

Creation Matters

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The progressive parade of horses from the tiny dog-sized *Eohippus* to the modern horse (*Equus caballus*) was historically one of the most well-known examples of the evidence once used to prove evolution. For almost a century this evolutionary icon has been cited in science textbooks, academic texts, popular mass-market books, and even children's books. The "most widely reproduced of all illustrations showing

the evolution of horses" was drawn early in the last century for the American Museum of Natural History and has been "reproduced hundreds of times since then" (Gould, 1991, p. 174).

The history of the horse evolution series began when Yale professor Othniel C. Marsh, endeavoring to confirm Darwin's evolutionary hypothesis,

...collected a magnificent set of American fossil horses and published a paper in 1874 tracing its development from a small three-toed animal "the size of a fox" through larger animals with progressively larger hooves, developed from the middle toe. Darwin thought Marsh's

sequence from little *Eohippus* ("Dawn horse") to the modern *Equus* was the best evolutionary demonstration anyone had produced in the 15 years since the *Origin of Species* (1859) was published (Milner, 1990, p. 222).

The story of horse evolution spread to Europe when British scientist Thomas Henry Huxley visited Marsh at Yale, and was "mightily impressed with his progressive series of fossil horses" (Milner, 1990, p. 222).

Textbook icon

Gould (1991, p. 156), having surveyed the presentations of evolution in biology texts, bemoaned the fact that each textbook author

... continued on p. 10

Horse Evolution: An Icon Discarded by Jerry Bergman, PhD

Why is the doctrine of creation important? Isn't it true that the only really important doctrine is redemption? Isn't it true that the Bible's orientation is primarily spiritual, not physical? Why make so much of something that seems to be more in the realm of the scientist than in the realm of the theologian. Isn't it quite possible for an evolutionist to believe in Christ and be saved?

I. The teachings of scripture form a unit

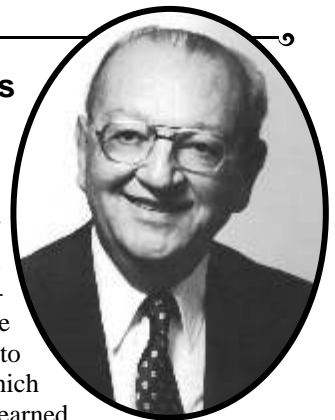
To the last of these three questions we shall answer "Yes." But we shall also insist that the doctrine of creation is important because what Scripture teaches is an organic whole and cannot be fragmented. It is like a wheel with spokes radiating out from the central doctrine of justification. Thus creation, the fall, redemption, eternal life are all linked together. The doctrine of Creation teaches

us that man was created perfect, sinless. We need to know this in order that we do not blame God for our wickedness.

We need to know that we were created perfect in order to appreciate God's love which not only redeemed us but redeemed us from a state into which our first parents had fallen from that original perfection. We need to know the doctrine of Creation in order to understand the perfection which God is preparing for us after this life. The teachings of the Scripture form a unit. An attack on one is an attack on all. Once we have begun to deny one doctrine we are tempted to deny the others. If we reject the story of creation in a state of perfection and believe instead that we have developed from the anthropoid, then redemption is something that God owes us, since our being in the state of sin is the result of bringing us up from the anthropoid. Then sin is His fault and not ours. Indeed we deserve commendation because we have risen so far above the jungle and the barnyard.

II. Creation is mentioned repeatedly in scripture

The doctrine of Creation is not an obscure doctrine, nor is it one which "is hard to understand which they that are unlearned and unstable wrest unto their own destruction," II Peter 3:16. There are over 65 passages in the Old and New Testaments which refer to this doctrine. Many of these, it is true, speak of God as the Creator without referring in detail to the method of creation, and theistic evolutionists are wont to say that they can be interpreted in the light of theistic evolution as well as in the light of special creation. Yet all of these are written against the background of Genesis 1 and 2 and presuppose it. They take for granted the details mentioned there. Our Savior refers to the Genesis account. St. Paul builds New Testament doctrine on it. The repeated references to



The Importance of Creation Study by John W. Klotz, PhD (reprinted from 1964 CRSQ Vol. 1 (Annual))

... continued on p. 2

creation in the Scriptures show us how important the Holy Spirit thought it to be.

III. Man's relationship to God depends on the doctrine of the creation

Repeatedly Scripture emphasizes the Creator-Creature relationship. We owe God honor and worship because He created us. More than that, we owe God obedience for that same reason. Christianity is an authoritarian religion. When God speaks, man is to obey. He isn't to argue with God, he isn't to question His wisdom, he isn't to suggest some alternative, but he is to obey. The Ten Commandments are binding on all men not because they are the socially acceptable way of living but because they are the commandments of the Creator. When God says, "Thou shalt not steal," I am to obey Him. I am not to question His authority or His motives. I am not to suggest that He is an ally of the propertied classes, permitting Himself to be used in promoting their ends. I am not to argue that in a purely socialistic society this sort of commandment will no longer be needed. God the Creator has spoken and I the creature must obey.

Similarly, when God says: "Thou shalt not commit adultery," I must obey. I cannot argue that this commandment is given only to protect the home and society and that when these are not harmed it may be broken. I cannot argue that adultery is wrong only

when there is danger of pregnancy and that the development of modern contraceptives has made premarital and postmarital faithfulness unnecessary. God, the Creator, has spoken and I must obey.

IV. The doctrine of creation is intimately related to supernaturalism

The Bible assumes the existence of the supernatural, and the doctrine of Creation is an important part of this assumption. The Bible is not materialistic and mechanistic in its orientation. It proclaims an all-powerful God who has created every material thing and who has established all the natural laws which govern the universe. This God is both immanent and transcendent. He is in the world, for in Him we live and move and have our being, Acts 17:28. But He is not a part of the world. He is a personal God, separate from these things which he has fashioned and made.

The scientist does not deal with the supernatural. It is outside the realm of those things with which he concerns himself. He has deliberately limited himself to those things which can be touched and felt and handled. He seeks explanations which are in keeping with the natural laws which God has set up. While some scientists have denied the reality of those things which cannot be measured, science itself does not. The scientist has found this approach fruitful. By limiting himself to a study of the natural laws which God has set up, he has gained a considerable measure of control over the universe which God has created.

But we should recognize that he does limit himself to a study of the laws which God has set up without attempting to study the God who set them up.

