FOSSIL ZONES

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For the first third of this centrury most creationists held to the concept that there was no general sequence to the fossils, but that they were arranged into the "geological column" simply to support the theory of vast ages of time. More recent studies suggest that there is a general sequence, although not in such detail as the evolutionists hold. In order to explain this orderly arrangement, the ecological zonation theory has been proposed, and has been accepted by many creationists. According to this theory the fossil "zones" are the remnants of the original life zones of the antediluvian earth.

Some questions and problems are discussed, and answers suggested.

Historical Outline

Modern uniformitarian geology was introduced by James Hutton to the Royal Society of Edinburgh[1] in 1785. After describing the globe, its core, water, land, and air, and the various geological processes, he declared that their formation must have taken "an indefinite succession of ages." He imagined one cycle after another, and considered that "the result, therefore, of our present inquiry is, that we find no vestige of a beginning,—no prospect of an end."

When Charles Lyell published his *Principles of Geology* in 1830, he built it on Hutton's uniformitarian hypothesis. This, the first textbook on geology, went through 12 editions and was used in colleges in England and America for 50 years. By the end of the century following Hutton's promulgation of uniformitarianism this viewpoint had become almost universal.

Lyell's geological philosophy was clearly evolutionary, for though his book was published nearly 30 years before Darwin's *Origin of Species*, he wrote: "The disposition of the seas, continents, and islands, and the climate, have varied; the species likewise have changed."[2]

Practically all of the scientific world had accepted the idea of evolutionary geology by the end of the 19th century, and many church people had adopted some kind of progressive creationism or theistic evolution. Ardent advocates of evolution boastfully claimed that the Genesis "myth" of the Flood had been completely obliterated.

When George McCready Price in particular, initiated the 20th century revolt against evolution, he charged that the churches had apostasized and were following after pagan philosophies.[3] In 1906 he published a small book challenging the current geological concepts of long ages of time. Uniformitarianism, he stated, was both unproved and unprovable.[4] He argued that the "geological column", with different periods in consecutive order, was arbitrary. Rocks, he declared, had been classified by their contained fossils without respect to their actual position. In his *New Geology*, published in 1923, he stated what he called the Law of Conformable Stratigraphic Sequence: "Any kind of fossiliferous rock, 'young' or 'old', may be found conformably on any other kind of fossiliferous rock, 'older' or 'younger'."[5]

He stated further that "in olden times as now there were zoological provinces and district."[6] But these provinces, as he called them, had no orderly arrangement. They were scattered hit-and-miss, and the arrangement of them into a sequential order was regarded by him as merely a subterfuge to support the evolutionary theory.

The views of Price were accepted by many church-related colleges, and by several fundamentalist church leaders. Several evangelists ardently proclaimed the doctrine of creationism, basing their arguments on ideas presented in various volumes published by Price. It was not until a third of the 20th century had passed that any serious challenge was given by creationists to this interpretation of the rocks, or proposals made to modify it.

Reconsideration

During the school year 1920-21 I took the course in geology that Price taught at Pacific Union College, in Angwin, California. Then, after graduating in 1922, Price having moved to another college, I took up the course and taught it for 25 years. At first I used his *New Geology*; and, not having read widely nor done any independent field work, I continued to promote the views regarding the fossils that were given in the text.

In the spring of 1936, while discussing the distribution of the fossils, one of my students questioned the interpretation given in the text. He was the son of an oil-well promoter in Oklahoma, and had grown up in the oil business. "But," he said, "there *is* an order to the rocks. The oil drillers depend on that, and can tell in just what stratum they are by the fossils."

Upon his invitation I spent a month with him visiting oil drillings, consulting with oil geologists in their laboratories, and traveling over Oklahoma and northern Texas studying the arrangement of the rocks. When the month was over, it was quite apparent that further study had to be given to the problem. For the next nine years I spent much time reading geological reports and books on stratigraphical geology, and making field trips through California and other western states studying the rocks.

