

Creation Research Society Quarterly

Haec credimus:

For in six days the Lord made heaven and earth, the sea, and
all that in them is and rested on the seventh.—Exodus 20:11

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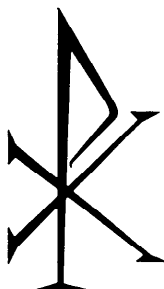
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COVER ILLUSTRATION

The picture on the front cover is a view of Venus, taken by the Pioneer Venus Orbiter. It was supplied by the National Aeronautics and Space Administration, and is used here by permission.

The complex system of clouds can be seen clearly. Some have suggested that the canopy, which they believe formerly surrounded the Earth, may have had a somewhat similar structure. At least, it is suggested, the existence of the clouds on Venus may show that the canopy was possible on Earth.

More on these points will be found in the item The Atmosphere of Venus, by Peterson, in the section Panorama of Science. Mr. Peterson also obtained this picture for the *Quarterly*.

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QUOTABLE QUOTE

Therefore he seems to me a very foolish man, and very wretched, who will not increase his understanding while he is in the world, and even wish and long to reach to endless life, where all shall be made clear.

—King Alfred the Great

THE SERPENT'S SNARE[†]

WILLIS E. KEITHLEY*

If the name's the game, then play this one with caution. While *Darlingtonia* sounds delectable, its devices are diabolical. Of all the carnivorous plants, this is perhaps the most malignant. While its name has an intimate ring, it is also insidious.

It is not at all unseemly that this plant should also be called the Cobra Head. The similarity in Figure 1 is not difficult to see, even to the forked tongue of the snake. One can almost hear the hiss of the serpent; but that sibilant sound is the feeble whisper of the flies that are trapped inside that sinuous head. They have been lured into that pronged mouth by its fetid breath.

The translucent top of the head entices those hapless insects into its crown with a false corona of light. As they buzz futilely around that unholy halo, they eventually fall exhausted into the main stem, where barbaric bristles in Figure 2 thrust them relentlessly down the stalk.

About halfway down, they encounter a liquid which contains an anesthetic. And our fateful flies become the

sinister repast for the serpent. At least it practices euthanasia in a humane manner.

Now here is an interesting enigma: Why should a plant want to look like a snake and eat like a bird? What a capricious passion for protein! Does that sound like assigning soul and psyche to this vegetative tissue? That is the only option if we rule out divine creation. For this flowering fiend does not need its insect diet to survive.

Consider for a moment the thought processes and engineering necessary for a plant to convert from a stem to a cylinder. While other plants are hirsute outside, this one is hollow and hairy inside. And those baleful barbs must be set at the proper angle to perform their pitiless propulsion downward.

Then there are the problems of pumping the water into the barrel, concocting an enticing aroma, designing the proper contraption for the trap and brewing the anesthetic. No one of those endeavors would have been useful or effective without the others; thus this appetite for insects must have solved all those precise functions simultaneously with one lucky and lusty mutation. And since there seems to be no practical purpose in its whim-

(Continued on page 184)



Figure 1. The *Darlingtonia*. The reason for the name Cobra Head is apparent.

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[†]An account, similar to this, is given in Mr. Keithley's book *Portraits on Nature's Palette*, under the heading *Darling Diabolo*, pages 113 & 114. The book is available from Mr. Keithley at the address given.



Figure 2. The inside of the main stem of *Darlingtonia*. The bristles, which push insects down, and an insect being pushed down, can be seen.

A CREATIONIST CRITIQUE OF HOMOLOGY

A. J. JONES*

Received 23 March, 1981

Ever since Darwin, homology has been one of the lines of evidence alleged to support evolution. It is shown here that such arguments mis-use the evidence, or fail to include all of it. When all of the evidence is included, and it is interpreted correctly, homology is seen to point to a Designer, Who uses a basic plan in many different ways.

PART ONE

A. Introduction

The evolutionist has, essentially, only two lines of approach available to him when he sets out to marshal evidence for evolution:

(1) through the evidence of hereditary variation and change;

(2) through the phenomenon of homology.

The first approach marshals the evidence from the biological disciplines of Biogeography and Genetics (including Domestication and Animal and Plant Breeding). Others have written fine critiques of this evolutionary approach, so we can let Colin Patterson's admission in the current British Museum handbook on 'Evolution' sum up the position:¹—

... all such examples (from Biogeography) illustrate change and divergence on a relatively trivial level.

That is, the evidence is indicative of change solely *within* the creationists's 'kinds'. If the evolutionist is to convince people of endless evolution then it must be through the second approach, i.e., through homologies.

It need hardly be noted that this second line of approach is the most appealing and persuasive. Darwin thought so:²—

(the facts of taxonomy, morphology and embryology) ... seem to me to proclaim so plainly, that the innumerable species, genera and families ... are all descended ... from common parents ... that I should without hesitation adopt this view, even if it were unsupported by other facts or arguments.

... we ought frankly to admit ... community of descent: to take any other view is to admit that our own structure and that of all the animals around us, is a mere snare laid to entrap our judgment.

Many, especially theistic evolutionists, have propagated the latter argument. Dobzhansky³ goes so far as to describe the creationist position as 'implicitly blasphemous' because 'it actually accuses the Creator of arranging things so that they suggest evolution merely to mislead honest students of His works.

B. Comparative Studies

The evidence from homologies is the evidence provided by the similarities between different organisms which have been uncovered by all the different divisions of comparative biology: comparative anatomy, physiology, cytology, biochemistry, parasitology, ethology, and embryology, and taxonomy and mole-

cular biology. The study of fossils (paleontology) also comes here, a fact which must be emphasized.

Evolutionists regularly refer to the fossil 'record' and state that fossils provide 'direct', 'objective', 'historical' evidence for evolution. All such claims are, of course, sheer nonsense. These terms are valid *only* if historical evidence is available. There is only one form of *historical* evidence, namely *eyewitness reporting*, and only one *reliable* form of historical evidence, namely the *evidence of a witness known to be trustworthy*. Evolutionists, who are bound by dogma to reject the very possibility of historical evidence (no witnesses had evolved until it was too late) should stop using such deceptive terms. However some paleontologists are now describing the situation correctly:—

... the paleontologist can provide knowledge that cannot be provided by biological principles alone. But he cannot provide us with evolution.⁴

That different strata contain different fossils is evidence of change in the past, but it is not direct evidence of evolution or of the causes of evolution.

Fossils may tell us many things, but one thing they can never disclose is whether they were ancestors of anything else.⁵

Put simply, fossils do not carry labels. What we make of them, we make on the basis of comparative studies, i.e. on the basis of our evaluation of homologies and of the content and significance we attribute to the concept of homology itself:—

... our knowledge that mammals descended from therapsids is based not on their temporal distribution in the fossil record, but on the same kinds of inference from their ancestral characteristics that are used to assess the phylogeny of existing forms that have no fossil record.⁶

C. Evolution and Homology

Evolutionists have traditionally given the concept of homology a purely evolutionary content:—

By definition this similarity is due to an inheritance from a common ancestor.⁷

Similarity due to common ancestry.⁸

Characters that resemble each other because they are descended from a common ancestor.⁹

As such, the concept is 'at the root of all phylogenetic schemes, for it is by means of their homologous structures and the modifications which they have undergone that the ancestry and affinity of organisms are determined.¹⁰

The basic argument is that similarities (of, e.g., structure) between organisms are proof of descent from a common ancestor (with, e.g., that particular structure).

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The first point to note, therefore, is that this is not a scientific argument, but what Popper¹¹ has called an 'historical interpretation'. It is an attempt to fit known facts into a pattern of past events (evolutionary descent) which is assumed, but which cannot be reproduced or confirmed (since historical evidence is lacking). This lack also entails that the interpretation is based on circular reasoning. In each case the criterion of homology (whether of organs, chemicals, behavior or whatever) is taken to be common origin, but the *only* criterion of common origin—the *only* way it can be recognized—is (by) homology.^{12,13}

In the very nature of the case, it will always be possible to conceive of some pattern of past events which would reconcile any given phenomenon with evolution. Let us imagine, for example, that we have three organisms, A, B, and C, whose evolutionary relationships we wish to study. They each have a particular structure which we regard as homologous in all three. This structure is very similar in A and B but different in C, so we might suggest the following 'historical interpretation':

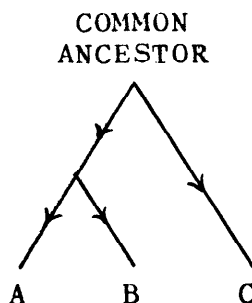


Figure 1.

—However we have made some questionable assumption. We have assumed,

- (1) evolutionary rates and selective pressures have been the same in all lines of descent;
- (2) mutations have occurred randomly, all necessary mutations having equal probability;
- (3) there has been no convergence and no backward steps. Now we have no reason (i.e. no historical evidence) for making these or any other assumptions. In fact there is no reason why we should not make *any* assumptions that suit us. No one was there who could 'spill the beans'. This is not just a nice game: evolutionists do indeed permutate the assumptions so that their phylogenies fit their preconceptions.

The cytochrome of the turtle is more like that of birds than that of its fellow reptile the rattlesnake. In fact the amino acid differences in the cytochromes of these two reptiles exceed that found between members of different vertebrate classes. Do evolutionists therefore remove one of them from the Reptilia? No! The evidence does not fit their preconceptions, so they simply assume a faster rate of evolutionary change in some lines of descent, in this case mainly in the line leading to the rattlesnake!¹⁴

Numerous other examples can easily be found in the literature. There never can be facts which could contradict evolutionary preconceptions in the face of all the reconciling assumptions that are currently available.

In this situation there is only one way we can evaluate the arguments scientifically. Even though we cannot test any given historical interpretation as such, we must be able to show that our outlined course of events does not contradict confirmed laws and principles from the relevant scientific disciplines. To do this we must first spell out the implications of the evolutionary approach.

D. Implications of the Evolutionary Approach to Homology

The biologists' evaluations of homologies have produced a hierarchical classification of organisms, i.e. a nested series of ever more inclusive groups. The question therefore arises, 'Why do we find this pattern?'

Why do organisms have to be classified like this? Why are they not strewn in single file up the ladder of the plant and animal kingdoms, or fortuitously like pebbles on a beach, or arbitrarily like the stars in imaginary constellations!¹⁵

Clearly, if a hierarchy of groups exists, it is because there are in the world certain constraints or principles which entail such a hierarchical ordering of groups. Any theory which purports to explain the pattern of homologies must show that the constraints or principles are to be expected in the light of its theoretical assumptions.

If homologies are the result of evolutionary descent from common ancestors, then evolution has conformed to at least the following four principles. Evolution is:—

- (1) a *progressive* process;
- (2) a *conservative* process;
- (3) a *stochastic* process;
- (4) an *inefficient* process.

(1) Evolution is a *progressive* Process

When evolutionists arrange the known types of organism so as to show their supposed evolutionary history, then it is immediately evident that evolution is, in general, a *progressive process*—'The striking feature about living creatures is that they are continually becoming more complex, and in this sense more improbable, if this concept has any meaning. During the process of evolution living things have collected more and more information about ways of keeping alive.'¹⁶ The general pattern of homologous organs clearly implies such a principle. For example, from a postulated ancestor with unspecialized limbs, evolution has produced organisms showing numerous variations, both simple and complex, on the basic pentadactyl theme. We have to explain this long-term increase in complexity.

(2) Evolution is a *conservative* Process

Living and extinct (fossil) organisms can be classified into a relatively small number of basic groups (phyla and classes). What the patterns of homologies demonstrate therefore is that, 'there are large numbers of organisms, differing considerably in the details of structure but constructed on the same fundamental plan.'¹⁷ e.g. that of the insect or vertebrate. Thus we have to explain why these fundamental structural plans continue to be inherited.

(3) *Evolution is a stochastic Process*

In mathematics *stochastic variables* are of such a nature that every event which occurs limits the number of possible succeeding events.

An example of such a process is embryonic development: the virtually unlimited competencies of the early cleavage cells are progressively restricted as development proceeds.

Evolution is similarly described. Each basic animal or plant group contains many specialized forms. It is generally agreed that the diverse species of each group could not evolve from such specialized forms. The first member (ancestral form) of each major group must have been a 'generalized plastic type'¹⁸ which possessed 'evolutionary or phylogenetic plasticity' and was thus capable of wide 'adaptive radiation' into all the specialized forms. For example, the first mammals are said to have evolved from a group of rather small and unspecialized reptiles which became rather like the modern insectivores such as shrews. Then as the forms specialized in each line of descent so the capacity for further radiation was progressively lost.

Villee et. al.²⁰ presented this principle as one of 'five principles of evolution to which nearly all biologists would subscribe.'

(4) *Evolution is an inefficient Process*

The arguments from homologies are based on a distinction between *ancestral* characters and *adaptive* ones. It is assumed, for example, that the structural plan common to all the diverse members of a group *cannot* be adaptive for a particular mode of life. Maybe it was adaptive in the ancestral species, but now it is there simply by inheritance. Paul Moody actually defines homologies as,

Fundamental similarities, not connected with similar habits or means of livelihood.²¹

Similarly, embryologists (e.g. de Beer²²) distinguish *palaeogenetic* (ancient or ancestral characters) from *cenogenetic* ones (special embryonic *adaptations* such as the embryonic membranes of mammals). Once the evolutionary process has begun with a given plan, it is seemingly stuck with it, even when it is no longer adaptive. It is only the specific modifications imposed on that plan during evolution which are adaptive *now*.

Many take the argument further and argue that organisms and organs are generally less than perfect for their function, suboptimal (from Darwin²³ *passim* to Futuyma.²⁴)

The historical development of the ancestral/adaptive distinction is surprising. It arose historically from the ideas of the German 'nature philosophers' (*Naturphilosophen*) of the early 19th century—who were *creationists* (though standing against historic Christianity). They asserted that homologous organs corresponded to their representatives in an 'archetype', a hypothetical blue print or exemplar on which groups of similar organisms had been created. The archetype was derived by abstracting all the similarities found in common in a group and ignoring all the variations. It was thus an abstraction. The famous Victorian zoologist, Richard Owen, spread these ideas in the English-speaking

world,²⁵ and also introduced the term 'homology' into biological language to cover these similarities in basic structure.²⁶ The fact that the archetypal pattern itself had no apparent functional significance in the diverse members of each group was used as evidence for the existence of the ideal archetypes (in the mind of the Creator). Darwin simply took these ideas over, replacing the archetype with the common ancestor. The lack of function was now hailed as evidence for evolution.²⁷

On any other view the similarity of pattern . . . is utterly inexplicable.²⁸

The argument has been repeated, uncritically, from one generation of textbooks to another.²⁹

E. Is the Evolutionary Approach Scientific?

If the evolutionist interpretation of homology is valid then support for these principles must be forthcoming from the relevant scientific disciplines. We can highlight some of the critical gaps in this support.

(1) *The Lack of Progressive Mutants*

It is taken for granted in almost all evolutionist texts that genetic systems do proffer for selection some mutants which are more elaborate than the forms currently existing. However, despite the vigor of some of the claims, mutations which produce higher degrees of complexity or organization have *NEVER* been observed. Sir Peter Medawar was right when he stated that, 'the real weakness of modern evolutionary theory' is 'its lack of a complete theory of variation, of the origin of *candidature* for evolution.'³⁰ Worse than this, evolutionists do not have any reason to even *expect* progress. As the famous evolutionist John Maynard Smith has said, 'there is nothing in neo-Darwinism which enables us to predict a long-term increase in complexity'³¹

(2) *The Lack of the Genetic Conditions*

If the evolutionary interpretation of homologies is correct, then there must exist a 'mechanism' for the production of homologous structures which meets the following requirements:

- (a) The mechanism must be *inherited* in some form so that the fundamental constancy of the homologous patterns may be explained;
- (b) The mechanism must allow for hereditary alterations in the basic patterns so as to explain the enormous variation in their detailed expression.

The obvious explanation is that the developmental processes which produce homologous organs are specified by particular genes. The inheritance of these genes would explain the constancy of the homologous patterns; gene mutation would explain the variation in detail. This thesis has been assumed by numerous authors.³²⁻³⁴ However, it cannot stand today. It is a central statement of neo-Mendelism that there is no long-term persistence of any given relationship between a gene and a feature.³⁵ The genetic criterion of homology must go.^{36,37}

Well, maybe the developmental processes are constant even though genetic determination is not constant. This is possible though we then have no explanation for the constancy of the developmental processes. However

there is no need to worry, because the developmental conditions of homologous organs are *not* constant. Indeed, as long ago as 1894 the great E.B. Wilson had stated that, 'Embryological development does not in itself afford at present any absolute criterion whatever for the determination of homology . . .'³⁸

The intervening years have only confirmed the soundness of his judgment.

By 1938, it was clear that genetic and embryological criteria of homology had failed and deBeer was asking his fellow evolutionists what mechanism could it be that maintains the homologous patterns.³⁹ In 1971, he asked, 'if it is true that through the genetic code, genes code for enzymes that synthesize proteins which are responsible (in a manner still unknown in embryology) for the differentiation of the various parts in their normal manner, what mechanism can it be that results in the production of homologous organs, the same 'patterns', in spite of their *not* being controlled by the same genes?'⁴⁰ Thus after more than 30 years he has to report that the question is still unanswered and that, 'the pride with which it was assumed that the inheritance of homologous structures from a common ancestor explained homology was misplaced' for homology is (for evolutionists) still 'an unsolved problem'. That is the situation today.⁴¹

Again we must conclude that the evolutionist argument from homology lacks scientific content. This particular lack has very serious implications; it strikes at the root of all attempts by evolutionists to give homology an objective basis and distinguish *homology* (similarities due to descent) from *analogy* (similarities *not* due to descent). The only way they can recognize analogous variation, especially when due to convergent evolution (*sic*) is by criteria (e.g. genetic or embryological) which we now know do not hold for organs of 'unquestionable' homology. The evolutionist concept of homology is now shown to be entirely subjective, as Blackwelder has long claimed:—

Taxonomists have never had an objective basis for homology . . . they cannot at present give it any objective basis, even though it is a logical necessity in the evolution of animals.⁴²

A problem indeed!

F. Logical Problems with the Ancestry/ Adaptation Distinction

(1) Methodology

The evolutionist argument assumes that only the various detailed expressions of a homologous pattern are adaptive now, but that the essential pattern itself is no longer adaptive. The question that must be asked is, 'How do evolutionists know that the basic patterns are non-adaptive?' It must be asked because it is, in fact, logically impossible ever to demonstrate non-adaptation. There are no *positive* criteria by which non-adaptation can be recognized and demonstrated. The *only* way non-adaptation can be demonstrated is by the ruling out of every conceivable adaptation (function). This is impossible because there will always be an infinitude of conceivable functions. There may not, in-

deed, be one prime function: the structure may be an optimal compromise between two or more partially incompatible specifications. Again the structure and/or function may change or adjust or even disappear during a specific stage of development or in response to environmental changes which affect the organism. Only after a great deal of careful research are we allowed the luxury of even *suspecting* a lack of function.

On the other hand research can produce positive and cumulative evidence for the adaptive function(s) of a given feature or plan.

This being so, we can only conclude that evolutionary science has been very bad science. *Non-adaptation has simply been dogmatically assumed: little or no research had ever been done.* It has always been fashionable for evolutionists to dismiss creationist science as 'God-of-the-gaps' science, yet, in reality, it is the evolutionist who puts evolution in the gaps in our knowledge and who is continually retreating as those gaps are closed. Some examples will make the point.

Example 1. The Pinna

Darwin, on the basis of no evidence, argued that the external ear (pinna), together with its extrinsic and intrinsic muscles is vestigial in man and the great apes.⁴³ Cain's prediction was fulfilled:—

If it is taken dogmatically that many characters *must* be non-adaptive then of course there will be no motive to investigate them, and they will continue to be quoted as non-adaptive whether they are or not;⁴⁴

It was not until 1959 that any research was done! It was then quickly, and easily, demonstrated that the pinna performs 'an acoustical transformation which is essential to localization in human hearing'.⁴⁵ If the pinna has a function then it must be provided with sufficient musculature to maintain the necessary blood supply. It is often forgotten that muscles serve other functions besides the movement of body parts!

Example 2. The Evolutionary Series of Vertebrate Cardiovascular Systems

Evolutionist texts have always placed different animal types in series which purport to show how 'advanced' types have been derived, in evolution, from more 'primitive' types. In the presentation of these series, the standard of comparison is the 'fully evolved' type put at the head of the series, the other types being seen as imperfect or less perfect solutions to the problems 'solved' by the 'perfect' type. The features of an animal are 'advanced' if like the condition found in the 'fully evolved' type or 'primitive' if like the condition found in the supposedly ancestral type. A classic example is the arrangement of the land vertebrate types to show the 'progressive' adaptation to terrestrial life (amphibia—reptiles—birds and mammals). However the evolutionist comparative anatomy which dominated biology until the 1940's was atomistic—and disastrous. Organisms were disintegrated into separate parts and organs whose structures were studied out of all relation to the context of a whole living organism adapted to a particular environment⁴⁶—museum jar biology! It is still true today that, 'Even for an expert it is very dif-

ficult to imagine how the various organs fit together.⁴⁷ or what a particular organism does with most of its characters.

In the land vertebrate series, the prime exhibit has been the 'progression' in heart structure from the two-chambered fish heart to the four-chambered bird and mammal heart which is said to represent the optimal solution to the problems of terrestrial life. The amphibians, in particular, have had a raw deal, being seen as 'imperfectly adapted to terrestrial life', even 'phylogenetically senile'.⁴⁸ Such are the stultifying effects of a false methodology.

The amphibian heart is in fact remarkable specialized, being fully adapted for a respiratory regime in unique amphibious animals which utilize both cutaneous (skin) and pulmonary (lung) respiration.⁴⁹ Similarly, the reptiles have cardiovascular systems which are highly specialized for their particular modes of life.⁵⁰ The 'perfect' four-chambered hearts of 'higher' vertebrates would be very 'imperfect' for amphibians or reptiles. The relationship of the different heart types to one another is not that of 'primitive' to 'advanced' in an evolutionary series. They are equally optimal solutions to the problems posed by different modes of life. *It must be emphasized that no valid comparison of structures can be made when their respective functions in the life of the organisms concerned have not been elucidated.*

Example 3. The Monotreme and Marsupial Mammals

The mammal groups have usually been arranged so as to show the trend of evolution from 'an early and incomplete stage of development'⁵¹ in the monotremes and marsupials through to the 'perfect' adaptations of the eutherian mammals. This was again a consequence of the evolutionist approach to comparative anatomy which, in this case, was enshrined in T.H. Huxley's classification of mammals into Proto-, Meta- and Eutheria. As Tyndale-Biscoe notes, 'Huxley's idea has had a long and baneful influence on the understanding of marsupials and monotremes.'⁵²

One of the main exhibits has been the different body temperatures. Monotremes maintain temperatures at $31 \pm 2^\circ\text{C}$; Marsupials at $36 \pm 2^\circ\text{C}$ and Eutherians at $38 \pm 2^\circ\text{C}$. When these facts were first reported (in 1897 and 1903) it was also claimed that monotremes and marsupials were unable to maintain their body temperatures against an ambient temperature gradient. 'Obviously' eutherians have evolved the best thermostat setting and the most efficient thermoregulation.

It was, again, an argument from ignorance, for little serious research was done until the 1960's! Schmidt-Nielsen admits that, 'There is no *a priori* reason to regard a lower body temperature as physiologically inferior . . . The fact is that we do not fully understand the advantage of any given body temperature.'⁵³ Contrary to the earlier assumptions there is no evidence that monotremes or marsupials are physiologically any less sophisticated. They are, in fact, excellent temperature regulators and their lethal temperature is about 6°C above normal core temperature just as it is in eutherians. When corrected for temperature, the metabolic rates are the same for all types of mammals.^{54,55} There is no need to cite further examples. Research has in-

variably uncovered strong evidence of adaptation whenever supposedly non-adaptive or imperfectly-adaptive features have been investigated.⁵⁶

(2) Natural Selection

In recent years, many neo-Darwinists have expressed disquiet about the ancestry/adaptation distinction.⁵⁷ The source of the disquiet is that the distinction seems to contradict all that they affirm of natural selection. Plants and animals display a wide range of admittedly precise adaptations which enable them to exploit almost every conceivable environmental niche in sea, land or air. Some of these adaptations are so remarkable and intricate, with such a complex interaction of vital parts (even of more than one organism) that one can only marvel at the tremendous power of natural selection. How, then, can such a powerful force fail to perfect body parts and organs if they are imperfectly adapted? Ever since the pioneering theoretical studies of R.A. Fisher (1930) geneticists have argued that any gene that has an advantage of even as little as one per cent (i.e. organisms with that gene will tend to leave, on average, 1 per cent more offspring than organisms without it) will spread through a population. J.Z. Young cites these studies and continues, 'We cannot safely assume therefore that any conscious feature is developed just by chance, nor that an organ is retained simply as a vestige . . . We are better employed trying to find out what such organs as the appendix or the pineal gland do than in speculating about their 'vestigial' nature.'⁵⁸

This contention gains force when we remember that in evolutionary series, the supposedly ancestral groups have, by that token, been in existence *longer* and thus subject to selection for *longer* and have survived the rigours of selection for a *longer* time.

Yet another consideration has forced biologists to reconsider the ancestral/adaptation distinction:

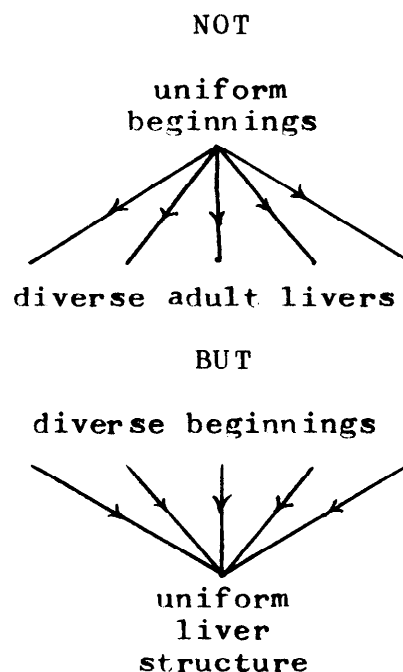


Figure 2.

In his reappraisal of liver structure, Elias found that all vertebrates possess a fully developed liver with a remarkable uniformity of structure. Yet this uniform adult structure is produced by an astonishing diversity of developmental processes.⁵⁹ Contrary to earlier recapitulation ideas, the reality is as shown. How can this be explained by evolutionists? The only suggestion Elias can make is that the adult structure is, 'not only the best but also the worst possible, i.e. the only tolerable structure which a liver must have to assure survival.'⁶⁰ Different modes of early development are possible, but only if they lead to the *one* tolerated end result.

