THE LONG-BARRELED BORE

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If the caliber of that title sounds a bit queer, consider for a moment the boring auger of the Ichneumon wasp. For here is a drilling tool that defies comparison or comprehension. Of course reference is made to the amazing ovipositor of *Megarhyssa lunator* and its several similar species.

Can the reader imagine boring into wood a decimeter deep with a mere thread? Or even surmise the purpose for doing so in the first place? Yet here is an insect that has the amazing ability to locate beetle larvae in the cambium layer of a pine tree by tapping the bark with the antennae. (Is this ultrasonics or sonar?)

Then the insect assumes the stance as shown in the cover illustration, and accurately aligns a "drill rig," which is composed of two spring-loaded sheaths to guide the threadlike egg tube to its ultimate destination of parasitizing the hapless larvae of the bark beetle.

The intervening layers of bark are penetrated by the ovipositor in a whip-sawing action, since that grim gimlet is equipped with microscopic saw teeth as seen in Figure 1. Many species can penetrate several centimeters of wood to reach their prey.

One can only wonder at the ingenuity of this adept drillpress. What a monumental sequence of mutations must have been necessary through trial and error to develop such a specific instrument! But can this precision be attributed to blind and unpremeditated permutation? Mere evolutionary speculation cannot suffice to bridge those yawning gaps of instinctive purpose, deliberate design, intelligent integration, and that perennial and plaguing question of survival before the perfection of such a complicated contrivance.

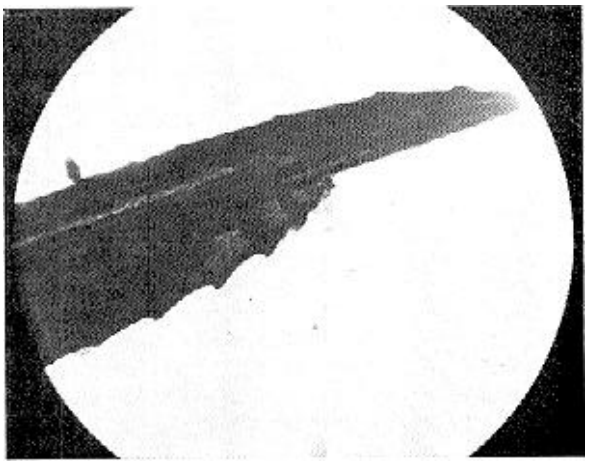

Figure 1. Photomicrograph of the drill point on the ovipositor of the Ichneumon, showing the saw-like serrations. The picture is magnified 150 times. Photo by Willis E. Keithley.

Confronted with such an intelligent and astute invention as an Ichneumon, it is not irrational to exclaim with John Milton,

> Great are thy works Jehovah!
> infinite Thy power!
> what thought can measure
> thee or tongue
> Relate thee!

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WAS EVOLUTION REALLY POSSIBLE?

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The theory of evolution was propounded by Charles Darwin, who claimed about 100 years ago that all existing life on earth—animal and vegetable—developed from lower creatures, in a continuous chain of adventitious processes. The first life forms—the living cell—had come forth supposedly out of non-living material. Despite widespread acceptance of this doctrine in scientific and lay circles, it contains much that is imaginary and it will not stand critical examination in the light of modern science.

Darwin's Theory

The Origin of Species — that was the title of Charles Darwin's book, first published some 100 years ago. In it, Darwin developed a theory based on the possession by each type of creature of its specific characteristics and attributes.

So long as these attributes are attuned to the natural conditions prevailing within the particular time and environment, these creatures continue to exist, proliferating generations bearing these same successful characteristics, and indeed improving them, by means of the process of "natural selection." This "natural selection" is the outcome of a continuous struggle for existence, in which the strongest survive.

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On the other hand, creatures with less well adapted facilities—the "weak"—are defeated and disappear. Thus, through this process, which Darwin thought had continued through millions of years, development toward better and higher forms of life took place, until man "appeared" from forms less developed than himself.

The Modern Theory

Darwin's theory, in its general lines, received wide acceptance in the scientific world and thereby also with the general public. However, Darwin's original formulation and that of his many emendators, both in his own and in later generations, is not currently held by men of science. On the contrary, many of Darwin's ideas have been found to be naive and mistaken.