By 1945 I was thoroughly convinced that there was a natural order to the arrangement of the fossils. The question now was, How can one interpret that fact without accepting the geological ages theory? Some other explanation was needed in order to be able to hold to the Biblical account of creation and the Flood.

In 1933 I had graduated from the University of California with a major in the field of ecology, and as

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the studies proceeded on the rocks it became evident that there was a close similarity between the arrangement of the life zones in the field at present and the arrangement of the fossils.

Ecological Zones and Fossil Zones

Wherever studies have been made, the present world of life has been arranged in life zones (or associations or communities—whichever one may choose to call them). Each zone has a characteristic assemblage of species fitted to the environment. In different parts of the country are zones of similar ecological position, but with different species. For example, in the Sierra Nevada mountains of California is a zone dominated by the Western Yellow Pine. In the Rockies, in the same ecological zone, is the same pine, with an assemblage of different species. The Yellow Pine is taken as an indicator of the Transition Zone, having exactly the same relation to the zone as do "index fossils" to the fossil zones.

Not only do the lands show ecological zonation, but the oceans do as well. Wherever mapping has been done, the waters are definitely zoned, as may be seen in the reports of many marine stations.

Interpretation of Fossils in Terms of Zonation

The tables of "correlation" which are found in the geological reports are attempts of outlining the relative chronological positions of the strata. They might, however, be just as readily considered to represent relative ecological position. Authors of geological literature, refer to the "age" of a formation. This might as well mean that that formation had an assemblage of fossils that relate it to other formations ecologically. But there is order; for if there were not, it would be impossible to make any system.

If one were to postulate a direct creation by an omniscient Creator, then certain assumptions would be unavoidable, among them the following:

(1) The surface of the earth would be diversified by mountains, plains, lakes, rivers, and seas of different sizes and at different levels.

(2) These diverse features would be the home of many different kinds of plants and animals.

(3) The plants and animals would be grouped in communities according to their individual adaptations to the varying environmental conditions, and these communities would, in their broader aspects, constitute the major life zones.

(4) The arrangement of the life types in that original creation would not necessarily be the same as at present. Indeed, it would be much more orderly than at present, for the present world is biologically impoverished, and has been terrifically distorted and confused by the vicissitudes through which it has passed.

The theory of ecological zonation was first published[7] in 1946. Since then it has been quite generally recognized by many conservative creationists who have studied it. However, a few have expressed questions that puzzle them; and attention should be given to some of these questions.

Of course anyone who holds to progressive creationism or theistic evolution, or any other aspect of the "gap theory" that allows life upon the earth before the third day of creation week a few thousand years ago, will not accept this theory of ecological zonation; in fact he would have no need of it, as it would not fit into any scheme that allows for long ages for life upon the earth.

A Number of Questions Considered

(a) How could the Flood, some ask, arrange the fossils in any order? Would it not mix them all up so that there would be no order or sequence of any kind?

This question, in my opinion, arises from a misunderstanding of the nature of the Flood. According to Genesis 8:3 as I interpret it, the waters reached maximum height at the end of 150 days or five months. Therefore the rise of the waters must have been comparatively gradual. Without doubt there would be disturbances in the waters of the earth that would produce the lower sediments, and there would be a wash-off of soil to produce mud that would form the shales.

In the Cambrian rocks black shales are often found. I have seen hundreds of feet of black shale in New York and Ontario. The color has been attributed to the presence of organic matter. The suggestion has been made that these shales might have been formed from ancient soils, although modern geologists admit of no land in "Cambrian times". But to the creationists the black shales may be significant.

As the waters rose higher and higher, and the turmoil caused waves to break against the land, zone after zone would be washed away and spread out in the surging waters. Eventually there would result in sequence of deposits with plants and animals in the same order in which they had been on the land. Of course one cannot expect perfect coordination between the fossil zones and the original land zones, as there would be some mixing. But the fact that there is any zoning at all indicates that there must have been zoning on the land, unless one ascribes it to geological ages.

