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Celebrating Our 35th Year of Publication

Articles

- An Overview of Various Igneous Rock Outcrops 126
Near The Van Andel Creation Research Center
Interpreted Within A Young-Earth Flood Model
Carl R. Froede Jr., George F. Howe,
John K. Reed, and John R. Meyer
- The Transitional Form Problem 134
Jerry Bergman
- Rapid Canyon Formation: The Black Canyon 148
of the Gunnison River, Colorado
Emmett L. Williams
- Demythologizing Uniformitarian History 156
John K. Reed

Panorama Notes

- Speculation Regarding the Albedo of the 166
Antediluvian Moon
Carl R. Froede, Jr., and James Brelsford

Front Cover

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Van Andel Creation Research Center
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Departments

- Editor's Comments 125
Eugene Chaffin, Editor, CRSQ
- Call for Papers 125
The Second CRS Monograph on Astronomy
- Errata 125
- Announcement of Proposed Constitutional 147
Change
- Letters to the Editor 168
- Minutes of 1998 Creation Research Society 170
Board of Directors Meeting
David A. Kaufmann, Secretary, CRS
- Book Reviews
- The Heavens Declare the Glory of God: 169*
Daily Devotionals in Defense of
Biblical Christianity
- Shattering the Myths of Darwinism 171*
The Hunt for Life on Mars 173
Darwin's Leap of Faith: Exploring the False 174
Religion of Evolution
- Membership/Subscription Application 175
- Order Blank for Past Issues 176
- Scientific Snapshots:

Past Erosion of the High Plateaus of Utah
and "Making the Best of a Bad Situation"
Inside Back Cover by Emmett L. Williams,
Robert L. Goette, and George F. Howe

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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

Editor's Comments

In this our thirty-fifth year of publishing a peer-reviewed, scientific journal, the Creation Research Society continues to be blessed with a wealth of interest from various persons who have made personal sacrifices in order to be able to present scientific results in a way that would honor their creator.

Each year the Creation Research Society (CRS) board meets to implement plans for future activity, and each year the minutes are published for the information of the members. Please read Secretary David Kaufmann's minutes in this issue. Informed members are better able to pray, direct their research efforts, and contribute to the work of the society.

Recently a CRS-sponsored project deployed a team of scientists on field trips near the Van Andel Creation Research Center (VACRC). In this issue, the third in a series of reports resulting from the project appears. Igneous rocks are quite prevalent near the VACRC and the team reports on their significance in terms of the Global Flood model. Do the results indicate subaqueous deposition, post-Flood deposition, and what indicators might a geologist find?

Emmett Williams has been very interested in canyon formation, as attentive readers of the *Quarterly* well know. Now Dr. Williams reports on a Colorado example, discussing hypotheses of Floodwater erosion, post-Flood retreating Floodwaters, and associated volcanic activity.

Carl Froede and James Brelsford ask an interesting question: was the surface reflectivity (albedo) of the Moon greater in antediluvian times? Could a period of solar-system-wide bombardment, and/or volcanic activity have changed the moon's surface?

One of the defining concepts leading to the rise of evolutionism in the 1800's was the idea that natural processes occurring today must, in past eras, have always occurred at the same rate. Dr. John Reed examines illogical basis of this assumption, and instead explores what a Biblical creationist might substitute as the basis for scientific exploration.

If evolutionism is correct, then the paleontological record should be replete with enigmatic fossils which would show how transitions from lifeless matter to living cells, single cells to multicelled animals and plants, fish to frogs, ruminants to whales, apes to humans, etc. could have occurred. Can those who expound evolutionism explain the origin of duck-billed platypuses, sea horses, star fish, sweet gum tree balls, butterflies, and birds? Jerry Bergman examines the data provided by modern paleontology, and offers an appraisal of the record.

Please remember in your prayers the direction of the Creation Research Society.

Eugene Chaffin
Editor, *CRSQ*

Call for Papers

The Second CRS Monograph on Astronomy

Due to the popularity of the first CRS monograph on astronomy, *Design and Origins in Astronomy*, edited by the late George Mulfinger, the CRS has decided to publish a second astronomy monograph. We are interested in original papers, but would consider revisions of papers that have appeared in the *Creation Research Society Quarterly*

in the past 15 years. Submissions on all topics of astronomy are encouraged.