It is interesting to note that one of the earliest clashes between religion and science did not deal with the doctrine of Creation but rather with the doctrine of Preservation. The man who is responsible for much of the mechanism and materialism of science today was Isaac Newton, one of the greatest scientific geniuses of all times. Living in the 17th century, one of the greatest scientific centuries of all times, he was a contemporary of Boyle, Hooke, Wren, and the founders of the Royal Society. All of these men were devout, pious, and deeply religious. Indeed many 20th century historians of science find it difficult to accept their religious orientation at face value and suggest it was a cover-up, that they did not really accept God and Christ but because of the nature of the times had to pay lip service to Christianity. Reading the writings of such men as Boyle and Newton leaves no doubt as to their sincerity. They were indeed deeply religious men.

At the same time we ought to recognize that Newton's system whereby the universe became a machine and his denials of the role of God as preserver laid the foundation for much of the mechanism and materialism which characterizes modern science. Newton believed that the age of miracles was past. He accepted the Old and New Testament accounts of miracles, but he believed they no longer occurred. He believed that God now worked through the natural laws

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which He had established. Newton's God was a watchmaker God, a God who had fitted all the wheels together and had started it running but who had now withdrawn completely. In other words, God had now abdicated in His role as Preserver. God was transcendent, but no longer immanent.

It was an extension of Newton's ideas that led to causal determinism and led to ideas such as those of LaPlace who believed that if there were a supernatural being capable of knowing all cause and effect relationships and capable of analyzing all of them, he could with confidence reconstruct every event even of the remote past and predict every event of the future. LaPlace talked about a Supernatural Being. However, it was not long until others came along and applied Occam's razor to the system. Since God was not needed in the system — it functioned by the natural laws He had established, He could be eliminated. This was the strict causal determinism which prevailed until the beginning of the 20th century.

At the turn of the century, causal determinism received a death blow from which it never recovered. This was the principle of indeterminism introduced by Heisenberg. Heisenberg's principle applies only on the subatomic level. He learned that it is impossible to predict both the position and the velocity of an electron. This meant that strict causal determinism would not work on the subatomic level. It was Heisenberg's position that the universe is indeterministic and his position was shared by Eddington. Others, such as Einstein, insisted that the universe is deterministic but we simply cannot demonstrate it.

While it is true that indeterminism can be demonstrated only on the subatomic level, certainly it is fair to suggest that from a philosophical standpoint it may apply on other levels as well. This, once more, leaves room for God. If things are not so exactly predetermined by cause and effect relationships, perhaps there is a role for God after all. Thus supernaturalism may not be so outmoded after all. It is interesting to note that while strict causal determinism has been abandoned in physics, a sort of determinism and a dependence on strict cause and effect relationships is still the basis of much of the reasoning in biology. Indeed it is this mechanistic determinism that is the basis for evolution. Living things develop through natural laws, by cause and effect relationships. Theistic evolutionists claim that God

is behind the process. But to most of them He is the watchmaker God of Newton who is transcendent but no longer immanent.

Cause and effect is also widespread in the social sciences. Man is both the product of and the victim of his environment. He is the helpless pawn of forces outside himself. This does away with human responsibility in the moral realm. Man cannot be responsible if his actions are the consequences of environmental stimuli.

Theistic evolutionists claim that God is behind the process. But to most of them He is the watchmaker God of Newton who is transcendent but no longer immanent.

Strict causal determinism in any area is a gloomy philosophy. Man is helpless. He cannot alter his environment and he cannot control his actions. He is a complete automaton.

V. The doctrine of creation postulates an absolute God

One of the most significant developments of 20th century physics is the theory of relativity developed by Einstein. While indeterminism has probably been favorable philosophically to organized religion, relativity has not. Einstein believed that the only constant or absolute is the speed of light. Everything else is relative. Time is relative. As the speed of an object increases and approaches the speed of light, time slows down for that object. Its length decreases and its mass increases. Thus his theory is considered to have destroyed the concept of absolutes.

Actually, you and I are committed to the idea of absolutes. The God whom we worship is the Absolute. He is not relatively holy, He is absolutely holy. He is not relatively wise, He is omniscient. He is not relatively powerful, He is omnipotent. It is of His omnipotence that the doctrine of Creation speaks. Why shouldn't God cause the earth to appear as the Genesis account reports? He is all powerful. He doesn't need time to accomplish something. He doesn't need a process of development. He doesn't need to make things in steps. Our God is an absolute God. He speaks and it is done. It is because He is the absolute God that we owe Him respect and homage.

VI. The New Testament accepts the Genesis account literally and builds on it

Our Savior quotes Genesis and quotes it in such a way that He obviously accepts it literally. You will recall our Savior's clash with the Pharisees regarding divorce as it is recorded in Matthew 19 and Mark 10. The Pharisees thought that they could trap Him by asking Him about divorce. Their divorce practices were very loose: they took advantage of Moses' regulations regarding a bill of divorce which at the Savior's time was available on the slightest pretext. They knew that the Savior did not approve of their divorce practices. By asking Him about divorce they thought they would trap Him into approving something of which He did not approve or criticizing a regulation of Moses. Instead the Savior in support of His position quoted Genesis 1:27 and 2:24. He takes these as literal, not as allegorical. He accepts this account in Genesis 1 and 2 as historical and not as myth or saga.

Even more significant is St. Paul's use of the creation account. He accepts the historicity of Adam and Eve, something which few theistic or atheistic evolutionists accept. To the evolutionist, Adam and Eve cannot be individuals: they must represent an evolutionary population. It is unthinkable that only one male and one female developed to the status of Homo sapiens. Rather a group, perhaps a hundred or five hundred, achieved this biological status, and it must be these that are referred to as Adam and Eve.

We must recognize that Adam is sometimes used in the Old Testament as a generalized term for man. This is in keeping with the Hebrew practice of economizing on vowels, of making one word do the work of several. Yet it is very clear that Moses is talking about one man and one woman. St. Paul understands Moses in this way. In Chapter 5 of His epistle to the Romans, he repeatedly compares the one Adam with the one Christ. He says, for instance in v. 12 "By one man sin entered into the world and death by sin." He tells us, v. 15, that by the offense of one man, many died and that by the grace of God which is by one man many are made alive. He goes on to say, v. 18, "By the offense of one judgment came upon all men to condemnation; even so by the righteousness of one the free gift came upon all men unto justification of life" and then he continues in v. 19, "For as by

one man's disobedience many were made sinners, so by the obedience of one shall many be made righteous." St. Paul uses a similar parallel in I Corinthians 15. There he says, v. 22, "For as in Adam all die, even so in Christ shall all be made alive."