(b) Sometimes the question arises: Why would not land plants appear in the Cambrian even, if the sediments were produced by Flood waters? But the picture here suggested for the rising Flood waters, comparatively little vegetation would be carried into the seas until the disturbances reached a certain volume. Any plant remains that were carried into the seas would float on the top, and would not be found in the bottom sediments—not until the violence of the storm had increased to tear away masses of the land and bury plants and animals beneath them.

(c) What about the repetition of certain fossil layers? In some cases there is an alternation over and over again. In the Paris and London basins are six cycles, marine sediments having come from the north and terrestrial from the south. In Burma are alternating beds varying in thickness from 1,000 to 12,000 feet, but all appear to have been deposited in water not over 600 feet deep. Coal beds show many alternations with shales, sometimes as many as a hundered such alternations being seen.

A most notable example of cyclic sedimentation is found on the Gulf coast of Texas. Sellards reported this graphic picture:

> The outstanding feature in the history of Cenozoic sedimentation in Texas is a continuous and relentless struggle between the encroaching waters of the Gulf and the heavily loaded, large streams....
>
> A correct interpretation of the geology depends upon a knowledge of the remarkable intergrading and interbedding of the two types of sediments, the continental and the marine....
>
> At least nine maximum transgressions of the sea occurred, and . . . each transgression was followed by a maximum regression. . . .
>
> Abundant river water heavily laden with sand and silt meandered across the flat coastal plain. . . . Trunks of trees, logs, and large branches were carried downward by the currents. . . . The heterogeneous mixture of sands, clays, and lignites, the remarkable exhibits of current bedding, the stream ripple marks, . . . can be explained only by a constant shifting of river beds over a flat, swampy coastal plain.[8]

As one considers what is described and evidence in other parts of the earth, it becomes evident that terrific back-and-forth washing or wave action was involved. This would account for the alternation of strata which might, superficially, give one the impression of a succession of habitats or communities.

(d) Some species range through several zones. How does this fit the picture?

For the last five years I have been photographing the plant communities of California. It is noticeable that while some species are limited in their range, others run through many communities. Certain species may be found all the way from the Great Valley to the top of the Sierra. But this does not present any difficulty in defining the communities, or life zones. The recognition of a certain community or zone depends on the assemblage and not on any one species. In many communities from two to ten species are considered as indicators, because they are typical. Others may be present also, but may range widely.

The situation is the same for fossil zones. The fact that some species range more widely than others is no problem.

(e) But, it is asked, would not violent Flood waters carry some species completely outside their original habitats? That is true; but it would be true also that they would be most abundant in the original habitats. Here is an illustration: In the Cambrian the following are found:

> Sponges are common, and they run up to the Pliocene
>
> Brachiopods have the same range, but are markedly members of Cambrian.
>
> Jellyfishes are few, but range up to Pliocene
>
> Tetra Corals occur up to the Permian.
>
> Gastropods occur in some numbers, then a few up to Pliocene.
>
> Trilobites are very abundant, and a few occur as far as Permian.
>
> Starfishes occur, and a few are found up to Pliocene.

But now take a look at the outstanding features of the major systems. Each has its characteristic assemblage of life forms. The systems from Cambrian to Mississippian are almost entirely marine, although a few simple plants are found in Devonian and Mississippian.

In the Pennsylvanian a marked change may be seen. A vast array of plants are to be found, which appear to have thrived on marshy land or along the borders of waterways. Also many amphibians are included.

The Pennsylvanian is famous for coal beds. Notable, also, in this system are gigantic delta beds, indicating great volumes of water.

In the Mesozoic rocks amphibians, reptiles, and different types of plant life are most common.