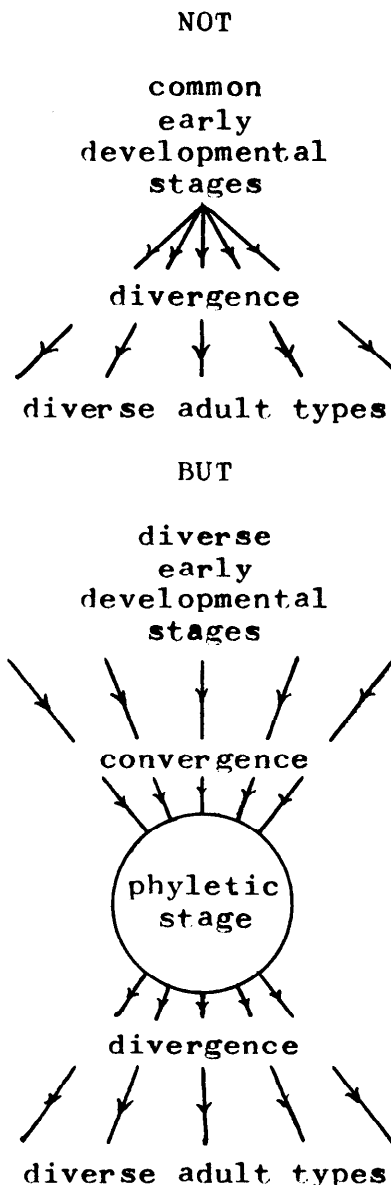
The same situation is found for some other organs and indeed for the whole vertebrate body plan. Haeckel's famous diagrams showing the parallelisms in early vertebrate development⁶¹ have been rightly criticized for the way in which the original figures of other authors were doctored to demonstrate the similarities, *but that is not the major point that must be made*. The crucial point to make is that the diagrams begin—quite arbitrarily—with a relatively late stage in development which already shows the full layout of the basic vertebrate body plan (*four body regions—cephalic, pharyngeal, abdominal, caudal—six basic organ-forming areas—epidermal, neural, notochordal, 2 mesodermal, endodermal—and the rudiments of the major parts and organs—brain, nerve cord, notochord, somites, heart, ears, eyes, kidney, liver etc.*). If we start at the logical place—the fertilized egg—the argument loses all its force. The remarkable uniformity of the vertebrate body plan is attained by an astonishing diversity of developmental processes. The eggs of the different classes differ radically in their yolk content, in their size and shape, in their cleavage patterns, in their blastula type, in the organization that prepares them for gastrulation and in the processes of epiboly and gastrulation. Just prior to organ formation the different forms come to resemble each other quite closely (the *phyletic stage*) and then diverge again as development proceeds to the different adult types.⁶² The overall pattern is thus as shown right.

As Cohen notes, the same pattern obtains in other phyla:

Equally, the embryos of the other phyla of the animal kingdom are frequently very diverse from fertilization through cleavage, but allied forms come to resemble one another just prior to organ formation; then they diverge again as development proceeds.⁶³

With so much divergence in early development for natural selection to utilize, it is evident that the body plans would have been reconstructed if that would produce better adaptation to specific modes of life. Elias' argument is clearly the most reasonable to apply here also: the *phyletic stage* of development is not only the best, but also the worst possible, i.e. the only tolerable intermediate stage.

Since evolutionary texts make much of the embryonic aortic arches of land vertebrates (often, but quite incorrectly, called 'gills'), we can fittingly conclude this section with a comment from Arthur Cain,



... we know so little about the actual mechanics of development that this may be one more argument from ignorance... the developmental features of classes, subphyla or phyla are more likely to be those best suited for producing a given basic plan.⁶⁴

(3) Convergence and parallelism; serial homology and sexual homology

There are three classes of apparent homologies which cannot be explained in terms of evolutionary descent from a common ancestor.

The *first class* consists of similarities found in forms which evolutionists can not regard as descended from a common ancestor possessing the feature in question. It has long been recognized by the experts that convergence and parallelism are extremely common.⁶⁵⁻⁸² Creationists, too, have discussed the topic.⁸³⁻⁸⁷

Evolutionists, following Darwin,⁸⁸ usually assume that convergence will never be so good as to mislead us,

but this assumption is quite gratuitous (see Section E(2)) as the continuing arguments in the literature demonstrate, e.g. Old World and American porcupines;⁸⁹ compound eyes of crustaceans and insects⁹⁰; the fine structure of cilia in diverse animals and plant; epibranchial organs in diverse fish⁹¹ and so on. On Darwinian assumptions these phenomena clearly demonstrate the strongly adaptive nature of the 'homologies' concerned.

The *second class* (serial homologies) concerns those similarities between organs repeated along the anteroposterior axis of one and the same organism, e.g. forelimbs and hindlimbs in land vertebrates; feeding, walking/swimming and respiratory appendages in arthropods; and gill arches and jaws in fishes. In no case can the similarities be traced back to any ancestor with a single pair of limbs, appendages or gill arches. At most it may be said that there has been a reduplication of pattern, but what does that explain? Why, for example, should there be in vertebrate *fore-* and *hind-*limbs, one upper bone, two lower bones, followed by groups of small bones and finally ending in five digits? It is 'A most remarkable convergence.'⁹² It is strongly suggestive that this is simply the most efficient basic pattern.

The *final class* (sexual homologies) concerns the detailed correspondences between male and female genital systems. In mammals the male testes corresponds to the female ovaries; the scrotum corresponds to the labia majora and vulva (in abnormal cases the ovaries undergo 'descent' like the testes and pass into the labia) the penis corresponds to the small clitoris (which also contains erectile tissue); part of the prostate corresponds to the uterus; the male has rudimentary mammary glands (which may even produce milk in newborns in response to the mother's hormones). The correspondences are remarkable, but it is impossible to explain them in traditional evolutionist terms. The rudimentary organs in each sex can hardly be regarded as vestigial since 'it is not possible to refer them to a single representative in a common ancestor, which in vertebrates was certainly not hermaphrodite.'⁹³ Again the suggestion is there that this must be structurally and functionally the best way of producing the basic genital plan.

G. Conclusion to Part One.

On the one hand, these considerations abundantly demonstrate that the evolutionist has no scientific argument from homology at all.

On the other hand, the growing evidence for a soundly functional interpretation of the great body plans points the way to a creationist interpretation which will be developed in Part 2.

PART TWO—OPTIMAL DESIGN

A. Introduction—the Definition of Homology

The purpose of a definition is to state precisely what something is so that we may recognize it and distinguish it clearly from other things with which it might be confused. The 'definition' of homology in terms of evolutionary descent is thus clearly not a *definition* at all, for evolutionary descent is rather a (supposed) *con-*

dition of homology. We certainly cannot recognize homology by means of a factor that (supposedly) explains its existence. We recognize something by its *properties*, not by its *pedigree*.^{94,95}

However, the definition of homology is a real problem. Homology is a structural concept which cannot be captured in a scientific definition. Science investigates the functional aspects or *modes* (numerical, spatial, physical, etc.) of reality. To do so it has to abstract from the integral wholeness of reality.⁹⁶ Consequently, it is unable to grasp coherent patterns, forms or structures. These it must presuppose even though they cannot be explicitly stated in the form of scientific propositions. It is simply a fact that much of our knowledge is inherently tacit and intuitive as Michael Polanyi has abundantly demonstrated.⁹⁷ This tacit (but integral) *subjective* knowledge of reality is the inescapable context of all our *objective* scientific understanding.

The only way we can recognize homology, and thus define it, is by congruence of characters. The author of the term, Sir Richard Owen,⁹⁸ defined homology as follows,

correspondence of a part or organ determined by its relative position and connections with a part or organ in a different animal, the determination of which homology indicates that such animals are constructed on a common type. (cf the *principe des connexions* of E.G. Saint Hilaire.⁹⁹)

This definition can scarcely be improved. The recognition of homology is the result of an often long and tedious process of study and comparison between two organisms. The resulting statement of homology indicates a conclusion referring to whole organisms ('constructed on a common type') and not simply to one pair of corresponding structures.¹⁰⁰ We can now illustrate the point made above. Owen's definition is not really a scientific one because the critical term 'common type' is not defined; indeed it *cannot* be scientifically defined.

As we work with and study a group of animals (or plants) we acquire a 'feeling' for the group and gradually build up a concept of that 'type' or organism. But we cannot specify this 'type concept'. It is not the 'type specimen', nor is it a character-list. Rather it is a 'Gestalt' which integrates all our knowledge of the organisms—their anatomy, embryology, behavior, ecology etc., as far as we know them. Typology, *in this sense*, is absolutely essential to biology; indeed it is inescapable.¹⁰¹⁻¹⁰⁹ Once we relegate the 'character-list' to its rightful position in *taxonomic description* (where it is, of course, irreplaceable) then we can avoid the confusion with so-called 'intermediate' and 'aberrant' forms. Thompson¹¹⁰ writes in regard to his experience of a difficult insect group that the extension of observation to more and more individuals of the group and thus to more and more points in structure and function, did not lead to a blurring of his concept of the type (as believers in an ultimate evolutionary continuum might have expected). On the contrary his concept of that type became increasingly distinct. I had the same experience when studying the extraordinary diversity of fishes which belong to the family Cichlidae.¹¹¹ Whereas the aberrant forms perplex a newcomer to a group who has

to rely on the character-list (which is continually subject to revision) they pose little problem to the expert whose type concept is the integration of a long experience of the living, behaving organisms. Taxa, as Whewell noted long ago¹¹² are given by type not by definition.

This brief analysis should make it clear that, far from being an embarrassment to creationists, homology is very much a creationist concept—it entails a recognition of distinct types of organism.

B. Creationism

Before proceeding to a more detailed evaluation of homologies, we need to articulate certain aspects of creationism and clear away a few misunderstandings.

Evolutionists routinely insist that creationism does not belong to science because you cannot observe creation or in any way investigate it. This self-serving reasoning is plausible only when it is ignored that the term 'creation' has two distinct meanings—the original creative acts (*creatio*) and the results of creating, the created things (*creatura*). It is undeniably true that *creatio* is not open to scientific investigation, but it is equally true that *creatura*—the laws and phenomena of the created universe—is most definitely open to meaningful investigation in terms of creationism. The *kinds* of relationships we observe in the universe provide much positive evidence for creation and through them we can discover much about the Creator's methods and thus about the Creator Himself.

If, for example, we investigate a human 'creation' such as an aeroplane, then we can come to an understanding of all the laws and phenomena involved in its *operation*. These will not enable us to explain the *origin* of the aeroplane (*creatio*) but they will certainly tell us two things.¹¹³ *Firstly*, they will convince us that the aeroplane was created—it could never result from aluminum, glass, wood, etc., doing 'what comes naturally' (its property of flying is a result of a total organization imposed by intelligence on a collection of non-flying parts). *Secondly*, our investigations will tell us much about the manufacturer's methods and thus also about the manufacturer (designer) himself.

What, then, does the Biblical revelation lead us to expect?

Firstly, creation will show plan and purpose. Creation is not by magic.¹¹⁴ A magician says the word and it—anything—happens and it happens immediately, automatically and without cost. When the sovereign God creates it is according to a pre-determined plan which He maintains consistently throughout time (Eph. 1:9-10; Heb. 11:3). He created the universe by His wisdom (Jer. 10:12; 51:15) so that it reveals His sovereign power and glory—indeed His very Godhood (Ps 8:3-4; 19:1-6; 136:1-9; 139:14ff; Is 40:12ff; Rom. 1:20). The unerring regularity of the movement of the heavenly bodies is a token that God is a faithful Creator, one who will keep all His promises (Jer. 31:35-36; 33:25-26). Everything created has a purpose, a role to play in God's plan (cf Rom 12:4ff; 1 Cor. 12:12ff; Eph. 4:15ff; Col. 2:19).

Secondly, created things are optimally designed.

Since man was created in God's image (Gen. 1:28) we can draw some cautious conclusions from human creativity. A great inventor distinguishes himself in certain main ways—in the efficiency of function of his invention and in the economy of material, time and effort involved in its production, operations and maintenance.

When humans design their lack of omniscience allows errors to be incorporated so that revisions and redesigns are necessary. It is extremely rare to find a first design that fully accomplishes the desired results. With the advantage of hindsight, improvements can easily be suggested. When a series of redesigns has been completed we can say that the end result has been 'optimized', i.e. we have a design that operates with maximum efficiency under the appropriate conditions and which in its production, operation and maintenance keeps the expenditure of materials, time and effort to a minimum. When an omniscient God creates we may expect the first design to be optimal and the optimizing process absent.¹¹⁵

Creation, in the sense just outlined, has always been an extremely fruitful concept and it is not coincidental that the great scholars who established and developed the scientific tradition were Christian in their thinking.¹¹⁶ In many cases their specific discoveries were a direct result of a fearless application of the creation idea.¹¹⁷

C. The Phenomena of Homology

The phenomena requiring explanation may be detailed as follows:

(1) *Homologies are present in hierarchical patterns.* Some homologies characterize a wide range of groups (e.g. the pentadactyl limb is characteristic of all land vertebrates); others are of more limited occurrence (e.g. feathers are characteristic only of birds). The result is a hierarchical classification—nested sets of groups traditionally placed in categories (taxonomic levels) called phyla (for the most inclusive groups), classes, orders, etc.

(2) *There is a relatively small number of distinctive architectural styles of organism.* For example, there are only about 30 major types of metazoan animals. These are the largest groups that can be characterized by coherent patterns of homologies. Traditionally these groups are placed at the phylum level in biological classifications. Some eight are large groups with a wide variety of types (Vertebrata, Arthropoda, Mollusca, Annelida, Coelenterata, Echinodermata, Brachiopoda (mostly extinct) and Nematoda). Another ten or so are moderate in size, but the rest are small or even very small and almost all of these latter groups consist of marine organisms only.

A similar pattern obtains at all lower taxonomic levels, i.e. most groups contain some subgroups with a wide variety of types, some with a moderate variety of types and a larger number of small or very small subgroups.

(3) *The body plans of the groups are embryonic plans or particular patterns of development.* In their development all organisms unfold ('evolve') a special adult expression of the embryonic plan. The distinctive embry-

onic plans characterize phyla and so may be called *phyletic plans* (cf *phyletic stage*, in Part 1.)

(4) *At all levels in the classification there is a mosaic distribution of characters within groups.* In each group there is a limited, though varying, number of types of those organs or structures which are always present and these are distributed more or less evenly among the various subgroups. There are also some structures which may or may not be present. These are distributed, apparently impartially among the various subgroups. It is as if, to follow Douglas Dewar's analogy,¹¹⁸ we have 50 hands of 13 playing cards, all different, each with one card of each denomination (ace to king), but with some hands with 1 or 2 blank cards for cards of low denomination. These 50 hands could represent the distribution of characters in 50 subgroups of a large group. It is this fact, incidentally, which vitiates every attempt to draw up genealogical trees of the animal groups.^{119,120}

(5) *There is a high degree of mixture of design features* ('convergence' in evolutionist parlance) both within and—more significantly—between groups at all levels, e.g. camera-type eyes are integrated into both the molluscan and vertebrate phyletic plans.

(6) *All animals that have been adequately investigated have been found to be specialists.* Although many can adjust to diverse regimes (e.g. utilizing whatever food source is most abundant) all have a particular environmental niche to which they are pre-eminently adapted. It is usually only in times of stress that most animals are restricted to their special niche. Thus we can distinguish between *obligate* and *facultative* specialists, but *generalized* organisms are nowhere to be found.

The author had an interesting experience which is very relevant to this point. For several years he studied the cichlid fishes (a family taxon of over 1,100 species of freshwater fishes found in tropical and subtropical waters of both the Old and New Worlds). One species studied ('Brown Acara') is wide-ranging in Central and South America and in all visible features it seems to be as 'generalized' a cichlid as one could wish for—an ideal 'ancestral' cichlid. But one night the air pumps supplying the aquaria failed and by morning most of the cichlids were dead—except the Brown Acaras, not one of which was affected! It was then that the truth was discovered. The Acaras are specialized, possessing a highly vascularized gut which acts as an efficient accessory breathing organ ('gill'). The Acaras are widely distributed because they are specially adapted to a common habitat of the tropics—stagnant water!¹²¹

D. Principles of Creation

If the patterns of homologies are the result of creation, then creation has conformed to at least the following four principles:

(1) *Creation has conformed to limiting constraints.*

A limitation of patterns implies limiting constraints. It is our contention that the phyletic plans represent the main possible solutions to the problems of life, the main designs for living in the environments found on Earth. Some of these solutions are capable of rich and diverse

expression to meet more specific environmental demands. Other solutions are only capable of a more limited expression. This principle applies at all taxonomic levels: hence the disparate sizes of the subgroups of each group.

(2) *Each organism is a unique combination of complete, functionally integrated traits.*

Environmental demands necessitate adaptive features (traits) to meet the problems which they pose to a living organism. Each kind of living organism is a unique combination of specific design elements (adaptive traits) well-integrated into a distinctive type adapted to a particular range of environmental contingencies.

Some patterns of organization (e.g. of cells) and some design elements (e.g. cell membranes) answer to universal demands and so are universally present. For example, living systems are steady-state open systems which maintain their organization in a position away from equilibrium with the environment. Hence the universal presence of a bounding membrane (cell membrane) which can allow, but actively regulate, a throughput of materials so as to prevent the organism coming to equilibrium.

Other design elements are of more or less restricted distribution. Those which are always present in the members of a group (e.g. feathers in Aves) are essential to the basic adaptation. Those which may be absent (e.g. the long, sticky tongue of the flicker woodpecker) are necessary for adaptation to specific niches only.

Specific design elements which are capable of general application (e.g. camera-type eyes) may be integrated into different phyletic plans.¹²²

(3) *Creation conforms to a mosaic pattern of trait distribution.*

The pattern of trait distribution is correlated with the environmental patterns to which the organisms are adapted. There are no genetical or evolutionary (branching) relationships between habits and niches, but rather a mosaic or kaleidoscopic pattern of environmental demands (or restrictions) on organisms. Consequently, in each group, we would expect to find a corresponding mosaic pattern of adaptive traits, i.e. a creationist *ecological* explanation of the pattern of variation. Such a pattern would be expected to obtain at all taxonomic levels, i.e. to traits of wide distribution as well as to those of more restricted distribution. Evolutionary branching patterns of trait distribution, suggestive of descent from common ancestors, will not be found.

(4) *Creation designs are optimal from the start.*

This perfection has no history. Only complete, fully functional traits will be found, whether in living organisms or in extinct ones known only as fossils. Evolutionary transitions—incomplete (part-way) traits—showing the trial and error development of optimal results, will not be found.

E. The History of the Optimal Design Approach

The perfection of structure for function has always been the expectation of creationists as the long lineage

of books describing it demonstrates.¹²³⁻¹²⁶ Later in the 19th century we have the prestigious 'Bridgewater Treatises on the power, wisdom and goodness of God as manifested in the Creation.' (1833-1836). Of the 12 volumes in this series, the best known is probably that by Sir Charles Bell on 'The Hand',¹²⁷ which went through many editions during that century.

It was not until evolutionary ideas began to dominate that things changed. From the 1870's a false methodology reigned supreme. There was an immense concentration of effort in comparative anatomy and embryology, but it was all largely descriptive because the main object was the tracing of ancestries. In Britain, at least, physiology was allowed to become an independent and medically-orientated discipline with experimental methods which were hardly applicable to most organisms. G.P. Wells was hardly exaggerating when he wrote that, 'a great darkness had settled on the majority of British zoologists in the early years of this century.'¹²⁸

Things were little better elsewhere. When he attempted to explain development in terms of actual physical causes he met with the retort that, 'We have better things to do in embryology than to discuss tensions of germinal layers and similar questions since all explanations must of necessity be of a phylogenetic nature.'¹²⁹

By the time of the Second World War it had become abundantly clear that the evolutionary approach was barren, though this has rarely been admitted. After the war things changed rapidly, but it is sad to report that through all this period no significant creationist writing appeared. It was a medical scientist, David Cohn¹³⁰ who in 1954 resurrected the older approach when he put forward the idea of 'optimal design' in a paper on the vascular system. The 'Optimal Design' approach is simply the assumption that each organ or part is constructed in such a fashion that, within its appropriate environment it will function in an optimal fashion with respect to efficiency of operation, energy expenditure and ease of maintenance. *Any* other design, substituted for the actual organ, will in some sense result in a lowering of the overall metabolic efficiency of the organism. Rashevsky¹³¹, Rosen¹³² and Rudwick¹³³ have developed the idea; and Dullemeijer¹³⁴ has written on the methodology. More recently, creationists have again taken up the approach, the monograph of Marlyn Clark¹³⁵ on cardiovascular fluid mechanics being an outstanding example:

... The human body's complex subsystems are optimized. If, for a given human mechanism, an optimum operating characteristic has somehow been determined, the body will be found to be operating at this optimum. If a range of an operating characteristic is involved and, if one point in the range is more crucial to well-being than the others, the optimization will occur at the crucial point.

The support for this approach is now so extensive e.g. Cain,¹³⁶ that creationists can pursue it with confidence. See Part 1.

F. Conclusion

Contrary to the popular, self-serving reasoning of the evolutionist establishment, a creationist interpretation

of homologies is not only a valid scientific approach, but provides a working hypothesis of immense heuristic value. Indeed its fruitfulness has been demonstrated through three centuries of application. Specifically it makes three falsifiable predictions:

- (1) The biological features of each kind of organism will be found to be optimally adaptive for the organisms in their normal environments.
- (2) The eco-ethological correlation (that with normal habits and environment) will always be totally consistent. A consistent correlation provides positive justification for the creationist interpretation.
- (3) Correlation with a supposed evolutionary descent of types will only be consistent to the extent that it parallels the adaptive (eco-ethological) correlation. Elsewhere it will be inconsistent showing that evolutionists have no positive criterion which could be used to justify an evolutionary interpretation.

Thus we assert that the biological features of both living and extinct (fossil) organisms provide clues to the normal environment and habits of these organisms, *not* to evolutionary relationships.

The oft-repeated argument that Creationism is unacceptable because it is 'God-of-the-gaps' science is seen to be fallacious. It is doubtful if any Christian scholar has ever been guilty of practicing such science.¹³⁷ Historically and currently, it is the evolutionists who have been practicing such bad science. Their foundational argument for evolution (from homologies) has been based on nothing more than their ignorance of the adaptive significance of many of the biological features of organisms. As science has advanced its frontiers, those gaps in our knowledge have steadily been closed—and it is evolution, not the Creator, that has thereby been squeezed out.

PART THREE: APPENDICES

Appendix One: The Created Kinds

In an earlier article¹³⁸ I presented the Biblical evidence that demonstrates that the Biblical term 'kind' (Hebrew *min*) is a technical term and that there is full justification for the use of the term by present-day creationists to denote the distinct created kinds of animal and plant. Strangely this analysis has been ignored by later writers and, in particular, by those who contest that conclusion, e.g. Strickling.¹³⁹ However its arguments have not been refuted.

In two articles following the one just mentioned^{140,141} I marshalled the Biblical evidence that indicates the taxonomic level or category (in current classification schemes) in which these kinds should be placed. This Biblical evidence *demonstrates conclusively* that many kinds cannot be placed as low as the species level. The evidence strongly *suggests* that kinds often lie at the family/subfamily level in current animal classifications. Lammerts¹⁴² and Howe¹⁴³ have concluded that vertebrate families seem to be based on character differences that in plants distinguish *genera*. Consequently, Howe tentatively proposed that in plants the *genus* is frequently the modern counterpart of the created kind.¹⁴⁴

Ten years later I am more confident than ever that the basic equation of animal families = kinds is correct. These units *are* a recognizable reality and distinct at all times and in all places. It is a notable fact that modern classifications often agree in minute detail with the 'folk classifications' of so-called primitive people, and that what is recognized as a distinct 'kind' is indeed usually the 'family' of modern zoology.

Hugh Tyndale-Biscoe¹⁴⁵ comments on the mosaic pattern of character distribution in marsupials as follows: 'By comparing the various criteria available it becomes clear that one must hesitate to ascribe the terms primitive or advanced to the several groups, rather one must acknowledge that no living species is any less evolved than another and all have diverged to different degrees from their remote predecessors. It is also evident that several remarkable convergences must have occurred independently in different groups so that it would be unwise to draw conclusions about closeness of relationship.' He then continues, 'What does become evident, however, is the unity of species within groups, regardless of criteria used, which encourages the belief that these are natural groups; how the separate groups are related in time, however, must await a far better fossil record than is presently available. These natural groupings within marsupials have usually been given familial rank . . .'

I came to the same conclusion when studying a number of teleost (fish) families.¹³⁶

Similar confessions abound in the literature. Phillips Dales writing of the polychaete annelids (true worms) states that, 'in considering the evolution of the Polychaeta we are faced with two difficulties: First, the existing families are very distinct, . . . and, secondly, there are no fossils worth mentioning'¹⁴⁷ Van Tyne and Berger¹⁴⁸ write of the birds that, 'many families are so well marked that there is not the slightest disagreement among ornithologists about which species should be included in those families.' The entomologist William Thompson writes that, 'We can tell at a glance to what Order or Family a particular insect belongs.' In contrast, 'there is often controversy and uncertainty about the definitions of genera, species, and varieties.'¹⁴⁹

It is basically only in the groups of clean animals that there is disagreement about families, but then only because the wealth of variation tempts some zoologists to try to divide the natural groupings.¹⁵⁰

Appendix Two: The Created Kinds and Homologies

For creationists, the created kinds are the basic units in nature. In an earlier article¹⁵¹ I gave some of the evidence that suggests that the basic organizational patterns of an organism's structures and processes are coded in cell membrane templates (the *cortome* system). Thus I would suggest as a working hypothesis that the created kinds are the least-inclusive (lowest-level) taxa which are characterized by a distinctive *cortome pattern*, i.e. the basic pattern of homologous organs is controlled by the *cortome* system. Put another way, the major condition of *kindness* is that the organisms share in a common style of embryonic development, whose unique organizational pattern is encoded in the cor-

tome.

Different expressions of these patterns, giving lower-level taxa, would then be produced by genic mechanisms (the *genome* system).

Incidentally (*pace* Siegler,¹⁵² and Morris¹⁵³) the existence of distinct created kinds does *not* mean that all the other more inclusive groupings are artificial or arbitrary. These other groupings, when properly distinguished, are a natural and recognizable reality. The rationale has been given in Part Two of this article.