These parallels of St. Paul make no sense unless one accepts the historicity of Adam. If Adam is not an individual but rather represents an evolutionary population, what of Christ? Is He an individual or does He perhaps represent a suffering population? St. Paul's reference to Adam and Eve in I Timothy is also interesting. In Chapter 2, he tells us that women are not to teach nor to usurp authority over the man and he gives as his reason, "For Adam was first formed, then Eve." This reference makes sense only if Adam and Eve are individuals. To suggest that they represent evolutionary populations, involves biological nonsense. It suggests that first there was a race of males only and that after some time a race of females developed.

Even more interesting is St. Paul's reference to our first parents in I Corinthians 11. Here again he is dealing with the relationship of men and women and he gives as his reason in v. 8 "For the man is not of the woman; but the woman of the man." The Greek preposition used here means "out of," and is a clear reference to the creation of woman as it is recorded in Genesis 2:21.

There are some theistic evolutionists who recognize this New Testament problem and suggest that only one male and one female were picked out of the evolutionary population to be the parents of the human race. Thus a group of beings had evolved to the biological status of *Homo sapiens*. God interfered directly and picked out one male, Adam, and one female, Eve. To these He gave a soul and they became the ancestors of the human race. If this is the case, we might well ask, "What became of the other anthropoids whom God did not choose to become our parents? Are there people who are biologically *Homo sapiens* but who do not have a soul and are therefore not truly human? Is it possible that some of our radical racists are correct in insisting that not all the races of man are truly human?"

VII. The philosophy of evolution runs counter to Christianity

Modern evolution is Darwinian: the gener-

ally accepted theory today is said to be neo-Darwinian. By this modern evolutionists mean Darwinism modified by modern genetics. Accordingly there is still the struggle for existence, the survival of the fittest, nature red in tooth and claw. True, these concepts are no longer used in the same sense in which early evolutionists used them. The struggle for existence is no longer regarded as a struggle for food, only rarely does death result from battle and with bloodshed, fitness does not necessarily imply the long survival of the individual. The emphasis is on the race or population rather than on the individual.

Yet there is still definitely a struggle and a survival of those best fit to survive. There is no place for the weakling and therefore no place for Christian love. Indeed

The Christian ethic depends on love — love to God and love to the fellowman. It is the ethic of the Good Samaritan who at the risk of his own life attempted to save the life of the man, who because he was a Jew did not deserve to live. There is no such Christian love in any scheme of the survival of the fittest.

there are many who believe that man is making a serious mistake by keeping alive the physically weak and the helpless and in that way keeping their defective genes in the gene pool of the species. Mortimer Adler believes that if evolution is correct then the Nazi point of view with its racism and its murder of the unfit is also correct.

The Christian ethic depends on love — love to God and love to the fellowman. It is the ethic of the Good Samaritan who at the risk of his own life attempted to save the life of the man, who because he was a Jew did not deserve to live. There is no such Christian love in any scheme of the survival of the fittest. Evolution is a dog eat dog struggle. If evolution is correct, this attitude is not only permissible but even proper.

There is no question but that Hitler through Nietzsche was greatly influenced by Darwin. The Nazi system was definitely Darwinian in its orientation. This cannot

be said of Communism. Communism is influenced instead by the outmoded concepts of Lamarck. Its whole philosophy is that of inheritance of acquired characteristics rather than a survival of the fittest.

There is something else that ought to be noted. Christianity emphasizes the importance of the individual. You and I count in the eyes of the God of the Bible. He knows each one of us. His Son died for us and He has written our names on the palms of His hands. To the modern evolutionist the individual is unimportant. His survival does not count. Instead the important thing is the proportion of his genes in the gene pool of future generations. Whether his life is a long one or a short one isn't important, whether he is happy or oppressed doesn't really count. The important thing is the number of his offspring and therefore the frequency of his genes in the gene pool of the next generation. Thus a disorder such as cancer may actually be favorable from an evolutionary point of view. It is essentially a disorder of older people. It removes the individual from the scene after he has made his contribution to the gene pool of the next generation. He has served his evolutionary function and if he lives beyond this point he will only be draining the resources which might better be used by those who still have their evolutionary contribution to make.

Evolution necessarily implies that society is more important than the individuals which make it up. The welfare of the group is more important than that of the individual. If the rights of the individual interfere with the rights of society, his rights must yield. Christianity emphasizes the rights of both, and so does our American democracy. The individual does count. He is important: he is more than a small cog in a vast machine.

Thus we see that evolution does have implications for our faith. There are deep and basic philosophical differences and differences in approach. Evolution is important. It is more than just a scientific theory. It has implications not only for the material and physical realm but also for the spiritual realm.

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Math Matters

by
Don DeYoung, PhD

Precisely

Mathematical precision is relied upon to interpret nature correctly. Slight discrepancies in physical measurements often reveal new insights into creation. Let's briefly examine the details of a few examples.

Planet orbits

Astronomer Johann Kepler (1571–1630) spent sixteen years analyzing the orbital motion of the planet Mars. His task was aided by a wealth of precise measurements made years earlier by Tycho Brahe (1546–1601). Kepler carefully plotted the orbit of Mars, filling 900 pages with notes and calculations. The data closely fit a circular orbit which was assumed at that time to be the shape of all orbit paths.

However, Tycho's observations differed from a perfect circle by just eight minutes of arc, or 0.13° , four times less than the diameter of the full moon. Kepler had sufficient confidence in Tycho's data to realize that the slight angle variation was significant. This led eventually to Kepler's First Law which states that planets travel on elliptical paths rather than circular. Kepler wrote in *A New Astronomy* in 1609, "These eight minutes alone will lead us along a path to the reform of the whole of astronomy."

Precession of Mercury

The inner planet Mercury has a highly eccentric or lopsided orbit, varying in its distance from the sun by 52 percent. When closest to the sun, Mercury is said to be at perihelion. Gravity forces from the other planets cause Mercury's perihelion position to slowly precess or move along its orbit path by about 1.5° per century.

As early as 1859, a slight excess in the perihelion advance, beyond the standard prediction, was noticed. Albert Einstein explained this discrepancy in 1915 in terms of general relativity. Einstein's theory predicted an extra perihelion advance of just over 43 seconds of arc (0.012°) per century. The measured excess is a very close match

with Einstein's theory.