The Tertiary rocks are usually more broken and scattered and laid down on the tilted and broken layers beneath them. They contain higher plants and animals, particularly mammals.

It should be noted that the Cambrian is marked by the abundance of trilobites, the Devonian by fishes, the Pennsylvanian by peculiar trees, the Mesozoic by great reptiles, and the Tertiary by mammals. Of course evolutionists believe that this indicates a succession of life in time; it is just as strong an indication of an arrangement of life in space—ecological zonation.

Some creationists are puzzled by the presence of marine fossils in the Mesozoic and Cenozoic rocks. (Notice I say *marine*; there is no way to know whether ancient waters were fresh or salty.) But this need be no problem, if one considers that there is no reason for believing that all the waterways of the antediluvian earth were at the same level.

All bodies of water are not at the same level today. Lake Superior is at an elevation of 600 feet; Lake Tahoe is at 6200 feet elevation; and Lake Titicaca is over 12,000 feet above the sea. This situation in the ancient world would account for "marine" life mingled with the fossils in the upper zones.

In Table 1 note how the occurrence of dominant types assumes the appearance of a natural sequence of ecological zones from the lower left to the upper right, as the check marks form a diagonal line. Only the dominant types are listed.

(f) What about species found in reverse order? Does this not upset the zonal theory? Not at all; for many things happening locally might cause order of deposition to be disturbed and perhaps reversed.

Conclusion

There are only three possible explanations for the arrangement of the fossils in the rocks: (1) there was no order to the arrangement of the ancient biotic communities; and the so-called "geological column" is purely arbitrary, (2) there was temporal order in the ancient world; because of long ages of life succession, or evolutionary progress, or (3) the "geological column" represents the spatial arrangement of the ecological zones of the world before destruction of the arrangement by the Flood.

The ecological order cannot be worked in minute detail, because on the Flood theory allowance must be made for irregularity on account of wave action and distortion of the strata during the Flood and afterwards. But, allowing for certain irregularities such as have been noted, the ecological zonation theory does afford an alternative to the geological ages theory.

Table 1. This shows the distribution of the dominant types according to the conventional geological column, and also in terms of flood geology. The distribution (in the conventional terms, of course) can be checked against a standard book, e.g. *Historical Geology* by Carl O. Dunbar.

	Trilobites	Brachiopods	Graptolites	Crinoids	Cephalopods	Corals	Dipnoi	Crossopterygii	Sharks & Bony Fishes	Echinoderms	Ferns	Scale Trees	Scouring Rushes	Insects	Amphibia	Reptilia	Dinosaurs	Birds	Cycads	Conifers	Deciduous Trees	Sea Reptiles	Mammals	Man	
Modern																							X	X	Post-Flood
Pleistocene																							X		
Tertiary																		X					X		
Cretaceous																	X		X		X	X			
Jurassic														X		X	X		X	X	X				Uplands
Triassic											X		X			X	X		X						
Permian											X			X		X				X					
Pennsylvanian		X									X	X	X	X	X										Lowlands
Mississippian		X			X					X															
Devonian		X		X	X	X	X	X		X															
Silurian	X	X		X	X	X																			Marine
Ordovician	X	X	X	X	X																				
Cambrian	X	X																							

The conservative creationist cannot accept the ages theory, and recent knowledge of stratigraphic geology makes it imperative that some kind of order be recognized in the arrangement of the fossils. The ecological zonation theory is a logical alternative.

References

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[8]Sellards, H. 1933. Geology of Texas. Austin, pp. 527-529 and 591.

Editor's Note: Creationists differ among themselves as to the amount of importance which they attach to zonation. In this article it is considered to be very important. Other authors, while they admit that it has occurred in some places, consider it of only minor all-over importance. For instance, see Burdick, Clifford L., 1976. What about the zonation theory?, *Creation Research Society Quarterly* 13(1):37-38. Since the question, then, is one of degree, it would seem that answers will come only by exploration and field work.