Appendix Three: The Historical Consistency of the Creationist View

There is a notable consistency in the creationist position on this matter of the created kinds.

It was not until the 17th century (when the folklore and mythology began to be removed from the Western tomes of Natural History) that a biological understanding of the created kinds became possible. In 1686 (*Historia Plantarum* Vol. 1) John Ray defined 'species' as groups with mutual fertility. In 1735 Carolus Linnaeus (*Systema Naturae*, 1st Edition '*Classes Plantarum*') identified these 'species' with the created kinds. It was a mistake and after years of specific research in plant hybridization, Linnaeus concluded that he had indeed drawn the boundaries of the kind too narrowly. In 1774 (*Systema Vegetabilium*) he settled on the genus as the created kind. In the pre-Darwinian era this was the view of most creationist naturalists (evidence for this can be found in, of all places (!), the 'Historical Sketch' which Darwin placed at the front of his 'Origin of Species'). Since then, there has been a general tendency for Linnaeus' animal genera to be promoted into the family category (a category which Linnaeus did not have) whereas his plant genera have tended to remain in the genus category. This being so, we can claim that creationists have been in general agreement over the identification of the kinds for over two centuries!

Appendix Four: The Created Kinds in Taxonomy

I would agree¹⁵⁴ with Siegler¹⁵⁵ and Ancil¹⁵⁶ that we adopt Marsh's term *baramin*^{157,158} for the taxonomic level which contains the created kinds. The groupings placed at this level would be distinguished by the suffix *-imin* (this is preferable to Siegler's *-min*¹⁵⁹ as it brings the suffix into conformity with *-idae*, *-inae* etc.), e.g. *Equimin* (horse kind); *Canimin* (dog kind) etc.

Marsh¹⁶⁰ argued that, 'from the standpoint of unity, convenience and practicability' creationists should adopt current evolutionist classifications. He concluded that, 'a creationist classification would be a challenging and interesting endeavor, but it would possibly largely be love's labor lost because evolutionists would not use it, and the resulting confusion would finally bring taxonomy to a complete impasse.' Siegler¹⁶¹ concurs with this conclusion when he suggests that the creationist insert one additional category—the *baramin* category—into current systems at whatever level is appropriate in each case. Ancil, however, asks if it is not time for a creationist taxonomy. 'Need creationists be bound by the conventional categories and criteria?'¹⁶²

These different views are not incompatible. The con-

ventional categories (phylum, class, order etc.) are largely, I believe, acceptable (they were, after all, the product of creationist thinking!). Current schemes simply need to be reformed in two main ways—

Firstly, we should urge on our evolutionist colleagues the need to ensure that classification schemes recognize only *natural* groups (cf Appendix 6). The so-called 'cladist' taxonomists (G.J. Nelson; C. Patterson; N. Bonde; N.I. Platnick et al) have done much to aid creationists in this regard. Colin Patterson writes that, 'as the theory of cladistics has developed, it has been realized that more and more of the evolutionary framework is inessential, and may be dropped.'¹⁶³ The leading cladist, Gareth Nelson, wrote to Patterson (summer, 1980) that, 'In a way, I think we are merely rediscovering pre-evolutionary (i.e. creationist!—A.J.) systematics; or if not rediscovering it, fleshing it out.' It is not surprising that other evolutionists are unhappy with them. Alan Charig¹⁶⁴ correctly says that cladistics is really 'natural order systematics'. He wonders, 'what the 'natural order' can possibly mean if it does not indicate any type of phylogenetic relationship'. He is unhappy because creationists can accept the cladists' phenetic schemes. Fascinating!—and we are not even involved in this virulent controversy!

Secondly, if we can agree on which category of current schemes usually hold the baramins, then we should work to bring all deviant groupings into line at this level. Outside our own circles we can use the conventional name for this level (*family*, *genus*).

One word of warning. It is important to remember that *baramin* is primarily a taxonomic *category* or *level*. Whether or not a grouping is regarded as a created kind depends on our current understanding. In some cases, future research may require the removal of a group from that category to a different one.

Appendix Five: The Identification of Baramins

This is the crucial matter—either we can identify the kinds or else our creationism has no taxonomic utility.

In 1941, Frank Marsh¹⁶⁵ proposed a reproductive criterion for the identification of the kinds which he sharpened in 1957.¹⁶⁶

'Animals are members of the same kind if their gametes can participate in true fertilization, i.e. the nuclei can unite so that chromosomes from both parents play a role in development.'

Development may arrest at an early stage, but cytological evidence of true fertilization, or the identification of specific phenotypic features from both parents in the hybrid embryo, would be sufficient to meet this criterion. Siegler¹⁶⁷ and Ancil¹⁶⁸ concur with Marsh. However, I am unable to subscribe to this view.

(1) We are making the same mistake that we charge evolutionists with in connection with *homology*. We cannot *recognize* (or *define*) the baramins by means of a *condition* of 'kindness'. We are failing to say what baramins actually *are*.

(2) No Biblical or scientific theoretical support can be given to this criterion. It is certainly fair to deduce from the Biblical statements that viable hybrids between kinds can not be produced.¹⁶⁹ The problem, of course, is

that this does not give a *definitive* criterion because hybrids are not always possible *within* kinds. Hence Marsh's sharpening of the criterion so that true fertilization becomes the test. But why should this be so? We have obviously gone beyond the Biblical data. Is there, then, any scientific support? I believe not.

The criterion has scientific credentials only if we can show that it is entailed by our current theories of heredity and development. But as I have argued in a previous paper¹⁷⁰ the major difficulty facing a scientific theory of evolution is that currently there are no theories at all! It is also a problem for us, because without such theories we cannot justify Marsh's criterion.

In the article just mentioned I proposed as a working hypothesis, a two-system model of heredity (*cortome* and *genome*). If this model is correct, then Marsh's criterion is wrong. If the baramin organizational pattern is coded in the cortome, then in fertilization the baramin pattern will always be determined by the organism providing the egg; the sperm parent providing only genome factors. A real hybridization of kinds would be impossible! The degree to which a given genome can work with a given cortome could be expected to bear some relationship to taxonomic distance, but no particular cut-off point could be expected. Indeed there is no particular cut-off. True fertilization has been obtained between animals belonging to distant baramins, e.g. *Fundulus heteroclitus* (Order Cyprinodontiformes) × *Scomber scombrus* (Order Perciformes).^{171,172}

How then do we recognize baramins? As with homologies, so with baramins—the recognition is a tacit affair whereby, as an integration of study experiences, we build up a concept of a particular type of organism (cf Appendix One). In animals, behavior plays a leading role, so I proposed the following definition of an animal baramin.¹⁷³

A baramin consists of all those animals that partake of, and recognize, the same pattern of behavior.

The support for this criterion is three-fold:

(1) *Empirical*—The truth of this criterion is a fact of everyday experience in relation to the diverse breeds of domestic animals. My own research with species of the freshwater fish family Cichlidae (Cichlimini!) abundantly supported the criterion. The Cichlidae is an extraordinarily diverse family of some 1,100 species found in tropical and subtropical freshwaters from the Americas to India. Cichlids could recognize and respond appropriately to behavioral elements found in other species which were not a (noticeable) part of their own normal pattern of behavior. This was true regardless of the morphological, ecological, or geographical 'distance' between the species. In contrast, morphologically, ecologically and geographically 'near' species from different kinds (classified as families in this case) could not cooperate in a specific behavior pattern (e.g. mating behavior).¹⁷⁴ Research workers, besides myself, have often reported that after working with a group for some time they develop such a tacit awareness of the characteristic behavior that they can easily pick out members of that kind (even species new to them) from

amongst many superficially similar animals belonging to other groups.

(2) *Biblical*. The Bible never addresses itself to the question of the recognition of the kinds. Definitive statements are never needed until controversy calls for them. On this issue controversy is a very recent phenomenon! Nevertheless we are not left entirely in the dark.¹⁷⁵

The Syriac word corresponding to the Hebrew *min* means 'clan' or 'family'. In Genesis the Hebrew *mishpachah*, 'clan', is the parallel of *min* (Gen. 8:19 with 7:14) and *mishpachah* was 'basically an administrative rubric' (Speiser) which denoted political, extrinsic relationship rather than genetic, intrinsic relationship.¹⁷⁶

We need only think of the acceptance of the Moabites Ruth (Ruth; Mtt. 1:5) or the Canaanite harlot Rahab (Jos. 6:17, 22-25, Mtt. 1:5) into Israelite clans, to appreciate this point. The solidarity of a clan derived primarily from the acceptance of common obligations according to custom and law. In Israel this centered in the primary obligation to observe the Mosaic Covenant Law.

The implication is clear that the members of an animal *min* are one because they obey the same laws, i.e. the same innate (instinctive) pattern of behavior.

This is surely why (*contra* Strickling¹⁷⁷) Man is not called a *min* in Genesis One. He was created 'in the image of God' that he might enter God's family (*mishpachah* = *patria* Gen. 12:3/Acts 3:25). But as an outworking of the Fall, mankind in fact split up into numerous nations and clans (*min*!). Only by new birth into God's family can unity be found in the obedience to the Spirit of Christ. There is really no 'mankind' now!

(3) *Philosophical*. In terms of Herman Dooyeweerd's Christian Philosophy¹⁷⁸ the *psychical* (ethological) is the qualifying modal function of animals. Thus a behavioral criterion for distinguishing kinds would be expected. It is also interesting that Dooyeweerd's ideas applied to biology would lead us to expect that DNA is not the be-all and end-all of heredity (see de Wit^{179,180}). I mention this philosophy because Dooyeweerd's analyses contain some very useful material for creationists even if we may not agree with all that he writes.

Conclusion.

It is my belief that the unity of a baramin is not necessarily a unity of descent from created originals. I believe that many baramins were created with a variety of types. The unity of a baramin lies in the participation of those types in a common pattern of behavior.

The diversity of the clean baramins in large measure survived the Flood whereas the single surviving pairs of some unclean kinds has meant a greatly reduced diversity in these kinds.¹⁸¹

The diversity in some kinds (e.g. the 1,100 species of cichlid) is, however, not as great as it seems. Often the diverse species are the product of endless permutations of a relatively small number of characteristics.¹⁸²

Appendix Six: Intermediate Kinds

(1) Groups and non-groups

It is a significant fact that whenever evolutionists

describe some animal or fossil as a 'link' they describe it as a link between groups which are not comparable. Almost always the descendant groups are genuine, characterizable groups, whereas the groups held to be ancestral are not. The ancestral groups (e.g. 'Invertebrates', 'Fishes', 'Reptiles', 'Rhipidistian fishes'; 'Therapsid reptiles' etc.) are characterized only by the lack of characters, i.e. they are non-characterizable. Although convenient labels for many purposes, they do not represent natural groups. For example, the Fishes (*Pisces*) as a group can be defined only by the lack of pentadactyl limbs etc. All characters that might be used as diagnoses are found in other groups also (scales, fins, gills, etc. are all found in amphibians, for example). The actual characterizable groups are 'cartilaginous fishes' (*Chondrichthyes*), 'bony fishes' (*Osteichthyes*), etc.

Thus creationists must insist that links have not been shown to be links until they have been shown to be links between characterizable groups.

(2) Complete and incomplete traits

'Links' are not links if they are mosaics of complete functional traits from other groups. True links must, of necessity, show the intermediate states in the development of new traits. Yet all claimed links are—if anything—mosaics and thus just a special case of the general phenomenon of the mixture of design features (Part 1). To a creationist proponent of optimal design these 'links' simply show that more unique combinations of design elements are possible than we might have once thought. These 'links' are an indication, *not* of evolutionary relationships, but of a particular ecological niche—and we are spurred to discover as much as we can about the environment and way of life of the animal.¹⁸³

(3) *Archaeopteryx*

We can illustrate these remarks by reference to that most famous 'missing link', *Archaeopteryx*.

Archaeopteryx is said to be a link between reptiles (ancestral group) and birds (descendant group). But whereas birds (*Aves*) are a natural (characterizable) group, the *Reptilia* is an artificial construct. Reptiles are simply those animals left when the birds and mammals are removed from the *Amniota*, i.e. they are characterized by the absence of mammal and bird characters, not by the presence of diagnostic 'Reptilian' characters. In reality the *Reptilia* contains animals which should be placed in a number of smaller characterizable classes (for the crocodilians, snakes and lizards, turtles and tortoises, pterosaurs, dinosaurs, etc.—for a relevant creationist work, see Newton.¹⁸⁴). Thus the supposed 'Reptilian' features of *Archaeopteryx* are not, in reality, the features of any genuine group. The forelimb claws, socketed teeth, breastbone without keel, unfused backbone, long bony tail, etc., tell us nothing about ancestry. Since natural groups are characterizable and all of *Archaeopteryx*'s characters are those of birds, the creationist can confidently regard *Archaeopteryx* as a bird kind.

Archaeopteryx shows no intermediate states in the (supposed) evolution of bird traits. It has completely developed, fully functional wings; fully developed func-

tional features and an extremely robust wishbone. This point is, however, now generally recognized. Futuyma¹⁸⁵ says of therapsids and *Archaeopteryx* that, 'they are mosaics of ancestral and derived character states rather than true intermediates'. Similarly Gould and Eldredge¹⁸⁶ had written that, 'curious mosaics like *Archaeopteryx* do not count'.

Appendix Seven: Molecular Homologies

It is not uncommon today for biologists to admit that, 'we have no absolute proof of the theory of evolution, by direct evidence of the senses; all the available evidence is merely circumstantial.'¹⁸⁷ Many would endorse Popper's description of the theory of evolution as 'a metaphysical research programme'¹⁸⁸ Nevertheless, these biologists still embrace the theory enthusiastically, claiming that it does have scientific value and that there is no alternative theory that fits the facts so well ('Evolution is, indeed, the one coherent system of principles that unified all of biology.'¹⁸⁹) As one criterion of progress in science, Popper suggests that, 'If the progress is significant then the new problems will differ from the old problems: the new problems will be on a radically different level of depth.' Patterson continues, 'It is surely true that the problems which occupy today's workers in molecular evolution are on a radically different level of depth from those which interested mid-Victorian evolutionists.'¹⁹⁰ It is, indeed, a common claim that the series of variations in the monomer sequences of proteins and nucleic acids from different organisms constitute 'new' evidence which provides powerful support for evolution. However, it is difficult to reconcile this euphoria with three pertinent facts:

- (1) No new principles or types of evidence are actually involved;
- (2) There is a serious conflict between the arguments of the molecular biologists and those of other comparative biologists;
- (3) Biologists are repeating the same methodological mistakes that have long vitiated the 'classical' studies of comparative anatomy and embryology.

(1) *Nothing is new*

The biomolecular evidence—like the classical evidence of comparative anatomy—is based on the recognition of homologies, in this case the recognition of the 'same' sequence, patterns. The criterion of homology is taken to be common origin, but—as before—the only criterion of common origin is homology! There are still no criteria independent of the evolutionary conclusion.

(2) *Molecular biologists versus the rest*

The comparative anatomists and embryologists have argued that the basic patterns are 'ancestral' whereas the various detailed expressions of these patterns are 'adaptive' and thus not necessarily indicative of ancestry. No-one seems to have noticed that the molecular biologists have drawn almost the opposite conclusion. For them it is the basic patterns—the common amino acid residues (sequence patterns) and the three-dimensional configurations they entail—that are fundamentally 'adaptive'. It is held that these cannot be replaced without major disruption of the essential bio-

logical properties of the molecules. The various differences between the molecules of different species are held to explore the possible expressions of the primary adaptation, i.e. they all result in functional molecules. However, it is tacitly assumed that they are not more specific adaptations, i.e. the different sequences are not related to the different habits and environments of the organisms, but are merely random productions within the functional range supposedly provided by biopolymer redundancy.

The creationist is in a position to apply Occam's razor to the confusion and provide one consistent explanation for all types of homology.

The basic patterns are adaptive in relation to basic functional demands; the varying expressions of these patterns are secondary adaptations in relation to more specific functional demands.

(3) *The same old methodological blunder*

The particular molecules found in each species are compared with the corresponding molecules in the (supposedly) ancestral organism and the degree of difference determined. This degree of difference is quantified as the minimum number of point mutations required to produce the descendant condition. The numerical difference between two organisms is then taken to be roughly proportional to their evolutionary relatedness. No attempt is made in the presentations to relate the differences in the monomer sequences to the differences in the demands placed on the polymers by the different habits and environments (internal and external) of the organisms. The famous saying of G.W. Hegel is again fulfilled, 'What experience and history teach is this—that people . . . never have learnt anything from history.'

The unmistakable lesson to be learnt from the history of anatomical and embryological re-interpretations is that *no valid comparison of structures can be made when their respective functions in the life of the organisms have not been elucidated* (Part 1), and that the only valid methodological approach is *to assume optimal adaptation* since there are no positive criteria by which non-adaptation can be recognized and demonstrated.

Work on the functional interpretation of biomolecular structures has scarcely begun, but we can already marshal the following evidence in support of the contention that sequence differences are a reflection of functional differences related to each organism's different habits and ecology.

A. Indirect Evidence

(1) *Natural Selection.* The 'ancestral' polymers are identified in *modern* organisms which have been subject to natural selection for as long as or longer than those other modern organisms which yield the 'descendant' molecules. (Part 1)

(2) *Single predominant types.*¹⁹¹ There is usually only one predominant molecular type of each protein molecule in each species. But why should other, perfectly functional molecules disappear? What has happened to all the intermediate types between the ancestral molecule and the modern one? Each 'good' point muta-

tion should increase by one the functional types present. Only if a species population is reduced to a few individuals could the laws of probability favor a mutant becoming predominant. If, on the other hand, natural selection is held to have eliminated all but one molecular type in each species, then this would, of course, be positive evidence that only that one type is optimal for each species.

Specific examples reveal further problems. For example in most vertebrates there are two varieties of globin—myoglobin and haemoglobin. Land vertebrates have *alpha* and *beta* types of haemoglobin, mammals have a third *gamma* type and some primates a fourth *delta* type. All these (and other types not mentioned here) are supposed to have arisen by duplication and variation of a single ancestral gene that coded for the original vertebrate globin. It sounds a nice story until we examine it. For example, for the single chains of myoglobin to associate (four to haemoglobin) the primary structure of myoglobin must undergo alterations at many sites (the 'D' helix is lost). Modern vertebrates can tolerate very little variation in these globin chains, yet evolutionists are postulating that there was at some stage a series of animals which could tolerate all the necessary intermediate stages between these two basic types of globin chain. *Ipso facto* these intermediates were neither good myoglobin nor good haemoglobin and so would have been eliminated by natural selection!¹⁹²

(3) *The failure of evolutionary correlations.* Creationists might expect that biomolecular relationships would broadly parallel the supposed evolutionary relationships, simply because the traditional evolutionary pattern is broadly one of an ecological progression from marine organisms to tidal zone dwellers, to shore dwellers, to lowland dwellers and finally to upland dwellers. However, just as a consistent (self-justifying) evolutionary interpretation of the geological systems cannot accommodate the numerous fossil mix-ups, strata mix-ups, polystratic fossils, etc., so a consistent evolutionary interpretation of molecular homologies cannot tolerate the numerous cases where molecular relationships flatly contradict evolutionary relationships (see, e.g. Parker¹⁹³) *Falsa in uno, falsa in omnibus*. All these exceptions can, of course, be explained away, but not without losing every positive criterion which might otherwise have been used to justify an evolutionary interpretation. At the very least, consideration of other interpretations is in order.

(4) *Some biomolecular types have a mosaic pattern of distribution*

The distribution of, for example, the haemoglobins fits no evolutionary branching pattern whatever. They occur in a few plants (e.g. yeast, the mold *Neurospora* and in the root nodules of legumes) and in some members of every major invertebrate phylum except those of the sponges, coelenterates and (surprise!) the protochordates (including the amphioxids). Richard Dickerson admits that, 'It is hard to see a common line of descent snaking in so unsystematic a way through so many different phyla...' (cited by Parker, loc. cit). So

evolutionists are forced to postulate numerous independent origins:

The distribution of hemoglobins among invertebrate animals does not fit any phylogenetic scheme. It appears as if hemoglobins have arisen independently many times in the course of evolution.¹⁹⁴

It seems likely that the gas-transporting function of hemoglobin... evolved a number of times within annelids.¹⁹⁵

However Dickerson admits that repeated evolution seemed plausible only as long as haemoglobin could just be considered red stuff that held oxygen. It does not seem plausible now that we know the complex eight-helix folded pattern of the molecule.¹⁹⁶

Analysis of amino acid identities in the particular helices of the different haemoglobin chains brings to light further problems which are difficult to resolve in evolutionary terms.¹⁹⁷ What is happening in the field of molecular biology is exactly what has already happened in the classical fields of comparative anatomy and embryology. It is easy to place phenomena in evolutionary patterns when little is known of their functional roles. The more we learn about the phenomena the less and less easy it becomes to see any evolutionary pattern. When *ad hoc* hypotheses are increasingly necessary to explain why the pattern looks nothing like the evolutionary branching pattern expected, then the evolutionary interpretation has long since lost any coercive force.

B. Direct Evidence

(1) *The molecules have to meet various demands.* Each of the 20 or so amino acids has its own unique set of properties and thus distinct advantages of its own. Different amino acid sequences will therefore provide molecules in a continuous spectrum of overall properties. It can therefore be expected that particular sequences will provide the optimal properties for particular situations. Certainly we know two things. The first is that the primary structures (monomer sequences) of biomacromolecules must meet many stringent demands, e.g.

- (a) ensure the correct three-dimensional configuration and stabilize the molecule;
- (b) provide sites for attachment to cell membranes;
- (c) give specific immunological properties;
- (d) provide sites which respond to hormones or other regulatory mechanism... etc.

In addition each type of macromolecule must meet many more specific demands, e.g. enzymes have,

- (a) active (catalytic) sites;
- (b) sites which ensure substrate specificity;
- (c) sites which permit inhibition by feedback control from distant products in the chain of reactions... etc.

Often these properties are conferred by parts of the primary sequence *spread over the molecule*. The more we learn of each biomacromolecule the more it seems that the entire molecule is necessary to the function and that therefore the very first molecule of each type must have had most of the sequence intact.¹⁹⁸

Secondly, we do know that properties vary from one organism to another in relation to differing demands and that this is the reason for some differing primary structure.

(2) *Specific examples of molecular adaptation.* These are just a few examples chosen to illustrate the possibilities. (a) The aspartokinase enzymes in *E. coli* catalyse the formation of aspartylphosphate from aspartic acid and ATP. Aspartylphosphate then undergoes a series of reactions to give rise to the amino acids lysine, threonine and methionine. One enzyme is inhibited by lysine and the other by threonine. Thus excess of one reduces, but does not stop, the supply of phosphate.¹⁹⁹

(b) The temperature kinetics of lactate dehydrogenase enzymes vary as predicted by their relative prevalence in minor populations from cold and warm waters.²⁰⁰

(c) In two series of fishes from cold and tropical waters it was found that the temperature for thermal shrinkage of their collagen rises and is directly correlated with the hydroxyproline content.²⁰¹

(d) It might be expected that different cytochrome-c must behave differently in the different cellular milieux of the organisms in which they occur. Investigations have scarcely begun, but Aw²⁰² cites a report that the cytochrome-c from a few species show individual high affinities for the enzyme cytochrome-c oxidase at low ionic strengths. Further reports are awaited with interest!

(e) *The haemoglobins.* The properties of different haemoglobins are adapted to the different environmental demands on the organisms concerned and it is the amino acid sequence patterns which are responsible for these major physiological adaptations.

The oxyhaemoglobin dissociation curve varies in relation to (i) temperature; (ii) carbon dioxide and other acids (Bohr effect; Root effect); (iii) ions and (iv) organic phosphates. Associated with these parameters are some major adaptive patterns, e.g.:

(i) Small endotherms have curves which are displaced to the right in comparison with those of larger endotherms. This ensures that the tissues of smaller mammals are supplied with oxygen at the higher rates needed to sustain their higher metabolic rates.

(ii) The Bohr effects show a similar variation, being much larger in smaller mammals than in larger.

(iii) Animals adapted for life at high altitudes (e.g. llamas) have curves displaced to the left allowing efficient blood oxygenation at low oxygen pressures.

(iv) Other animals which must obtain oxygen in oxygen-deficient environments (e.g. aquatic animals and internal parasites) have curves shifted to the left.

(v) Very active animals (e.g. birds) have curves shifted to the right in order to facilitate their high metabolic rates.

(For more details, further examples and references see Schmidt-Nielsen.²⁰³)

These facts would obviously lead us to expect that, say, human and horse haemoglobin would be more similar than human and carp haemoglobin! Until the molecular biologists have elucidated the relationships between primary structure and the functional demands, creationists must insist that no evolutionary argument

from biomolecular homologies is valid. For his part this creationist confidently expects that future research will confirm the predictions made in the conclusion to Part Two of this series of articles.

In grasping at the evidence of 'chemical paleogenetics' evolutionists thought that they had a prize rose. They were mistaken; it is, for them a nettle.

Appendix Eight: Imperfections

Creationists do recognize some imperfection in that this is now a cursed world in which there are distortions of the original perfect harmony. However the nature of *this* imperfection is quite different from the imperfection of evolutionary intermediates.

We may assume that the basic adaptation of each kind (encoded in the cortome) is optimal. Imperfections can then be introduced through the genome in three main ways: by random genetic drift in small populations; by mutation or by excessive change in one or a few features (through genic recombination). In the latter two cases it is a distorted environment that is responsible for the distorted adaptation.

(1) *Random genetic drift.* In small populations (no more than a few hundreds *at most*) isolated from others, genetic information is lost fairly rapidly by random effects, so that certain genes may reach 100% by the loss of their alleles. The Amerindians, for example, all lack the B blood group gene, probably because they were founded by a small migrant population.

Small populations will also tend to fix bad mutations. For example, the 300 descendants of the 15 people shipwrecked on Tristan da Cunha included 4 homozygotes for the rare condition *retinitis pigmentosa*.

It is strange indeed that modern evolutionists are claiming that evolution takes place in small populations! Devolution perhaps, evolution no!

(2) *Mutation.* Mutations do not primarily *affect* variation, but *affect* (or *assault*!) the organism's viability. Genes have multiple effects of the most diverse kinds. Thus it may chance that one component of a mutant gene's action is advantageous in some deleterious environment, but the net (or overall) effect will still be a lowering of the organism's viability. However if the lowering of viability due to the mutation is less than the lowering due to some other factor against which the advantageous component provides protection then, of course, the mutant will spread in the population (by natural selection). This is the case with sickle-cell anaemia.

