

**CREATION SCIENCE
TEXTBOOK ADDENDA**

**For the textbook
GENERAL SCIENCE**

by

**Watkins, Emiliani, Chiaverina, Harper, LaHart
Harcourt Brace Jovanovich, Publishers
1989**

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BY WAY OF EXPLANATION

This presentation is not intended to be a complete discussion of the evidence for creation but rather a supplement to the textbook *General Science*. It presents the scientific creation position on the textbook subjects relating to origins so that the classroom teachers do not have to make a presentation on material in an area where they have little or no background. This material is presented at a level that is consistent with the student's background. Reference to the textbook must be made in order to get a clear picture of the evolutionary perspective on the subject being discussed. If more information is desired on a particular subject, please get the more complete presentation given in the discussion of the Biology textbook¹⁴ or contact the author.

INTRODUCTION

Most General Science textbooks present the origin of life from only a single viewpoint. They fail to acknowledge that there are two major scientific theories of origins - evolution and creation. Only scientific aspects of creation and evolution will be examined since they are furthest apart in concept and all other origin theories are some combination of these two. The textbook presents only evolutionary concepts, so the material furnished here will rebut these concepts from a creationist perspective.

This presentation will show where and why creation scientists do not agree with all of the ideas on origins presented in the textbook *General Science* by Watkins, Emiliani, Chiaverina, Harper and LaHart published by Harcourt Brace Jovanovich in 1989. The facts presented by the textbook authors are accepted by creation scientists but they, however, come to different conclusions because there are additional facts not presented in the textbook which cannot be overlooked. These additional facts support another theory to explain the observed facts - creation.

Anyone who reads the newspapers, magazines and journals, listens to radio or watches TV, is aware that the media presents the idea that all or most scientists believe evolution to be fact and not theory. However, there are a significant number of scientists that do not accept evolution as fact and so it is reasonable that alternate theories of origins should be examined. The journal *Industrial Chemist* reported in its February 1988 issue that a survey of what scientists accept on the

subject of origins yielded the following results:

Accept Evolution	48.3 %
Accept Biblical Creation	22.8 %
Some combination of the two	22.8 %

The definition of evolution must be examined in order to understand why there is a difference of opinion as to whether evolution is fact or not. Section 25.2 page 529 of the textbook defines evolution to be: "*The adaptation and resulting change in living things over time is called **evolution**. Evolution occurs over lengths of time and over many generations of living organisms. Evolutionary changes result in changes in species.*" If only the first sentence of this quote were the definition of evolution there would be no problem for creationists but it is not the dictionary or textbook definition as the last two sentences point out. Creationists object to the middle sentence because they do not believe that all organisms came into existence through this process. They maintain that organisms [representing kinds] appeared suddenly in their complete or present form but not necessarily as modern species. There is no consideration of the time over which changes occurred or the age of the earth. Biblical creationists maintain that the earth is relatively young. If the earth is young then evolution is impossible because of the great number of steps necessary for it to happen. Is there any doubt why evolutionists object to Biblical creation? The first sentence of the above definition refers to the theory of natural selection (sometimes called "survival of the fittest" or "adaptation of the species") as proposed by Charles Darwin. Natural selection has been observed and can be considered as scientific fact. Darwin believed and thus evolutionists believe that since natural selection is true then evolution must be true. In other words, if small changes in organisms occur due to natural selection [micro-evolution] then large changes "must" occur [macro-evolution. Creationists do not agree with this hypothesis.

A fundamental difference between the two major theories lies in how genetic information originated in organisms. The evolutionist believes that the increasing genetic information necessary for different organisms to evolve arose by purely random chance happenings over a great period of time. This is in conflict with "information theory" which maintains that meaningful information does not come about spontaneously nor does it increase spontaneously. In contrast, the creationist believes that the complexity and information content of the genetic information is evidence that each organism must have been designed and therefore appeared suddenly in the approximate form it now appears.

INFORMATION FOR CHAPTER 24

The question of origins does not need to be addressed in this chapter but certain points and questions need to be brought out and answered so that the material in chapter 25 on evolution may be understood more easily.

The Mutation Problem

Creation scientists disagree with the conclusion of the third paragraph of section 24-8 which states, "*These mutations are responsible for evolution, or the changes in species over long periods.*" This is because creationists remember having read earlier that, "*Chromosomes may not always replicate or divide properly*" (Section 24-8, paragraph 1, sentence 1) and ask how often does this happen? They also read in paragraphs 2 and 3 that, "*Mutations are often harmful or fatal*" and "*Some mutations are actually beneficial.*" Wherein modern thinking maintain that mutations are neither beneficial nor harmful, the author's statements are certainly logical in that some mutations must be more or less harmful than others. The question that the author's statements stimulate is, " How often does a favorable mutation occur ?"

It is known that duplication (replication) errors are extremely rare. Hickman¹ states that there is no more than one error in copying the entire human DNA or genotype of about 4,000,000,000 units called base pairs. This clearly says that duplication errors do not provide an abundant source of mutations for evolutionary change. Ambrose² states that only one in 1000 mutations "*might*" be beneficial. He further adds to the complexity of the situation by saying that generally it takes about 5 mutations to make a significant physical change in an organism. A single physical change in an organism does not mean a new species has been formed. The fruit fly [*Drosophila*] has been forcibly mutated hundreds of thousands of times causing major physical changes but never has anything but a fruit fly been produced. Dodson³ estimates that it takes over 300,000 generations for a slightly beneficial *recessive* gene to increase in frequency from 1 in 1,000,000 to 2 in 1,000,000. It must also be remembered that a mutation in any cell other than in the cell involved in reproduction (the seed, pollen, egg, sperm, etc.) does not have any influence on succeeding generations. When all of this is considered, the question must be asked, "How can evolution occur from processes that produce many more negative results than positive results?"

To better understand this problem consider a simple analogy. Suppose driving from Baton Rouge to Hammond (about 36 miles) is to be accomplished using the odds of 1295 to 1. This is about the same as the assumed likelihood of a beneficial mutation. Take a piece of paper and put two points on it connected by a line divided into 36 parts. You will also need two pairs of dice. Assume a favorable mutation is represented by four ones appearing when the dice are rolled. When this occurs advance one mile. Any other combination of numbers on the dice represent unfavorable or neutral mutations. The book states that some mutations are fatal so assume that any time four of any number other than one come up the organism is killed and the trip must be started over. The rest of the combinations represent unfavorable mutations which do not normally kill the organism but if enough unfavorable mutations do occur then the organism will be weakened and die. Assume this number is twenty so that if twenty rolls of the dice do not yield four ones then the organism dies and the trip must be started over. Do you think that we

can ever get to Hammond? If not, then you do not think evolution can be accomplished by mutations. What is the alternative? Creation! Remember that even if you do feel you could get to Hammond that does not prove evolution because of the other problems mentioned in the previous paragraph.