Fine structure of hydrogen

Experimental evidence shows that the separation of the components of the fine structure "doublet" in hydrogen is only 96 percent of that predicted by Paul Dirac's relativistic quantum theory. This small discrepancy eventually led to the working out of the entire discipline of quantum electrodynamics (QED). The related calculations predict the energy values for the innermost orbits of atomic electrons.

The results are found to agree exactly with experimental data. In fact, theory and experiment differ in some cases by less than one part in ten billion, or 10^{-10} . QED is one of the most precisely verified theories ever constructed (Wigner, 1960; Rohlf, 1994).

Gyromagnetic ratio

The gyromagnetic ratio g is a constant arising in QED. This g factor determines the magnetic field arising from an individual electron's charge, mass, and spin. The g factor has been calculated and also measured to a high degree of agreement and precision (Hayes, 2004). The experimental value is:

$$g = 2.0023193043718 \pm 0.0000000000075$$

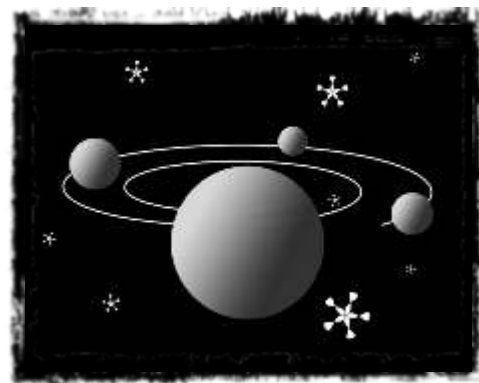
There is close agreement between theory and experiment for electrons but not for another key elementary particle called the muon.

Gravity

Gravity is the universal attractive force existing between all objects. This force F decreases as the square of the separation distance d between objects. Scientists long have puzzled over this inverse d^2 dependence, $F \sim 1/d^2$. This behavior matches the geometry of space but there is no inherent reason why the gravity force should conform in this way. One writer concluded that the "2" in the gravity equation is "a little too neat" (Thomsen, 1980).

Sensitive experiments have been carried out to determine whether the numerical factor may be something more random than exactly "2," perhaps $d^{1.99}$ or $d^{2.1}$. The findings show that gravity decreases by the factor 2.00000. In other words, the number is, indeed, exactly 2.

The Bible informs us that the heavens declare the glory of God, according to Psalm 19:1. It appears that mathematics, the language of creation, does likewise.



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Matters of Fact

by

Jean K. Lightner, DVM, MS

Directed Mutations?

Editor's note: You may submit your question to Dr. Jean Lightner at jean@creationresearch.org. It will not be possible to provide an answer for each question, but she will choose those which have a broad appeal and lend themselves to relatively short answers.

Q Is there a mechanism for directed mutations?

A The questioner noted that some creationists have proposed that directed mutations may have played a role in adaptation within created kinds (Lightner, 2009, 2010). There is, indeed, a mechanism by which this could happen — meiotic recombination.

Most familiar plants and animals reproduce sexually. In order to accomplish this, gametes (eggs and sperm) are formed through a special type of cell division known as meiosis (Figure 1). Chromosomes come in pairs, known as homologs, one derived from each parent. The homologs must be drawn together in stable pairs early in meiosis. Then they will be drawn in opposite directions such that the two cells formed during the division will have exactly one of each homolog. Meiotic recombination is a critical step in this process; it enables the homologs to stably pair so they can be accurately separated.

Meiotic recombination begins with an enzyme making a double-stranded break in the DNA comprising one of the homologs. Then each side is cut back in one direction, forming two tails. One or both of the tails invades the homolog, and repair of the break begins.

There are several pathways that can be used to repair the break, and several different outcomes are possible. The best known outcome is crossing over, where the ends of the homologs are swapped (Figure 2). This helps shuffle alleles (versions of a gene) to keep healthy variation in the population.

A second outcome is probably much more common, though less well known. This is gene conversion. Instead of swapping a portion of the chromosome, the information from one homolog is copied on to another. This is often much more difficult to detect than crossing over, as it often involves relatively short tracts of DNA (Cole et al., 2012). Additionally, it can change the expected inheritance pattern of

alleles, violating an assumption of the mathematical models used to detect natural selection (Lightner, 2010).

In addition to swapping and copying segments, meiotic recombination is associated with other mutations (Malkova and Haber, 2012). While these changes to the DNA sequence are commonly written off as copying errors or accidents, there are details surrounding them that bring this conjecture into question. For example, in bacteria that were starving because they could not metabolize the sugar source in the growth media, mutagenesis increased which allowed for the development of adaptive mutations which enabled them to use that food source. Much of the mutagenesis was attributable to a specific polymerase which copied 'damaged' DNA fairly accurately, but induced changes when copying from 'undamaged' templates.

In yeast, mutations were found to occur at a much higher rate during gene conversion than the normal spontaneous rates. A number of the mutations appeared to be from template switching, where the portion of DNA used as the template to extend the broken end changes, often multiple times. This process is complex and requires that certain enzymes be present for it to occur (Malkova and Haber, 2012).

What we currently know of meiotic recombination is that it induces changes to the DNA sequence in an enzymatically controlled way. These changes can be adaptive. It is only one mechanism by which directed mutations can take place. (Transposable elements are another; Jerlström, 2000; Borger, 2009.)