In certain deleterious (malarial) environments the death rate from anaemia is less than that from malaria. But this is really a perverse result—if this is evolution then evolution is death on an installment plan. Genic compensation, which increases the proportion of foetal haemoglobin in the adult (up to 30%), may reduce the anaemia considerably, but this does not mean that the mutation itself is no longer deleterious. It remains unchanged and the evolutionary end will still be death. Genic compensation simply allows more installments.

(3) *Unbalanced recombination.* Recombination can produce the same result as mutation. Through breeding programs, man can, through the selection of particular

genomes, 'improve' or 'enhance' the functioning of a particular mechanism (e.g. egg production; milk production, etc.), but this is again a perverse result for the organisms concerned. Each mechanism interacts with all the rest and where there are no corresponding adjustments in all the other mechanisms, the organism's overall viability in its environment is reduced. In many cases such adjustment would not even be possible. Most of man's breeds of animals are monstrosities which, although useful to man, could never survive on their own.

It is evident that extreme environments can have a similar effect in nature. In an extreme environment organisms with some grossly enhanced (or reduced) feature may persist because the concomitant lowering of viability is less than that caused by an environmental factor against which the enhanced (or reduced) feature provides protection (e.g. wingless flies on windswept islands).

In all these and similar cases, the imperfections are easily recognized as degenerations from perfection. They can not be confused with intermediate steps on an evolutionary road to perfection.

For helpful discussions of imperfection see also Cain²⁰⁴ and Cody²⁰⁵

Appendix Nine: Evolution and Optimal Design

Historically the optimal design approach developed within creationism, but latterly some evolutionists have adopted it (e.g. Cain²⁰⁶). The question we must ask is, 'Is this a valid evolutionist interpretation?' The answer to this question is definitely NO!

Criticism One. Natural Selection is an Optimization Process.

The evolutionist argument has been as follows: 'If natural selection has produced the remarkable and complex adaptations that we know exist, then how could such a powerful force fail to perfect any imperfectly adapted part or organ?' In other words the argument is circular—it is assumed that natural selection is the mechanism by which optimal adaptation is attained. But that is hardly a valid approach.

Natural selection is an optimization method, specifically one of the methods of a class known as *steepest ascent methods*.²⁰⁷ Such a trial-and-error method is bound to produce a series of modifications or subforms before the optimal result is eventually obtained. Indeed the charge of the mathematicians (Ellacott,²⁰⁸ Moorhead and Kaplan²⁰⁹ *passim*) has been that the random ascending paths which natural selection follows would require vastly more time to produce the known results than evolutionists actually have available. Worse still, such a slow process could not avoid being completely nullified by random losses. Be that as it may, evolutionists must—if they wish to maintain their theory of natural selection—expect to find in the living world, or in fossils, evidence of stages in the optimization processes (Futuyma²¹⁰). No such stages have ever been found.

Criticism Two. The Optimal Results were Original

When applied to the known phenomena, the evolu-

tionists' interpretation entails that, without anything further, natural selection acting on random variations, came up with optimal solutions to the relevant problems of life *AT THE VERY START* of the evolution of every type of part, organ or organism. But how can this be? It is as if it is *known in advance* what evolution is aiming at, as if the optimal results are pre-determined. But modern evolutionary theories explicitly exclude such possibilities.

A single example will highlight the problem.

Evolutionists make much of the universality of the eukaryotic cell structure without discerning the problem it poses. The clear implication is that the first single-celled protist (whether algal or protozoan does not matter) had been tossed up with a structural plan which has proved to be optimal for all the vast range of its descendants—syncytial, colonial, metaphyten and metazoan. But how could natural selection do this, an agent, after all, which is not noted for foresight, an agent which could only select in relation to the *then existing* conditions and demands? Natural selection could take no notice of all the demands placed on the vast range of eukaryotic types that *now* exist by the vast range of environments they *now* exploit.

The only alternative is to assume that a vast range of earlier, less optimal types has now been reduced to uniformity. But this is to admit such a phenomenal amount of convergence that evolution becomes a *reductio ad absurdum*. Scylla and Charybdis indeed!

Criticism Three—Adaptation leads to natural selection not vice versa.

This third criticism is simply to underscore the superficiality of the evolutionist discussions of 'adaptation'. Adaptation, as a *process*, is 'the alteration of an organism so as to bring it into a correct relationship to its environment.' Before any adaptation (state or process) can be understood both the organism (as an adaptable entity with the intrinsic ability to adapt) and the environment (to which it adapts) must first be assessed in their own right. Both the organism *and* the environment must be 'fit', or adapted, to each other to start with. The environment must be 'fit' in the sense that the existing law order, properties of natural elements and compounds, etc., must be such that the adaptations of organisms are possible.^{211,212} The law-order and properties are original: they are obviously not themselves the product of the evolutionary process acting on the organism!

In reality all organisms are already adapted; all natural selection can do is enable organisms to *maintain* their state of adaptation, enabling them to keep up with a changing environment. The idea that natural selection (i.e. the environment!) can improve or originate adaptations—especially convergent ones—is something to which no evolutionist has ever yet lent any plausibility. It is really the Marxist error that if you improve the environment, then people will automatically change to fit it and so become better!

It is clearly no exaggeration to say that a belief in optimal design and a belief in evolution are completely incompatible.

References

- ¹Patterson, C., 1978. Evolution. British Museum (Natural History).
- ²Darwin, C.R., 1871. The origin of species, sixth edition. Issued 1971 in the Everyman's University Library, J.M. Dent and Sons, Ltd. P. 436 and p. 32.
- ³Dobzhansky, Th., 1955. Evolution, genetics, and man. John Wiley and Sons.
- ⁴Kitts, D.B., 1974. Paleontology and evolutionary theory. *Evolution* 28(3):458-472. See especially p. 466.
- ⁵Reference 1, p. 133.
- ⁶Futuyma, D.J., 1979. Evolutionary Biology. Sinauer Associates.
- ⁷Villee, C.A., W.F. Walker, and R.D. Barnes, 1978. General Zoology, fifth edition. W.B. Saunders Co.
- ⁸Reference 1, p. 189.
- ⁹Ayala, F.J., and J.W. Valentine, 1979. Evolving: the theory and processes of organic evolution. Benjamin/Cummings Publishing Co.
- ¹⁰de Beer, G.R., 1962. Embryos and ancestors. Oxford University Press.
- ¹¹Popper, K.R., 1961. The poverty of historicism, second edition. Routledge and Kegan Paul.
- ¹²Zangerl, R., 1948. The methods of comparative anatomy and its contribution to the study of evolution. *Evolution* 2(4):351-374.
- ¹³Jardine, N., 1969. The observational and theoretical components of homology. *Biological Journal of the Linnean Society* 1, 327-361.
- ¹⁴Aw, S.E., 1976. Chemical evolution: an examination of current ideas. University Education Press, Singapore. P. 99.
- ¹⁵de Beer, G.R., 1958. The Darwin-Wallace Centenary. *Endeavour* 17, 61-76.
- ¹⁶Young, J.Z., 1971. An introduction to the study of man. Oxford University Press.
- ¹⁷Thompson, W.R., 1956. Introduction to (a new printing of) the origin of species, by C.R. Darwin. J.M. Dent and Sons. Pp. vii-xxiv.
- ¹⁸Newman, H.H., 1932. Evolution, genetics, and eugenics, third edition. University of Chicago Press.
- ¹⁹Reference 10, p. 116.
- ²⁰Villee, C.A., W.F. Walker, and F.E. Smith, 1963. General zoology, second edition. W.B. Saunders Co.
- ²¹Moody, P.A., 1966. Evolution, organic (In) McGraw-Hill encyclopedia of science and technology. Vol. 5, pp. 130-133.
- ²²Reference 10.
- ²³Reference 2.
- ²⁴Reference 6, pp. 434-437.
- ²⁵Owen, R., 1849. On the nature of limbs. A discourse. John Van Voorst.
- ²⁶Owen, R., 1843. Lectures on the comparative anatomy and physiology of the invertebrate animals. Vol. 1. Longmans Brown, Green, and Longmans.
- ²⁷Reference 2, pp. 184, 191, 414, 415, 420 & 453.
- ²⁸Darwin C.R., 1871. The descent of man and selection in relation to sex. Vol. 1. John Murray.
- ²⁹Kimball, J.W., 1974. Biology, third edition. Addison-Wesley Publishing Co.
- ³⁰Medawar, P.B., 1961. Critical notice: the phenomenon of man by Pierre Teilhard de Chardin. *Mind* 70(277):99-106.
- ³¹Smith, J.M., 1969. The status of neo-Darwinism (In) Toward a theoretical biology. 2. Sketches. (C.H. Waddington Ed.) Edinburgh University Press. Pp. 82-89.
- ³²Haldane, J.B.S., 1927. The comparative genetics of colour in rodents and carnivora. *Biological Reviews* 2(3):199-212.
- ³³Boyden, A., 1935. Genetics and homology. *Quarterly Review of Biology* 10, 448-451.
- ³⁴Reference 6, p. 143.
- ³⁵Jones, A. J., 1982. The genetic integrity of the "kinds" (baramins): a working hypothesis. *Creation Research Society Quarterly* 19(1):13-18.
- ³⁶Harland, S.C., 1936. The genetical conception of the species. *Biological Reviews* 11(1):83-112.
- ³⁷de Beer, G.R., 1971. Homology. An unsolved problem. Oxford University Press.
- ³⁸Wilson, E.B., 1895. The embryological criterion of homology. (In) Biological lecture, 1894, Marine Biological Laboratory, Wood's Hole. Pp. 101-124.
- ³⁹de Beer, G.R., 1938. Embryology and evolution (In) Evolution: essays on aspects of evolutionary biology presented to Professor E.S. Goodrich on his seventieth birthday. (G.R. de Beer Ed.) Clarendon Press.
- ⁴⁰Reference 37, p. 16.
- ⁴¹*Ibid.*; also p. 1.
- ⁴²Blackwelder, R.E., 1967. Taxonomy. A text and reference book. John Wiley.
- ⁴³Reference 28, pp. 20 & 21.
- ⁴⁴Cain, A.J., 1964. The perfection of animals. (In) Viewpoints in biology (J.D. Carthy and C.L. Duddington Eds.) Butterworths. Pp. 36-63.
- ⁴⁵Barbeau, D.W., 1967. The role of the pinna in human localization. *Proceedings of the Royal Society B*. 163 (1011):158-180.
- ⁴⁶Goodrich. E.S., 1930. Studies on the structure and development of vertebrates. 2 volumes, re-issued by Dover, 1958.
- ⁴⁷Dullemeijer, P., 1971. Comparative ontogeny and craniofacial growth. (In) Cranio-facial growth in man. (Moyers and Krogman Eds.) Pergamon Press. Pp. 45-75.
- ⁴⁸Parker, T.J., and W.A. Haswell, 1962. A textbook of zoology Vol. 2. (Seventh ed. by A.J. Marshall.) Macmillan.
- ⁴⁹Reference 7, pp. 327-329.
- ⁵⁰White, F.N., 1976. Circulation. (In) Biology of the Reptilia (C. Gans Ed.) Vol. 5. Academic Press. Pp. 275-334.
- ⁵¹Reference 2, p. 109.
- ⁵²Tyndale-Biscoe, C.H., 1973. Life of marsupials. Edward Arnold.
- ⁵³Schmidt-Nielsen, K., 1979. Animal physiology: adaptation and environment, second edition. Cambridge University Press.
- ⁵⁴Reference 52, pp. 9-12.
- ⁵⁵Reference 53, pp. 189 & 190.
- ⁵⁶Reference 44.
- ⁵⁷Reference 44.
- ⁵⁸*Ibid.*
- ⁵⁹Reference 16.
- ⁶⁰Elias, H., 1955. Liver morphology. *Biological Reviews* 30(3):263-310.
- ⁶¹Elias, H., 1955. Embryonic diversity leading to adult identity: the early embryology of the liver of vertebrates (a preliminary report). *Adatomischer Anzeiger* 101, 153-167 (13/15).
- ⁶²Haeckel, E.H.P.A., 1866. *Generelle Morphologies der Organismne*. Berlin.
- ⁶³Cohen, J., 1967. Living embryos. An introduction to the study of animal development, second edition. Pergamon Press.
- ⁶⁴*Ibid.*, p. 64.
- ⁶⁵Reference 44, pp. 57 & 58.
- ⁶⁶Wasmann, E., 1909. Evolution, Kegan, Paul. Trench Truber, and Co.
- ⁶⁷Vavilov, N.I., 1922. The law of homologous series in variation. *Journal of Genetics* 12, 47-89.
- ⁶⁸Berg, L.S., 1926. Nomogenesis: or evolution determined by law. Constable.
- ⁶⁹Clark, W.E. Le Gros, 1934. Early forerunners of man. Bailliere, Tindall, and Cox.
- ⁷⁰Wallis, W.D., 1931. The structure of prehistoric man (In) The making of man. Modern Library. Pp. 69-75.
- ⁷¹Romer, A.S., 1949. (In) Genetics, paleontology, and evolution (G.S. Jepson Ed.) Princeton University Press. P. 115.
- ⁷²Zuckerman, S., 1951. Morphological series of hominid remains. *Journal of the Royal Anthropological Institute* 81, 57.
- ⁷³Wood Jones, F., 1953. Trends of life. Arnold.
- ⁷⁴Lawrence, G.H.M., 1951. Taxonomy of vascular plants. Macmillan. Pp. 102 & 103.
- ⁷⁵Russell, L.S., 1960. (In) Evolution: its science and doctrine. (T.W.M. Cameron Ed.) University of Toronto Press. P. 10.
- ⁷⁶Kerkut, G.A., 1962. Implications of evolution. Pergamon Press. Pp. 152, 153, & 157.
- ⁷⁷Keosian, J., 1960. On the origin of life. *Science* 131 (3399):479-482.
- ⁷⁸Andrews, H.N., 1961. Studies in paleobotany, John Wiley and Sons. Pp. 159, 312, 315, (398-402).
- ⁷⁹Nursall, J.R., 1962. On the origin of the major groups of animals. *Evolution* 16(1):118-123.
- ⁸⁰Hardy, A.C., 1965. The living stream. Collins. Pp. 119-202.
- ⁸¹Reference 44, pp. 51-54.
- ⁸²Marshall, N.B., 1971. Explorations in the life of fishes. Harvard University Press. Pp. 100-168.
- ⁸³Reference 52, p. 6.
- ⁸⁴Short, A.R., 1943. Modern discovery and the Bible. Inter-Varsity Fellowship.
- ⁸⁵Shute, E., 1961. Flaws in the theory of evolution. Temside Press.
- ⁸⁶Howe, G.F., 1970. Paleobotanical evidences for a philosophy of Creationism (In) Why not Creation? (W.E. Lammerts Ed.) Creation

Research Society Books, Norcross, Georgia. Pp. 230-242.

- ⁸⁶Howe, G.F., 1971. Homology, analogy, and creative components in plants. (In) *Scientific studies in special Creation* (W.E. Lammerts Ed.) Baker Book House. Pp. 243-257.
- ⁸⁷Woodmorappe, J., 1978. The cephalopods in the creation and the universal deluge. *Creation Research Society Quarterly* 15(2):94-112.
- ⁸⁸Reference 2, pp. 175 & 190.
- ⁸⁹Reference 6, pp. 113 & 114.
- ⁹⁰Tiegs, O.W., and S.M. Manton, 1958. The evolution of the Arthropoda. *Biological Reviews* 33(3):255-337.
- ⁹¹Reference 81, pp. 126 & 127.
- ⁹²Ibid., p. 158.
- ⁹³Reference 37, p. 15.
- ⁹⁴Reference 12.
- ⁹⁵Inglis, W.G., 1966. The observational basis of homology. *Systematic Zoology* 15, 219-228.
- ⁹⁶Jones, A.J., 1971. The nature of evolutionary thought. *Creation Research Society Quarterly* 8(1):44-49.
- ⁹⁷Polanyi, M., 1958. Personal knowledge. Also 1967. The tacit dimension. Both Routledge and Kegan Paul.
- ⁹⁸Owen, R., 1847. Report on the archetype and homologies of the vertebrate skeleton. Reports of the British Association for the Advancement of Science, 1846, pp. 169-340. See especially p. 175. Also 1848. On the archetype and homologies of the vertebrate skeleton. John van Voorst, London.
- ⁹⁹Saint Hilaire, E.G., 1818. *Philosophie anatomique des organes respiratoires*. Mequignon-Marvis, Paris. Pp. xxv-xxviii.
- ¹⁰⁰Reference 95.
- ¹⁰¹Whewell, W., 1847. The philosophy of the inductive sciences, founded upon their history, new edition. 2 volumes. John W. Parker, London. Pp. 486 et seq.
- ¹⁰²Pantin, C.F.A., 1954. The recognition of species. *Science Progress* 42, 587-598.
- ¹⁰³Pantin, C.F.A., 1968. The relations between the sciences. (A.M. Pantin and W.H. Thorpe Eds.) Cambridge University Press. Pp. 77 et seq.
- ¹⁰⁴Polanyi, 1958. Personal knowledge. Routledge and Kegan Paul. P. 122.
- ¹⁰⁵Thompson, W.R., 1962 Evolution and taxonomy. *Studia Entomologica* 5, 549-570.
- ¹⁰⁶Greene, M., 1966. The knower and the known. Faber and Faber.
- ¹⁰⁷Greene, M., 1967. Biology and the problem of levels of reality. *The New Scholasticism* 41, 427-449.
- ¹⁰⁸Dalcq, A.M., 1968. Form and modern embryology. (In) *Aspects of form* (L.L. Whyte Ed.) second edition. Lund Humphries, London. Pp. 91-120.
- ¹⁰⁹Lorenz, K.Z., 1968. The role of gestalt perception in animal and human behavior. (In) *Aspects of form*, Reference 108.
- ¹¹⁰Reference 105, pp. 565 & 566.
- ¹¹¹Jones, A.J., 1972. Developmental studies and speciation in cichlid fish. Ph.D. Thesis, Dept. of Zoology and Comparative Physiology, Birmingham University, Birmingham, England.
- ¹¹²Reference 101, p. 494.
- ¹¹³Parker, G.E., 1980. *Creation: the facts of life*. C.L.P. Publishers. Pp. 1-17.
- ¹¹⁴Clark, R.E.D., 1972. Creator God or cosmic magician. (In) *Symposium on Creation*, volume 4 (D.W. Patten Ed.) Baker Book House. Pp. 108-122.
- ¹¹⁵Clark, M.E., 1976. Our amazing circulatory system . . . by chance or creation? I.C.R. Technical Monograph. C.L.P.
- ¹¹⁶Jaki, S.L., 1974. Science and creation. Also 1978. The road of science and the ways to God. Both Scottish Academic Press.
- ¹¹⁷Reference 114.
- ¹¹⁸Dewar, D., 1931. Difficulties of the evolution theory. Edward Arnold.
- ¹¹⁹Dewar, D., 1957. The transformist illusion. DeHoff Publications. Pp. 246-248 and 274-280.
- ¹²⁰Reference 111.
- ¹²¹Ibid.
- ¹²²Howe, G.F., 1971. Reference 86.
- ¹²³More, H., 1655. An antidote against atheism or, An appeal to the natural faculties of the mind of man whether there be not a God, second edition. W. Morden, Cambridge.
- ¹²⁴Ray, J., 1704. The wisdom of God manifested in the works of the creation, fourth edition. S. Smith, London.
- ¹²⁵Paley, W., 1903. Natural theology: or, Evidences of the existence and attributes of the Deity, collected from the appearances of nature, sixth edition. R. Faulder, London. This work has been reprinted by St. Thomas' Press, Houston, 1972.
- ¹²⁶Cuvier, G., 1817. *Le regne animal distribue d'apres son organisation*. Deterville, Paris.
- ¹²⁷Bell, C., 1833. The hand: its mechanism and vital endowments as evincing design, second edition. William Pickering, London.
- ¹²⁸Wells, G.P., 1976. The early days of the S.E.B. (In) *Perspectives in experimental biology* (P.S. Davies Ed.) Pergamon Press.
- ¹²⁹Reference 17, p. xx.
- ¹³⁰Cohn, D.L., 1954. Optimal systems I: the vascular system. *Bulletin of Mathematical Biophysics* 16, 59-74.
- ¹³¹Rashevsky, N., 1960. Mathematical biophysics, third edition, volume II. Dover Publications.
- ¹³²Rosen, R., 1962. The derivation of D'Arcy Thompson's theory of transformations from the theory of optimal design. *Bulletin of Mathematical Biophysics* 24, 279-290.
- ¹³³Rudwick, M.J., 1964. The inference of function from structure in fossils. *British Journal for the Philosophy of Science* 15, 27-41.
- ¹³⁴Dullemeijer, P., 1968. Some methodology problems in a holistic approach to functional morphology. *Acta Biotheoretica* 18, 203-214. Also Reference 47.
- ¹³⁵Reference 115.
- ¹³⁶Reference 44.
- ¹³⁷Reference 114.
- ¹³⁸Jones, A.J., 1972. A general analysis of the Biblical kind (min). *Creation Research Society Quarterly* 9(1):53-57.
- ¹³⁹Strickling, J.E., 1980. After their kind and in His image. *Creation Research Society Quarterly* 17(2):106.
- ¹⁴⁰Jones, A.J., 1972. Boundaries of the min: an analysis of the Mosaic lists of clean and unclean animals. *Creation Research Society Quarterly* 9(2):114-123.
- ¹⁴¹Jones, A.J., 1973. How many animals in the Ark? *Creation Research Society Quarterly* 10(2):102-108.
- ¹⁴²Lammerts, W.E., 1970. The Galapagos Island finches (In) *Why not creation?* (W.E. Lammerts Ed.) Presbyterian and Reformed. Pp. 354-366.
- ¹⁴³Howe, G.F., 1979. Biogeography from a creationist perspective 1. *Creation Research Society Quarterly* 16(1):38-43.
- ¹⁴⁴Ibid.
- ¹⁴⁵Tyndale-Biscoe, C.H., 1973. Life of marsupials. Edward Arnold. P. 26.
- ¹⁴⁶Reference 111.
- ¹⁴⁷Dales, R.P., 1967. Annelids, second edition. Hutchinson. P. 64.
- ¹⁴⁸Van Tyne, J., and A.J. Berger, 1959. Fundamentals of ornithology. John Wiley and Sons. Pp. 368 (376).
- ¹⁴⁹Reference 17, p. xvi.
- ¹⁵⁰Reference 141.
- ¹⁵¹Jones, A.J., 1982. The genetic integrity of the 'kinds' (baramin)—a working hypothesis. *Creation Research Society Quarterly* 19(1):13-18.
- ¹⁵²Siegler, H.R., 1978. A creationists' taxonomy. *Creation Research Society Quarterly* 15(1):36-38 & 11.
- ¹⁵³Morris, H.M., 1876. The Genesis record. Baker Book House. Pp. 62- & 71.
- ¹⁵⁴Jones, A.J., 1970. Myth and science in evolutionary thought. I. The unmasking of evolutionary thought. (2 parts) Private edition of 500 copies.
- ¹⁵⁵Reference 1523.
- ¹⁵⁶Ancil, R.E., 1980. A proposal for a new creationist discipline. *Creation Research Society Quarterly* 17(2):123-127.
- ¹⁵⁷Marsh, F.L., 1941. Fundamental biology. Privately published. P. 100.
- ¹⁵⁸Marsh, F.L., 1947. Evolution, creation, and science, second revised edition. Review and Herald Publishing Association. (First edition 1944.) Pp. 174 & 175. See also Reference 157.
- ¹⁵⁹Reference 152.
- ¹⁶⁰Marsh, F.L., 1973. Review of Siegler's *Evolution or degeneration— which?* (Reference 167.) *Creation Research Society Quarterly* 10(2):125-127.
- ¹⁶¹Reference 152.
- ¹⁶²Reference 156, p. 125.
- ¹⁶³Patterson, C., 1980. Cladistics. *Biologist* 27(5):234-240.
- ¹⁶⁴Charig, A., 1981. Cladistics: a different point of view. *Biologist* 28(1):19 & 20.
- ¹⁶⁵Reference 157.
- ¹⁶⁶Marsh, F.L., 1957. Life, man, and time. Pacific Publishing Associa-

- tion. P. 118.
- ¹⁶⁷Siegler, H.R., 1972. Evolution or degeneration—which? Northwestern Publishing House. See also Reference 152, p. 37.
- ¹⁶⁸Reference 156, p. 124.
- ¹⁶⁹Reference 138.
- ¹⁷⁰Reference 151.
- ¹⁷¹Newman, H.H., 1915. Development and heredity in heterogenic teleost hybrids. *Journal of Experimental Zoology* 18, 511, 576.
- ¹⁷²Russel, A., 1939. Pigment inheritance in *Hundulus-Scomber* hybrids. *Biological Bulletin* 77, 423-431.
- ¹⁷³Reference 154.,
- ¹⁷⁴Reference 111.
- ¹⁷⁵Reference 138.
- ¹⁷⁶*Ibid.*
- ¹⁷⁷Reference 139.
- ¹⁷⁸Dooyeweerd, H., 1953-1958. A new critique of theoretical thought. 4 volumes. Presbyterian and Reformed.
- ¹⁷⁹de Wit, J.J.D., 1965. The impact of Herman Dooyeweerd's Christian philosophy upon present day biological thought. (In) *Philosophy and Christianity*. J.H. Kok N.V., Kampen. Pp. 405-433.
- ¹⁸⁰de Wit, J.J.D., 1965. A new critique of the transformationist principle in evolutionary biology. J.H. Kok.
- ¹⁸¹Reference 141.
- ¹⁸²Reference 111.
- ¹⁸³Reference 133.
- ¹⁸⁴Newton, B., 1979. Monsters and men. Dunestone Printers Ltd.
- ¹⁸⁵Reference 6, p. 162.
- ¹⁸⁶Gould, S.J., and N. Eldredge, 1977. Punctuated equilibria: the tempo and mode of evolution reconsidered. *Paleobiology* 3, 147.
- ¹⁸⁷Reference 164.
- ¹⁸⁸Reference 1, p. 149.
- ¹⁸⁹Reference 6, p. 11.
- ¹⁹⁰Reference 1, p. 149.
- ¹⁹¹Mills, G.C., 1968. The evolutionary significance of the species variation in cytochrome c structure. *Journal of the American Scientific Affiliation* 20(2):52-54.
- ¹⁹²Edsall, J.T., 1968. (In) *Structural chemistry and molecular biology* (A. Rich and N. Davidson Eds.) W.H. Freeman. P. 88.
- ¹⁹³Reference 113, pp. 20-22.
- ¹⁹⁴Riggs, A.F., 1966. Respiratory pigments. McGraw-Hill Encyclopedia of Science and Technology, Volume 11, pp. 510-513.
- ¹⁹⁵Reference 7, p. 657.
- ¹⁹⁶Reference 113, p. 20.
- ¹⁹⁷Reference 14, p. 106.
- ¹⁹⁸*Ibid.*, pp. 79 & 96.
- ¹⁹⁹Paul, J., 1967. Cell biology, second edition. Heinemann Educational Books.
- ²⁰⁰Merritt, R.B., 1972. Geographic distribution and enzymatic properties of lactate dehydrogenase allozymes in the fathead minnow *Pimephales promelas*. *American Naturalist* 106(948):173-184.
- ²⁰¹Prosser, C.L., 1965. Levels of biological organization and their physiological significance. (In) *Ideas in modern biology* (J.A. Moore Ed.) Natural History Press, New York. Pp. 357-390.
- ²⁰²Reference 14,
- ²⁰³Reference 53, pp. 68 *et seq.*
- ²⁰⁴Reference 44, pp. 56-58.
- ²⁰⁵Cody, M.L., 1974. Optimization in ecology. *Science* 183 (4130):1156-1164.
- ²⁰⁶Reference 204.
- ²⁰⁷Ellacott, S.W., 1977. Mathematical problems in the evolutionary model. N.S.A. Report. London.
- ²⁰⁸*Ibid.*
- ²⁰⁹Moorehead, P.S., and M.M. Kaplan, (Eds.) 1967. Mathematical challenges to the Neo-Darwinian interpretation of evolution. Wistar Institute Press.
- ²¹⁰Reference 6, pp. 28, 29, and 434-437.
- ²¹¹Clark, R.E.D., 1977. Creation and the argument from design. *Faith and Thought* 104(2):99-108.
- ²¹²Clark, R.E.D., 1978. God beyond nature. Pacific Press Publishing Association.