Attempts at improvement, and new ideas of later researchers, led eventually to a modified theory, which contains main points as follows:

There are continual changes in forms of life, both beneficial and regressive. These changes take place in the hereditary factor (the "gene") of the organism and are transferred to offspring. They are caused by "chemical errors" (mutations) occurring at random in the "hereditary factor" of gametes which is itself of chemical constitution and therefore is subject to chemical reaction. Since the fault is random, it may happen—and it is admitted to do so in most cases—that it will be detrimental, damaging the organism or even making its further existence impossible. But—so it is claimed—some few faults may be beneficial, and these will give their bearers and their offspring improved characteristics.

That handful of fortunate creatures—to continue the argument—in which a mistake occurs with a "beneficial effect on increasing reproductive fitness"—becomes preferred above their numerous neighbors of the same species, becoming the "strongest" who conquer the available "living space" and eliminate during the generations less fitted members of the species.

Random processes such as these—so it is contended—continue for tens of millions of years, so that gradually and slowly new, better life forms are developed, continually progressing and improving, whilst at the same time weaker forms, lacking the ability to meet the exigencies of life and the pressure of competitors, are destroyed and disappear.

Some (but Not All) of the Parts of the Theory Are in Accord with Observations

Explanations accompanying this doctrine, called "synthetic evolution," are compatible in some ways with present knowledge about the chemical structure of the "hereditary material." This "hereditary material"—the gene—is in fact a portion of a molecule of DNA, found in the nucleus of cells of all life. Successful experiments and clear observations have been reported of chemical faults—"mutations"—occurring in nature.

It is even possible in the laboratory to excite artificial mutations,[1] and to isolate those organisms in which mutation has occurred. It is also possible to observe what seem to be cases of natural selection, in the development of steadfastness to difficult conditions. Examples are bacteria which can withstand antibiotics, insects impervious to insecticides, and animals and plants which can live in circumstances of cold, heat, and dryness.

(It might be added, though, that often the selection lasts only as long as the exigency which caused it. For instance, when use of an insecticide is stopped, the number of immune insects may drop to a small fraction of the total. Again, even though selection may favor black moths in certain places, some white ones continue to exist. In other words, the selection is often observed not to eliminate completely the "less fit.")

It seems likely that because of such observations the theory of "synthetic evolution" has gained ascendance over older versions of the theory, now largely abandoned. Of course, the newer theory is still continually being revised and modified.

New Theory Is Widely Accepted

At the present the "theory of evolution" or the "theory of the development of the species" is accepted as a matter of course by the majority of biologists, who maintain that it accounts for the origin of life as well as for the existence, distribution and typification of species. Relationships between the various families and the common factors in the morphology and systematics of the differing life types are commonly discussed in terms of the theory.

In fact, the theory is solidly entrenched in the biological sciences. Scientific literature has brought the doctrine into all institutions of learning at every level, and modern means of communication have spread it to every corner of the globe. Both intellectuals and the non-scientific public absorb the action continually as it is pressed forward by all this publicity. Any competition is neither very vociferous nor very well heard. The theory is quoted blindly on every hand and is blandly accepted by those who study it in the belief that it has been verified according to accepted scientific principles.

Evolution versus Creation

It would be fair to say that the essence of the theory of evolution, as it is usually presented, is randomness and chance. In opposition to this is the belief that the great variety of things in

the natural environment are the result of intelligent design. Such design must have come from something outside the things themselves; a Designer is implied. In cosmogony, such an origin by intelligent design from outside is commonly called Creation; and the Designer is the Creator.

Arguments will be presented shortly to show that the only reasonable belief is that the world and the things in it have come about by Creation, not by chance. At this point, however, a question might be asked. Did the Creation take place little by little, extending, perhaps, over a very long span of time? If so, it might appear superficially like the alleged evolution by chance. Or did Creation occur in a very short time, say a few days? If Creation is within a Creator's power at all, it would seem that there would be nothing impossible to Him in a quick Creation.

It may be that this question of how long Creation took is one which cannot be answered by studying the world around us, since Creation was, in any event, completed before man, the scientist, came upon the scene. The only way of deciding may be from records which are believed to be true accounts of what happened.

Since the purpose of this article is to show that Creation is the only possible explanation of the natural environment, the author does not intend to investigate how long the Creation took; the question fast vs. slow will not be considered further.

Rather, discussion will center on certain aspects of the theory of evolution as it is ordinarily proposed, on some of the effects of the theory, and whether the theory is, in fact, a reasonable one.