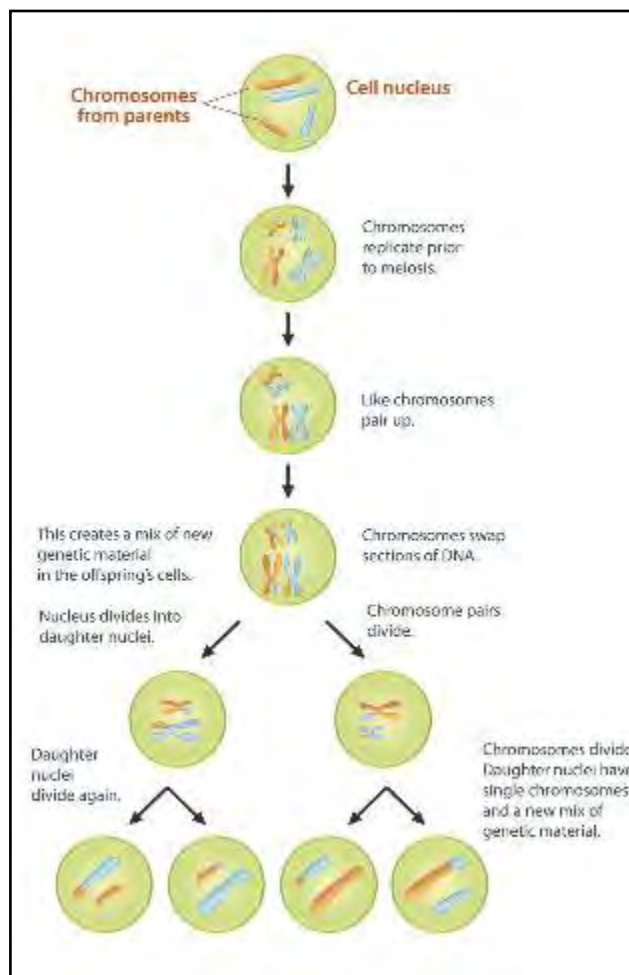


Figure 1. A simplified depiction of meiosis showing only two sets of homologs (chromosome pairs). Blue indicates chromosomes from one parent, red is from the other. The chromosomes must be stably paired early in meiosis so they can be accurately divided in the first cell division. Crossing over, which involves swapping sections on homologous chromosomes, is important in enabling those chromosomes to stably pair and in maintaining healthy variation in the population.

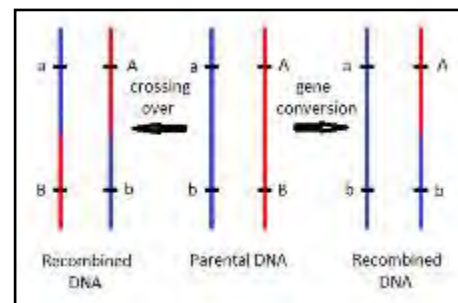


Figure 2. DNA tracts from two homologs are shown in the center. Crossing over involves swapping the ends (outcome on left). Gene conversion results in a section being copied from one to the other (right).

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Figure 1 — Anonymous. n.d. Asexual and Sexual Reproduction. 5 Meiosis and Gametogenesis. MoodleShare. Retrieved 28 Jan 2013 from <http://moodleshare.org/mod/book/view.php?id=2124&chapterid=273>
Figure 2 — Redrawn by J. Lightner,

...without excuse!

by Timothy R. Stout

RNA is an enigma for abiogenesis. It seems to solve many problems concerning how a natural origin of life could take place. In living systems it serves as an information template, such as in messenger RNA, and it also has catalytic functions, such as in various ribozymes of ribosomes. RNA's ability to serve both as an information template and also as a catalyst makes it appear to be an ideal candidate for a self-replicating molecule, a major hypothetical step towards abiogenesis.

However, when one looks at the complexities and difficulties associated with implementing RNA chemistry, the story changes. The problems are so overwhelming that many scientists studying life's assumed origins believe they are forced into a protein-based, metabolism-first scenario (Stout, 2012b).

Nicholas Hud, Ph.D. is a professor at Georgia Technological University and head of the school's Center for Fundamental and Applied Molecular Evolution. He is among those in the "information first" camp of abiogenesis. In his studies, he has come across an unexpected difficulty facing the information-first scenario. He is the lead author in an unpublished manuscript (Hud *et al.*, n.d) in which he and his cohorts discuss this difficulty along with a proposed solution. However, it appears that their proposed solution only adds to the complexity of an already overwhelmingly complex situation.

The information-carrying capacity of RNA is based on what is commonly referred to as "Watson-Crick base pairing." This refers to the preference of the nucleotides guanine (G) and cytosine (C) to pair with each other on the one hand, and for adenine (A) and either thymine (T) in DNA or uracil (U) in RNA to pair with each other. How-

ever, this pairing only works with a backbone in place on the template molecule, and with a catalyst performing alignment functions for the assembly molecule. The action of this combination forcibly aligns the coding regions of the nucleotide bases to interact and can produce extremely accurate selection. These interactions are important for template copying, and also for protein translation, where the transfer RNAs of the coded proteins also make use of Watson-Crick pairing.

Hud *et al.* have observed, however, that free RNA nucleotides in an aqueous solution do not naturally join to each other at their bonding sites in order to form Watson-Crick base pairs. The bonding sites are hydrophilic (attracted to water). As a result, they point towards the aqueous solution and bond with it instead of to each other, as they do in base pairing. In the meantime, the bodies of the various bases are hydrophobic (repelled by water) and thermodynamic considerations cause them to stack together sideways. This configuration is the natural result of free bases interacting in an aqueous solution. However, this reaction is useless towards forming long-stranded RNA molecules, and actually works to prevent it.

The situation is called a paradox by Hud *et al.* Base pairing is the basis of the informational capabilities of RNA. Yet, these bonds do not form naturally. For pairing to actually take place, an intricate process is required to constrain the nucleotides to a specific configuration. This is how they describe the paradox (emphasis in original):

How would life have anticipated Watson-Crick base pairing, and therefore coupled the bases into a polymer, if the nucleoside bases were not involved in such pairings prior to their attachment along a common

backbone? One can always argue that the formation of RNA-like polymers with appropriate bases was a complete accident. However, we argue that the probability for the spontaneous coupling of small molecules from a complex mixture to give rise to an RNA-like polymer with a majority of bases capable of Watson-Crick pairing is impossibly low *if* there is not a mechanism that preorganizes only those molecules that can form base pairs prior to their coupling into a polymer.

They propose a solution to this problem. First, they point out that there are small molecules that are commonly found in a 6.8 angstrom gap which occurs between nucleotides in both RNA and DNA. These are called "intercalating molecules." So, they propose what they call "molecular midwives," molecules which "would have aided the 'birth' of proto-RNA." They would be similar to intercalating molecules in size and physical traits. They then list various advantages that a molecular midwife could offer.

Next, they attempt to preempt an obvious rebuttal to their proposal. They state,

One might argue that the molecular midwife hypothesis introduces yet an additional complication to origin of life scenarios by requiring one more ingredient. We would counter that the benefits of a molecular midwife far outweigh this added requirement....

Realistically, I believe the critics are correct. The overriding problem facing the information-first scenario is to provide nucleotides of one sort or another (i.e., nucleotide bases, nucleosides, or nucleotides) with consistent concentrations, with useful

ratios between the different molecular species (A, C, G, and U), and an environment free from interfering contaminants. So far, this problem has been insurmountable — at least in scenarios that do not have extensive human intervention (Stout, 2012a). No matter how useful a molecular midwife might be to aid the assembly of nucleotide bases into nucleic acid, it does nothing to solve the primary problem — that of getting a consistent supply of bases using unguided, prebiotic processes working on prebiotic raw materials.