PROFESSOR FRICK—AND THE THEORY IN STONE

HILTON HINDERLITER*

This is an analogy to the development and present status of evolution. Please read the story of Prof. Frick, in the left-hand column, all the way through. Then go back and re-read while following, according to the reference number, the point-by-point explanation in the right-hand column.

Once upon a time, in the small town of Academia, there was a professor of economics named Frick. Though he was not a stone-gatherer by training¹ Prof. Frick developed a strong desire to collect rocks. So one bright, sunny afternoon he trekked into the neighborhood hills, and came back with three outstanding specimens: one was bright blue, with jagged edges; another was dull gray, and smooth all over; and the third was grayish-blue, being moderately rough in texture. Relaxing on his patio, Frick began to exercise his imagination; and before long he had developed a new theory about the origin of rocks. Immediately he called together the local populace, and standing before them in the town square he began, "I have discovered that all rocks were originally gray and smooth, with blueness and sharpness developing simultaneously over long periods of time—and all by the action of natural processes." Then he continued into a lengthy discourse, by going on to say, "Just how, my friends, do you suppose that gray smooth rocks changed into blue sharp ones? I am going to explain to you today processes whereby this may have occurred."² No one in the group questioned

Note: the term *evolution* is used here to mean the development of all life forms from a common ancestor, and that from non-living materials, all by the spontaneous action of natural processes. In contrast, *creation*—although it allows for variation, *within kinds*—holds that life in its various forms was supernaturally brought into being, as was also the matter and organization of the universe in its totality. For a proof that scientific studies require the acknowledgement of supernatural events, see appendix I of *Does it belong here?—An Open Letter to Anyone Who Declares Evolution to be more Scientific than is Creation*, also by Hilton Hinderliter. Itemized references to the following points can be supplied; but they are omitted in this paper, for the sake of brevity.

1) The recognized founders of modern evolutionary theory were not acting in the fields for which they were qualified. Lyell was an attorney; Darwin eventually graduated from theological school, after having unsuccessfully tried classics and medicine.

2) Contemporary science textbooks typically use this approach; base the argument on the *assumption* of evolution; and imply that any evolutionary process that *might* have happened, *must* have happened.

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why the other possible orders in which the rocks could just as well have been arranged were not mentioned, since the people of that area had certain common, underlying beliefs.³—call them mental biases, if you will. For one thing, they considered themselves to be quite intellectual; for another, their Civil War allegiances lay with the North⁴. Hence they would give no ear to a possibility of dullness replacing sharpness; and likewise they rebelled at any thought of gray superseding blue! So at the close of Fricks' oration the hearers cried "brilliant", and rose to give him a standing ovation.

When the applause finally subsided, a lone voice was heard from the periphery of the jubilant mass. It was that of a young man sitting on the grass, holding in his hand a book about science and logic—which he had been studying while the crowd gathered to hear Frick. "I noticed, sir, that you *stated* that rocks had developed according to your theory⁵, but you never *proved* that they had done so. Is it valid to build your argument on the mere assumption of that which you claim to show in the end? Even if rocks *could have* changed⁶ as you say they did, how do you *know* they must have? By the rules of logic, if your theory is to be at all convincing, you must show that all other possible schemes could not be correct.⁷ As the startled professor became noticeably reddened, the youth added, "Furthermore, if you wish to classify your theory as *scientific*, must you not subject it to test? Has anyone ever observed a rock changing as you say they have⁸? And can you help us to know whether your theory is right or wrong—by describing types of evidence which, if found, would *falsify* it⁹?" The professor really had no answer to any of this, but he thought of a way of escape: he turned dramatically away from the young fellow and quipped, "What does *he* know about rocks?" It worked—the crowd roared. And the new theory was on its way to fame.

Soon a school was founded; and students came from far and wide to learn from the real expert, Prof. Frick. First they were taught that the Frick theory was the only correct and reasonable explanation¹⁰ for the origin of different rock types. Then they were sent out into the hills in search of data. Along the way they encountered many samples which would have troubled anyone not trained in Frickology. But they were by that time *sure* that any evidence inconsistent with the theory could not be trusted¹¹. All smooth blue rocks—which they knew shouldn't exist—must have been filed from previous-jagged forms, so they reasoned; and gray sharp ones must have been only painted gray¹². For a long time nobody even bothered to check the credibility of such rationalizations, but one busy day a student dropped a sharp gray stone, and it broke into pieces. To her surprise, there was no blue color on the inside: nor was there any sign of paint on the outside¹³. This fact bothered her for a while, but she was embarrassed at the thought of mentioning it to the others, who knew it couldn't mean anything. And soon she forgot about it herself.

As time went on, and many rock samples piled up outside the laboratory buildings, other oddities began to puzzle some of the students. It had been anticipated that

3) Even persons labelled *scientist* have biases—especially on the subject of *origins*.

4) a) Some people have a strong tendency, when they don't know the answer to some question, to pretend that they do know—due to intellectual conceit alone. Many things now taught as *known* are only guesses.

b) The denial of supernatural events is nothing but a mental bias. It certainly could never be proven. (See also the note above.) If one's meaning of the word *science* involved the acquisition of *truth*, and if supernatural events were involved in our origin, then it surely would not be scientific to deny reality, by refusing to consider the possibility that such may be occurred. On the other hand, it is widely known that some of the outspoken founders of evolution were desirous of explaining how the universe could have come into being without the act or purpose of a Designer; that is, their bias was obviously atheistic. Although it is by no means true that all who now accept evolution are motivated by atheism, there are still those who use evolutionary fantasies to convince others that there is no reason behind our existence. It is easy to see, however, that such persons are not talking science. There is no detail of a bone, for example, that implies that it had no *reason* for existing—that it was merely the result of chance.

5) For a sample of this from a recent textbook, see *Does it belong here?*

6) It cannot even be said that evolution *could have* occurred (much less that it did occur). Both science (thermodynamics and probability) and logic (as with the inability to explain the evolution of complex structures as in the bombardier beetle) amount to impassable roadblocks to evolution.

7) It is logically impossible to *disprove* creation. *Appearance of age* could well have been characteristic of creation. (Could a created tree have had growth rings? Would that prove it had grown for many years?) And, although neither this author nor any of the creationists he has known claim it to be true, fossils could have been created in place. Any argument against this possibility (such as "Surely you don't think God would do such a thing to trick us") are purely religious in nature—and not theologically sound, at that. And nowadays it is rarely considered that the creation of a detailed earth is well within the ability of One who made every electron in the universe to be just like every other electron, etc.

8) Some things have been called examples of evolution in progress (such as peppered moths, fruit flies, and antibiotic-resistant bacteria). However, these have been shown to be no support for evolution in the larger sense, at all. And the evolution of one kind of organism to a significantly different kind has been admitted as being outside the realm of human observability—because of the vast time said to have been involved.

9) For more on *falsifiability*, see *Does it belong here?*

10) The reader is challenged to show that the way students typically are introduced to evolution is not outright *indoctrination*.

11) When informed of findings which contradict the *geologic column*, a guide at Dinosaur National Monument declared, "That just couldn't be!" (What a scientific attitude: discounting the facts on the basis of the theory!) In radiometric dating, samples giving ages not in agreement with *accepted values* have been merely discarded as being *contaminated*.

12) a) The first answer to the finding of human and dinosaur footprints in the same strata (which defies evolutionary belief that 70 million years separated the two) was that someone *carved* the footprints.

b) When rock layers were found in orders *opposite* to that in which they were supposedly deposited, it was said that *overthrusting* had pushed older rock on top of younger, with erosion washing away the uppermost young layers—so that it only *looked like* they were in the wrong order.

13) a) Digging under the bank of the Paluxy River showed that the human footprints had not been carved. The only excuse left was that "some dinosaurs must have had feet like people!" (Tell that to Mary Leakey: she may be tracking dinosaurs in East Africa!)

b) The vast areas that would have had to slide to get Chief Moun-tain where it is (in Glacier National Park) pose grave problems in rock mechanics, neither can there be found any scratches or rubble that would have resulted from such sliding. Pollen from highly-developed plants, found in the lower layers of the Grand Canyon, bring the Geologic Column crashing to the ground; and the publication of these findings cost one man his academic reputation (truth isn't always welcomed with open arms!)

specimens of all types along the progression from gray smooth to blue rough would be found—but such had not happened. Oh, for a while it was claimed that they had been found. Some small pieces of minimal roughness were claimed to be intermediate in color between gray and blue. But the truth was that some of them were so dim in hue that their color was only existent in they eye of the beholder. In fact, when more accurate methods of color determination were discovered, it was found that the researchers were mistakenly seeing colors that they had only *hoped* to find¹⁴. And in some other cases the “missing pebbles” were learned to be dishonest fabrications¹⁵.

It was now true that even within Frickdom there was a lot of difference of opinion. Some were for ascribing all changes in rocks to pressure; others held that all changes were completely random. And the situation was not clarified by still others who put in, as their two bits’ worth, that: “Gradual change over vast periods of time is the way in which sudden change in the nature of rocks comes about”.

Finally matters reached the point that dyed-in-the-wool graduates of the school were admitting that intermediate forms had not been found, and likely never would be found.¹⁶ About the same time it was noted that, among stones subjected to the elements, blue color faded to gray, and sharpness wore down to smoothness. By this time Prof. Frick had gone on to his reward; so it was up to his progeny to provide explanations for the fact that things naturally happened opposite to the ways specified in the theory.¹⁷ The best that they could do was to contrive dating methods that would make it seem that oodles of time had been available—as they proclaimed: “Given enough time, anything can happen”. The trouble was, though, that time really worked against them. And worse yet, to make the vast-age-dating methods look consistent, they had to do some unfounded (and even unethical) manipulation of numbers; and at the same time they had to suppress dating methods which gave “young” ages.¹⁸ Oh, they did manage to put together a few specific scenarios, such as: “There is at least a small chance that a smooth rock could fall from a cliff, thereby breaking into pieces with sharp edges”. Few people, however, were satisfied by such attempts to sidestep contradictions between the theory and the evidence.¹⁹ As for discrepancies in color, the best which they could suggest was that: “Blue would now have faded to gray if there was no sunlight when the rocks were forming”.²⁰ But then an oak leaf was found encased in a gray rock; and even loyal Frickites were driven to ask: “How could a leaf have grown without sunlight?”²¹

Indeed, there was now much disarray beneath the facade of Frickianism. Some eminent Frickians were saying that once a smooth gray rock had suddenly flown into sharp blue ones; although, of course, nobody had even seen such a thing happen. And a noted astronomer was maintaining that the sharp blue rocks had fallen from the sky.

Not only was there dissention within the ranks of Frickianism, but significant numbers of students trained in the school itself were defecting.²² Some students were even setting up counterprograms of investigation,

14) *Missing links* have generally proven to be more the imagination of the finders than reality. Archaeopteryx was forcefully declared to have been the ancestor of birds, but it has since been found that birds existed at the same time, along with it. And the story of *ape men* has proved to be a comedy of errors. The ladder to humanity has had its rungs kicked out repeatedly. One tooth used to construct a half man—half ape creature turned out belonging to an *extinct pig* instead! Still, recent efforts of government-funded programs for studying fossils have religiously stated that they would consider no alternative to evolution. (Open-minded scientists, no?)

15) Piltdown Man was a deliberate fake; but the experts were so anxious to find ape-men that they were fooled by it for 41 years.

16) Numerous well-known evolutionists have lately admitted to the consistent *gaps* in the fossil record, and are trying to concoct new, *believable* varieties of evolutionary theory. Whereas the old versions had frogs changing gradually to princes over millions of years, the new have it happening in spurts!

17) Examples of evolutionary reasoning that science eventually discounted have abounded since the time of Darwin—including the inheritance of acquired characteristics, spontaneous generation, vestigial organs, the hope of finding homologous genes, etc.

18) The invention of radiometric dating came decades after the scheme called the *geologic column* (which is built totally on the assumption that evolution did occur) had reached the status of *dogma*. Hence the three major untestable suppositions involved in the dating calculations—constancy of decay rates, unimportance of transport phenomena, and the guessed values of initial isotopic abundance ratios (IIAR's)—were made to conform with evolution. When potassium-argon ages were calculated, the value of a crucial branching ratio was *fudged* to give agreement with uranium-lead ages. The assumed IIAR's for potassium-argon dating were later dealt a fatal blow by knowledge gained from space exploration. (By the way, this is the dating method on which all the ages of Richard Leakey's “People of the Lake” fossils depend.) The IIAR's for uranium-lead dating have, themselves, been scrutinized by researchers, and found to be untrustworthy. Then, too, ages computed for samples of *known* age—a simple check of the reliability of radiometric dating—have repeatedly missed by a mile! In addition to all the problems with radiometric dating, there are many other dating methods which give ages for the earth, solar system, etc in thousands of years (as opposed to millions or billions). Curiously the methods that yield young ages—though every bit as scientific as radiometric dating—are rarely mentioned in textbooks.

19) This is comparable to the *open systems* attempt to sidestep the second law of thermodynamics—and just about as impressive.

20) To allow for any ghost of a chance of life evolving from non-life, it must be *assumed* that earth's early atmosphere contained no free oxygen.

21) a) Studies of rock prove that the present amount of oxygen was in the atmosphere during *all* ages. By evolutionists' own admissions, this requires that life did *not* evolve on earth (the atheist's only hope are *little green men*!)

b) Equally demolishing to evolution is the study of *radiohalos*. A scientific analysis of these tiny rings in certain micas shows that the crust of the earth came into being (in solid form) in a time of a few minutes or less! (Uniformitarianists, try that one on for size!)

22) The Creation Research Society now numbers some 700 members with master or doctorate degrees in scientific discipline, essentially all of whom were taught evolution. Many (including the present author) had accepted it (having accepted the testimony of *experts*), until enlightened by evidence.

to get at the truth about rocks. Sensing the likely danger that the trickle would grow into a mighty current, the faithful disciples of Frick turned to last-ditch extremes: they announced that anyone who denied the credibility of the *theory in stone* was no scientist at all. Their articles solemnly declared that: "*All serious rock experts adhere to the theory of Frick*"—thus implying that anyone who dared to question the acclaimed theory was incompetent. This included even those who had been thoroughly brainwashed in the halls of Frickdom, but

who had later allowed the evidence to change their minds.

However, the winds of free investigation and discussion were bringing some fresh air into even the innermost recesses of Frickdom. Even the most loyal were admitting that the Frickian theory was untenable without serious amendment. So in due time, investigators of rocks, who still called themselves Frickians, were teaching that the gray and the blue rocks had existed together from the beginning. "And," they added, "that is what we have really been saying all along"!

PRINCIPLES OF CREATIONISTIC BIOLOGY

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Three principles which can be used as a basis for biological research in a Creationistic framework are discussed.

A great deal of effort has been expended over the past few years in reinterpreting old data and compiling new data in a creationist framework. However, it has been my feeling that this work has been hampered by the lack of well-stated principles on which to base creation science. The consequence of this has been apparent both on the internal and external levels. On the internal level the various papers are sometimes difficult to compile into a unified whole due to a lack of universal principles. On the external level, involving confrontation with evolutionists, it has been difficult to be taken seriously as they reject any Biblical authority and we have not had a set of scientific principles to fall back on.

In this paper I will suggest a set of principles which can form a unified base for research and provide a scientific foundation from which to approach evolutionists.

The General Principle of Creation

The general principle of creation can be stated as follows: Increasing levels of complexity of an organism requires increasing amounts and/or detail of information. This predicts that advancement from colonial grade to tissue grade,¹ for example, would require more genetic information to control the greater physiological complexity. This increase in information should be reflected in an increase in the amount of DNA per cell. Thousands of organisms have had the amount of DNA in their cells determined and an increase has been observed in the amount of DNA per cell as the organismic complexity increases.² It should be noted that this increase holds in the invertebrates but not in the vertebrates where frogs and amphiuma³ have more than two times and twenty six times respectively the DNA of man.⁴ Thus, the prediction based on DNA content does not seem to always hold within grades. To an extent this is to be expected as differences between dif-

ferent types of animals within grade may be largely due to regulatory differences. It has been proposed that the highly repetitive sequences of DNA which are not structural genes (satellite DNA or introns) may be involved in this regulation.⁵ Whether different types of organisms have widely differing amounts of satellite DNA has not been determined. At any rate why the frog needs so much more DNA than man is unclear.

The general principle of creation also holds for the origin of life and its precursors. Before a nucleotide or amino acid sequence can be put to biological use it must have information impressed upon it. The formation of biologically active proteins from amino acids is an increase in complexity or order in the sense that they are polymers and in that a specific sequence of amino acids is required. To obtain the required sequence requires the input of information. In living cells this information comes ultimately from the DNA which is also constrained to have a specified sequence to serve as a template for a viable protein. With the origin of the first functional DNA (or RNA according to one theory⁶) from a mix of chemicals the need for information input is even more pointed. All nucleotides in a cell are dextrarotatory. No method is known to randomly isolate a pure optically active compound. Information input is required. Even if a DNA of pure optically active nucleotides were formed it would only reflect that information superimposed on it. This is because information is not simply an increase in order but a specified increase in order.⁷ This is not to suggest that prebiotic creation proceeded by the paths suggested by the evolutionist with only the addition of directiveness. We can not know the details of this stage of creation any more than can the evolutionist. It does point out that any scheme must include informational input.

The Principle of Limited Variation

The general principle of creation deals with the progression to higher forms of life. As this is a historical event it must by nature be highly theoretical. Creation

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theory also makes predictions about organisms and their relationships in the present. To reflect this two additional principles should be stated. The first is the principle of limited variation, first stated by Dr. F.L. Marsh.⁸ This principle states that processes of biological variation can go no farther than to produce new variants within basic types already in existence. Note that this does not rule out the possibility of subspecific speciation as the new species would be of the same class or type as the parent species.

There are generally two sources of variation in organisms. These are environmental and genetic. Environmental variation is due to location, nutrition and in higher organisms possibly training. Examples would be trees above and below the timberline and grass with and without fertilization. Genetic variation is due to new combinations of or changes in the genetic material. Recombination of genes between parents of the same species or variant produce throwbacks but nothing new. Hybridization between different variants does produce new variants. As an example the Himalayan cat is the true-breeding off-spring of the Persian and Siamese cats. Changes in the genetic material include mutation, changes in chromosome number and changes in chromosome structure. Changes in the genetic material are generally harmful but does give rise to some new variants. However, most of these new variants are due to hybridizations that change the number of chromosomes (autopolyploidy, allopolyploidy, and heteropolyploidy) and not to the formation of new or improved genes by mutation. Invariably hybridization only occurs between closely related organisms, i.e., of the same basic type. This observation is predicted by the principle of limited variation.

The Principle of Conservation of Adaptedness

The final principle to be discussed here is the principle of conservation of adaptedness. This principle states that variation in a population which results in lessened ability to survive or reproduce tends to be eliminated in successive generations. From this principle we would expect two things. First, the offspring of well adapted parents (barring mutations) should also be well adapted because those genes which cause maladaptation should have been eliminated from the gene pool in earlier generations. Secondly, mutations of genes or chromosomes should result in a less adapted individual. While generally both of these expectations are observed in nature, many harmful mutations persist in a population for very long periods of time. The persistence of very harmful mutations is because they frequently are masked when in a heterozygous condition and only lethal when homozygous. Consequently the principle must not be applied without consideration of the complete genotype of the organism.⁹

Application of this principle should also keep in mind what it means to be adapted. Unfortunately, this seems

to be a concept everyone recognizes but finds difficult to explain. In part this is due to adaptedness being a subjective evaluation essentially based on the ability to survive.¹⁰ This seems to lead to the tautology that adapted organisms survive because they are adapted. However, the reason for the apparent tautology is the false assumption that every term must or can be defined. The fundamental terms of science cannot be defined, they can only be described. This is apparent when you consider that a term is defined by the use of more basic terms. But fundamental terms or concepts are the most basic ones possible. Therefore there are no terms available to define fundamental terms. We may then describe adaptedness as being suited to the environment as measured by the ability to survive.

Most will by now have recognized that the principle of conservation of adaptedness is simply the theory of natural selection and might wonder why it is necessary to state it under a new title. Since natural selection in evolutionary theory is responsible both for the conservation of species and the formation of new species and animal types, it would be a source of confusion to use the same term but retain only a portion of its meaning. To avoid this confusion the use of a new term is better.

These principles will allow two very important things to be done. They provide a common base for the reinterpretation of old data and interpretation of new data in a creationist framework. Secondly, they allow the statement of creation in a positive, scientific way. It is only by taking this step that we can hope to make creation respectable to the scientific and non-scientific communities.

References

- ¹Colonial grade refers to those organisms which are multicellular aggregates such as the Volvox. While these animals do have a self-consistent form, the cells are not organized into tissues.
- ²Hinegardner, Ralph, 1976. Evolution of genome size. (In) F.J. Ayala (ed.) Molecular evolution, Sinauer Associates, Inc., Sunderland, Massachusetts. Pp. 179-199.
- ³An apode amphibian, commonly called the Congo eel.
- ⁴Dobzhansky, Theodosius, 1970, Genetics of the evolutionary process, Columbia University Press, New York. p. 17.
- ⁵Leninger, Albert, L., 1975. Biochemistry, Worth Publishers, Inc., New York. Pp. 884-885. And Dobzhansky, Theodosius, et al., 1977. Evolution. W. H. Freeman, San Francisco. Pp. 74 & 85-87.
- ⁶Eigen, Manfred, et al., 1981. The origin of genetic information. Scientific American 244(4):88-118.
- ⁷Wilder-Smith, A.E., 1981. The natural sciences know nothing of evolution. Master Books, San Diego, California.
- ⁸Marsh, Frank L., 1978. Variation and fixity among living things. A new biological principle. Creation Research Society Quarterly 15(2):115-118.
- ⁹One of the classical examples of gene masking is the Mouse t allele. See: op. cit., Dobzhansky et al., Pp. 124 & 506-507.
- ¹⁰Smith, John Maynard, 1975. The theory of evolution. Penguin Books, Baltimore, Maryland. Pp. 15-26.
(Editor's note) Readers may be interested in comparing this work with Brown's article, *The First Seven Basic Biological Laws of Creation*, elsewhere in this issue of the *Quarterly*. Both items were prepared about the same time; and I do not doubt that the authors arrived at their ideas independently.

THE "TANGLED" TONGUE†

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In this paper the author attempts to relate, on the basis of his experience, a condition—dyslexia—to the fact that some of the world's languages are written in different directions from others. He believes that human beings are "pre-programmed" (visually and mentally), some to be able to learn one language more easily, some another. The dyslexic seems to be suffering from a mixture of this built-in information, and thus to have trouble, particularly in reading.

There are many people who have difficulty expressing themselves in their own language, despite the fact they may have clear, mental understanding. In childhood, these individuals may have difficulty learning to read, and it usually carries over into adulthood, manifested there by slowness in reading. Also, there may be a tendency to reverse certain letters or numbers as they attempt to read or write. Investigators from several professional fields of interest, such as optometry, education and psychology, all agree that there is not necessarily a correlation between intelligence and the presence of these characteristics. The condition described here is usually referred to as dyslexia.

As an optometrist, I became interested in the above phenomenon several years ago because I regularly examined people who displayed these problems, particularly young boys around the age of 9 or 10. These children are often brought to the eye doctor because the teacher, parent or school psychologist suspects the child may have a seeing disorder (and sometimes this is true). But more often than not, the child will have good eye and visual health, insofar as clarity of seeing and absence of pathology is concerned.

A common side effect associated with the reading difficult is called mixed-dominance. That is, the person will prefer to "sight" with the right eye but will be left-handed, or vice versa. Or, they may be able to do things pretty efficiently with either hand, and consequently, the parents and the child often aren't sure about their dominant handedness.

In addition to the eye-tracking and reading problem, these same persons may have difficulty enunciating certain words too, so, speech therapists are often involved in the overall treatment program of the dyslexic individual.

Optometrists who specialize in the therapy end of dyslexia are called developmental optometrists. As the name implies, these O.D.'s are interested in the sequential development of children's learning processes. Basically, they believe every person is designed to go through several stages of growth patterns, the success of each stage being dependent on the completeness of the previous stage in order for the end result to be good and "normal". It is thought that certain stages of development will have been missed completely, or were not carried out to completion, in those persons who display the characteristics of dyslexia. Based on this assumption then, the treatment provided to the "patient" centers

around having him perform certain tasks (in an accelerated manner) which are designed to fill in the missing "gaps" of the person's growth stages.

Because of my involvement in visual training and developmental optometry over the past few years, I generally agree with the above (admittedly very elementary) introduction to dyslexia from the optometric viewpoint. To me, the rationale is logical and the treatment works when performed by an optometrist who knows what he is doing. Obviously, the results will depend upon the severity of the condition, the intensity and duration of the treatment program and the degree of commitment and involvement by the patient personally.

Is Dyslexia A Disease?

