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HUTTONIAN BIOLOGY AND GEOLOGIC UPHEAVAL

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Abstract

James Hutton's views of essentialist biology lead to the necessity of a singular epoch of rapid geologic activity.

Introduction

The central theme of James Hutton's *Theory of the Earth* is that the terrestrial surface is constantly being eroded into the sea from which solidified sediments are uplifted to form new land. This continual process of "reproduction" not only affects the mineral constituents of the world, but also produces soil suitable for land plants which provide nourishment for an extensive variety of animals. As Hutton noted:

> The formation of the present earth necessarily involves the destruction of continents in the ancient world . . . we clearly see the origin of that land, by the fertility of which, we, and all the animated bodies of the sea, are fed.[1]

Hutton views the global actions of dissolution and renovation as integral factors in the generation of fertile soil which enables our planet to "maintain and perpetuate" a system of flora and fauna.[2] According to Hutton, diverse biota have sustained a distinct existence with respect to the earth throughout geologic history. In like manner, he affirms the individuality of *terra* by rejecting Buffon's proposal concerning the solar origin of the earth.[3] Buffon suggested that an accidental collision of the sun with a comet was the mechanism which formed the planets.

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Hutton's attitude of discontinuous essentialism considers the sun, the earth and numerous classes of life to be discrete entities of nature. Although he argued against the transformation of one basic organizational structure into another, his synthesis was not entirely static. In his unpublished *Principles of Agriculture*, Hutton describes the diversification of "varieties" within "species":

> . . . let us suppose only one form originally in a species; and that there had been established in the constitution of the animal, a general law or rule of seminal variation, by which the form of the animal should constantly be changing, more or less, by the influence of different circumstances or in different situations; and we should in this see a beautiful contrivance for preserving the perfection of the animal form, in the variety of the species.[4]

Strikingly unique individuals may arise within a "species" yet among these the essential adaptive features are *preserved*. This anti-evolutionary stance denies the premise that there are no natural constraints on heritable variation. Manier points out that it was impossible for Darwin to demonstrate that the postulate of unlimited variation "either followed from or was compatible with some well-established law of nature."[5] The basically minor modifications observed through artificial and natural selection suggest that distinct bio-

logical categories may have persisted for the length of geologic time while remaining essentially the same.

Paleobiology

In Hutton's framework of paleobiology, "The animals of the former world must have been sustained during indefinite successions of ages."[6] He contended that fossil taxa are no different than the present array of life.[7] With the exception of extinction, paleontological research is consistent with the principle of biological stability. The orderly succession of prehistoric life through the geological eras has been interpreted to show how unique assemblages of life forms were distinct in various periods. C. W. Harper states that:

> Fossil taxa often occur in a regular vertical order in strata, yet, this regularity does not necessarily imply that the taxa succeeded one another in the same order in time[8]

If mammals are not found in the early Cambrian, this does not irrefutably document the presumption that the first trilobite appeared before the first mammal. The absence of a particular fossil taxon does not require its nonexistence for a certain epoch. For instance, the fossil record of coelancanth fishes does not extend past the Mesozoic; however, this group continues to survive in the form of *Latimeria* (a genus of coelacanths).[9] Even though paleontological succession reveals a general trend toward more complex organisms in younger strata, such a pattern fails to conclusively validate a common ancestry for all plants and animals. As Kitts affirms:

> Darwinian paleontologists cannot take much comfort from the fact that the fossil record does not compel them to reject their theory because it does not compel them to accept it either.[10]

One possible evidence against Huttonian biology is the fact that definite classes of biological diversity mark the distinctions between the Paleozoic, Mesozoic and Cenozoic eras. If basic types of organisms exhibit relative constancy, this alternative to evolutionism must account for the sequential nature of the paleonological record. Anti-evolutionist G. H. Harper suggests that the assemblages of biota which characterize paleobiological periods of the standard geologic time scale occupied a large proportion of local populations where fossilization occurred.[11] A crucial problem for such a scenario is the usual rule that relatively simpler fossils are found in older strata. It is hard to imagine how G. H. Harper's idea can predict the order seen in the first appearances of primary adaptive groups, from fish to amphibians to reptiles to mammals. In addition, it is reasonable to assume that the statistical rates of fossilization for "advanced" and "primitive" phyla would be very nearly equal through the geologic ages. It seems unlikely that G. H. Harper's proposal can accurately describe the observed order of succession.

Rapid Geologic Activity

An opposing view of paleobiology regards the major portion of the ecosystems represented since the early Cambrian "explosion" as occurring within a single period of earth's history. This conjecture requires a swift formation of most fossil bearing strata. Postulating that the majority of fossil taxa were part of a singular epoch of rapid geologic activity (SERGA) is in direct agreement with the Huttonian concept that morphologically "simple" and "complex" individuals have existed together through the duration of geologic time.[12] It seems likely that the vast time spans supposed by orthodox paleontologists to separate trilobites and whales did not exist if these organisms lived concurrently. It is difficult to determine what possible mechanisms associated with a SERGA might account for paleontological succession; however, the proposition of a SERGA appears to be the most sensible framework which follows from the assumption of essentialist biology.

