, even if these compounds could somehow have survived the transit from the atmosphere to the oceans (which is contraindicated by all available evidence), the compounds could not have survived unless the temperature of the oceans was very, very low. Could the oceans have been that cold four billion years ago on a ball that was supposed to have been cooling from a molten state? And, if the oceans were cold enough to prevent destructive chemical reactions, how could further reactions leading toward the origin of life have occurred, as these all require higher temperatures?!

The summary of all of this, then, is that the accumulation of signficant quantities of even these simple organic chemical compounds seems definitely to be precluded by all available evidence. Evolutionist H.R. Hulett put it like this: "It is in fact hard to reconcile the thermodynamic and kinetic characteristics of these compounds with the postulated pathways for chemical evolution in the primitive environment" ("Limitations on Prebiological Synthesis," *IN: Journal of Theoretical Biology*, Vol. 24, 1969, p 572).

Evolutionist D.E. Hull, writing in *Nature* magazine, was quite blunt with his comments regarding the things we are herein discussing. He said simply:

> "The conclusion from these arguments presents the most serious obstacle, if indeed it is not fatal, to the theory of spontaneous generation. First, thermodynamic calculations predict vanishingly small concentrations of even the simplest organic compounds. Secondly, the reactions that are invoked to synthesize such compounds are seen to be much more effective in decomposing them. The physical chemist, guided by the proved principles of chemical thermodynamics and kinetics, cannot offer any encouragement to the biochemist who needs an ocean full of organic compounds to form even lifeless coacervates" ("Thermodynamics and Kinetics of Spontaneous Generation," *IN: Nature*, Vol. 186, 1960, pp 693,694).

As damaging as that may be to the idea of chemical evolution, the worse has not yet been heard. From all that we have seen, it is utterly impossible to get the chemical precursors via any kind of naturalistic process. But even if that were granted, the really crucial stage is what must then follow—the transformation from nonlife to life.

Going From "Nonlife" to "Life"

Dr. R.L. Wysong, in his book, *The Creation-Evolution Controversy* (Inquiry Press, East Lansing, Michigan, 1976, p 211), reminds us of the task before the evolutionist in this regard when he says:

> "The problems facing spontaneous generation origins are not solved simply by postulating a reducing atmosphere (methane, carbon monoxide, hydrogen, ammonia, nitrogen, water, oxygen). If we dismiss the evidence cited above that militates against an early reducing atmosphere, concede a reducing atmosphere, we find ourselves still faced with tremendous problems."

Dr. Wysong is indeed correct. There are "tremendous problems" still to be faced by the evolutionist who wishes us to accept his scenario. And those problems are brought to our attention by no less an evolutionist than Sir Francis Hitching himself.

> "Living things are distinguished from nonliving things in a number of ways. Primarily, they organize themselves on a continuing basis. They tend to move themselves toward an increase in order and complexity—they grow, while nonliving things inevitably disintegrate. They have a unique ability to renew themselves after injury—they are able, both at the cellular level and as complete organisms, to reproduce their form. There are other secondary characteristics, such as the ability to dispose of waste, and to respond to stimuli, that have no exact parallel in the nonliving world.
>
> "This is true even of the simplest living forms: single-celled bacteria. They represent a quantum evolutionary leap from the lifeless chemicals that came before. Assuming that there was, around four billion years ago, a sea with perhaps a ten percent solution of amino acids, sugars, phosphates, and so on, two prodigious leaps have to take place, and they have to happen in synchrony.
>
> "The amino acids must link together to form proteins; and the other chemicals must join up to make nucleic acids, including the vital DNA. The seemingly insurmountable obstacle is the way the two reactions are inseparably linked—one can't happen without the other. Proteins depend on DNA for their formation. But DNA cannot form without preexisting protein.
>
> "This biological treadmill greatly worries all biologists actively concerned in research into the origin of life. The puzzle was put succinctly: 'How, when no life existed, did substances come into being which, today, are absolutely essential to living systems, yet which can only be formed by those systems?'" (*The Neck of the Giraffe*, p 47; emp. added; last question in quotation is from Harold F. Blum, *American Scientist*, Vol. 43, 1955, p 595).