The Information Content Problem

In order for a more complex organism to evolve there must be an increase in new information [genetic complexity] added to the DNA . It should be noted that an error in copying or the breaking or losing of a chromosome does not add additional information to the DNA but decreases it and so does not lead to the implied conclusion of the third paragraph of 24-8, i.e., evolution. Organisms may be destroyed or greatly deformed by errors or breakage but there is no increase in complexity. Mice living at the Chernobyl reactor show mutational changes but they and their offspring are still mice. The only way to have an increase in complexity is to have a chromosome, a piece of a chromosome, the DNA or part of the DNA of a bacterium or virus added to the existing DNA. A real problem arises when we consider adding information to the DNA. Not only must it be added but it must be added in such a fashion that it sensibly increases information content and actually ends up describing a more complicated organism. For instance, take the last five sentences or any other group of sentences representing additional information and try to put them into this document so that they make sense and add to the meaning. To simulate evolution close your eyes and randomly select a spot to insert them. Try it. You will soon come to the conclusion that it is impossible.

We know that about one person in 750 has some form of Down's syndrome⁴ which is caused by the addition of an additional chromosome or extra DNA to the existing DNA (Trisomy). Even though the textbook says that some of these people can become contributing members of society this is not a DNA addition that improves survivability. The chances of a random section of DNA from any source joining with the DNA of a reproductive cell (gamete) in a manner that would contribute to the functionality of an organism are impossibly small as noted in the previous paragraph.

When all of the factors just presented are considered, creation scientists do not think mutations can account for new species arising as suggested in the third paragraph of section 24-8 or for the great diversity of the gene pool which allows for the adaptation of organisms to their environment. They maintain that new species were designed for their environment with their present gene pool more or less like it is today. They do recognize that the gene pool is being modified by mutations but these changes are seldom favorable.

INFORMATION CONTENT FOR CHAPTER 25

Scientific creation can be defined as the analysis of scientific data which supports the sudden appearance of an organism in its completed form. The organism is designed in such a way as to best suit its environment and to adapt to moderate changes in the environment. Creation scientists believe that special adaptations are designed by a Creator and did not evolve as evolutionists believe.

There are very large differences between the theories of creation and evolution when their major points are compared as shown in the table below.

CREATION	EVOLUTION
DEFINITIONS	
Sudden appearance of an organism in its completed form .	The adaptation and resulting change in living things over over a long time.
ROLE OF MUTATIONS	
Usually degrades the gene pool.	The means by which new organisms appear.
DIVERSITY IN GENE POOL	
Originally designed that way. New mutations are occurring but generally are degrading the gene pool in terms of viable variations.	Occurred because of the mutation process.
ROLE OF NATURAL SELECTION OR SPECIES ADAPTATION	
Does not lead to new species but rather tends to keep the existing species from changing. Can lead to new sub-species. (See discussion of natural selection p. 6).	Leads to new species and new sub-species.
FOSSIL RECORD	
All of the families should be represented throughout the entire column.	Should progress from the simplest organisms in the deepest strata to the most complicated organisms in the higher strata.

DISCUSSION OF PREVIOUS TABLE

Definitions

These definitions are very far apart in concept. Creation is not dependent upon time whereas evolution cannot occur without some amount of time. Certainly the appearance of an organism in its final or complete form is very different from having it develop up to its present form.

Role of Mutations

This was discussed earlier on page 3 of this document.

Diversity of Gene Pool

The creationist believes that the ability of an organism to adapt to its environment was designed which means that the DNA sequence was designed. If the DNA was designed by a creator then it is reasonable to assume that it was perfect originally. On this basis, any mutations that occur will degrade the DNA or gene pool. The question is whether the over 4000 human disease related mutations now recognized existed from the beginning or have occurred over the years. In other words, is the gene pool deteriorating or improving? Creationists believe it is deteriorating and therefore its diversity is less now than it has been in the past. When the diversity in the gene pool is not large enough to allow the organism to adapt to new environmental conditions the organism becomes extinct.

Natural Selection or Species Adaption

The textbook description of natural selection does not point out that species adaptation can tend to keep the status quo as well as change it. If a well established organism were to go through a mutational change that altered its physical characteristics, chances are that the mutation would weaken the organism and make it less likely to survive in its present environment. Natural selection would tend to eliminate the mutational change unless an environmental change that could use the mutational change occurred at the same time as the mutation. This means that natural selection can nullify the effects of mutation and makes the likelihood of progress by mutation even less likely.

Natural selection is the process by which sub-species develop. If the environment changes, some of the existing species will adapt to the new environmental conditions because of the diversity in the gene pool and thus become a sub-species. For example, some of the various types of dogs are sub-species where species means the animals that can reproduce.

Fossil Record

The fossil record poses some real problems for the evolutionist. Not only are there many gaps in the fossil record but very complex organisms appear suddenly in very deep geologic strata. The second layer from the bottom of the Grand Canyon is

called the Cambrian layer. It has worldwide distribution and has fossils such as the nautiloid which is a squid-like animal that is a very complex organism. Its eye is very similar to that of a human. In the same and even deeper strata are found trilobites which are highly complex organisms with unusually complex eyes that are not related to the nautiloid's eye. This means that there were two different highly complex eyes evolving at the same time - a very unreasonable assumption. The Cambrian layer contains a literal explosion of life forms with no evidence as to where they came from. Most of the phyla are represented in this strata and appear in all of the higher strata as well as the Cambrian. These facts support creation rather than evolution.

Misnamed Evolutionary Changes

An example of natural selection is given in the textbook on pages 529-530 under the title **Evolutionary Changes** when it discusses adaptations of the Galapagos tortoises. Note carefully that the Galapagos tortoises adapted and did not become a new species in the sense that they still were interbreeding. They are still tortoises - they did not evolve in the sense of molecules to man. They went through what creationists call micro-evolution and not macro-evolution. The total gene pool is probably the same as it was originally just as it is in the peppered moth of England⁵ (*Biston betularia*).