For submissions or additional information, contact Danny R Faulkner, 1402 University Dr., Lancaster, SC 29720. H: 803-286-9781 O: 803-285-7471 e-mail: Faulkner@gwm.sc.edu

Errata

CRSQ 35(2), September, 1998 page 110. The last few words of Waisgerber's comments were cut off: "Yet throughout history, Peleg's division was believed by devout Jews and Christians to be the time when Japhetites, Shemites, and Hamites were dispersed; not continents divided."

CRSQ 35(2), September, 1998 page 99. The reference was omitted in the letter "Professor Maciej Giertych": Giertych, Maciej. 1991. Forward, in Keane, Gerard J. *Creation Rediscovered*. Credis Pty. Doncaster, Victoria, Australia. p. 4.

An Overview of Various Igneous Rock Outcrops Near The Van Andel Creation Research Center Interpreted Within A Young-Earth Flood Model

Van Andel Creation Research Center Report Number 3

Carl R. Froede Jr., George F. Howe, John K. Reed, and John R. Meyer*

Abstract

For many areas of the Earth, intrusive and extrusive igneous rocks form a significant portion of the vertical stratigraphic column. They reflect geologic energy levels which might aid in understanding Earth's short history within the Young-Earth Flood model. We propose that intrusive igneous rocks reflect high-energy heat and tectonic conditions and that their exposure provides testimony to the erosional power of the global Flood. We believe that extrusive igneous rocks can also

provide information about both the passage of time and the former environmental conditions that prevailed when they were deposited. The Van Andel Creation Research Center provides a strategic location from which a great variety of these igneous outcrops can be investigated. We discuss several locations which reflect such features as exfoliating granites, flood basalts, and subaerial volcanic deposits, and explain them within the framework of the Young-Earth Flood model.

Introduction

The Van Andel Creation Research Center (VACRC) provides a strategic location for the study of exposed intrusive (granite, granodiorite, quartz monzonite, etc.) and extrusive (ash, tuffs, lava flows, etc.) igneous rocks. In many cases these areas have been previously investigated by uniformitarian scientists as part of an economic survey of the state or as part of the quest to determine the geologic history of the area (Jenny and Reynolds, 1989; Nations and Stump, 1996). However, the origin and stratigraphic relationships of these igneous rocks have yet to be defined within the framework of the Young-Earth Flood model, and creationist geological timescale (Froede, 1995, 1998; Walker, 1994).

Igneous rocks reflect tremendous forces in operation within the Earth. We believe that these immense forces began with the advent of the Flood, and continued (although at ever-decreasing rates) into recent times

(Froede, 1998; Reed, Froede, and Bennett, 1996). We propose that igneous rocks can provide the creationist researcher with many clues concerning their origin and development both during and after the global Flood.

The creationist study and interpretation of intrusive and extrusive igneous rocks, along with their associated environments, necessitates both a review of the relevant literature and locations where we can observe and study a variety of these terrains first hand. For example, Froede (1995, 1997) and Froede, Williams, and Brelsford (1998) have presented information about exposed granitic plutons within the Atlanta, Georgia area in an effort to explain their origin and development within the framework of the Young-Earth Flood model. Likewise, the volcanic rocks and catastrophic features of Mount St. Helens, in Washington state have also been investigated and presented within this same framework (Austin, 1984, 1986, 1991; Snelling and Mackay, 1984). However, these locations only demonstrate a few of the processes that relate to the history of magmatic generation, mobilization, emplacement, or even eruption. Essentially, we see the top (e.g., volcanoes) and bottom (e.g., plutons), but miss the opportunity to observe or understand the relationship between them.

The Creation Research Society's Van Andel Creation Research Center (VACRC), located in Chino Valley, Arizona, affords the visiting scientist the opportunity to study a wide variety of igneous rocks in diverse settings

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within close proximity to the research facility (Figure 1). These igneous rocks span the entire spectrum between plutons and extrusives. This wide range of igneous rock can help us understand the forces in effect during and following the Flood. Surprisingly, these intrusive and extrusive rocks are not limited to any one specific geomorphic province (see Froede, Howe, Reed, Meyer, and Williams, 1997).