This "great worry" of evolutionary biologists is further exacerbated by the complexity of the "simplest" living cell. According to Hitching, even the simplest bacterium has about 2,000 genes, each with 1,000 "letters" instructing the organism how to function and reproduce. Here then, says evolutionary theory, was the raw material which led ultimately to the vast

library of information in human DNA—the equivalent of 1,700 volumes, each containing a thousand pages (cf. J. Little, *New Scientist*, September 4, 1980).

How did this extremely complex, seemingly well-designed DNA coded system arrive? From whence did it come? Dr. Douglas Hofstadter, a committed evolutionist, has stated the matter like this:

> "A natural and fundamental question to ask on learning of these incredibly interlocking pieces of software and hardware is: 'How did they ever get started in the first place?' It is a truly baffling thing. One has to imagine some sort of bootstrap process occurring, somewhat like that which is used in the development of new computer language—but a bootstrap from simple molecules to entire cells is almost beyond one's power to imagine. There are various theories on the origin of life. They all run aground on this most central of all central questions: 'How did the Genetic Code, along with the mechanism for its translation (ribosomes and RNA molecules) originate?' For the moment, we will have to content ourselves with a sense of wonder and awe, rather than with an answer" (*Godel, Escher, Bach: An Eternal Braid*, Vintage Books, New York, 1980, p 548).

Professor William Thrope of Cambridge University's Zoology Department told fellow scientists:

> "I think it fair to say that all the facile speculations and discussions published during the last ten to fifteen years explaining the mode of origin of life have been shown to be far too simple-minded and to bear very little weight. The problem in fact seems as far from solution as it ever was. The origin of even the simplest cells poses a problem hardly less difficult. The most elementary type of cell constitutes a 'mechanism' unimaginably more complex than any machine yet thought up, let alone constructed by man" (F. Ayala and T. Dobzhansky, Editors, *Studies in the Philosophy of Biology*, University of California Press, 1974, pp 116,117).

The simplest form of life known to science contains hundreds of different kinds of enzymes, thousands of different kinds of RNA and DNA molecules, and thousands of other kinds of complex molecules. The thousands of chemical reactions which occur in this cell are strictly coordinated with one another in time and space in a harmonious system, all working together towards self-maintenance and eventual reproduction of this living cell. Every detail of its structure and function reveals purposefulness; its incredible complexity and marvelous capabilities reveal a master plan.

It seems futile enough to attempt to imagine how this amazingly complex system could have come into existence in the first place, in view of the vast amount of contradictory evidence which we have already discussed. But even if it could "somehow" have come into existence, its continued existence, from the very start, would have required mechanisms especially designed for self-maintenance and reproduction. There are numerous injurious processes which would prove fatal for the cell if repair mechanisms did not exist. These injurious processes include dimerization of the thymine units in DNA, deamination of cytosine, adenine, and guanine in DNA and RNA, deamidation of glutamine and asparagine in proteins, and the production of toxic peroxides, to cite just a few. The cell is endowed with complex defense mechanisms, in each case involving an enzyme or a series of enzymes. Since these defense mechanisms are absolutely necessary for the survival of the cell, they would have had to exist from the very beginning. Life could not have "waited" until such mechanisms "evolved," for life would be impossible in their absence.

The ultimate fate of a cell, or any living thing, is death and destruction. No dynamically functioning unit can survive as a species without self-reproduction. The ability to reproduce, however, would likewise have had to exist from the very beginning in any system, no matter how simple or complex. Yet the ability to reproduce requires such a complex mechanism that the machinery required for this process would have been the last thing that could have possibly evolved. This dilemma has no solution, and thus poses the final insuperable barrier to the origin of life by any naturalistic process or processes. Angrist and Hepler have noted as much in their work, *Order and Chaos* (Basic Books, New York, 1967, pp 203,204).

> "Life, the temporary reversal of a universal trend toward maximum disorder, was brought about by the production of information mechanisms. In order for such mechanism: to first arise it was necessary to have matter capable of forming itself into a self-reproducing structure that could extract energy from the environment for its first self-assembly. Directions for the reproduction of plans, for the extraction of energy and chemicals from the environment, for the growth of sequence and the mechanisms for translating instructions into growth all had to be simultaneously present at that moment. This combination of events has seemed an incredibly unlikely happenstance and often divine intervention is prescribed as the only way it could have come about."