The authors also suggest (sixth line from the bottom of page 530) that the giraffe neck might be the result of natural selection. A close look at the giraffe neck reveals that it is not just larger vertebrae, muscles and longer blood vessels that happened in a random manner. There are pressure sensors and regulators, valves in veins, increased muscle fiber in artery walls and by-passing structures for the blood. All of these are necessary for the giraffe to be able to live as it lowers its head to drink or graze. There is so much that must come together in the neck of the giraffe to make it functional that deliberate design seems to be the only answer. Changes in the environment cannot explain this final result.

The last paragraph on page 530 starts a discussion on the flamingo as an example of evolutionary change. The decision needs to be made whether the flamingo's beak occurred by natural selection or was it deliberately designed. The number of mutational changes necessary to accomplish this new beak from the DNA of other birds makes it obvious that design must have been involved, not mere chance happenings. The changes in the jaw necessary to have it attached

5 The peppered moth is heralded as an example of evolution but is really an example of natural selection or species adaptation. Before the industrial revolution most of the moths were a mottled gray that blended well on the tree trunks that had lichen growing on them and so were invisible to birds. The darker moths were quickly eaten by birds. With the industrial revolution came air pollution which killed the lichen on the trees and thus exposed the gray moths against the dark background of the tree trunk. The light colored moths were eaten by the birds but the dark colored moths escaped detection. These dark moths multiplied and became dominant and therefore were said to have evolved. The story concludes

with the cleanup of the air and the return of lichen on the trees. The dark moths have essentially disappeared and the light colored moths have returned and become dominant. The creationist believes that the gene pool has not changed and that this is a clear example of natural selection -- the moth is the same as it always was.

to the spinal column instead of the head and the reattachment and reconfiguration of muscles and tendons necessary to control the jaw lead one to believe the flamingo's beak was created.

INTERPRETING ILLUSTRATIONS (HOMOLOGY)

Creationists object to the conclusion that since different animals have similar or homologous structures they must have a common ancestor. They object because it is an unproven hypothesis. There are many homologous structures on the cars in a parking lot such as wheels, headlights, side mirrors, body style, etc. Does this mean that they all came from a common ancestor? If the assumption were made that they could evolve, then they could be arranged in an order that would illustrate this. In other words, if you were given some criteria (size, shape, complexity, similarity, function, etc.) by which to judge things such as cars, spoons, forks, wheels, organisms, etc. you could arrange them in an order to illustrate or confirm the criteria. This is what evolution does with this argument.

Upon close examination of the animal structures presented on page 532, it should be noted that the bones, while located in the same relative location, are not the same size and do not have the same bony knobs and protrusions. This means that they are not similar after all. The information in the DNA must be very different to direct the formation of these different bone structures. Shouldn't the genes of animals with similar structures be similar if they came from the same ancestor? It was reported some time ago that similar genes do not produce the same structure in different organisms⁶. Just because a structure is serving a similar purpose in different animals does not mean that these animals all came from the same ancestor. As the text points out, there are many instances where similar structures obviously do not mean descent from a common ancestor such as the wings of birds, bats, insects, and butterflies. What determines the common ancestry of a structure? There are no logical criteria!

A further consideration regarding similar structures is whether there is another way to do the assigned task. How many ways can an appendage like a leg that serves to support an organism be attached? One requirement is something must offer stiffness to the appendage. There are two ways to do this in a living organism - by bone and/or cartilage? Shouldn't these bones and/or cartilage look approximately the same regardless of use except for the way they are connected together? If the design is good then why shouldn't it be used in multiple applications?. This is exactly what design engineers do. Is it wrong then for a Creator to do the same thing?

IMPROVED BREEDING

The textbook suggests that selective breeding is evolution. Certainly, improved cattle and plants have been produced from man's viewpoint by man's efforts but the real question is whether this is evolution and are the supposed improved strains better able to survive and reproduce in their original habitat? For instance: Is the one meter tall crepe myrtle better able to survive by itself or does it require special care? Are the super sweet and super size vegetables and fruits better able to survive and reproduce than their parents? Are the beefmaster and beefalo cattle able to adapt to environmental changes as well their ancestors? Could these changes have occurred without man's intervention? Did the results of the crosses result in different families or are they still from the same family?

In most cases, these new varieties or sub-species quickly become extinct if not cared for properly. They require special care because some of their gene pool has been eliminated through selective crosses. Since I raised peaches commercially I know from personal experience that the peach trees which produce large peaches will quickly die if not cared for. This is in direct contrast to wild trees that I have seen flourish around an old abandoned house for years without care. The selective crossing of trees for large fruit with good flavor weakens the ability of the tree to survive.

Lastly, it should be noted that selective breeding is not evolution. It is the result of deliberate, planned selection from the existing gene pool for a specific purpose and is not likely to have occurred by random chance happenings.

INCREASED RESISTANCE

The textbook statement is true when it says, "*Increasing the disease and insect resistance of a plant or an animal is usually a helpful change----- Sometimes, however, an unplanned resistance develops that has a damaging effect.*" This does not mean that macro-evolution has taken place. Deliberate action was required by the scientists and so the results are not due to random chance happenings. The insects and bacteria that become immune to insecticides or medicines are still the same kinds of organisms. Some people are less resistant to certain diseases than others. This does not make them a new species. Evolution has not taken place although the gene pool may have been adversely affected.

THE QUESTION OF EARLY HUMANS

Creationists do not believe the statement in the first paragraph of the textbook (Page 537) that "*humans.....have evolved from early hominids*". As stated earlier, they believe that all of the animals supposedly making up the ape-human lineage are individuals that first appeared much as we see them today. Creationists point out that we are back to the homology argument already discussed. Just because two animals look somewhat alike does not mean they came from a common ancestor. To point up the absurdity of this hypothesis, look at the

DNA of ape and man. It has been stated recently that the DNA of ape and man are 99% the same. If only a 1% difference exists, that amounts to the amount of information contained in a book whose thickness is equivalent to about 45 General Science textbooks based on the human genome of eight billion base pairs⁷. Where and how did this vast amount of additional information come about? It is completely inconceivable that this much coherent information could have been accidentally added to the DNA of a member of the ape family at one time to get man. If the transition from ape to man is to be accomplished by mutations, it is apparent that there should be plenty of fossil evidence. Where is the fossil evidence ?