Hud *et al.* have only exacerbated the information-first problem: they openly acknowledge that without the spontaneous

appearance of molecular midwives, the likelihood of nucleotides forming nucleic acids is impossibly low. The unexpected, additional complexities of a base-pairing paradox and of molecular midwives do not resolve any problems associated with an information-first scenario. They only make a bad situation worse.

The paradox discussed by these researchers provides yet more evidence that basic principles of science and the problems revealed by greater insight into molecular processes work against a natural origin of life. God says that a person is “without excuse” who will not see the evidence He gives for creation (Romans 1:20).

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Speaking of Science

Editor's note: Unless otherwise noted, S.O.S. (Speaking of Science) items in this issue are kindly provided by David Coppedge. Opinions expressed herein are his own. Additional commentaries and reviews of news items by David, complete with hyperlinks to cited references, can be seen at: <http://crev.info/>. Unless otherwise noted, emphasis is added in all quotes.

Stampeding Dinosaur Tracks Made in Water

What were these dinosaurs running from? *ScienceDaily*¹ reported that dinosaur trackways in Australia, formerly presumed to have been made by a stampeding herd on land, were actually formed in water. “Queensland paleontologists have discovered that **the world’s only recorded dinosaur stampede** is largely made up of the tracks of **swimming rather than running animals**,” the article began.

Some of the tracks look like vertical impressions of toes; others are long grooves. These would fit impressions made as the dinosaurs, at least the smaller individuals, were partially buoyed up by water. Larger individuals left flat footprints as if wading up to their legs. The tracks are identified as ornithomimid, ranging in size from chickens to ostriches. The tracks are found in sandstone and siltstone near Queensland and Lark Quarry.

The new interpretation changes the scenario from a stampede to a river crossing, the article said.

The question they are not asking is, *How did footprints in water get preserved?* Wouldn’t such vulnerable impressions get washed out quickly if made in a shallow river? Wouldn’t dinosaur tracks like this be ubiquitous around the world, if made the way these evolutionary paleontologists assume, in shallow rivers over millions of years? There should have been numerous rivers in the paths of numerous dinosaurs like this.

The dinosaurs probably knew something the scientists don’t: flood waters were coming, and a huge wall of sand- and silt-filled water was aimed right at them. They were running for their lives. This was a rare, catastrophic occurrence, the last thing they would have seen.

1. University of Queensland (2013, January 8). Australia’s stampeding dinosaurs

take a dip: Largely tracks of swimming rather than running animals. *ScienceDaily*. Retrieved January 28, 2013, from www.sciencedaily.com/releases/2013/01/130108190250.htm

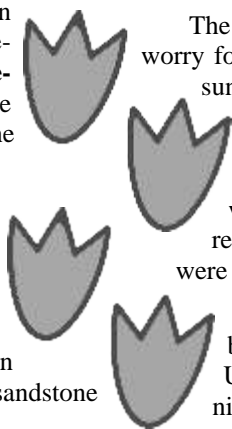
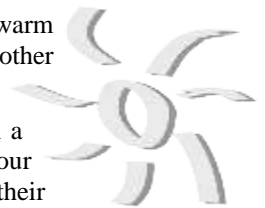
Faint Young Sun Paradox Solution Criticized

A proposed solution for keeping the Earth warm when the sun was 25% cooler leaves other evolutionists doubtful.

The “faint young sun paradox” has been a worry for decades. Theoretically, stars like our sun would have been 20–30% cooler in their early years — about the time when the Earth was preparing for life in evolutionary scenarios. How did the Earth’s surface avoid becoming frozen solid, from which an escape to springtime was impossible? Besides, records of the “oldest” crustal rocks show signs that oceans were liquid 3–4 billion years ago in the evolutionary timeline.

A new solution was proposed in the 4 Jan issue of *Science*¹ by Robin Wordsworth and Raymond Pierrehumbert of the University of Chicago. They propose that higher levels of nitrogen combined with 10% hydrogen would have increased collisional and rotational states in these gases. That would produce enough global warming to keep the surface from freezing. This new proposal adds to earlier hypotheses about other greenhouse gases that might have been present, such as methane or more carbon dioxide.

But in the same issue of *Science*, James Kasting of Penn State threw cold water on the new proposal.² Hydrogen gas was unlikely to have existed once life evolved, because methanogens would have eaten it out of the atmosphere in short order. In addition, Sara Reardon in *NewScientist*³ noted that fossil raindrop imprints, which are large and show free fall through a thin atmosphere, contradict the idea that nitrogen and hydrogen were abundant. She also pointed out that volcanoes do not typically exude the amount of hydrogen needed in the new model. And on *Space.com*, Charles Q. Choi said that “Past research had suggested that the **early Earth was not rich in hydrogen**.”⁴ Even Wordsworth admitted, “**Hydrogen is such a rare gas** in Earth’s atmosphere today that at first



glance, it seems crazy that it could ever have played a role in warming the climate.”

While not overthrowing the new proposal, Kasting, Reardon, and Choi suggested that the paradox will require further work to resolve. Woodworth agreed:

There’s been **lots of previous work** on the faint young sun paradox, and **we’re sure our study won’t be the last word on the matter**....It’s of course quite **possible** that the early Earth was kept warm by a **combination of effects**.

Nevertheless, the headlines in the popular media put the proposal in a positive light. Because Titan’s atmosphere has more hydrogen than Earth’s, *NewScientist* titled its entry, “**Titan holds clue to faint young sun paradox**.” This is misleading because the hydrogen does not contribute significantly to warming on Titan due to the low temperature, according to Kasting. And *Space.com* promised but did not deliver on its headline, “**How Early Earth Kept Warm Despite Faint Sun**.”

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2. Kasting, J.F. 2013. How was early Earth kept warm? *Science* 339(6115):44-45.
3. Reardon, S. (2013, January 8). Titan holds clue to faint young sun paradox. *NewScientist*. Retrieved January 28, 2013, from www.newscientist.com/article/dn23043-titan-holds-clue-to-faint-young-sun-paradox.html
4. Choi, C.Q. (2013, January 3). How Earth kept warm despite the faint sun. *Space.com*. Retrieved January 28, 2013, from www.space.com/19118-early-earth-atmosphere-faint-sun.html

New Feathered Fossil, but Not Simple Evolution

You would think evolutionists would celebrate this new “feathered dinosaur” instead of furrowing their brows.