Students of Biology Have Been Wronged

Original researchers in biology, who accepted evolution and those who laid the foundations of the new theory, ignored the question of the statistical probability (or improbability) of supposed evolutionary phenomenon. Even now, very few critical mathematical computations have been made on this aspect. However, when such calculations have been made, the chances of the occurrence of significant changes, even in the period estimated by proponents of the "synthetic theory" at some 100 million years, have been shown to be almost nil.[2]

In the light of current knowledge of biochemistry, facts contradict every hypothesis proposed to explain any mechanism whatsoever for such changes and the construction of new genes. The lack of a logical explanation for the source of life is not the only deficiency of the theory; many authors have already demonstrated mathematically that random self-development of an organism is impossible in any geological period whatsoever.[3]

What Are the Factors Causing New Characteristics?

One need not be a savant to discover the improbability of the hypothesis of random development of complicated systems, such as materials exchange and the energy utilization of sugars, or the physiology of the muscle and nerve.

Sugars, as is well known, are the main source of energy for the body, and an important material in the making of the various compounds in life. For the utilization of grape sugar (glucose) by the body, the sugar must undergo a chain of reactions carried out through enzymes—adapted protein materials which hasten and supervise the execution of the chemical reactions of organisms. No fewer than ten types of enzyme, specially adapted for the purpose, are required for the successful execution of the process termed "glycolysis."

Nor is this yet sufficient, for the complete utilization of the products of the process requires numerous further sets of enzymes, the one interweaving with the other. These are the sets which carry out "combustion," i.e. the complete oxidation, extracting the last bit of utility from the material. Every enzyme type within the set seems to have a defined task, involving a specialized structure.

(All of the anaerobic glycolytic pathways, for instance, are interdependent, acting in sequence to supply a vital source of energy to tissues. Although occasional mutants of their respective genes are encountered in healthy subjects, these mutations are not maintained at polymorphic levels in large populations, presumably because they have no relative advantage and, indeed may be disadvantaged. This specialized structure, then, has to be very precisely constituted to be suitable for the task which it has to perform.)

The plan for this structure, including the control and fine adjustment systems, is carried in information provided in advance in a special gene or genes (nucleic acid) found in the chromosomes of the cell nucleus. These are carried forward hereditarily from generation to generation, together with all of the information locked in them. It is evident, therefore, that for a new enzyme to come into being and to be acquired by the life form carrying it, it has to appear as an item of information in the gene, i.e., a new gene must appear.

If this is to happen, it must be through the chemical mutation of another gene, as has been mentioned. The mutation would alter the gene, which would acquire a new meaning, and would be transformed, if everything should go well, into a new gene bearing new information. For a set of ten new enzymes to come about in this manner, at least ten new genes would have to

happen, through ten different, independent, mutations.

Appearance of New Cells

All muscles of the body—skeletal muscles, and muscles of internal organs—operate through contraction. This is their special characteristic, not found in other bodily cell structures. The relatively great pulling power of the muscles is produced by their contraction when they receive nervous excitation. When the excitation passes, the muscle relaxes and returns to its former state.

The exact process of contraction and relaxation is constituted through electrochemical and mechanical operations occurring simultaneously, and continues to be the subject of research, since the process has not yet been elucidated completely. It is known that muscles contract as a reaction to instructions emanating from the nerve center, which sends out signals to nerves attached to the muscle fibers; these signals cause chemical changes in the muscle and the electrochemical energy is transformed into mechanical action.

Imagine an individual muscle cell (fibril) that first appeared in the world, within some multicelled creature. With what new tools must it be equipped, in order for it to be of any utility whatsoever? It is necessary (a) for it to include several thousand new molecules of proteins called actin and myosin, and (b) for these molecules to be in a parallel, coordinated order of a special kind resembling a comb, in order for them to react simultaneously when stimulated.

And the cell must (1) be situated between two specific supporting points, (2) be equipped with a motor nerve cell to trigger it, (3) have a suitable conjunction between the nerve cell and muscle, and (4) be part of a control system for the operation of the muscle when excited by the nerve. For the appearance of a new, efficient muscle of this kind, which would be suitable for use by an animal, several tens of independent mutations are required at the very least.

Natural Selection

Unicellular creatures, or primitive multi-cellular ones, multiply relatively quickly; from several individuals it is possible to obtain within a short time an almost unlimited number of offspring determined only by the living space available.

Once the living space has been taken up, the life forms reach saturation point, their numbers cease to grow and remain constant, or even decline. However, it would be wrong to suppose that at saturation point the cells entirely cease multiplication. Actually reproduction continues, but the death rate grows to equal or exceed the "birth rate" and hence the number of living cells ceases to increase.