The text presents some evidence about which there is controversy. Paleontologist Adrienne Zihlman, University of California at Santa Cruz says, "Lucy's fossil remains match remarkably well with the bones of a pygmy chimp."⁸ Evolutionists such as Charles Oxnard, Sir Solly Zuckerman, William L. Jungers, Jack T. Stern, Jr, Randall L. Susman, Malcolm Bowden all concur.⁹⁻¹³ The textbook Modern Biology by Albert Towle¹⁴ presents two different views of human evolution (pp.261-262) which points up that the lines of descent are pure supposition. The creationist believes that each of the animals represented in these lines of descent are individuals that are not related.

AMINO ACIDS AND EVOLUTION

The statement under Procedure on page 540 that, "*The more amino acids that animals have in common, the more proteins the animals have in common, and the more closely related they are to one another*" is completely false as stated. There are only 20 proteinous amino acids and all animals have all twenty which means that the attempted comparison of members of the animal kingdom shown in Table 1 has no meaning as presented. Any conclusions drawn from this table are probably in error.

CONCLUSION

Hopefully, this brief presentation has allowed the reader to recognize that there are many good arguments and facts which support creation rather than evolution. Neither theory can be absolutely proven since they concern something that happened in the past with no living witnesses except the Creator in the case of creation. As more and more facts are uncovered in the origins area the case for creation becomes stronger and that for evolution weaker.

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BY WAY OF EXPLANATION

This presentation is not intended to be a complete discussion of the evidence for creation but rather a supplement to the textbook *Modern Biology*. It presents information of the scientific creationist's position on biology and the subjects relating to origins in the textbook so that the schoolroom teachers do not have to be pressed to present information on material that is unfamiliar or on which a very limited background exists. The material is presented at a level that is consistent with the students background and comprehension. Reference to the textbook must be made in order to get a clear picture of the evolutionary perspective on the subject being discussed.

INTRODUCTION

Most Biology textbooks present the origin of life from only a single viewpoint. They fail to acknowledge that there are two major theories of origins - evolution and

creation. All other theories are some combination of these two. This presentation will show where and why creation scientists do not agree with all of the concepts on origins presented in the textbook *Modern Biology* by Albert Towle. All of the facts presented by the textbook authors are accepted by creation scientists but they come to different conclusions because of differing opinions of their importance and because there are additional facts not presented in the textbook which they feel cannot be overlooked. Creation scientists have developed another theory to explain the observed facts - creation.

Anyone who reads the newspapers, magazines and journals on the news stands or listens to radio or watches TV is aware that the media presents the idea that all true scientists accept evolution as fact and not theory. The journal *Industrial Chemist* reported in its February 1988 issue that a survey of what scientists accept on origins yielded the following results:

Accept Evolution	48.3 %
Accept Biblical Creation	22.8 %
Some combination of the two	22.8 %

Obviously, there are a significant number of scientists that do not accept evolution alone and so it is reasonable that students should be presented alternate theories of origins. Only creation and evolution will be examined since they are furthest apart in concept and any other theories are some combination of these two. The textbook presents only evolutionary concepts so the material furnished here will deal only with creation concepts.

Dr. Towle says, "evolution is the unifying theme of biology" (text pages 6 and 230) and develops the text material around this idea. Because he has done this, no attempt will be made to address each place in the text where evolution is mentioned. This presentation will discuss the origins issue in relation to biology and will refer to the textbook material as (tp 1) to indicate where relevant text material is located.

It should be remembered throughout this discussion that biology is the study of living things. It is not necessary to know where an organism came from to determine how it functions internally and externally and how it relates to other organisms. Similarities to other organisms is interesting but not necessary to understand the detail functioning of the organism although it may help to eliminate repetition in some cases.

This paper is divided into two sections. The first section deals with the plausibility of evolution and creation. The second section deals with some of the more commonly presented arguments for evolution as given in the textbook. Both sections present only the creation position on these subjects.

SECTION I

DEFINITION

The definition of evolution must be examined in order to understand why there is a difference of opinion as to whether evolution is fact or not. The textbook says on (tp 219), "***Evolution is the theory that species change over time. According to this theory, today's species descended from more ancient forms of life by structural and physiological modifications.***" Creationists would agree completely if only the first sentence of this quote were the definition of evolution. There would be no problem. They call this micro-evolution. But this is not the textbook definition as the second sentence points out. The definition describes macro-evolution. Creationists object only to the last sentence of the above definition since they maintain that organisms appeared suddenly in their complete or present form. There is no need for consideration of the time over which this occurred or the age of the earth. Biblical creationists add that the earth is young. If the earth is young then evolution cannot be true because of the great number of assumed steps necessary for evolution to have taken place. This is perhaps the reason why evolutionists object so strenuously to the concept of Biblical creation. They extend this objection to the scientific creationists even though the scientific creationists do not necessarily agree with the Biblical creationists. The first sentence of the above definition refers to the theory of natural selection (sometimes called survival of the fittest or adaptation of the species) as proposed by Charles Darwin. Natural selection has been observed and can be considered as fact. Darwin and evolutionists believe that since natural selection is true then evolution must also be true. In other words, if small changes in organisms occur [micro-evolution] due to natural selection then large changes "must" also occur [macro-evolution]. Creationists do not agree with this hypothesis. The change at the genus level of one organism to another has not been observed to occur naturally nor has it been demonstrated by any laboratory experiment.

The fundamental difference between these two theories lies in how genetic information originated in organisms. The evolutionist believes that the genetic information of different organisms arose by purely random chance happenings over a great period of time. In contrast, the creationist believes that the complexity and information content of the genetic information indicates that it must have been designed and therefore appeared suddenly in the approximate form in which it now appears.

The Mutation Problem

"A change in DNA is called a mutation" (tp 163). Evolutionists hypothesize that mutations are responsible for changes in species over long periods and that changes in species ultimately lead to changes at the genus level, the family level and on up to the kingdom level. Creationists agree that mutations can cause new species but disagree with the rest of this hypothesis. The great complexity and preciseness

found in the DNA and the tremendous increases in DNA information content necessary to evolve from "amoeba to man" make the hypothesis very unlikely. Some simple reasoning will show why the creationists have difficulty with the evolutionary position.