Eosinopteryx brevipenna, a new fossil from China, was pretty small, according to the artist reconstruction on *LiveScience*¹—less than a foot. It looks something like a sparrow with a long tail. Its reduced feathers suggest it was flightless. Is it a transitional form at last? No. It throws out the classification of *Archaeopteryx* as a transitional form:

“This discovery **sheds further doubt on the theory that the famous fossil Archaeopteryx** — or ‘first bird’ as it is sometimes referred to — **was pivotal in the evolution of modern birds**,” researcher Gareth Dyke, a senior lecturer in paleontology at the U.K.’s University of Southampton, said in a statement.

“Our findings suggest that the **origin of flight was much more complex than previously thought**,” the article continued. Its reduced plumage “suggests that **feathering was already diversified by the Late Jurassic, adapted to different ecological niches and purposes**.” This would seem to suggest that *Eosinopteryx* was secondarily flightless, but the paleontologist argues it shows dinosaurs did not use their feathers for flight.

One cannot trust artist reconstructions, but just about everything in the drawing and the fossil looks suitable for a bird classification. Why is it even being called a dinosaur? And why do almost all of these weird, mosaic fossils come from China? Couldn’t some of them fly out of the reach of hoaxers? Just asking. Anyway, if it confuses the evolutionary story, that should be cause enough to be skeptical.

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Make Like a Firefly

Biomimetics puts a new meaning into “Make like a tree.” Yes, make things like trees, snails, fireflies, and a thousand other creatures do, and life can be inspiring. See what the following organisms have to offer:



Fireflies: A new LED inspired by fireflies is 55% more efficient, reported *ScienceDaily*.¹ The team lead said it “**will continue to explore the great diversity of the natural world, searching for new sources of knowledge and inspiration**.”

Skin: Who would have thought your skin would inspire design of a generator? Scientists at MIT and Harvard did. In *Science*, they wrote about their “**Bio-Inspired Polymer Composite Actuator and Generator Driven by Water Gradients**.”² They’ve designed a water-actuated polymer film that “**can generate contractile stress up to 27 megapascals, lift objects 380 times heavier than itself, and transport cargo 10 times heavier than itself**.” They were “**Inspired by the network structure of animal dermis**, in which rigid collagen fibers reinforce an elastic network of elastin microfibrils to form **a sturdy and flexible material**,” they said.

Tissue: Human tissues inspired the creation of 3-D scaffolds for tissue repair, according to *ScienceDaily*.³ A team of researchers from international hospitals designed a stretchable polymer that will allow stem cells to be positioned where needed. The abstract of the paper in *Tissue Engineering*, entitled “Biomimetic three-dimensional anisotropic geometries by uniaxial stretch of poly(ϵ -caprolactone) films for mesenchymal stem cell proliferation, alignment, and myogenic differentiation,” states, “Here, we present **a novel simple, solvent-free, and reproducible method** via uniaxial stretching for incorporating anisotropic topographies on bioresorbable films with **ambitions to realize stem cell alignment control**.”

DNA: *ScienceNOW*⁴ reported a new record for DNA storage of digitized information: 2.2 petabytes per gram (a petabyte is a thousand terabytes or a million gigabytes). “At the storage density achieved, **a single gram of DNA would hold 2.2 million gigabits of information, or about what you can store in 468,000 DVDs**,” the article said. Calling DNA a perfect storage medium, the Nick Goldman team stored photographs, sound, and text, including all of Shakespeare’s sonnets. The team believes it will remain stable for thousands of years, even without electricity or constant maintenance.



The team also retrieved the stored information with 100% accuracy. See also the *BBC News*,⁵ *Nature News*,⁶ and *PhysOrg*.⁷ For all the celebration, observers will note that nature had it first, using a stable aperiodic molecule that can store up to an exabit (10^{18} bits, a thousand petabits) of information per cubic millimeter, according to Dr. Dean Kenyon in the Q&A section of the film *Unlocking the Mystery of Life*.⁸

Snails: Snails have teeth? Yes, marine snails called chitons do, and upcoming solar panels might thank them for it. *ScienceDaily*⁹ shows a photo of the large chiton’s teeth, and promises “**less costly**”

and more efficient nanoscale materials to improve solar cells and lithium-ion batteries” by the skin of their teeth. How can that be?

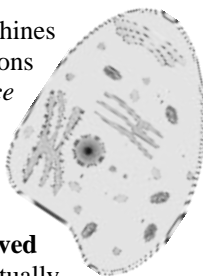
Well, these marine snails that feed on algae on rocks have a rasping tool called a radula, with “a **conveyor belt-like structure in the mouth** that contains 70 to 80 parallel rows of teeth.” It allows them to replace the front teeth continuously, at the same rate they are shed, with materials containing magnetite, one of the hardest minerals known.

David Kisailus from UC Riverside, who “**uses nature as inspiration to design next generation engineering products and materials,**” said that he’s amazed at how the chiton uses available materials at room temperature to build these highly-effective tools. His paper analyzing the process includes visions of how the same principles could allow engineers to construct tools from nanocrystals “at significantly lower temperatures, which means **significant-ly lower production costs.**”

Catalysts: Cells are filled with molecular machines called enzymes that catalyze slow chemical reactions to fantastically rapid rates. A paper in *Science* discussed “Re-engineering nature’s catalysts” that demonstrates “**biomimicry paradigm in reverse**” — that is, “**altering the function of one of nature’s most versatile biocatalysts is directed to a transformation originally conceived and implemented by synthetic chemists.**”¹⁰ Actually, it’s straightforward biomimicry, too: you have an idea, and you look how nature solved it.

The authors of this paper claimed, “**Directed evolution** is one of the most successful approaches toward achieving these goals. This **method is a laboratory-based, accelerated version of natural evolution.**”

Notice some strange reasoning in the final quote? Are they claiming that researchers have no minds or goals? Or is natural evolution being inappropriately personified?



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Horse Evolution ...continued from page 1

essentially copied material from other books. He discussed in detail the most common example of textbook cloning, namely the section on horse evolution, noting that when textbook authors “illustrate evolution with an example from the fossil record, they almost invariably trot out that greatest war-horse among case studies — the history of horses themselves.” Gould added that the

...standard story begins with an animal informally called *Eohippus* (the dawn horse), or more properly, *Hyracotherium*. Since evolutionary increase in size is a major component of the traditional tale, all texts report the diminutive stature of ancestral *Hyracotherium*. A few give actual estimates or measurements, but most rely upon a simile with some modern organism. For years, I have been

much amused (and mildly bothered) that the great majority of texts report *Hyracotherium* as “like a fox-terrier” in size (1991, pp. 158-159).