I am convinced that dyslexia is not a medical problem in the classical sense of a disease, and therefore, it would be of little value for me to talk about all the things which I think dyslexia *isn't*.

A Little Background, From My Study During the Past Four Years

I may lose some of my readers at this point, not because you won't be able to understand what I'm saying, but because of the nature of the subject matter. However, if you'll "hang in there", when you've finished reading this short story, you'll know and understand the "ins and outs" of dyslexia better than most—I really believe that! Not because of my personal superior knowledge and training in the field, but because I believe I've made a discovery and I wish to share it with all interested persons. It has helped me and it will help you, especially if you are personally affected by dyslexia or know someone who is. Stay with me now.

For the past four years, I have become intense in my belief that the Holy Bible is, in fact, *the* perfect book of knowledge, containing God's Wisdom for understanding all mankind's pertinent ills and that it gives instructions on how to deal with them. I have searched the Scriptures carefully and regularly and my belief becomes increasingly solid and sure as I read, learn and *apply* the Biblical teachings and principles to my own life. (During the past two years, I have written a booksize commentary on the books of Revelation and Daniel and other portions of apocalyptic Scriptures. These prophecies are not pertinent to this study; I mention this only to give you an idea of the depth of my sincerity that the Holy Scriptures are an *absolutely* accurate "word-picture" of God, man and their interrelationships.)

When I was doing these studies, I was not looking for

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some Biblical answer to the question about dyslexia. But quite by “accident”, I found something very interesting.

The Languages

The problem of dyslexia is actually and merely a language barrier. In other words, something is hindering the proper handling of symbols, mental word formation and word order within the affected individual. Perhaps if we understood languages better, I’ve thought, maybe we would better understand why certain persons show difficulty working with the particular language to which they are exposed as a result of their birthplace. It was probably this kind of thinking that made me somewhat sensitive to two passages of Scripture in the Bible, one in the Old Testament and one in the New Testament.

Genesis 11

Genesis is the first book of the Bible and, as its name implies, it is a book about beginnings. I am confident that it is no mere coincidence that we find the explanation in this book concerning the beginnings of our languages. This is not going to be an in-depth study of the Bible, but I do want to include a few verses so that you have right before you the main Biblical message which I believe relates to the topic of dyslexia.

And the whole earth was of one language, and of one speech. And it came to pass, as they journeyed from the east, that they found a plain in the land of Shinar: and they dwelt there. And they said one to another, go to, let us make brick, and burn them thoroughly. And they had brick for stone, and slime had they for mortar. And they said, go to, let us build us a city and a tower, whose top may reach unto heaven: and let us make us a name, lest we be scattered abroad upon the face of the whole earth.

And the Lord came down to see the city and the tower, which the children of men builded. And the Lord said, behold, the people is one, and they have all one language, and this they begin to do: and now nothing will be restrained from them which they have imagined to do. Go to, let us go down, and there confound their languages, that they may not understand one another’s speech. So the Lord scattered them abroad from thence upon the face of all the earth: and they left off to build the city.

Therefore is the name of it called Babel: because the Lord did there confound the language of all the earth: and from thence did the Lord scatter them abroad upon the face of all the earth. (Genesis 11:1-9).

Now, if you aren’t well acquainted with the King James Version of the Bible, I suggest you re-read the above passage several times until you get the gist of what is being explained to us. Here’s what I see: A “great” leader by the name of Nimrod was leader of the above-described people on planet earth at the time, and as the Scriptures indicate, everyone spoke the same language then! I realize this seems incredible to imagine now, but try to accept it as fact—at least for the time being. Secondly, these people were obviously agreed to

build a “stairway to heaven”. We can’t possibly know how awesome this edifice might have been, though absurd to think they believed they could please God with their personalized method of reaching heaven by their own planning. It was this exercise of self-will which caused God to come and confuse the “tongues” that they might not be able to understand one another. Notice that the passage says that their languages were confounded and the people were then scattered abroad upon the face of the earth. I believe the incident was instantaneous and supernatural; the way God often displayed His sovereignty and magnificent power in the early days of recorded history.

I imagine the occurrence was something like this: On a certain day, all the workers came together to do their usual jobs of construction, one man shouts an order to those under supervision, and none of them understood a word the man had said!

They began to speak to one another to express how ridiculous the boss sounded, only to learn that perhaps their friend didn’t understand him either! Would this be confusing? I’d say so! Under those conditions, I know that I would quickly disperse and look for someone who could understand me. Obviously, some of the persons would have been given the same language, these would have congregated together and set out for their eventual, God-given destination in an effort to get away from this apparent “madness”. And thus began the languages, which have continued to this day—although obviously undergoing constant changes over the centuries.

What Had God Done?

The people who previously spoke and wrote the same language were suddenly given a whole new way of speaking and writing, and it was genetically-engineered right into their minds! The new, written symbols were as different as the sounds of each new speech. Some of the languages were written from left to right, some were written from right to left and some were written vertically. And right along with this change of the printing systems, the eye-tracking and mind-understanding systems of each person was made to naturally follow the new order of things, so that they could cope in this new environment. Why am I so sure of this explanation?

The Eye-Movement Phenomenon

Before I learned of the above Scriptures and interpreted them the way I’ve just explained, I had learned of a very interesting ocular characteristic which occurs in the eyes of dyslexics. Motion pictures were made of the face of “subjects” as they attempted to read English literature—which is written from left to right of course. The investigators often observed that the person’s eyes would occasionally drift from right to left instead of left to right as should be the case. This occurred often enough that it was reported as an ordinary incident in those individuals who have trouble learning to read English. This discovery told developmental optometrists that there seems to be a natural ocular motion from left to right in individuals who *easily* learn the English language. When you think about it, this is ex-

actly what would be expected. There's nothing absolutely correct about left to right printing or vice versa, it's just "the way it is" for a particular language. However, some folks are better "prepared" for one way than the other and if you happen not to be born in an environment which you are best "suited" for, then you're bound to have some trouble. The resultant problem has been called dyslexia.

My "Prize" Patient

After my optometric training and Biblical understanding began to merge, I developed a "theory" of my own. It seemed logical to me that if a person displayed an ocular motion from right to left rather than left to right, that he would be an ideal candidate to study a language which was written in the direction of his natural, eye-movement tendency. I presumed that such a person would excel in this situation. For about two years, I used this concept as I explained dyslexia to concerned parents or those persons who were affected themselves.

Recently, a patient came to me to be fitted for contact lenses and also to consult me about her dyslexia. I referred her to an optometrist who does more of the actual therapy than I do but she wanted me to explain my understanding regarding her condition. (This girl knew nothing of what you've read thus far prior to coming to see me.) Before I had gotten very far into my discussion, she interrupted me and said, "I think you should know something before you go on." I stopped and she explained that it was very difficult for her to do her college reading assignments, although she was obviously very intelligent and a good learner in other respects. Then she said, "You know what though, I took a course in a language which reads from right to left and I excelled." I nearly fell out of my chair! "Praise the Lord", I thought. Needless to say, I became very excited and she became tickled at my obvious joy, although not fully understanding why I was so elated. I asked her to explain thoroughly. She had taken Hebrew. (Strangely, I had always used Hebrew as my example postulation when explaining my understanding to patients!) She said even her teacher was awed by the ease and swiftness with which she grasped the language.

In spite of my excitement, this came as no surprise to me, for I already knew this would be the case if my presumptions were right. I believe God confirmed my convictions and the correctness of the analysis by sending me an example exactly according to "specifications". My conclusion is that the only reason she has difficulty with English is because she was not precisely "genetically-programmed" for this system of communication. Then, to cap it all off beautifully, she said her ancestry was Jewish! Obviously, this added further credibility to this idea of being mentally "programmed" for a particular language.

How Does the Mix-Up Occur?

It's really very simple. Ever since God scattered the people away from Babel, there has been a gradual, international tendency to return to oneness of thought and desires, centering around selfishness. Let's face it.

That's the truth. People have mixed national and racial backgrounds through marriages and if one of the parents happens to be "engineered" for English, the children may inherit some of the tendencies from that parent and if the other parent is "engineered" for Hebrew, let's say, then the children may tend to develop a blend of dominances, resulting in confusion under some circumstances, especially in the areas of reading. So, on and on and on, this process has continued throughout the ages, from Babel till the present time. Consequently, the end result is that some children have the condition called dyslexia.

A very reasonable question may come to your mind right about now. Since God put a stop to man's efforts in trying to reach heaven through his tower-building experiences (having stopped him by creating many languages and dispersing the people), has He ever shown us His plan of entering the Kingdom of God (heaven)? This question and the answer lead us to the New Testament.

Acts 2

Searching the Scriptures from cover to cover will reveal only two pertinent passages in the Bible which give significant information about languages as to the reason for their existence. We have already covered one, Genesis 11, the other is found in the second chapter of Acts. Again, I quote:

And when the day of Pentecost was fully come, they (i.e., the apostles) were all with one accord in one place. And suddenly there came a sound from heaven as of a rushing mighty wind, and it filled all the house where they were sitting. And there appeared unto them cloven tongues like as of fire, and it sat upon each of them. And they were all filled with the Holy Ghost, and began to speak with other tongues, as the Spirit gave them utterance. And there were dwelling at Jerusalem Jews, devout men, out of every nation under heaven. Now when this was noised abroad, the multitude came together, and were confounded, because that every man heard them speak in his own language. And they were all amazed and marvelled, saying one to another, behold, are not all these which speak Galilaeans? And how hear we every man in our own tongue, wherein we were born? Parthians, and Medes, and Elamites, and the dwellers in Mesopotamia, and in Judaea, and Cappadocia, in Pontus, and Asia, Phrygia, and Pamphylia, in Egypt, and in the parts of Libya and Cyrene, and strangers of Rome, Jews and proselytes, Cretes and Arabians, we do hear them speak in our tongues the wonderful works of God. And they were amazed, and were in doubt, saying one to another, what meaneth this? (Acts 2:1-12)

Once again, I ask you to read the Scripture passage several times so that you really learn the essence of what is being taught in the verses. I believe these are the main points to understand:

The Messiah, Jesus Christ, had ascended back to God the Father a short time (fifty days) prior to the incident described in the above 12 verses. Prior to leaving, Jesus had told His disciples to go to the "upper room" and

wait till they received power from on high—this was a place where the disciples and the Lord often gathered for prayer and communion. That's the time-setting. Then the disciples were in the "upper room" when the loud noise occurred. The Power of the Holy Spirit was being sent to the apostles and He (the Holy Spirit) "indwelt" each one there. They actually saw "tongues of fire" over each other's head as it enveloped them. The result was that each of them began to speak in languages that they never knew and they were doing it effortlessly as a result of supernatural, God-given ability.

Immediately, they had power they had never experienced before and they went about Jerusalem teaching and preaching the Gospel of Jesus Christ to the people who had come from abroad (where they had been dispersed to by God) to the Pentecost Festival. (See Jn. 16:13 for the promise of the Holy Spirit Who would come after Jesus had ascended back to the Father). God had "staged" this scene (i.e., the Pentecost timing) in order that there would be many people from all surrounding countries to hear the "Good News" which the apostles began to spread concerning Jesus of Nazareth. The people from neighboring countries were awed by the abilities of the men to speak clearly to them in their own native tongue. The apostle Peter (who had denied he even knew Jesus Christ the day before His crucifixion) went out that day and preached with such conviction, fervency and power, that 3000 people became believers in the Lord Jesus that day. Peter was no longer restrained in his commitment to Christ, for he had received new power from God to help him overcome his lack of boldness.

Now, Let's Tie the Two Loose Ends Together— Babel and Pentecost

The situation with Nimrod and his followers at Babel occurred around 2500 B.C. God had dispersed the people into all parts of the world, giving them different natures and languages, to the extent that it would keep them "occupied" and somewhat divided, while God worked out His plan of salvation and redemption for mankind; that is, God stalled man temporarily through the languages and dispersion of the people, then gave His revelation of how to get to heaven—but not by climbing up a man-made ladder!

God called Abraham around 2000 B.C. and started laying the ground-work of His plan of salvation. It would be given to those who would *believe* in His plan. Then, God raised up the nation of Israel and through them, and the prophets who spoke God's messages to them, God wrote His Own strategy for us to read and learn—the Bible.

The Old Testament clearly prophesies the coming of the Messiah, first as a suffering servant, taking the sins of believing mankind upon Himself (see Isaiah 53) then later, to return as Lord and King of His resurrected saints (true followers of Christ). The Bible declares that Jesus fulfilled every Old Testament prophecy relative to God's requirements for mankind's access to heaven. Jesus became "the door", the Bible says; Jesus became God's "tower" to heaven, if you will. And after Him, there would be no other provision. Jesus' last words ut-

tered on the cross were, "IT IS FINISHED". He was not simply saying that His life was about to end in death. He *meant* that God's plan of redemption was FINISHED.

Immediately after Jesus died, the veil in the Temple at Jerusalem was torn from the top to the bottom (indicating that it was not done by human hand); the symbolism was that God's "gateway" to heaven was opened at last.

Then at Pentecost, God revealed more information about His plan to gain entrance into His Kingdom. He sent the Holy Spirit to indwell believers so that they might have new power to assist them in their faith, belief and service in Christ's Church. God's "proof" of what I'm saying was that Christ's disciples could speak in foreign languages—without prior training! Their ability to do this represented the beginning of a *reversal process* of that which had begun thousands of years earlier at Babel when the languages were given to hold man "in check" while God introduced *His* program. Therefore, Pentecost became the "antithesis" of what happened at Babel. More simply stated, Pentecost brought the *healing* of Babel. This is not to say that Pentecost erased all the languages (obviously); but God's "picture" began to emerge more clearly at that point. In the early Church years, believers often "spoke in tongues" (other languages) right after they had trusted in Jesus for personal salvation; it was a "sign" to unbelievers which God allowed for the purpose of creating interest in the unbeliever to the testimony of the new believer.

I find it very interesting to note that the Bible was begun in the language of Hebrew through Moses, and today, it seems to be understood and preached, chiefly, by English speaking people. I do not believe it to be a mere coincidence that English speaking nations are also mainly responsible for broadcasting the Gospel of Christ into a spiritually-darkened world right now; and, that most of the Bible translating into other languages is going forth from America. I don't say this out of prideful patriotism; it is a statement of plain fact.

The False "Pentecost"

What happened at Pentecost was a far cry from that which fallen man (under the inspiration of Satan) is trying to accomplish today. The Bible clearly teaches that Satan will be given the privilege of building an earthly empire over which he will finally reign as "god" for a brief period. (This is to be before Christ returns to reign as rightful King). One of the biggest problems Satan has in establishing his "throne" is the language barrier. His method is to "mend" the god-caused, multiple languages in the world, using speeded up methods through computer and other technological advances, the purpose of which is quickly to translate language information from one group of people to another. These man-made methods of "erasing" the language barrier is a spiritual repetition of the man-made Tower of Babel; that is, man is still trying to solve his own problems and attempting to bring in peace on earth through *self* effort.

The above statement is not to imply that we, as Chris-

tians, should not use technology to spread the Gospel of Jesus Christ. We should use every means available to us, so long as we can maintain truthful, Biblical teaching, without compromising it. If it becomes necessary to “water-down” the message of God’s Word, then we must make our decision—in advance—to be willing to proclaim the truth regardless of the cost, even if it means our lives!

A Concluding Statement About Dyslexia

You may be wondering (understandably) what happened to my topical subject, after having read the last few paragraphs. I included those thoughts because I see the whole “picture” of languages, Babel, Pentecost, Satan’s delusions, and dyslexia, all tied in together.

The dyslexic has become a very SPECIAL person to me. I definitely don’t see his “problem” in the usual sense. I have learned that the dyslexic holds a great key to understanding why we have different languages. It tells me how much God truly loves us and how patient He is as He teaches us how He deals in the affairs of mankind. I praise God that He has made me see real beauty through a situation that is so often—erroneously—thought of as tragic. This is another example of how differently God thinks than does mankind. It reminds me of a description of another person revealed in Scripture:

... He hath no form nor comeliness: and when we shall see Him, there is no beauty that we should desire Him (Isaiah 53:2)

Christians will recognize this as a prophetic statement about the Lord Jesus. Read the verse again, and then recall and contrast what it says with what Christ actually did for us as He sacrificed His life, taking upon Himself the total sin penalty.

My advice to parents, teachers and others interested in the dyslexic, is to love and respect him; try to see him through “God’s eyes”. I really know how trying and exasperating it can be at times as you train and give guidance to the dyslexic; just remember this, he/she is very special to our Creator God.

Somehow, I think the apostle Paul may have been alluding to just such a situation when he wrote:

But God hath chosen the foolish things of the world to confound the wise: and God hath chosen the weak things of the world to confound the things which are mighty. (1 Corinthians 1:27)

Postscript

I feel a need to further clarify and emphasize a particular point about my hypothesis concerning dyslexia. It may seem that I’m saying that the whole answer to the difficulty in the dyslexic’s reading ability lies in his particular eye-tracking “engineering” not being exactly right for the language he’s trying to learn. It’s not quite that simple. Languages are not only different because of the direction they are written, of course. The whole word-order varies from language to language. For instance, in English, the adjectives, adverbs and other descriptive parts of a sentence are physically located in different positions relative to the subject and objects of a sentence as compared, say to French (even though

both languages read from left to right). What I’m saying is, if we oriented English from right to left on a page of literature, it would not necessarily help the dyslexic a bit. His whole sentence structuring ability (“genetically-engineered”) is confused. This would explain why a child may learn another language, such as Hebrew, quicker; even the shapes and designs of the letters appearing more “natural” to him.

It has been about three months since I wrote *The “Tangled” Tongue*. Since then, it was published by the Southwest Radio Church in their monthly edition of *The Gospel Truth* and also broadcast throughout the world on the radio from their headquarters in Oklahoma City, OK. This has resulted in a significant number of responses which have added confirmations to the thesis. I’d like to share two examples with you.

A local mother told me that I had answered a mystery for her concerning her daughter. She had always noticed that her child’s sentence structure was clearly German, even though she had never been exposed to that language. (The parent had studied German previously.) However, there is close German ancestry!

Another case was told me about a family living in Denver, Colo. The parents’ son (age 13) has severe dyslexia. They had been puzzled by the fact that his “dyslexia” went away in the preparations for his barmitzvah. (The barmitzvah is a religious service which requires a child to learn a significant amount of Hebrew.) The family was of Jewish descent!

These and other reports coming in are substantiating and adding credibility to what has been “discovered” and set forth in THE ‘TANGLED’ TONGUE. I become increasingly convinced that we have a realized truth at hand. We were advised to expect increases in understanding some of God’s mysteries, through the prophet Daniel approximately 2500 years ago:

But thou, O Daniel, shut up the words, and seal the book even to the time of the end; many shall run to and fro, and knowledge shall be increased. (Dan. 12:4.)

I praise God for sharing His Wisdom with us in these days of rampant ungodliness. Here’s what the Lord said concerning the differences in mankind at the time of the end, only a few verses after the above quote:

Many shall be purified, and made white, and tested, but the wicked shall do wickedly; and none of the wicked shall understand, but the wise shall understand. (Dan. 12:10.)

The Serpent’s Snare

(Continued from page 155)

sical mimicry of the cobra’s head, this also must have been a fortuitous mishap.

Evolutionary development demands trial and error. The odds of error are multiplied by the complexity and interrelationships of the necessary trials; consequently the permutations involved in this plant’s characteristics would be infinitesimal. It seems equally ridiculous to impute either reason or randomness to this singular stalk, yet there is evidence of intelligent design. The only rational answer is a Divine Intelligence.

EVOLUTIONARY ASSUMPTIONS IN PHYSICS LITERATURE

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Two well known physics periodicals, the Physics Teacher and the American Journal of Physics, were surveyed for evolutionary content during the year 1981. Many examples of evolutionary presuppositions and attitudes were found, in items on various topics, including science education, cosmology, and the energy crisis.

Introduction

During 1981 the journals *Physics Teacher* (PT) and *American Journal of Physics* (AJP) were monitored for evolutionary content. These two widely read journals are dedicated to the instructional aspects of physics. Articles are generally concerned with demonstrations, testing techniques, and new developments in the physics world. Many articles are funded by government grants. It was initially thought that evolutionary overtones in the journals would be minimal because the writings are technical and non-biological. However it quickly became a problem of deciding which of the numerous examples to include in this summary! In the following paragraphs, instances of evolutionary assumptions will be discussed.

Indoctrination

A February AJP letter asks, "How can we explain physics to a kindergarten student?" An activity involving the origin of the earth is then described for children: "Suppose the Earth started as a small solid blob condensed from a dusty, gaseous nebula. This might be represented by an irregular-shaped piece of clay. . . . Smaller particles are supposed to be flying about randomly in all directions; when they hit our protoearth blob they have a good chance of sticking to it. Stand back several feet and throw small pieces of sticky clay at the blob you have mounted."¹

This suggested activity promotes the accretion hypothesis for the formation of the planets. Of course the fundamental problems of gravitational condensation of planets and stars, as well as the origin of initial material are not mentioned. Such problems might confuse the kindergarten student!

A letter in the February PT concerns entropy. The letter writer had found a copy of the November 1980 *Bible-Science Newsletter* which had made the valid point that the ultimate reason for universal decay was man's sin. The PT writer's sarcastic conclusion:

"At last! A solution to the energy crisis! All we have to do is stop sinning, and we can gather up all the degraded energy we keep discarding at low temperature, and use it over again."²

There is more truth here than the unwitting writer ever intended. His words unknowingly touch on the major implications of pre-fall thermodynamics.

Cosmic Calendar

It is very popular to illustrate assumed geologic and

astrophysical ages in new ways. Thus a short article in the March PT suggests using a frequency counter to convince students of a 15 billion year history.³ The counter is to be set at 5000 cycles/second, with each count representing 1000 years. The counter accumulates 10^6 counts (1 billion years) in just 200 seconds. The full 15 billion years is registered in 50 minutes, just the length of typical class period! The instructor is told to label the display in *millions* and *billions* of years so that everyone in the room is sure to get the message. If the time span still remains incomprehensible to students, it is suggested that the instructor lower the counter pulse rate so that 15 billion years will be counted during the length of the semester. It appears that many *hours* are spent thinking up demonstrations to convince students that many *billions of years* have gone by. Addition of the flashing lights of a frequency counter is supposed to add credibility to the tale!

Testimonies

The April AJP gives a review of *The Particle Play* by J.C. Polkinghorne. This new book does a splendid job of reviewing the elementary particle physics world of quarks and leptons. In a most unusual addition to a technical book, author Polkinghorne further gives his testimony of faith in the Creator:

"I believe we must hold fast to the insights of science, and to our experience of beauty, choice, and moral responsibility. And to that list I would want to add the worship of God and the knowledge of his grace in Jesus Christ . . . Israel developed an idea of the Word of God who was his agent in the *creation* of the world. The prologue of St. John's gospel not only makes the astonishing identification of that Word with Jesus of Nazareth but also says that the Word is the true light that lightens every man."⁴

This quotation is included in Polkinghorne's book but *not* in the AJP review. Instead, the AJP reviewer simply says that the book is "... idiosyncratic . . . The publisher is to be congratulated for not suppressing the author's individual style."

The April PT contains an article titled "Literature and Science at a Catholic College (Catholic University)." Unlike the book review, the journal this time gives full coverage to the author's philosophy of life. One wonders if this is true mainly because the views expressed are opposed to creation or absolutes of any other kind:

"To the objectivist there is an intelligent order in reality . . . As a subjectivist, I believe there is no external truth independent of human consciousness.

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Truth is the product of human consciousness . . . there is no truth in the world outside."⁵

The reader of *AJP* and *PT* certainly does not get a balanced diet of philosophy. Instead, the "modern" subjective view is carefully inserted among the technical articles.

Science Education

The creation-evolution issue itself was the subject of a May *AJP* editorial. The topic was discussed with typical misunderstanding, so common in current periodicals.

"Creation versus evolution . . . faith versus reason . . . the religious will believe what they believe by conviction . . . Scientists, on the other hand, will not, cannot accept any explanatory scheme that cannot, at least in principle, be falsified."⁶

The Editor, a well-known physicist, ends his message with a note of open mindedness which is too often lacking in such discussions:

"One thing is certain: truth will out . . . the creationists cannot remove one fossil from the geologic record nor can the evolutionists put one there."⁷

These are good sentiments. However, maybe the editor should admit that a few "fossils" *have* been inserted into the fossil record: Piltdown man and Nebraska man to begin with!

In the August *AJP*, Editor Rigden laments the declining interest in science education:

"Remember Sputnik? Remember the millions and millions of dollars spent on curricula in mathematics, physics, chemistry, biology, and earth science during the 60's? . . . Yet, here we are, almost a generation later, debating in 1/3 of our state legislatures whether creationism should be taught in the science classroom, science enrollments are down, and the very existence of science in school and college curricula is under siege."⁸

Perhaps there is a correlation here that Editor Rigden has completely missed. Could it be the very acceleration of humanistic science education and research which has caused many citizens to become disillusioned with science? Consider the creationists Johannes Kepler, Robert Boyle, Blaise Pascal, Isaac Newton, Lord Kelvin, Clerk Maxwell, etc. Their accomplishments and Christian testimonies provided true excitement and popular support for science in their day. However today, even the enthusiasm for these early scientists has been blunted by their thoroughly secular treatment in the literature.

Nucleosynthesis

Gamma-ray line astronomy is discussed in the November *PT*. Of special interest in this discipline is the search for evidence that terrestrial elements were long ago formed in the interior of stars. One often hears the poetic statement that "our bodies are made of stardust." This assumption is forced upon big bang cosmologists who realize that no atoms heavier than helium could possibly spontaneously form in open space. The article describes a possible test; I have italicized statements that admit speculation:

"It is widely *believed*, but *unproven*, that much if not all of the intermediate and heavy mass elements we see around us are produced in stellar explosions called supernovae and novae . . . With the advent of very large computers it has been possible to follow the extremely complicated nuclear reaction matrix which occurs during the explosive phase. In a few seconds the whole history of stellar nucleosynthesis, which *may* have run for billions of year, is rewritten. A remarkable result of the . . . calculations is that it is possible, *on the computers at least*, to make most of the elements in their observed relative cosmic abundances. In *principle* we can (test the theories). Much of the freshly synthesized matter *should* be in a radioactive state. Ultimately the detection of even one single gamma-ray line from decaying stellar debris will represent a major step forward in our understanding of how our world was made."⁹

Of course, even the detection of such gamma-ray lines could *not* prove that all heavy elements originated in star explosions. At best the finding would be yet another evidence of the rapid and violent decay of the physical universe.