It is known that duplication (replication) errors are extremely rare. There is no more than one error in 4,000,000,000 units when copying the entire human DNA (genotype).¹ The text further complicates the problem when it makes the following statements, "...but mutations usually occur in only one individual out of tens of thousands"(tp 167). "*The majority of mutations are harmful. Most of these are called lethal mutations because they prevent the individual from developing much beyond the zygote stage*" (several cells beyond conception) (tp 163). Other authors comment that only about one in 1000 mutations "might" be beneficial². Generally it takes about 5 mutations to make a significant physical change in an organism². Note that this does not mean a new species has been formed. Many more than five mutations at a time have been caused on fruit flies [*Drosophila melanogaster*] with only a deformed fruit fly as a result. It takes over 300,000 generations for a slightly beneficial recessive gene to increase in frequency from 1 in 1,000,000 to 2 in 1,000,000³. It must also be remembered that a mutation in any cell other than the reproducing cell does not have any influence on succeeding generations. When all of these probabilities are combined, the question must be asked, "How can evolution occur from processes that produce many more negative results than positive results?"

The previous paragraph reads so easily that most people do not realize that these apparently simple statements mean that macro-evolution is extremely unlikely. To get as appreciation of this let us examine these probabilities in more detail.

First, consider the two statements that "The majority of mutations are harmful" (only one in one thousand are beneficial) and that "it takes five mutations to cause a significant change in an organism." The question is whether progress can be made up the evolutionary ladder of increasing complexity with odds that give predominately negative results. To illustrate the point, use two pairs of dice to perform the following experiment. If a roll of the dice produces four ones, assume this represents a favorable mutation. The odds of doing this are 1295 to one. This is about the same as the odds mentioned above for a beneficial mutation. All other combinations on the dice represent unfavorable mutations. The textbook says a majority of mutations are fatal (tp 163) so assume that any time four of any number other than one come up on the dice the organism dies instantly. This means that only five out of the 1296 mutations are considered to be instantly fatal. Compared to the textbook statement this is a very generous assumption. The rest of the combinations represent unfavorable mutations which do not normally kill the organism but if enough unfavorable mutations do occur then the organism will die. Assume twenty unfavorable mutations will kill the organism so that if twenty rolls

million. Thus if the organism is man with a generation length of 20 years, it will take more than ten million years for the gene to become established in the population. Consider these facts relative to the supposed descent of man from the ape family. Many sources report that the DNA of man and his supposed ancestor differ by only 1%. This means that the DNA of man has 40,000,000 base pairs different than his supposed ancestor (1% times 4,000,000,000 base pairs). Thus it would take about 400,000,000,000,000 years for these 40,000,000 mutations to have become established using the textbook's criteria. Since evolutionists claim that the supposed ancestor of man came on the scene about 4,000,000 years before man not nearly enough time has elapsed to have established the very large number of mutations necessary for man to have evolved from the ape. Even if a mutation could be established in one generation of 20 years (a very generous assumption), 800 million years would be needed for man to have come from the ape family.

Each one of the arguments discussed in the previous paragraphs indicates that neither the evolution of man nor evolution is likely to have taken place. When all three are considered at the same time it should be apparent that evolution is an impossible scenario. If evolution is impossible then creation is the only way life can be accounted for.

Examples of mutational changes are particularly instructive when it comes to the evolutionary concept. Mice living at the Chernobyl reactor show mutational changes but they and their offspring are still mice. With all the thousands of mutational experiments carried out on the fruit fly (*Drosophila melanogaster*) where the mutational rate was increased by 15,000 percent⁵, none have produced a better fruit fly nor anything other than a fruit fly that survived and reproduced. In fact, an interesting experiment was carried out in 1948 by Ernst Mayr and reported by J. Rifkin⁶ that revealed mutations can cause only a limited variation in a species. Starting with a parent stock that had 36 bristles the fruit fly was selectively bred (not a random event) in an attempt to have a fruit fly with no bristles. After 30 generations the number of bristles was lowered to 25 but then the line became sterile and died out. A second experiment was carried out to increase the number of bristles. Once again sterility set in when the number of bristles reached 56. Mayr concludes "The most frequent correlated response of one-sided selection is a drop in general fitness. This plagues virtually every breeding experiment." This paper's author can confirm this from his experience in raising peaches commercially. The peach trees that produce the prettiest and largest peaches will quickly die if not cared for. This is in direct contrast to wild trees that are seen flourishing around an old abandoned house for years without care. The selective crossbreeding of trees for large fruit with good flavor weakens the ability of the tree to survive. What does all of this mean? It means that when man deliberately introduces mutational changes into the DNA the probable result is an organism that is not as able to cope with the environment as it could originally. Why should an organism be stronger when undergoing random mutations if "controlled" mutations do not do the job?

The Information Content Problem

It should be recognized that in order for evolution to occur in the sense of amoeba to man [macro-evolution] there must be an increase in genetic complexity or new information added to the DNA . It should be noted that an error in copying or the breaking or losing of a chromosome does not add additional information to the DNA but decreases it and so does not lead to evolution. The organism may have been destroyed or greatly deformed but there is no increase in complexity. The only way to have an increase in complexity is to have a chromosome, a piece of a chromosome, the DNA or part of the DNA of a bacteria or virus, added to the existing DNA. A real problem arises when we consider adding information to the DNA. Not only must it be added but it must be added in such a fashion that it sensibly increases information content and actually ends up describing or coding a more complicated organism in the cell that actually takes part in reproduction [gamete]. For instance, take the last five sentences or any other group of sentences representing additional information and try to put them into this document so that they make sense and add to the meaning of the document. To simulate evolution the requirement is that this must be done by closing your eyes and randomly selecting a spot to insert these sentences. Try it. You will soon come to the conclusion that it is very very unlikely to achieve such a feat.

We know that the addition of another chromosome or extra DNA to the existing DNA (Trisomy) does occur. This increases the information in the DNA but not in a meaningful manner since the results are usually fatal or produce deformed offspring such as Down's syndrome, Klinefelter's syndrome and Turner's syndrome (tp 175). Even though some of these individuals "can become" contributing members of society, the additional chromosome does not make them more survivable. Trisomy is not known to be beneficial to the overall characteristics of an organism. The chances of a random section of DNA from any source joining with the DNA of a reproductive cell (gamete) in an overall constructive manner is impossibly small. The reader should keep in mind that controlled breeding and manipulation of genes (genetic engineering is discussed in chapter 13, tp 191-199) does not in any way indicate evolution. These are not random events as evolution dictates but are the results of intelligent interaction within the existing gene pool.