Another potential way of correlating the fossil record with Huttonian biology is to consider multiple epochs of major geologic upheaval. If there were many epochs of rapid deposition, then whatever paleontological pattern of succession might be preserved would repeat itself. Since the paleobiological data indicate just one general order of life forms, it seems that the SERGA concept is the most logical conclusion which follows from the premise that essential types of life have remained basically the same throughout earth's history. Otherwise, the rock record would reveal many instances of a recurring fossil order corresponding in each case to a period of rapid geologic action. Furthermore, several lines of evidence show the plausibility of a SERGA.

High magnitude geologic events have a greater chance of preservation in the rock record than those with normal rates of deposition. Unconsolidated sediment deposited during periods of slow activity may be removed by an unusual episode of erosion. Hutton said that some geologists have:

> . . . supposed certain occasions in which the consequence of those natural operations have been extremely violent, in order to explain to themselves appearances which they know not how to reconcile with the ordinary effects of those destructive causes.[13]

Tremendous incidents of geologic upheaval on a global scale are apparently rare; nevertheless, such occurrences have a great likelihood of being preserved in the stratigraphic record.

Exceptions to the basic order of fossils would be expected in the course of a SERGA. One example is in the Alay Range of the Soviet Union in which Silurian rocks overlie middle Carboniferous carbonate deposits.[14] The standard account of this anomalous relationship of "older" strata upon "younger" rock involves thrust faulting along with enormous horizontal displacement of geologic structures. Rezvoy remarks that, ". . . the thrust planes, where they can actually be observed, show no trace of large displacements along them."[15] Furthermore, Rezvoy claims that the existence of a thrust plane ". . . can be inferred only from the change in the fauna collected both above and below it."[16] In other words, the primary reason for considering these strata as "reversed" is the fossils rather than the structural data.

Adopting the concept of a SERGA implies a condensed chronology of much of the geologic column. Studies concerning isotope ratios in coalified wood indicate that the periods of historical geology may be 10,000 times shorter than the commonly accepted ages.[17] Compressing the virtual sum of fossiliferous strata into a comparatively small time interval requires rapid processes. An illustration of such activity is found in Germany's Geiseltal lignite which contains

preserved insect colors and chlorophyl that necessitate very quick fossilization.[18]

Summary

Although most of today's geologists accept evolutionary theory, James Hutton the "father of modern geology" held to the view that the basic forms of life have persisted relatively unchanged during the span of geologic time. This anti-Darwinian perspective carries significant implications regarding the nature of historical geology. After considering several alternatives it is concluded that the most consistent position with Huttonian biology is to view the majority of the geologic record as the result of a relatively short period of geologic upheaval.

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PANORAMA OF SCIENCE

Vitalism: A Neglected Weapon?

The question, vitalism versus mechanism, was debated often in the past by those who studied nature. Of late, little has been heard of the matter since secular biologists, with very few exceptions hold the mechanical view. It might be expected that it is difficult to get any argument for the vitalistic position into the literature.

The mechanistic position is that all of the features of living things are due to the interactions of the molecules of which the living thing is composed (the same interactions we study in chemistry or physics). A vitalist, on the other hand believes that there must be something else — call it a spark of life, or something of that sort.

It is sometimes said that vitalism is disproved by the fact that many of the chemical products of living things can be produced in the laboratory, *in vitro*. But surely that argument is fallacious. Some of the same reactions which occur in a blast furnace might happen in a volcano. But nobody doubts intelligence and planning are involved at the steel producer—things which would never be found in a thousand Mount St. Helens.

One of the several good arguments that can be given for vitalism concerns the development of living things from single cell to adult. The common view now ascribes the development to the code contained in the DNA in the first cell. No one doubts that it is part of the answer and the discovery of DNA was a great one, helping to show how complex living things really are. But can anyone explain, for instance, how a certain sequence of molecules causes the spots on a peacock's tail? To say "By enzymes" is merely to imitate the old lady who said that machinery works "with screws, somehow." And the matter is much more difficult concerning instincts, which nobody doubts to be inherited in some cases. I know of at least one creationist who seems to hold a similar view: that DNA is inadequate to explain these things.[1, 2]

Another argument considers the nature of the mind. Some have said that thought is merely an arrangement or action of cells or parts in the brain. But surely such theory is incredible. How could an abstract universal idea or feeling, such as love, be a material arrangement? No, there must be something which is non-material.[3] If there is this non-material aspect (to use a rather indefinite word) in us all of our lives, is it not likely that it was present from the beginning? And if so, is it not likely that it contributed to our development?

I may be asked, what has this to do with creationism? Consider that if vitalism is true, the chance development of life from chemicals floating around somewhere is impossible. For nobody has proposed that the alleged primeval soup contained this vital factor (we call spirit) brought about by strokes of lightning, or something of the sort. If vitalism is true, the original life would have required some intervention; it must have been created.

Then, of course, one can continue. If some life, at least, required an intervention, a creation, we are entitled to wield Ockham's razor, and to accept creation as the reason for the diversity of life, as well as its origin.

It is suggested, then that creationists may find renewed study of this subject very worthwhile.

Contributed by H. L. Armstrong

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