In this situation, of all the creatures "born" within a given timespan only a few succeed in establishing a widespread family. Those which do so are the more successful, in Darwinian terms; their individual characteristics grant them victory in the struggle for existence, it is said; they overcome others, multiply, and pass on their superior characteristics to their heirs.

But by this argument, for a new system of material utilization such as that of the sugars, or a new type of cell such as the muscles, to appear as a permanent part of some creature, it is necessary that the new feature give its possessor some superior attribute enabling it to succeed in the process of natural selection. However, a new feature or phenomenon can be beneficial only when there is a complete set containing the minimum number of enzymes required, or when there is a network of parts and mechanisms fully integrated with the cell and its surroundings.

Number of Possibilities Is Limited

Assume that at least ten mutations must take place at once, in one and the same cell, for such a progressive change to occur. This is of course a minimum requirement, very farfetched, and it is highly doubtful if, in fact, meeting such conditions would be sufficient.

What is the possibility of a new metabolic facility arising within all of the generations of a typical unicellular creature (such as bacteria), which could have existed on earth? An approximate calculation shows that, during two billions of years, there would have been a maximum of 10^{48} births (or cell divisions) of unicellular animals, whilst in order for it to be possible for a specific creature to acquire a characteristic involving ten mutations, 10^{80} births (or cell divisions) are required. It can be seen at once how wide the gap is, arithmetically speaking.[4]

Even more remote is the possibility of a multicellular creature acquiring a new type of cell such as a muscle cell. During two billion years there could have been only 10^{44} births or multicellular animals, while the best probability for the acquisition of a new type of cell would be one individual out of 10^{160} births.[5]

Were Life Conditions in the Ancient World Different?

Many researchers find refuge in the idea that in very ancient periods the number of mutations was greater, owing to some special conditions then prevailing. The world, they suggest, was then being bombarded with a great quantity of cosmic rays or other radiation, causing a high rate of mutation, so that all new characteristics could have appeared at random.

It is regrettable that this idea has proven a pitfall for so many, for, on the contrary, a high rate of mutation causes death and disappearance;

most mutations cause destruction of vital genes, or the appearance of degenerative phenomena. It is well known that excess exposure to radiation has destructive effects, such as destruction of cells and structures, or birth of monstrosities lacking entire limbs.

It is permissible to suppose that the maximum rate of mutation which would not lead to elimination of the species would be one per million (about the number of vital genes); even then, in the first case considered, the probability of the appearance of a beneficial metabolic characteristic would be one in 10^{60} births, and the chance for the appearance of a new muscle or nerve cell would be one in 10^{120}. Even then there would be no possibility of such an evolution in the time available and with the number of creatures which could have existed.

Not only this; there are many types of creatures which have acquired entirely new characteristics (or so it would have to be maintained according to the theory of evolution), whilst living in situations which protect them from cosmic rays to a greater or less extent. Land creatures such as moles; earthworms; cave dwellers, such as bats; and sea inhabitants of the deep waters (which cannot live near the surface) would fall into this class.

No Substitute for Creation

All calculations made of the probability of the gradual beneficial development of characteristics and new genetic systems, one after the other, in millions of life forms show that during the limited time of the existence of the earth there could have been no possibility of the random appearance of life of this nature. The doctrine of evolution was founded by men who relied heavily on the supposition "that anything could have taken place on earth during an unlimited period." That supposition will not hold any more today. The tree planted by the original proponents of evolution has yielded fruit which has been consumed on all sides, but the tree has no roots.

The truth is that, today, men disagree about even the approach to the determination of the origins of the organisms now living on earth. Moreover, examination of astronomical bodies during space flights, and by telescopes, until now has resulted in only one conclusion—that life is a phenomenon unique to the earth, at any rate in that portion of the cosmos to which man has direct or indirect access. To the present human ingenuity has brought forth no really scientifically well-founded theory to explain the origins of life.

There is no reasonable substitute for the Creation of the world, and all its creatures, through a supernatural force above our comprehension—G-d Himself.

References

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[3]Coppedge, James F. 1973. Evolution: possible or impossible? Zondervan Publishing House, Grand Rapids, Michigan.
[4]Were the earth's surface equal to that of the sun, it would have been possible to get only 10^{52} births; and even were the earth's circumference as large as that of the whole solar system the number of births possible would not be more than 10^{60}.
[5]Sufficient to remember that the number of atoms comprising the earth probably does not exceed 10^{52}, while the sun contains no more than 10^{58}.

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