When all of the factors just presented are considered, creation scientists do not think naturally occurring mutations can account for new species arising **or** for the great diversity of the gene pool which allows for the adaptation of organisms to their environments. It is believed that new species were designed for their environment with their original gene pool more or less like they are today. Of course, it is recognized that gene pools are being modified by mutations but these changes are seldom favorable.

ORIGIN OF LIFE

Evolutionists hypothesize that the beginning of early life on earth was very

primitive. This is the approach of the textbook. Creationists hypothesize that the beginning of early life was very complex. The question is whether life appeared initially primitive or initially complex.

It is very easy to over simplify the idea of early life being primitive. The complexity of even the simplest life form is far from simple or primitive. The text says that prokaryotes were probably the first organisms on earth (tp 212). As stated earlier, one of the smallest prokaryotes (H-39 strain of mycoplasma, a bacterium) consists of 640 proteins whose average length is 400 amino acid bondings⁷. This means that it has 256,000 amino acids arranged in a very specific order. These amino acid bonds are coded in the DNA by means of 768,000 base pair bondings in a specific order and 768,000 sugar-phosphate pairs. If we add all of this together, we find that there are 4,864,000 individual chemical entities that must come together to form this "simple" bacterium (2x768,000 bases+1,536,000 sugars+1,536,000 phosphates+ 256,000 amino acids). How could this could have happened accidentally? The text makes it sound so simple! The step from inanimate organic compounds to a living organism is beyond comprehension.

Oparin's Solution

In the world as we know it, life could not have evolved. Why? The presence of oxygen in the atmosphere precludes the formation of amino acids and the formation of polypeptides, proteins, ATP, nucleic acids in DNA and lipids⁸. The Oparin hypothesis (tp 209) addresses this problem. There is, however, abundant evidence to the contrary which creationists maintain cannot be neglected. The only part of Oparin's hypothesis that has been proven by experiment is that the gases he listed (methane, ammonia, hydrogen and water vapor [tp 209]) can be made to form amino acids. Some of the problems regarding the origin of life under this hypothesis are:

1. The geologic evidence indicates that the necessary reducing atmosphere (one with no oxygen) was not present. Many primordial sediments contain red minerals [metal compounds of oxygen] indicating oxidization was occurring at the time of their formation. There is geologic evidence that the earliest rocks (dated at 3.7 b.y.) had an oxygenic atmosphere⁹ so that the formation of amino acids in any significant concentration in the atmosphere was not possible⁸.
2. Ultraviolet light breaks down the Oparin gases methane and ammonia, two of the three necessary building blocks of amino acids. The concentrations of these building blocks would have been reduced quickly to such a low level that they could not have played an important part in evolution.
3. Ultraviolet light breaks down water, the third building block of amino acids, into oxygen and hydrogen. The presence of oxygen would minimize the formation of any amino acids in the atmosphere.

These first three problems point out that any significant amino acid concentration in water certainly did not come from the reaction of gases in the atmosphere. Even

if amino acids could somehow be formed in a pool, lake or sea there are factors that make the formation of life very very unlikely. Consider the following:

4. Water is a diluting and reacting agent so the question must be answered as to how the amino acids can be concentrated to form polypeptides, proteins and ultimately organisms. The evaporating pool hypothesis has the problem that some of the compounds necessary for evolution to take place evaporate¹⁰ along with the water.

5. Amino acids are quick to combine with other compounds, including those from which they formed, to form non-biologic compounds.

6. Ferris, et al. report,¹¹ "But it has not proved possible to synthesize plausibly prebiotic polymers this long (30-60-monomers) by condensation in aqueous solution, because hydrolysis competes with polymerization." In other words, when two amino acids unite by the addition of energy to form a polypeptide a water molecule is produced. This water molecule will unite with the polypeptide. The polypeptide is not stable unless the water is removed¹².

7. Biochemical compounds tend to break down when not combined within a living organism. The chemical tendency is away from life¹³. Thus proteins would not have been stable and would not have just waited around for a spontaneous combination at some later time. When living organisms die they decompose back into their simplest molecular components.

8 There are two structural types of amino acids and sugars --- dextro- rotary (D type) and laevo-rotary (L type). Whenever amino acids and sugars are being formed these two types are formed in equal numbers. No known life forms use both types of amino acids¹⁴ and sugars. Both types of molecules will easily combine chemically with each other but only one of the wrong type of amino acid in a protein or sugar in the DNA will make it useless from a functional biological viewpoint. There is no natural process for separating and isolating them. The proteins of living organisms are made up of L type amino acids and D type sugars. The duplication process of the cell makes only the right type of molecule. DNA produces RNA which promotes the synthesis of proteins. There is no evidence that such a separating mechanism was present until the first replicating life form came into existence.

The famous Miller-Urey experiments (tp 210) supposedly suggests that life could have evolved. These experiments produced both D and L type amino acids and other non-proteinous amino acids and polymers which were capable of reacting with the desirable amino acids to produce non-biologic compounds¹⁵. Miller had to use a trap to isolate the products of his experiment from getting back to the original gases since the biologic amino acids formed would react with the excess Oparin gases and form non-biologic compounds. What mechanism in nature would be available to perform this same separation task? Their experiments came up with a total of only 10 biologic amino acids and 25 non-biologic amino acids, sugars and other compounds. Insulin, one of the smallest of

proteins, consists of 51 amino acid bonds and requires 17 different biologic amino acids. This protein could not have been formed had there been nothing but the Miller biologic amino acids present. Other scientists¹⁶ have done similar experiments with other sources of energy and formed many other biologic and non-biologic compounds but with similar results. If all of the cited experimenters results are combined the necessary 17 different amino acids required for insulin are not produced.

It is further noted in the textbook that even though science has demonstrated other ways in which vital organic compounds might have been formed there is a vast gap between the forming of individual compounds and their assembly into the precise order necessary to obtain a living organism. As stated earlier the H-39 mycoplasma has 4,864,000 compounds which have to be assembled in a precise way. This assumes there are no wrong L or D amino acids or sugars, no non-proteinous amino acids and other compounds such as were formed in the Miller-Urey experiments. The addition of these unusable compounds greatly increases the already astronomical odds that organic compounds did not form spontaneously. This further devastates the case for evolution but speaks loudly for the creation model.