Energy Crisis

M. King Hubbert who is a scientist with the U.S. Geological Survey has become well known for wisely predicting our present energy dilemma several decades in advance. He has a summary article on the energy crisis in the November *AJP*.¹⁰ His writings are certainly required reading for those who wish to understand the exponential nature of energy flow. Regarding the origin of fossil fuels, Hubbert assumes the standard view: "the accumulation of fossil fuels occurs very slowly with a geologic time scale of hundreds of millions of years." On what does he base this time scale? ". . . we accept the geological and biological evidence that our ancestors were present a million years ago . . ." Hubbert very clearly demonstrates the absurdity of extrapolating current fossil fuel energy consumption into the *future*. Perhaps he should also address the question of extrapolation far into the *past*.

Hubbert gives an interesting summary of the total original fossil fuel energy reserves of the *world*. His estimates in joules of energy are quoted in Table 1. These figures can be compared with the influx of solar energy upon the earth, estimated at 1.5×10^{22} joules per day. The surprising result is that the accumulated solar energy for just 12.5 days is equivalent to the total stored energy of all known coal reserves! Just 16 days of solar energy is equivalent to *all* of the fossil fuels in the list! Of course, most of this solar energy is not available to

Table 1. Estimates of the total reserves of fossil fuel in the world, as given by Hubbert.¹⁰

coal	$18.80 \times 10^{22} \text{ j}$	$(8.4 \times 10^{12} \text{ tons})$
oil	$1.22 \times 10^{22} \text{ j}$	$(2 \times 10^{12} \text{ barrels})$
shale oil	$2.75 \times 10^{22} \text{ j}$	$(4.5 \times 10^{12} \text{ barrels})$
natural gas	$1.09 \times 10^{22} \text{ j}$	(10^{16} ft^3)
total	$23.86 \times 10^{22} \text{ j}$	

our present world. Direct reflection back into space takes 30%, and 47% continually warms the atmosphere, ground, and seas. Only 0.02% is captured by plants in the important photosynthesis reaction. However, going beyond what Dr. Hubbert says, one can speculate that the early earth's vapor canopy was much more efficient at capturing and utilizing solar energy. As we have seen, if solar energy could somehow be 100% channelled into the formation of plants (fossil fuels), the total fossil fuel inheritance of the earth could be accumulated with just 16 days of sunlight!

Conclusion

Reading science periodicals from a creation perspective is a revealing experience. One begins to see evolutionary assumptions on origins in many unexpected places. Some of the assumptions are humorous to even consider while others are carefully chosen to discredit the creation view. This situation will not improve during the decade of the eighties, for indeed all current science periodicals are increasingly emphasizing evolu-

tion as a reaction against the creation movement. Our assignment of providing widely circulated creationist literature has just begun.

References

- ¹Brush, S.G., 1981. How can we explain physics? *American Journal of Physics* 49(2):106.
- ²Lehrman, R.L., 1981. Downhill all the way. *Physics Teacher* 19(2):82.
- ³Marschall, L.A., 1981. A cosmic clock for the classroom. *Physics Teacher* 19(3):185.
- ⁴Polkinghorne, J.C., 1979. The particle play. Freeman Publishing Co., San Francisco. P. 125.
- ⁵Ryan, F.L., 1981. Literature and science at a Catholic college. *Physics Teacher* 19(4):230.
- ⁶Rigden, J.S., 1981. Editorial: A reminder—truth will out. *American Journal of Physics* 49(5):393.
- ⁷*Ibid.*
- ⁸Rigden, J.S., 1981. Response to Letter to the Editor. *American Journal of Physics* 49(8):711.
- ⁹Leventhal, M., 1981. Gamma-ray line astronomy, promises and prospects. *Physics Teacher* 19(8):528.
- ¹⁰Hubbert, M.K., 1981. The world's evolving energy system. *American Journal of Physics* 49(11):1007-1029.

THE FIRST SEVEN BASIC BIOLOGICAL LAWS OF CREATION

COLIN BROWN*

Introduction

There are set forth here seven points, which I have called laws, and which I think everyone would agree to be important principles. I say "first seven" because it may be possible to formulate others; and "biological" because it may be possible to formulate some other laws having to do with the inorganic creation.

First the laws will be stated; then will come a few comments on them.

The Laws

1. The creation needs a Creator, Whom we call God.
2. When God created the basic kinds of life, He created within them the D.N.A. system. (And whatever else there may be which governs heredity).
3. Within the D.N.A. system (and whatever else may work in conjunction with it) is the ability to adapt to various environments, by appropriate changes.
4. While variations may arise within a kind, due e.g. to mutations, the variants remain within the kind. Variants which are suited to the environment may multiply; those which are not suited will in time be removed.
5. The kinds, i.e. Genesis kinds, may involve a great variety of forms. There may be varieties, sub-species, species, genera, sub-families, and possibly families within a kind. The question, whether orders may be considered to be within a kind, needs more study.

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6. Only creatures related to each other at least as closely as being within the same kind can hybridise.

7. Organs can become degenerate with the passing of generations, possibly being completely lost, or nearly so; the creature, however, remaining within its original kind. The question, whether organs can be acquired, is a more difficult one; but something will be said about it later.

Comments on the Laws

1. Until the nineteenth century, or so, most people would have granted the first law. It is true that a few tried to evade creation by saying that things had continued in more or less their present form from eternity. Nowadays, developments in thermodynamics have closed off that avenue.

It is the first law which is the basis of Natural Theology, as set forth by many writers, of whom Paley is likely the best known.¹

2. If creation is accepted, this law seems self-evident. I say "And whatever else . . ." because there is evidence that D.N.A. is not the only thing involved in heredity.²

3. The third law is plainly seen in the marvelous adaptations which are found throughout nature.

4. I have written at greater length on the fourth law earlier, and need not repeat here all of what was said.³ Evidence for it can be seen in, on the one hand the adaptation of many creatures to their environments, and on the other hand the fact that some sorts have become extinct.

5. The point of the fifth law is that the Genesis kind is

usually a broader class than the conventional species. As for the problem of identifying kinds, Jones, in particular, has made some useful suggestions.⁴

6. The sixth law can be based on experience. Marsh, in particular, has discussed the matter extensively.⁵

7. Commonplace examples in which organs have been lost or become ineffectual are Manx cats and hairless dogs.

As for acquiring an organ, the gillaroo, a "trout with a gizzard" (an enlargement in the throat, in which shells, etc., can be ground down) found in certain Irish lakes,⁶ might be mentioned.

Other examples include:

i. The lungless salamanders. These are very successful creatures, there being about 200 species out of about 300 of tailed amphibians generally. They have no lungs, but instead have a naso-labial groove, a depression found in the skin, leading to the upper lip, coming from the external nostril. They live on the surface, in caves, and in various environments.

The question is: did God create these creatures in their present form; or did they adapt (and remember that they are very successful) as set forth under the fourth law?

ii. Uric acid. This complex organic compound, which also contains nitrogen, is excreted by primates and dalmatian dogs, but not by other mammals. Is one to conclude that all others have lost this ability, or that only the few mentioned were created with it? Is it not more likely that this is an acquired ability, an adaptation, as stated under the fourth and seventh laws?

iii. The ostrich is the only bird (including the rest of the ratites) whose waste product is like that of mam-

mals, and not like that of any other birds. Again, did God create one bird thus; or have all other birds lost that feature? Or is this another case of the outworking of the fourth and seventh laws?

iv. Some birds have a penis (the ostrich, again, is one of these) others have not. Is this, again, a case of changes and adaptations, under the fourth and seventh laws?

v. A similar thing might be said about the cloaca of the beaver, or the peculiar tissues and organs found in the monotremes.⁷ No one doubts that, despite peculiarities, these creatures are very much within the appropriate Genesis kind.

References

- ¹Paley, William, about 1800. *Natural theology*. Reprinted by St. Thomas' Press, Houston, Texas, 1972.
 - ²Jones A.J., 1982, The genetic integrity of the "kinds" (baramins): a working hypothesis. *Creation Research Society Quarterly* 19(1):13-18. See especially item D, p. 15.
 - ³Brown, Colin, 1982. Variation and the fourth law of creation. *Creation Research Society Quarterly* 19(2):100-103.
 - ⁴Jones A.J., 1982, A creationist critique of homology. *Creation Research Society Quarterly* 19(3):156-175.
 - ⁵Marsh, Frank Lewis, 1981. Have the Genesis kinds ever crossed? *Creation Research Society Quarterly* 18(3):164-167.
 - ⁶Luce, A. A., 1958, *Teach yourself logic*. English Universities Press. Pp. 28 & 30.
 - ⁷Brown, Colin, 1982, The monotremes. *Creation Research Society Quarterly* 18(4):187-189.
- (Editor's note) Readers may be interested in comparing this work with Smith's article, *Principles of Creationistic Biology*, elsewhere in this issue of the *Quarterly*. Both items were prepared about the same time; and I do not doubt that the authors arrived at their ideas independently.

PANORAMA OF SCIENCE

The Atmosphere of Venus

Writing about Voyager 2's mission to Saturn, and how it raised more questions than it answered, Schefter said that it "in general posed a far more humbling experience for scientists than they expected."¹ The way that theories have been shattered by every space probe, no matter where they have gone, indicates that all of the space program has been a humbling experience. Venus is no exception. Its atmosphere is such a complex thing that even after several years of studying the data from the American and Russian probes of that planet, the scientists still do not understand "why" it is as it is, or "how" it can operate as it does. As one scientist said, "The details of this process remain something of a mystery."

Venus' atmosphere is 96% carbon dioxide plus small amounts of various other substances. There are 50 parts per million of water vapor and 200 ppm of sulfur diox-

ide in the lower atmosphere. The cloud and haze layers have sulfuric acid and some liquid and solid sulfur particles. Other gases such as nitrogen, argon, krypton, and xenon are also present.

The most fascinating aspect of Venus' atmosphere is the complex way in which it circulates around the planet in several distinct layers. These layers are called "circulation cells", and are labeled surface, mid-altitude, pre-cloud, cloud, and stratosphere cells. (See Table 1) All these cells rotate around the planet east to west at speeds up to 225 mph, while at the same time moving from equator to the pole and return at around 15 mph. This double direction has the effect of moving the atmosphere in a spiral around the planet. The atmosphere splits at the equator with the northern hemisphere spiralling towards the north pole and the southern hemisphere spiralling towards the south pole. This movement of the atmosphere towards the poles

Table 1. This chart shows the complexity of Venus' atmosphere: how it is layered in distinct, non-mixing cells, each with its own composition and movement.

Layer	Composition	Particle Size microns	Particles per cc	Altitude		Temp Celsius	Wind Speed mph	Pressure lb/in ²
				Kilometers	Miles			
Ionosphere				400-	240-			
Sensible Atmosphere	Density 10 ⁻¹⁸ gm/cc			250-	155-	27°		
Tropopause	10 ⁻¹⁰ gm/cc			144-	90-			
				125-	78-			
				100-	62-	-93°		
Upper Cloud	Sulfuric Acid	1-2	300	70-56	43-35	13°	225	7
Middle Cloud	Sulfuric Acid	1-2, 4	100	56-49.5	35-31	20°	120	
	Solid Sulfur?	10-15						
Bottom Cloud	Solid Sulfur?	10-15	400	49.5-47.5	31-30	202°		14
	Sulfuric Acid	1-2	few					
Pre-Cloud	Sulfuric Acid	1-2	300	47.5-47	29			
Haze	Sulfuric Acid?	sub-mic.	20-2	47-30	20-19	310°		
Lower Atmos.	No particles			30	19	310°		
				20	12	380°	50	
				10	6	410°	11	
				0	0	453°	0-2	1396

seems to result in large polar turbulence in the form of double vortices rotating around each other. These descending vortices were unexpected but the evidence for them is two hot spots rotating around each other as seen by infrared sensors.

The "air" that moves into the polar regions must be returned to the equator which it does in the circulation cells. These cells, stretching from the equator to the poles, are stacked one on top of the other with each of the upper three cells counter-rotating as three meshed gears would do. The cloud cell is believed to be the driver cell.

The base of the cloud layer is basically at the same altitude everywhere but is up to a couple of kilometers lower at the poles than at the equator. The altitude of the bottom of the clouds seems to be a factor of temperature, that being the altitude which is cool enough for sulfuric acid vapor to condense into particles.

This has been just a brief description of Venus' atmosphere based on information released by NASA.² The questions which everyone would like to know are, what powers the system, and what keeps the various circulation cells as separate units. Finding the answers is complicated by two discoveries based on two years worth of Pioneer Orbiter observations. First, "two circulation patterns have been discerned—a mid-latitude jet stream pattern which is succeeded in several years by a pattern of cloud circulation like that for a single rigid body"; and second, "a high-altitude haze layer which completely envelopes Venus' clouds, appears and disappears."

Two explanations have been suggested for the high speed winds "on a planet with no rotation. Both propose wave (eddy)-pumping of the enormous momentum of the planet's dense lower atmosphere to higher

altitudes where the momentum remains. One of these proposed mechanisms involves large horizontal eddies; the other, tidal effects as the lighted hemisphere moves slowly around the planet. Weather theoreticians agree that: wave pumping mechanisms are critical to understanding Earth's weather, and are not well understood on any planet."

In a previous article this author wrote, "Venus has a canopy and it would seem that whatever is maintaining it could surely have maintained a water vapor canopy around the earth."³ NASA's studies of the data from its Venus probes have revealed the amazing phenomena of the globe circling high speed winds in their spiral path and the circulation cells. As yet, no one really knows *how* those winds and cells are produced and maintained over thousands of years, but they are there.

Surely, some similar or equally amazing phenomena could have maintained the "waters which were above the expanse" (Gen. 1:7) on the newly created Earth.

—Contributed by Everett H. Peterson

Is the Big Bang Just a Lot of Noise?

Another proposal has been noted—and apparently on purely secular grounds—for a cosmogony which has no need of the alleged big bang.

Clube, a noted astronomer, has suggested that the notion of an aether, which he sometimes calls "material vacuum" should be revived, and that such a revival might help out with a number of problems. His thesis may be stated in selections from his own words:⁴

"... one is guided toward... the need of a material vacuum (i.e., aether. H.L.A.) Such a medium has to be cold and provides a natural explanation of the microwave background. One of the pillars of the big

bang theory is thus dissolved . . . With this particular formation . . . event horizons do not arise. Properties like those attributed to black holes do not therefore appear. There is no obvious basis in this picture for preserving (i) a Doppler origin for the cosmological redshift (ii) a 'big bang' origin for the microwave background, and (iii) all the problems associated with current theories of galaxy formation . . . If the aether is a material like any other it is probably more realistic to suppose it has various energy levels, however rare the transitions between them. On this hypothesis, there must be a background radiation at every point in space. It is very probable therefore that we can understand the microwave background as an emission of the aether itself . . . There is no sense in which such an explanation of the microwave background can be regarded as equivalent to the conventional big bang . . ."

Vestigial Organs (if they Exist at all) Prove Nothing

It is not often that one finds an evolutionist totally rejecting one of the historic "pillars of evolution." Still less common is to find an evolutionary journal willing to print such "heresy." Because of this the paper under review provides a very important and helpful connecting link in the self-correcting servo-mechanism of open and free discussion of all sides of controversial issues.⁵

First, a word about the journal itself is in order. *Evolutionary Theory* is apparently of relatively recent origin, though it is not possible to determine age from the volume number since it is only published when material is available. One is at first taken aback by the format since it is offset on 8½ × 11 inch paper directly from single spaced manuscript and bound by staples along the left edge. The logo on the front cover, however, explains the philosophy of the editors: "Dedicated to the primacy of content over display."

The unique nature of the journal is indicated by the following statement of philosophy found inside the front cover:

"This is an open journal. We welcome speculations and critical discussion of books, papers, or ideas. Short papers of even a few lines are appropriate, with no limit on maximum length. So are research suggestions or queries. We prefer a higher than usual probability of error to exclusion of new ideas, which are unorthodox by definition. Good taxonomic and other factual papers are welcome. Papers that disagree with the editor's views have a higher probability of acceptance than those that agree. Comments can be made on relevant papers in any journal at any time, or on more general questions. Comments and replies are reviewed like any other paper."

The purpose of the journal is stated as:

"Low-cost and rapid publication of papers with direct or indirect importance (but real importance) to the development of theory. Purely descriptive papers may appear and competent but routine theoretical work may be rejected. Length of papers is irrelevant to acceptance but unnecessary verbiage must be stringently eliminated. Quality of

papers will be maintained at a high level even if acceptable papers come infrequently. Unconventional approaches are welcomed."

The article under review provides evidence that the journal is serious about openness to "... new ideas which are unorthodox by definition." The author first discusses the extensive use of vestigial organ concepts in contemporary texts. He then suggests that this argument:

"... represents simply a special case of homologous organs, i.e. structures similar in fundamental structure, position, and embryonic development, but not necessarily in function. Our knowledge of anatomy, necessary to identify homologies, is based on a straightforward observation of adult embryonic structures. However, when one begins to investigate the function of these structures necessary to identify vestigiality, the situation is not so clear. In many cases the functions of minor structures are not well understood. Identification of function is often based on experimental procedures, the results of which require some interpretation. Hence, our knowledge of function can never be as secure as our knowledge of anatomy."

In reviewing the history of the vestigial organ idea from Darwin through Haeckel to Wiedersheim, Scadding notes:

"Functionless organs were clearly a distinct embarrassment to anyone who wished to talk of the purpose of nature. Haeckel refers to these rudimentary organs as a 'dysteleological proof of evolution' . . . It should be noted, however, that presented in this way, the vestigial organ argument is essentially a theological rather than a scientific argument, since it is based on the supposed nature of the creator."

With regard to the nature of the philosophical basis for vestigial organs as evidence of inheritance from other organisms Scadding says:

"Most authors regard this as an entirely scientific argument. Others clearly extend it into the philosophical or religious realm as well, by using it as a theological argument against special creation . . . I suspect that this argument gained widespread use not because it proves anything about evolution, but because it was thought to have particular force against some varieties of creationism."

The author then proceeds to destroy the vestigial organ apologetic on two different grounds. The first is the problem of identifying vestigial organs. The second objection he uses is based on the logic of the argument. This problem arises because:

"There is no way, however, in which this negative assertion (i.e. the organ has no function) can be arrived at scientifically. That is, one can not prove that something does not exist . . . since of course if it does not exist one cannot observe it, and therefore one can say nothing about it scientifically."

He thus ends the article with the following conclusion:

"Such an argument, from ignorance, or from negative results, is not valid scientifically, and has no place in observational science . . . Since it is not possible to unambiguously identify useless struc-

tures, and since the structure of the argument is not scientifically valid, I conclude that 'vestigial organs' provide no special evidence for the theory of evolution."

It is to be hoped that this devastating critique of the vestigial organ argument will be widely read. The paper will be especially valuable to teachers and students of the life science who regularly encounter dogmatic presentations of this viewpoint.

—Contributed by Dr. John R. Meyer

Ramapithecus, An Orangutan

Ramapithecus has been dislodged as the first step in the supposed evolution of man from the apes, according to David Pilbeam and Peter Andrews.^{6,7} David Pilbeam recently found pieces of a cranium in Pakistan that is very similar to *Ramapithecus*, but it classified as *Sivapithecus*, a one-hundred percent ape, said related to the orangutan. He is very cautious in the *Nature* article, but is more candid in an interview published in *Science News*.⁸ He says he has actually found the remains of two apes and that he has doubted the high status of *Ramapithecus* since about 1975. Peter Andrews, in the same issue of *Nature*, is bolder. Commenting on Pilbeam's work, he says "*Ramapithecus* can no longer be considered as part of the human lineage, but as part of the orangutan lineage."⁷

Creationists have long claimed the evidence for *Ramapithecus*'s special status is scanty, based until recently on only teeth and jaws. It is revealing to ex-

amine past research on *Ramapithecus*, much of which seems typical of evolutionary literature. Some have been cautious. For instance, Jolly and Plog admit that *Ramapithecus* "has stirred much debate among paleoanthropologists"⁹ However, some have been dogmatic in the face of skimpy evidence. Elwyn Simons, writing in the May 1977 *Scientific American*, headlines his article on *Ramapithecus* by saying: "This extinct primate is the earliest hominid, or distinctly manlike, member of man's family tree. The finding of many new specimens of it has clarified its place in human evolution."¹⁰

—Contributed by Mr. Michael J. Oard

References

- ¹Scheffer, Jim, 1982. Return to Saturn. *Popular Science* 220(1):56.
- ²NASA News. Releases nos. 79-06, 81-57, and 82-1. NASA, Ames Research Center, Moffett Field, California 94035.
- ³Peterson, Everett H., 1981. The necessity of the canopies. *Creation Research Society Quarterly* 17(4):201-204 & 213.
- ⁴Clube, S.V.M., 1980. The material vacuum. *Monthly Notices of the Royal Astronomical Society* 193(2):385-397.
- ⁵Scadding, S.R., 1981. Do vestigial organs provide evidence for evolution? *Evolutionary Theory* 5, 173-176. (May) (*Evolutionary Theory's* address is Route 3, Box 487. Boonsboro, Maryland 32713.)
- ⁶Pilbeam, D., 1982. New hominoid skull material from the Miocene of Pakistan. *Nature* 295(5846):232-234.
- ⁷Andrews, P. 1982. Hominoid evolution. *Nature* 295(5846):185 & 186.
- ⁸Greenburg J. 1982. Fossils trigger questions of human origins. *Science News* 121(5):84.
- ⁹Jolly, C.L., and F. Plog, 1976. Physical anthropology and archeology. Alfred A. Knoff, New York. P. 7.
- ¹⁰Simons, Elwyn L., 1977. *Ramapithecus*. *Scientific American* 236(5):28-35.

BOOK REVIEWS

Evolution from Space, by Fred Hoyle and N. Chandra Wickramasinghe, 1981. J.M. Dent and Sons, London, 176 pp. 7.95 pounds (\$13.90 approx.)

Reviewed by George F. Howe*

A well-written review is somehow supposed to aid the reader in deciding whether to purchase or at least to borrow a certain book. You can easily answer this "to read, or not to read" question by looking at these four propositions and deciding if any one of them holds your special interest:

1. The modern Darwinian evolution model can be criticized at many points as being scientifically inadequate:

"The fossil record is highly imperfect from a Darwinian point of view, because the slow evolutionary

connections required by the theory did not happen." (Dust jacket)

2. It is necessary to postulate the existence of a superior intellect to explain even the simplest forms of life:

"No matter how large the environment one considers, life cannot have had a random beginning." (Dust jacket)

3. There is a credible "outer space" alternative to the usual creation and evolution models of life origins on earth;

"Most of the biochemical complexity of life was present already at the time the oldest surface rocks of the Earth were formed." (Dust jacket)

4. Charles Darwin owed much of whatever was correct about his origins views to a little-known worker, Edward Blyth:

"When Darwin presented a paper (with Alfred Russel Wallace) to the Linnean Society in 1858, a

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Professor Haughton of Dublin remarked 'all that was new was false, and what was true was old.' This, we think, will be the final verdict on the matter, the epitaph on Darwinism." (p. 159)

If one has an interest in such matters, he will be doubly rewarded to discover that these subjects are being discussed by two internationally famous astronomers who have turned sour on Darwinism and have at the same time embraced a peculiar form of supernaturalism. If any of these themes causes even a slight shift in blood pressure or pulse rate, you'll find "Evolution from Space" well worth its price (approximately \$13.90). That is, you'll find it worth such a price if you can find it by that time in any U.S. bookstores. I spent one hour calling various commercial and university bookshops in Los Angeles and New York only to conclude as of mid-May, 1982, that no retail sources stocked it. However, "Evolution from Space" can be ordered through these same local booksellers and it should prove worth waiting 6 weeks to get a copy. Now let's take a second and longer look at each of the four propositions.

1. *Criticism of evolution.* In dealing with evolutionary mechanisms, authors Hoyle and Wickramasinghe displayed a measure of objectivity and egalitarianism that is expected of, but infrequently found among, "scientists." Their tightly reasoned treatise against the logic of contemporary Darwinism reminds one of Macbeth's "Darwin Retried" and Kerkut's "Implications of Evolution."

They affirm on page 22, for example, that Darwinism is perpetuated primarily for sociological rather than scientific reasons. While stressing the inadequacy of Darwinists to explain how the existence of X-rays should somehow induce bacteria to produce repair mechanisms by which to deal with X-ray damage, they summarize the tendency of confirmed Darwinists to overlook such deficiencies as follows:

"... because scientists believe in Darwinism there is a strong social tendency in this kind of situation for everybody to become satisfied with a weak explanation."

From time to time Hoyle and Wickramasinghe undertake quaint but fascinating side trips which make the book more enjoyable to read. With the phrase, "It is worth a digression to point out..." they portray, in one instance, the Darwinist scientist struggling to defend his defective origins model as a chess grand master who is able to wriggle for a while even though his game is lost:

"If one is not prejudiced either by social beliefs or by a scientific training into the conviction that life originated on the Earth, this simple calculation wipes the idea entirely out of court. But if one is so prejudiced it is possible, in the fashion of a grand master with a lost game of chess, to wriggle ingeniously for a while." p. 24.

They had the following poignant words to write regarding a stereotyped "scientific method:"

"The implicit assumption here is that Nature is a passive bystander, waiting there to be experimented on. Sometimes this may seem to be true. The earnest school-boy who carries through an experiment to

find out how much work makes so much heat gets an easy-tempered response. On other occasions, however, Nature answers with a lion-like roar, as if a teacher had at last lost patience with a dull-witted pupil. Such tempestuous replies make sport of scientific method." p. 9.

One severe problem they posed for Darwinism consisted of how a fruit fly might ever evolve the capacity to respond to ultraviolet radiation of wavelength 2537 Å when light of such wavelength is all but absent in the spectrum reaching the earth. It's one thing to hear problems like these being bantered about by us creationists but it is quite another to read as two well-known members of the scientific community at large undertake what turns out to be the wholesale demolition of Darwinism!

2. *Supernaturalism revisited?* Although their remarks about deity are exceedingly heterodox by evangelical Christian standards, these authors point the readers toward a superior intellect behind the work of origins. In a final chapter entitled "Convergence to God," Hoyle and Wickramasinghe have judged that there was an anti-creationist overreaction as a result of which the ideas of intelligence and design in origins were wrongly abandoned.

But their words about religion are by no means kindly as they portray mediæval Christianity to have been oppressive and totalitarian, spreading its tentacles until very recent times into such quarters as Cambridge University classrooms where it was required of student to attend chapel and to pass an exam on Paley's "Evidences..." Still, they seem to project nostalgia on page 136 when they compare the old Christianity with the new socialism:

"Indeed, there was little that was different in the new socialism from the old Christianity, except the removal of the concept of God, which ironically was the sole concept of any importance in the old religion."