Small wonder! In the real world, every effect must have an adequate cause. But in the strange land of evolutionary incredulity, wonderful things can "just happen." Plans draw themselves, mechanisms design themselves, order generates itself from chaos, and life creates itself! Yet evolutionists call creationists unscientific because they postulate an adequate cause—the Creator—to account for this marvelous effect called "life."

Interestingly, it is what we do know that is causing evolutionists so much trouble in this particular area. Thaxton, Bradley, and Olsen comment that,

> "...the sharp edge of this critique is not what we do not know, but what we do know. Many facts have come to light in the past three decades of experimental inquiry into life's beginning. With each passing year the criticism has gotten stronger. The advance of science itself is what is challenging the notion that life arose on earth by spontaneous (in a thermodynamic sense) chemical reactions. A major conclusion to be drawn from this work is that the undirected flow of energy through a primordial atmosphere is at present a woefully inadequate explanation for the incredible complexity associated with even simple living systems, and is probably wrong" (*The Mystery of Life's Origin*, pp

182,186, emp. in original).

Hoyle and Wickramasinghe, in their work, *Evolution from Space*, provide a fitting conclusion to this discussion.

> "No matter how large the environment one considers, life cannot have had a random beginning.... there are about two thousand enzymes, and the chance of obtaining them all in a random trial is only one part in $(10^{20})^{2,000} = 10^{40,000}$, an outrageously small probability that could not be faced even if the whole universe consisted of organic soup.
>
> "If one is not prejudiced by social beliefs or by a scientific training into the conviction that life originated on the Earth, this simple calculation wipes the idea entirely out of court...the enormous information content of even the simplest living systems...cannot in our view be generated by what are often called 'natural' processes, as for instance through meteorological and chemical processes occurring at the surface of a lifeless planet.... For life to have originated on the Earth it would be necessary that quite explicit instruction should have been provided for its assembly.... There is no way in which we can expect to avoid the need for information, no way in which we can simply get by with a bigger and better organic soup, as we ourselves hoped might be possible a year or two ago.
>
> "The correct position we think is...an intelligence, which designed the biochemicals and gave rise to the origin of carbonaceous life.... Given an atlas showing the amino acid sequences of all the enzymes, human biochemists could construct them with complete accuracy, thereby demonstrating the enormous superiority of intelligence allied to knowledge over blind random processes.... Any theory with a probability of being correct that is larger than one part in $10^{40,000}$ must be judged superior to random shuffling. The theory that life was assembled by an intelligence has, we believe, a probability vastly higher than one part in $10^{40,000}$ of being the correct explanation of the many curious facts discussed in the preceding chapters.... Paley likened the precision of the living world to a watchmaker, the world of Nature must owe its origin to a Creator, God.... The speculations of *The Origin of Species* turned out to be wrong.... It is ironic that the scientific facts throw Darwin out, but leave William Paley, a figure of fun to the scientific world for more than a century, still in the tournament with a chance of being the ultimate winner.... Indeed, such a theory is so obvious that one wonders why it is not widely accepted as being self-evident. The reasons are psychological rather than scientific" (J.M. Dent, Co., London, 1981, pp 148,24,150,30,31,143,130,96).

Thank you, Drs. Hoyle and Wickramasinghe, for expressing so beautifully what creationists have been saying for generations. Perhaps you can persuade your scientific colleagues, where we have failed.

A SIGNIFICANT DEBATE

On October 15, an important debate was conducted in Chino, California (greater Los Angeles area). Wayne Jackson and Bert Thompson, editors of *Reason & Revelation*, debated two evolutionist professors from Cyprus College on the creation/evolution controversy. Jackson affirmed that the universe and all within it is best explained by creation. Paul Ricci, a philosopher, denied that. Brian Myres, a biologist, affirmed that the universe and all within it is best explained on the basis of organic evolution. Thompson, a microbiologist, denied that. Each speaker was allotted 30 minutes for his speech. An open question and answer session followed the formal presentations.

The debate was attended by more than 400 people. The church of Christ in Chino, California is to be commended for sponsoring this important event. The entire debate (including question/answer session) is available on VHS video tape (1 tape; $20) or on three audio cassette tapes ($10). Quality on both is excellent. Order yours today. Check must accompany order.

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