Recent experiments concerning the formation of polypeptides do not enhance the chances of evolution taking place unless the polypeptide is one that can be used in the particular organism. If it cannot be used then it is only making evolution less likely since it introduces an additional non-usable compound. If it is usable then it must be included in exactly the right place in the protein being formed - a very unlikely scenario.

Do you think evolution could have happened under these circumstances? Once again the weight of the evidence supports creation not evolution. Life could not have begun in the manner proposed by evolutionary scientists.

Coacervates and Microspheres

Dr. Towle suggests (tp 210,211) that because coacervates and microspheres "bear a resemblance to living cells" they must have been a part of the early evolutionary process. Creationists disagree with this reasoning and point out that the need for an enclosing membrane simply reinforces the incredible complexity of living organisms that could have come about only by design. The membrane enclosing cells is much more complex than a balloon for instance in that it has openings which allow certain chemicals to pass and reject others. Fox, et al. point out that coacervates are readily dissolved with changes in PH, heat and dilution and are easily broken up by agitation¹⁷.

The Unbreakable Cycle

Creationists believe that the unbreakable cycles in all cells and bacteria

(prokaryotes and eukaryotes) preclude any possibility of evolution. Part of the problem is that DNA by itself is useless unless the information can be read and acted upon. The other part of the problem is that the mechanisms (enzymes) for reading DNA and duplication of cells is contained in the organism but the instructions on how they are to operate and how to form these mechanisms is in the DNA. In other words, if the reading enzymes evolved without something to read plus instructions on what to do with the information obtained, they would be useless. They should have been eliminated according to standard evolutionary theory. In a similar manner, what good are the replication enzymes if operating instructions are not present. All of this information is in the DNA but serves no purpose by itself without some means to read it. The net result is that the DNA and the rest of the organism had to form at the same time. Either one by itself is a dead end in the evolutionary process. Based on everything that has been covered at this point the only logical explanation is directed creation.

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SECTION II

It should be clear that biological evolution did not and has not occurred. There are, however, presentations in the textbook that contradict this statement. The purpose of this section is to

present the creation position and additional facts on the more common evolutionary arguments presented in the text.

An interesting way to learn to read critically is to observe the words of uncertainty in an article. Examples of these type of words are: "*if*", "*perhaps*", "*could*", "*may*", "*seems*", "*probably*", "*should*", "*assumed*", "*in about*", "*suggest*", "*seemingly*", "*implies*", "*might*", "*resemblance*", "*eventually*", etc. There are 24 of these types of words used in section 14.3 (tp 212). When these words are considered, it will be apparent that little is positively known about "The First Forms of Life." One way to compare evolution and creation is to look for these types of words in order to determine what is fact and what is supposition.

THE FOSSIL RECORD

The textbook gives a very biased view of the fossil record (tp 220). The geologic time scale presented on page 221 and the accompanying discussion leads the reader to the conclusion "*...that over time, organisms of increasing complexity appeared on the earth*" (tp 220). However, there are facts not presented in the textbook which do weaken this conclusion. Some of them are:

1. The fossil order presented on tp 221 does not appear anywhere on the earth in its entirety. One of the largest cross-sections of the earth is the Grand Canyon. It contains only 5 of the 17 geologic time periods shown in the textbook. Additionally, the 5 are not consecutive. Geologist John Woodmorappe states "Eighty to eighty-five percent of the Earth's land surface does not have even 3 geologic periods appearing in correct consecutive order¹⁸."
2. Woodmorappe also states that "Some percentage of every geologic period rests directly upon Precambrian basement"¹⁹ strata. This means that there are many geologic strata that are out of order.
3. Many gaps exist in the fossil record. It should be recognized that some geologists refer to a transitional fossil as a fossil that can be placed either further up or down in the evolutionary scale than the median of that fossilized organism for the geologic period under consideration. On this basis, there are many transitional fossils in existence but none of these actually fill the gaps in the fossil record. The text correctly says, "*for most organisms such transitional forms are absent from the fossil record.*" (tp 249) To get around this damaging evidence, the theory of **punctuated equilibrium** has been proposed (tp 249). A unique aspect of this theory is that the absence of fossil evidence is the proof of the theory. This is a unique idea. Where else in science do you find that the lack of evidence is proof of a hypothesis?
4. There is an explosion of life in the Cambrian strata with no evidence of where these life forms came from - they just suddenly appear. Many of these organisms have very complex structures such as the eye of the nautilus which is very similar to a human eye. Darwin was aware of this problem when he wrote, "Why then is not every geologic formation and stratum full of such intermediate links? Geology assuredly does not reveal any such finely graduated organic change, and this is perhaps the most obvious and serious objection which can be urged against the theory [of macro-evolution]." ²⁰ Every modern phyla is represented in the Cambrian strata. This is very difficult to explain except as a result of creation.

The Horse Fossils

The evolution of the horse shown on tp 220 is not substantiated by the fossil evidence. Consider the following facts:

1. David Raup, Curator of the Museum of Natural History says,²¹ ".....some of the classic cases of Darwinian change in the fossil record, such as the horse in North America, have had to be discarded or modified as a result of more detailed information."
2. Hyracotherium has little or no resemblance to horses but is similar to the Hyrax which is alive today.²²
3. In Oregon, the three toed and the one-toed horse are found in the same strata²³ which means that they lived at the same time in the same place. One is not the ancestor of the other.

Evidence of Common Ancestry

The textbook makes the point that the Hawaiian honeycreeper birds all came from a common ancestor (tp 222). Later in the section (tp 224) this is used as evidence of evolution where evolution is defined as change over time. Creationists agree that organisms do change over time but this is evidence of micro-evolution and not macro-evolution. The observed changes are adaptation within the species due to the diversity of the gene pool which, as pointed out in Section I, could not have come about by accident. All of the numerous kinds of dogs are from the same ancestor and are the result of selective breeding - not evolution. The thousands of mutational experiments performed on the fruit fly have produced some weird results but never anything but a fruit fly.