In place of the usual God-man relationship, these authors propose a "grey form of religion" in which there are higher and higher forms of intelligence in outer space. The extreme idealized limit of this sequence for Hoyle and Wickramasinghe is "God" who is, in their scheme, identical with the whole universe itself (nothing more or less than old-fashioned pantheism in scientific garb?). Yet they believe this "intelligence" is personal and can be felt by individuals, as implied in the closing sentence of chapter 9 where they conclude a discussion of communication between levels of intellect in the cosmic hierarchy:

"The connections of the sequence are more likely to be restricted to those sudden flashes of perception that have made so much difference to all the main trends of human thought, the conversion of Paul on the road to Damascus." p. 145.

3. *Cosmic genes.* Like their counterpart in life sciences, Dr. F.C. Crick of DNA fame, Hoyle and Wickramasinghe seriously suggest that packets of genetic material continually enter our atmosphere from outer space, riding the pressure of light between stars. These may be mere specks of genetic code-stuff (in their

view), entire bacteria, or even insect eggs. Some source out there, they believe, is benevolently broadcasting these materials widely and is thus providing pre-designed systems that any forms of life may need to adapt for whatever environmental niches they may be encountering on particular planets. Where successes occur, they envision whole new blocks of genes entering the cell and producing new functions on the order of the way a computer can be rapidly "upgraded." Such talk reminds me of the statement credited to Napoleon:

"It is strange what some people will believe, as long as it is not written in the Bible."

But the authors show how this model of theirs circumvents many of the problems faced by modern Darwinists—apparent polyphylogeny, lack of transitional fossil series, "rapid" appearance of new groups as in the history of insects, and design in nature. But like the current punctuated equilibrium model and like the Darwinism that Hoyle and Wickramasinghe's model is supposed to replace, cosmic evolution suffers at precisely the same points—lack of any adequate mechanism and absence of experimental supporting data. They are obviously unable to show the reader strong evidence of such genetic packages in astronomical debris entering our atmosphere. It seems this (and this alone) is the key evidence required to put this interesting origins model on some sort of scientific basis.

Their only data consist of bacteria (about 1 per 400 cubic feet) in our atmosphere at height ranges of 30,000 to 60,000 feet above the earth (pp. 60-62). Citing this Jet Propulsion Lab balloon study, they suggested that there is an increase of such microorganisms as *Penicillium* as one ascends.

They dismiss the obvious alternative that such forms are simply terrestrial cells that somehow got airborne:

"To deny this conclusion it is necessary to suppose that large-scale air movements carry many more bacteria from low levels to great heights in the atmosphere than the strong temperature inversion between the tropopause and the stratopause would appear to permit." p. 61.

Yet the reader is not shown how the "strong temperature inversion between the tropopause and the stratopause" would prevent any such thing! And so I am led to conclude that their real evidence for the entry of microbes from space is approximately zero, despite all that they propose by way of supporting comment and background discussion in chapters 4, 5, 8, and appendix 2.

4. *Did Blyth outshine Darwin?* Last but not least the authors produce a splendid summary of the contribution to biology made by Edward Blyth (see Appendix 1 as well as sections throughout the various chapters.) According to Hoyle and Wickramasinghe, Blyth perceived the true nature and role of selection in evolution earlier and more accurately than did Darwin, while Darwin for some unknown reason gave no credit to Blyth.

In my opinion "Evolution from Space" is a landmark book in which strengths far outweigh shortcomings. Authors Hoyle and Wickramasinghe deserve an "A" for courage in confronting the blind and arrogant dogmatism that surrounds evolutionary origins discussion in

our day. One could only wish that they, like Saul traveling to Damascus, would come face to face with the idea that there is yet a better origins view and a far better religion than what they now embrace.

The Unfathomed Mind: A Handbook of Unusual Mental Phenomena, compiled by William R. Corliss. The Sourcebook Project, Glen Arm, Md. 21057, \$19.95.

Reviewed by Jerry Bergman*

The Unfathomed Mind is the latest of a series of book-length compilations of interesting, unusual, or in some way noteworthy studies, data, anecdotes, reports, etc., most of which were selected from reputable scientific literature. Previous volumes include *Mysterious Universe*, *Incredible Life*, and *Ancient Man*. This volume covers psychology and the wonders of the mind. Biology, astronomy, anthropology, the earth, and simply unusual natural phenomena (mostly physics, chemistry, and related areas) are covered in the other volumes. Each one is a fascinating collection of short, readable reports which are intriguing, useful, and merit further discussion and research.

The sources for the mind collection were mostly journals such as *The American Journal of Psychiatry*, *The Journal of Abnormal Psychology*, *Journal of Nervous And Mental Diseases* and other APA approved or widely accepted journals. Occult or parapsychology literature was avoided. Corliss notes "The occultist alas, will find nothing encouraging at all [in this book]."

The criterion for selecting anomalous material was that either the information contradicted some current scientific theory, or the article raised questions not answered adequately in the professional literature. Corliss notes "It will soon become obvious to the reader that secondary objectives to this book are the posing of challenges to establishment science and the stimulation of useful controversy." Many ideas, concepts, beliefs, and so on, have become dogma entrenched in science and assumed without question. One who has read the literature widely realizes that especially in the behavioral sciences, the topic of the volume reviewed here, there is much to be challenged and we have assumed far too much for far too long. The current (June 1982) *Science* 82 magazine has 3 articles challenging several assumptions which are common in the behavioral sciences.

Included are selections on dissociative neurosis (where the personality splits, producing fugue, amnesia, or multiple personalities) hallucinations, information processing, the process of acquiring knowledge (learning), and similar topics. For those interested in creationism, the more useful sections include information processing and dissociative behavior, both of which are difficult to explain in evolutionary terms.

The concept of overdesign—human abilities are present which are far beyond anything which could have

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been selected by nature, e.g., the ability to do complex mathematics—is often illustrated in Corliss' selections. The abilities he includes are difficult to account for by the natural selection hypothesis. Differential survival would favor escaping predators, etc.; but there would be no rigorous selection favoring abilities which enable one, for example, to play musical instruments with a high degree of skill. Musical talent is a complex skill which seems to be largely biological; practice will never make a musician out of a person without talent, as is apparent from a number of readings Corliss included.

A good example of overdesign is the idiot savants who, although mentally retarded, demonstrate phenomenal mathematical abilities. Reuben Fields, a total illiterate, not even able to distinguish one letter from another, could correctly solve difficult mathematical problems since the age of eight. He learned to work with compound fractions, problems in physics, and general math without the benefit of a day of school in these topics. His powers were adequately verified by investigators. A typical example is "Given the circumference of the earth as 25,000 miles, how many flax seeds, allowing 12 to the inch, would it require to reach around it?" Within a minute, he calculated the correct answer: 19,008,000,000. When awakened out of a deep sleep in the darkness of night, he always gave the exact time (16 minutes after 3 in the morning, for example). Such phenomenal abilities greatly surpass those of the average person. Most people have a difficult time with pairs of two-digit number in their head; how many people can multiply 42×64 without the use of paper?

Several thousand or more idiot savants are now living. Although they have been extensively studied, the phenomenon is still not understood. When these persons are asked how they do their phenomenal calculations, (such as multiplying two sets of numbers of 8 or 12 figures each) they state such things as "I just did it, I just do it, I just did it," or, as a retarded person at the Morris Plains Institute stated, "My head is filled with blocks with figures on them, and they fall into positions and work out the problems." Every day this person soaks his head in water "to prevent the blocks from rattling" and occasionally has the institute director put oil in his ears so that "the blocks will slip upon each other more easily." To try to reason with him on the foolishness of this is pointless; the staff tries only to keep him happy and help him take care of everyday living requirements.

Among the theories developed to explain this phenomenal behavior is one which holds that all human abilities can be developed by practice and these persons have more time to practice. The biological basis, though, must first exist, and this basis is distributed in a normal curve. Some feel that the idiot savants simply utilize a common ability. People who have a phenomenal ability in music, art, reasoning, poetry or some other area are often quite average in most other respects. If these abilities are largely biologically determined, calculating and other talents found in idiot savants are biological and fall on a normal curve. Some people, therefore, have the skill to a far higher degree than most of us, and some of these happen to be retarded.

The fact that they are retarded, this theory holds, is largely irrelevant, except that certain skills may develop in retarded persons because of their lifestyle. Some normal people have such abilities. The writer has had several college students who were able to answer complex mathematical problems without paper or machines—one student could arrive at a solution in a graduate statistics class faster than the writer could put the problem on the board! In calculating the standard deviation of a set of data, this student, a Ph.D. candidate, could typically calculate the answer before the writer was able to transfer the problem from his notes to the board. The writer has encountered also several university mathematics professors who had phenomenal ability to work with numbers in their heads. They, too, were unable to explain how they developed their phenomenal ability or how they did the calculations. Several earned extra money by performing for audiences. This trade, it appears, has boomed with the advent of calculators because, if the audience can check their calculations, the miracle of it all is more apparent. The audience would typically ask a question such as "what is $4,375,652 \times 697,463$," and then calculate the answer on their own to check the wizard before them. Verification is an important part of the demonstration. Thus, the fact that many of these remarkable people are retarded may be irrelevant, although it may facilitate development of their skill. The father of learning is concentration.

Some idiot savants displayed their calculator skills even before they could speak. One, at 13 months, correctly answered the question "what is 4×12 ?" Others, raised in Africa in places where numbers were not used and calculating and multiplication were unknown, when brought to America and sold as slaves soon displayed their phenomenal abilities. One slave, brought from his native Africa at the age of 14 and soon sold to a planter, became known for his extraordinary powers in arithmetic. Asked how many seconds a man lived who was 70 years, 17 days and 12 hours old, produced the reply, "2,210,500,800," in a minute and a half. One of the gentlemen interviewing him, who was using a pen to calculate, told him he was wrong. The slave hastily replied, "Top massa, you forget de leap year." The doubter then again calculated the figure including leap years, and their sums agreed exactly. Such a power is difficult to explain by the natural selection hypothesis.

The many examples Corliss gives help illustrate the fact that there is much that is not known about the mind, its functions, limitations; and much that is known is difficult to explain by evolutionary theory speculation. Many commonly held assumptions in many fields have been recently questioned. Unfortunately, the public is not aware of this doubt and assumes that psychology and science in general knows much more than it really does, and is much more certain about its many hypotheses than it really is.

Aside from wonderment, the results of exposure to the phenomenal ability illustrated in Corliss' selection has an interesting effect. Its effect on one man, as was noted in an article Corliss included, was to lead him to renounce infidelity and accept Christianity. A creation in

which such powers existed, he reasoned (and others have felt similarly) could not exist without a creator. And such a Creator, he concluded, was worthy of respect, admiration and worship.

Such extreme ability, though, is in one sense only slightly more remarkable than the ability to add 2 and 2. The two differ in degrees only, probably not in quality. Common miracles cease to become miracles because of their commonality, even if the full complexity behind them is not understood. Only uncommon miracles are apt to be recognized as miracles.

Corliss also includes articles on hallucinations, and analogous phenomena such as "daydreaming", many of which are difficult to explain by natural selection. Other useful material is the many reports of mental control of pain, use of placebos and other topics. These discussions will no doubt stimulate thought on the artificial dichotomy between mind and body, physics and metaphysics, or however this dualism is described.

NOTICES OF BOOKS

Genesis and Science by Walter Lang, 1982. The Bible-Science Association, Inc., 2911 E. 42nd St., Minneapolis, Minnesota. 51 pages, \$3.00.

This work is a revision of *Five Minutes with the Bible and Science*, from the *Bible-Science Newsletter*, January and February, 1973. It deals with matters mentioned in the first part of Genesis which might also be subjects of scientific investigation and discussion.

In some cases, suggestions are given for reconciling apparent conflicts between the Biblical account and the scientific view. In others, the scientific aspect of a mat-

ter may be used to point to some spiritual truth. Matters discussed include: the origin of races; what became of the dinosaurs?; who, if anyone, was the second Cainan?; and, how were all of the animals fitted into the Ark?

It is fair to say that almost any reader would find here food for thought, or a possible solution to some problem about which he had been wondering.

Paradoxes in the Theory of Relativity, by Yakov P. Terletskii, 1968. Plenum Press, New York.

It is plain from correspondence that many readers of the *Quarterly* are interested in the theory of relativity; and such people might find food for thought in this book which, while not new, seems to be not at all well known.

The author's position seems to be that the theory is correct, in its essentials; but it is often stated badly. Readers may or may not agree with the scientific, and still more with the philosophical, views expressed; but they will likely find something of interest.

Retarded Action-at-a-Distance, by G. Burniston Brown, 1982. Cortney Publications, Luton, Gt. Britain. vi + 145 pages.

This is another work which will interest readers who have followed controversies about relativity. The author's thesis is that the difficulties (many of them at least) arise from the common representation of electrodynamic phenomena in terms of fields and waves. Instead, a direct representation of interactions in terms of action-at-a-distance, without any intermediary thing, is advocated. As well as developing his theory, the author criticises some of the alleged crucial experiments.

There are also some interesting remarks on the philosophy and methods of science, matters to which the author has given much thought.

LETTERS TO THE EDITOR

Comments on *An Estimate of the Current Status of Evolutionary Thinking*, by John N. Moore

I rejoice in the clear-sighted analysis of Mr. Moore.¹ His critique is devastating and linguistically precise. I pray it will free many from the evolutionary mythological gestalt. May I contribute some further thoughts awakened by Mr. Moore.

1. All human knowledge consists of actual experience, interpretations of experience and reports of experience of others. The only other possible knowledge of the real world would be by revelation from the Creator.
2. Reports are accepted on faith, based in *a priori* assumption grounds regarding the parameters of truth and falsity—unless the person possesses equipment and time to recheck the assertions and claims.

3. Actions of free agents (men) in history can not be scientifically validated because the motive structure and actual pattern of the free-agent event can not be reproduced . . . except by the agent and his Creator.
4. No two events of any kind are identical in all particulars. The parameters may be quite similar, however, as operating under the same laws. Since entropy is working with time, however, the whole visible pattern, to the observing eye, is disintegrating . . . as is the observing eye.
5. Man is both ignorant and deceitful about many things. Therefore, reports and experiments need to be subjected to rigorous logic and, for the grace believer, the revealed nature and will of God.
6. Grace believers should be bold and unashamed of submitting their logic structure to the authority of

the Word of God. All men, without exception, are submitting their logic structure to a revealed or hidden motivational pattern of pre-suppositions. The structural pattern of human thinking requires it.

7. If true revelation from the Being Who is outside human designs and designing is rejected, then transcendental "logic" based on human imaginations must prevail for all "knowledge" outside the parameters of my existence. In other words, I will produce my own revelation of origins and ends.

Reference

¹Moore, John N., 1982. An estimate of the current status of evolutionary thinking. *Creation Research Society Quarterly* 18(4): 189-197.

Sincerely,
Lawrence A. McGhee, M.A.
14019 S.E. Market
Portland, Oregon 97233
Received 18 May, 1982.

More Study Needed on Magnetic Fields

Dr. Barnes' theory of continual decay of the Earth's magnetic field has proven to be one of the most elegant ideas to come out of modern Creationism.¹ Its simplicity is in stark contrast with the much-hoped-for dynamo gyrating down through the ages of uniformitarian time. It would seem that Occam's Razor cuts true. And yet, almost impossibly overlooked by our side is the fact that there is indeed a precedent in nature for a reversing magnetic field! Brandt and Hodge "note that the general field (of the Sun) reverses polarity with the same period as the solar cycle."² It would seem that this point needs to be addressed in the light of Dr. Barnes' theory. Its significance could be considerable.

References

¹Barnes, Thomas G., 1981. Satellite observations confirm the decline of the Earth's magnetic field. *Creation Research Society Quarterly* 18(1):39-41. Also earlier works, referred to in this article.

²Brandt, John C., and Paul W. Hodge, 1964. Solar System astrophysics. McGraw-Hill Book Co. P. 138.

Yours in Christ
Mark Montie
1717 Independence Parkway
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Received 25 March, 1982

Reply to Montie

1. The primary reason that evolutionary geologists have held to a reversal theory of the earth's main magnet, its dipole magnet, is that this is the only excuse they have for holding on to their long (billions-of-years) age for the earth's magnet. To concede that this decaying magnet has not been reversing would be the death knell for the whole theory of evolution. Their only hope is to "read" reversal phenomena into the magnetization of accessible rocks in the crust of the earth. There is no

known mechanism for generating such reversals in the earth's dipole magnet. There has been an endless number of papers presenting reversal "histories", merely based upon their author's interpretations of the cause and timing of the magnetization in selected sets of accessible rocks in the crust of the earth. There is, however, ample evidence in the literature to show real problems and some self-contradictions with those interpretations. Be that as it may, one can show the futility of that procedure by looking at the actual physics of the problem.

The facts are: 1) The earth's dipole magnet is located in the core of the earth more than a thousand miles from the earth's crust (where the observable rocks are located). 2) It is an electromagnet dissipating almost a billion joules of energy per second now. 3) It is known to be decaying more rapidly than any other worldwide geophysical phenomenon. If the present decaying process continues the magnetic field will have vanished within the extreme limits of time of 2000 years¹ to 11,000 years,² depending upon whether one uses an evolutionary or a creationist presupposition. 4) There is at present no known source of energy to re-energize the magnet when its energy runs down to zero. One can safely say there is no theoretical reason at present to consider anything other than a single continuing decay process that started in the not too distant past, a creation only thousands of years ago, not millions or billions of years ago.

The question arises, is there some dynamo mechanism for reversing the magnetic field and some source of energy for running it, even though we do not know about it at present? One can of course hold such a view, but it is not very scientific to depend upon something for which one has no present physical justification.

Mr. Mark Montie, who is a top-flight creationist scientist, raises the valid question of whether or not there is a precedence of a magnetic reversal in the sun. Is this not evidence of a mechanism that could be applied to the earth's magnetic field? The answer to that question is very important. It should help clarify the basic problem that many scientists have in reconciling the creationist arguments against reversals with the tremendous amount of important data on magnetization patterns on the ocean floor and in bore holes and the like. These data are considered by many to justify the reversal theory, regardless of what philosophical motives may be associated with the theory.

The answer contains the following points: 1) A local magnetic field at a particular point near the surface of the earth can not be used as an indicator of the state of the earth's main magnet, its strong dipole magnet down in the core of the earth more than a thousand miles away. There are a multitude of magnetic influences near the surface which may mask the effect (field) of that remote dipole magnet. Scientists such as Gauss and others have taken literally hundreds of thousands of readings over extended portions of the earth several years of time and by very elaborate data reduction processes have reduced these data down to give one vector, the magnetic moment of this dipole magnet, for each particular epoch in time under consideration. It is essential to know that source vector (magnetic moment) if

one is to know the state of the dipole magnet. Ignorance of this requirement is the major reason for putting forward the so-called "evidences" for reversal, all of which are invalid.

2) The above stipulation was made with reference to the actual field observed at a particular location. It is vastly more difficult to obtain any meaningful relationship between the earth's magnetic dipole moment and the magnetization in a local rock. The problems are endless here. Magnetization in rocks can experience self-reversals in numerous ways, all of which are independent of the ambient (local) field. Furthermore the rock magnetization itself decays. The time and method of magnetization can not be known precisely. To make a long story short, no one has ever made a valid evaluation of the earth's magnetic dipole moment from any measurements of local rock magnetization. That is to say, no one has ever come up with the actual state of the earth's main magnet at any point in time calculated from observable rock measurements.

3) The magnetic field of the sun is vastly more complex than the magnetic field of the earth. The only magnetic fields that can be observed there are those in the outer portions of the sun, where there is great instability. The solar corona is so hot that it is continuously expanding into space, producing solar wind (consisting of charged particles) which blows outward through the solar system with speeds of 300-800 km/sec. Solar flares appear in regions of sudden coronal heating and vast quantities of electrons and protons are emitted. It is no wonder that magnetic fields are generated in complex patterns that show many kinds of reversal phenomena, but none of which can be shown to be a central dipole magnet analogous to the earth's dipole magnet.

4) That brings us to the question: Does the sun have a central dipole magnet, which actually reverses? The answer is: No one knows. What are commonly referred to as reversals on the sun are observable phenomena on the outer portion of the sun, but not a unified reversal of a whole dipole magnet which encompasses the totality of the sun. Sun spots show gigantic explosions with plasma streams from one spot to another on the outer portion of the sun. These are indeed evidence of violent "disturbances" associated with strong "local" magnetic fields. There are certain other regions where the "general field" may be directed inward on one end and outward on the other end, later reversing in those particular regions. This somewhat limited evidence of a reversal effect has been observed at approximately the same intervals of time (roughly ten to thirteen year intervals) as the sunspot cycles. But these too are what one might call "local effects" when one considers the immensity of the sun (almost a million miles across). No one has ever shown that there is a central dipole magnet for the sun, much less evaluate its magnetic moment. To talk about the sun spot cycles and some associated magnetic reversals is valid science, provided one does not interpret that to mean a reversal of the sun's presumed central magnetic dipole moment. There is no justification for making a claim for that kind of dipole

field reversal. Hence the observable solar magnetic phenomena do not set a precedent for a reversal mechanism to be applied to the earth's central magnetic dipole moment.

Our contention that there is no dynamo nor any other mechanism for the reversal of the earth's magnetic dipole moment does not mean there are no dynamo-type mechanisms for the so-called "local" magnetic phenomena. There certainly are dynamo-type mechanisms for these phenomena, which I choose to label as magnetic noises. For example there is a physical mechanism for separating electric charges in the earth's atmosphere and charging up clouds with high electric potential and a mechanism for discharging this as lightning. This is a dynamo-type mechanism that produces magnetic fields, and it does have sources of energy to produce this electric current. Similarly there are dynamo-type mechanisms in the sun's corona that separate charges and move them around; that is to say, produce currents and generate magnetic fields. There are also obviously sufficiently great sources of energy to move these separated charges about. These observable magnetic fields must still be classified as resulting from causes in the outer regions of the sun and not from some central source magnet in the core of the sun (roughly half a million miles from the surface). Or to say the least, no one has any data and data reduction which will solve the complex problem of the evaluation of a "presumed" central magnetic dipole moment in the sun. If a reversal mechanism can not be shown for a solar central magnet it can not be cited as evidence for a dynamo-type mechanism for the earth's central magnet.

The present status of evolutionary "evidence" for the presumed reversals of the earth's dipole magnet is as if geologists were to set up thermometers all over the Mount St. Helens volcano region and from these temperatures (regional) claim to show worldwide oscillations/fluctuations in the global temperatures of the earth. It is not that simple. It is important to make thorough studies of Mount St. Helens, but to apply the data or findings as an explanation of worldwide phenomena would be a distortion of science.

Instead of trying to force worldwide interpretation on anomalous magnetic patterns a creationist scientist should attempt to look for the regional non-conformities which may give clues to ores or minerals that are not uniformly distributed in the earth.

The author wishes to acknowledge the assistance of Dr. Seth Edwards for his editorial suggestions.

References

- ¹McDonald, Keith L. and Robert H. Gunst, July 1967. An analysis of the earth's magnetic field from 1935 to 1965, ESSA Technical Report IER 46-IES U.S. Government Printing Office, Washington, D.C. p. 1.
- ²Barnes, Thomas G., July 1973, Origin and destiny of the earth's magnetic field, Institute for Creation Research Technical Monograph No. 4, p. 24.

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Received 21 April, 1982.

SCRIPTURE, SCIENCE, AND ETHICS

Creationists, at least of the young-Earth variety, often appeal to creation with apparent age: things were created full-grown, as if they had had maybe years of previous existence. In some cases such a thing seems necessary; had Adam been created an infant, who would have cared for him?

The same idea might be extended to cases in which it is not so easy to see the necessity. One might even hold, for instance, that fossils were created in place in the rocks; although I do not know of anyone who has held that recently.

The objection always offered to apparent age is that, if God made things to look as if they had a history which they have not, He would be deceiving us, which He would not do.

Such an argument, as has been pointed out, shifts the discussion from natural science to theology: from the nature of the creation to the nature of God.

I wish to suggest, by an analogy, that the argument is weak in any case. The objection is that God would not have created a world in which the results of, and conclusions from, experience and experiment would not agree with what the facts are.

Now as well as natural science there is ethics. No Christian doubts that God has instituted certain prin-

ciples of conduct, which are taught in Scripture. Now, what about experience?

Presumably, one would, in lieu of any other information, count as right conduct what pays off, in the worldly sense. Some do. But does worldly success reveal God's will for us? Certainly not, as Scripture teaches abundantly. Well, then, since God has created a universe in which appearances may mislead in ethical matters (but He has given us the correct information) may the same not be true in matters of natural science?

LATE ACKNOWLEDGEMENT

In the article *Cosmic Space and Time*, by Bouw, in the *Quarterly* for June, 1982, it was stated, on page 31, that: "... one other factor ... has not been dealt with in ... creationist literature as far as the author is aware". This had to do with the fact that, according to present theories, interpreted properly, the alleged big bang would never have led to an expanding universe at all; rather it would all have collapsed into a black hole.

It has been pointed out that this was stated by St. Peter, Roger L., 1974. Let's deflate the big bang hypothesis. *Creation Research Society Quarterly* 11(3):143-155.

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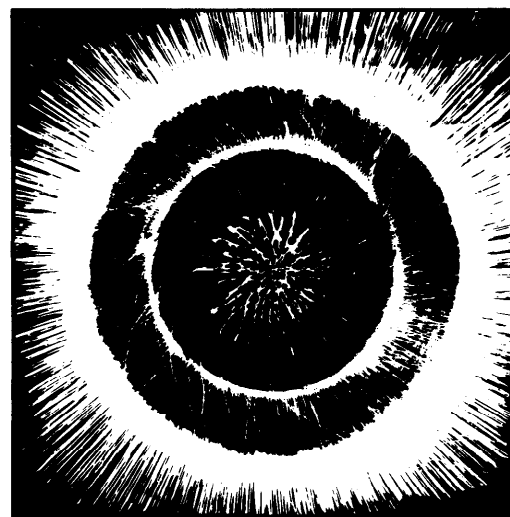
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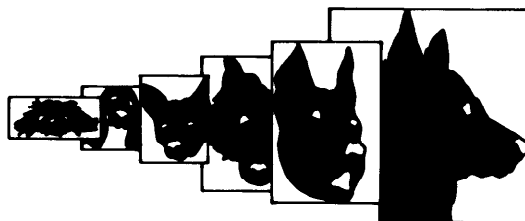
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