Even this size claim is probably inaccurate — some paleoanthropologists have concluded that *Hyracotherium* was twice the size of a fox-terrier. The horse example, although for decades the primary illustration used in high school textbooks to support evolution, came to an inglorious end:

Marsh’s classic unilineal (straight-line) development of the horse became enshrined in every biology textbook and in a famous exhibit at the American Museum of Natural History. It showed a sequence of mounted skeletons, each one larger and with a more well-developed hoof than the last. (The exhibit is now hidden from public view as an outdated embarrassment) (Milner, 1990, p. 222).

Changing an exhibit

The exhibit text was then modified and re-opened. Later, the museum totally revamped the horse exhibit in another attempt to make it somewhat more accurate. However, the museum continues to teach that *Eohippus* was an early horse, as shown by a horse activity worksheet for students in grades 3–5 on the American Museum of Natural History website (AMNH, 2008).

The steady gradual progression from a small animal to the modern horse, called the ladder model, was the classic series in which *Eohippus* (now called *Hyracotherium*) evolved into a three-toed *Mesohippus*, with only one toe touching the ground. Next in the series was the one-toed *Pliohippus* and, lastly, the modern horse.

These still-popular pictures are now acknowledged to be very inaccurate, even by those who accept neo-Darwinism. What is seen in the fossil record is not linear

evolution, but the expression of an enormous amount of variety. As Gould wrote, the ladder model “is much more than merely wrong. It never could provide the promised illustration of evolution progressive and triumphant” (1991, p. 180). When the eminent “paleontologist George Gaylord Simpson reexamined horse evolution and concluded that generations of students had been misled. ... he showed that there was no simple, gradual unilineal development at all” (Milner, 1990, p. 222).

Horses, like dogs, display enormous morphological variety that is revealed in both living horses and the fossil record. In size alone, living horses range from the miniature horse, which is about the size of a German shepherd and weighs around 200 pounds, to the Shire, which weighs up to 2,300 pounds and stands 68 inches high. External morphological differences, including color and hair traits, are other examples of horse variety.

Ladder or bush?

Simpson’s study that refuted the ladder theory is still one of the most authoritative debunkings of the classical horse evolution theory (1951). He showed that some horse types in the series that are now extinct overlap in the geological record with other extinct horse kinds that were supposedly their evolutionary precursors. Gould wrote that each horse genus is actually a

...bush of several related species, not a rung on a ladder of progress. These species often lived and interacted in the same area at the same time (as different species of zebra do in Africa today). One set of strata in Wyoming, for example, has yielded three species of *Mesohippus* and two of *Miohippus*, all contemporaries (Gould, 1991, p. 179).

The horse fossil record does not show a recognizable pattern that supports a gradual straight-line evolution, and this is one reason why the multi-branching “bush” view is now the dominant picture of horse history.

At the base of the horse evolutionary tree is the animal claimed to be the progenitor of all horses, now called a *Hyracotherium*. It was first described by the “great British anatomist” Richard Owen in 1841, and was named after a hyrax because he concluded that it was a close relative of hyraxes or *Hyracoida* (Gould, 1991, p. 60). As mentioned earlier, Marsh had named the progenitor *Eohippus*, meaning “dawn

horse” or the “first horse,” a name dropped and replaced by the term *Hyracotherium* (Gould, 1991, p. 160).

Stasis

A key conclusion from examination of the horse fossil record is that the species making up these bushes “tend to arise with geological suddenness, and then to persist with little change for long periods” (Gould, 1991, p. 180). Gould noted that the record not only shows abrupt appearance and stasis, not gradual evolution, but that there is

...no evidence of long-term changes within these well-defined species [of *Mesohippus* and *Miohippus*] through time. Instead, they are strikingly static through millions of years. Such stasis is apparent in most Neogene [later] horses as well, and in *Hyracotherium*. ...At high resolution, the gradualistic picture of horse evolution becomes a complex bush of overlapping, closely related species (1991, p. 180).

Furthermore, if one accepts the standard geological time scale, the fact that many of the animals in the horse fossil series are found in the *same strata* proves that they lived at the same time, in the same or a similar environment, and thus cannot be ancestors to the other contemporaneous horses in the series. In spite of much speculation, there exists

no unanimity of opinion even among experts concerning the origins of the domestic horse. Debate about it has so far lasted for about 150 years. Even before Darwin’s new theories ... of evolution, the im-

mense diversity of size, form and color of horses had led enquiring minds to explore the possibility of various primitive races of horse being extinct before the domestication of *equus caballus*. However, most of these ‘primitive races’ were supposed to differ from each other in color, and the theorists have therefore been able to draw little support from archaeological remains (Edwards and Geddes, 1973, p. 14).

Thus, the debate about horse origins continues today, but there is no debate about the fact that the classic picture of horse evolution frequently used in textbooks for the last century is clearly wrong.

Acknowledgements. Terry and Judy Trainor, Clifford Lillo, MA; Mary Ann Stuart MA, and John UpChurch.

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All by Design

by Jonathan C. O'Quinn, D.P.M., M.S.

Nature's Farmers

Leaf cutter ants are one of the countless species of living creatures inhabiting the earth which possess survival skills that are nothing short of extraordinary, and they are the only animals besides humans that grow their own food from living matter.

The larvae of these ants feed on the “nutritional bodies,” or gongylidia, produced by fungi of the family Lepiotaceae, which grow only in leaf cutter colonies. The ant colonies are divided into castes of different sized ants, each with a special role to play. The medium sized forager ants search for and cut small pieces of leaves and bring them back to the colony, where the plant matter is handed off to smaller ants, which in turn chew the leaves into smaller pieces and pass these to even smaller ants, which do the same. The smallest pieces are placed into large culture gardens deep within the colony, where they act as a substrate for fungal growth. The tiniest ants of the colony tend the fungal gardens,



Leaf cutting ant, Forest bachac: Atta cephalotes

Photo credit:

Scott Bauer, USDA Agricultural Research Service,

harvesting the gongylidia as they appear, and feeding them to the ant larvae after they hatch. To keep their gardens clean, the ants

physically remove any unwanted species of fungi, produce amino acids and enzymes to aid fungal growth, and secrete natural antibiotics from *Streptomyces* bacteria growing on and in their bodies, to protect their fungi from contamination.

This is a complex biological system in which different types of living organisms function in perfect harmony and which could not have developed in stages or by accident.

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