Homologous Structures

The textbook says on page 222 that, "*If a bat, a human, an alligator, and a penguin all evolved from a common ancestor, then they should share common anatomical traits.*" Creationists object to this conclusion. It is an unproven hypothesis. There are many homologous structures on the cars in a parking lot such as wheels, headlights, side mirrors, body style, etc. If the assumption were made that they did evolve, then they could be arranged in an order that would illustrate this. Does this mean that they all came from a common ancestor. In other words, if you were given some criteria (size, shape, complexity, similarity, function, etc.) by which to judge things such as cars, spoons, forks, wheels, organisms, etc., you could arrange them in an order to illustrate or confirm the criteria. This is what evolution has done with this argument.

Upon close examination of the animal structures presented on tp 223, it should be noted that there are bones located in the same relative location but this does not mean that they have the same bony heads and size. They are not similar after all. The lengths, diameters, knobby protrusions and their locations are all different. If the bones were not color-coded in the illustration on page 223 they would not look similar at all. The information in the DNA must be very different to direct the formation of each of these different bone structures. It is inconceivable that this could have occurred by random mutations.

To further confuse the picture for the evolutionist, it was reported some time ago that similar genes do not produce the same structure in different organisms²⁴. [Could it be that this was deliberately done by The Creator to prove that He exists?] Just because a structure is serving a similar purpose in different animals does not mean that these

animals all came from the same ancestor. There are many instances where similar structures obviously do not mean descent from a common ancestor such as the wings of birds, bats, insects, and butterflies. What determines when a structure means common ancestry? There is none and the textbook gives no direction on this.

Another consideration regarding similar structures is whether there is another way to do the assigned task. How many different ways can an appendage like a leg that serves to support an organism be attached to an organism? The requirement that the appendage must have stiffness can only be done in a living organism by bone or cartilage located either in the appendage or on the outside such as insects have. How else? Except for the way they are connected together, shouldn't these bones look approximately the same regardless of use? If the design is good then why shouldn't it be used in multiple applications?. After all, this is what good design engineers do. Is it not obvious that a Creator would do the same thing?

Vestigial Organs

Originally, there were thought to be approximately 180 vestigial organs in man. Slowly over the years this has been reduced to a handful so that present thinking is that the use will be found for these few remaining organs as science progresses. Towle comments that the tailbone of a human has no use and so man must be descended from the primates. However, the human tailbone serves as an attachment point for muscles that allows humans to walk more upright than the primates. S. R. Scadding²⁵ comments, "I conclude that 'vestigial organs' provide no special evidence for the theory of evolution."

Biochemistry

The textbook says (tp 223) that, "The universality of cytochrome c is evidence that all aerobic organisms probably descended from a common ancestor that used this compound for respiration." The creationist points out that all known organisms live in the same environment and therefore need similar biochemistry to survive. The universality of cytochrome c does not prove evolution. Quite to the contrary, the evolutionist must explain why there are so many different forms of cytochrome c and hemoglobin. In fact, the chances of favorable mutations in cytochrome c are so small as to make the evolution of the first molecule nearly impossible. The creationist maintains that the diversity of these molecules indicates deliberate design rather than random chance happenings. Could it be that the Creator did this to confirm His presence?

Embryological Development

The text says, "...embryos of certain species develop almost identically, especially in the early stages" (tp 224). The text concludes that this indicates evolution. The creationist points out that the early stages look alike because they all start from a single cell. As these cells divide the organisms appear the same until they become large enough to begin showing individual characteristics. Regardless of the similarities in external embryo morphology (appearance), the original cell of each organism are quite different. The DNA in the original cell of a fish is vastly different from that of a rabbit or gorilla. Evolutionists point to the similarity of appearance of the embryos shown at the first stage of development in Figure 15-5 (tp 224). The folds just below the head of the fish form the gills. The

pictures of the rabbit and the gorilla show similar looking folds and were originally thought to show that these vertebrates formed gills at this stage that later changed to lungs. It is now known that the folds on the rabbit and the gorilla are the early forms of glands and that there is no trace of these vertebrates ever forming gills. Once again the conclusion may be drawn that because two things look similar does not mean they are. You are referred back to the discussion on homology on page 11.

A superficial comparison of a bird to a bat would lead one to conclude a common ancestor. Yet they are worlds apart. One of the primary differences is in how they reproduce, i.e. eggs vs. live birth.

Radiometric Dating

The text briefly discusses radiometric dating on page 220. The discussion is accurate but in its brevity leaves the impression that there is no question about results obtained by this method. Creationists maintain that the ages of rock strata and fossils obtained by radiometric dating are not as accurate as evolutionists do. Without going into detail, it should be recognized that creationists do not criticize the technique used but rather the assumptions necessary to date radiometrically.

There is a wide variation in the ages obtained for the earth by various age indicators. These ages range from about 6000 years to the 4.5 billion years commonly accepted as the earth's age. Only the radiometric dating method indicates an old earth age whereas about 90% of the known age indicators indicate a relatively young earth. Is it reasonable to neglect 90% of the age indicators of the earth and base a theory on only 10% of the available data? Creationists say no!

Evolutionists are in a difficult situation because they need an old age for the earth. All of the many things that have had to happen by random chance in order for macro-evolution to have taken place could not have happened in a short period of time. Creationists are not bound by this restriction. They are able to look at the problem more objectively.

Miscellaneous

The textbook has woven evolution into many different aspects of biology as though evolution is a fact. In the interest of brevity, there are many subjects that have been left out and not discussed. Please do not interpret the lack of discussion of a topic as an indication that no evidence exists on the side of creation for that topic. Please contact the writer if more information is desired.

There are many more facts that can be provided on the subjects discussed in this paper but which have been left out in an attempt to keep the paper short. It is hoped that the reader is convinced that there are many facts that support the theory of creation and that the theory of evolution is exactly that - a theory with so little evidence that it is wrong to present it in any form except as a theory.

The essay on tp 227 is decidedly spiritual. The writer is "*...communing with the spirit of the fossil beast*" at sunrise. The student is invited to explain how "*reverie*" helps to find answers to questions. If spiritual writings are appropriate in a Biology textbook, why not include excerpts from Genesis?

Kettlewell's peppered moth experiments are being examined for sources of error (tp 224). Current findings show the light colored moths coming back into dominance. This

shows how stable species really are. They adapt to the environment but remain the same species.

The textbook still clings to Darwinian Evolution (tp 230) as the unifying theory for "*all of biology*." Punctuated equilibrium and Neo-Darwinism seem to be the theories of choice in today's world of non-believers.

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