In this article we present a few select sites of igneous rock outcrops near the VACRC (Figure 2). We hope that this article might stimulate interest in more detailed investigations of these areas in the future. A glossary of terms is included to help the reader understand some of the geological terminology used throughout this paper.

Intrusives

South of the VACRC are exposures of granite in an area identified by Krieger (1965, p. 44) as the Granite Dells

(Location 1 in Figure 2). This granite weathers by exfoliation (Figure 3) in a manner typical to most granitic plutons (see Froede, 1995; Froede et al., 1998). Following its original emplacement, additional stresses served to generate internal jointing within the rapidly cooling granitic mass which likely enhanced the formation of liesegang rings or banding. These bands reflect areas where iron oxide precipitated due to complex crystallizing conditions within the fluid-saturated magma. The formation of additional late-stage joint sets within the granite likely influenced its exfoliation along these liesegang bands resulting in the exposed checkerboard pattern (Krieger, 1965, pp. 45-46) [Figures 4 and 5].

Interestingly, granitic outcrops are more commonly found in the Transition Zone, and Basin and Range provinces. We believe that this is because the original sedimentary overburden or perhaps the former volcanic cover has been removed (via Floodwater erosion) exposing the underlying granitic rocks (see Lipman, 1984). Granitic rock outcrops along sections of the Grand Canyon, where



Figure 1. Surface outcrops of igneous (intrusive and extrusive) rocks across the State of Arizona. The map is a composite spanning the entire uniformitarian stratigraphic column (from Reynolds, Welty, and Spencer, 1986). Note that all three geologic-geomorphic provinces contain rocks of igneous origin: CP—Colorado Plateau, T—Transition Zone, and BR—Basin and Range.

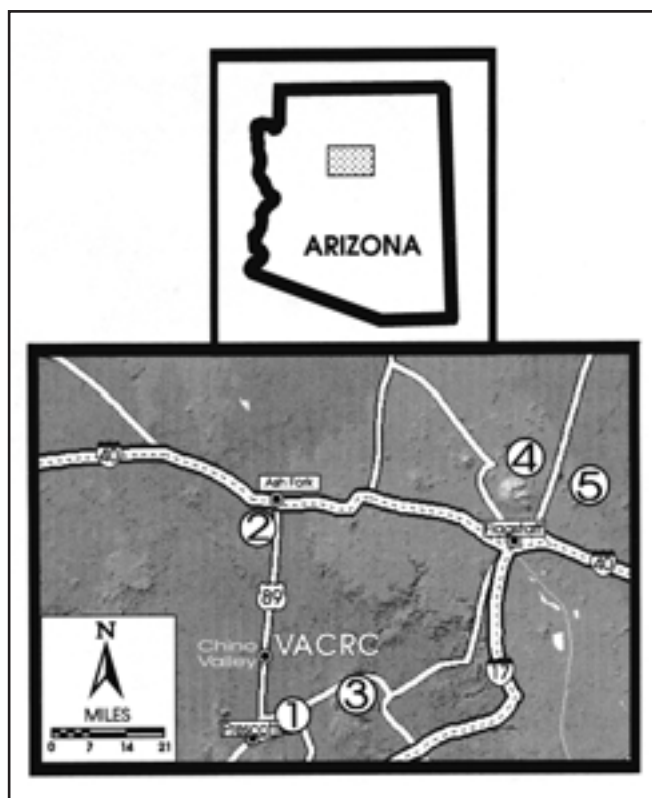


Figure 2. A map showing each of the areas reported within this article. The Creation Research Society's Van Andel Creation Research Center (VACRC) affords the visitor close proximity to several different volcanic terrains. Due to the complexity of the eruptive processes across the area the volcanic rocks range from basaltic (Hawaiian types of lavas and rocks) to rhyolitic (Mt. St. Helens types of lava and rocks). This is truly an excellent place to study volcanic rocks and associated features.



Figure 3. An outcrop of the Granite Dells just north of Prescott. Exfoliation and jointing serve to shape the granite into rounded blocks.

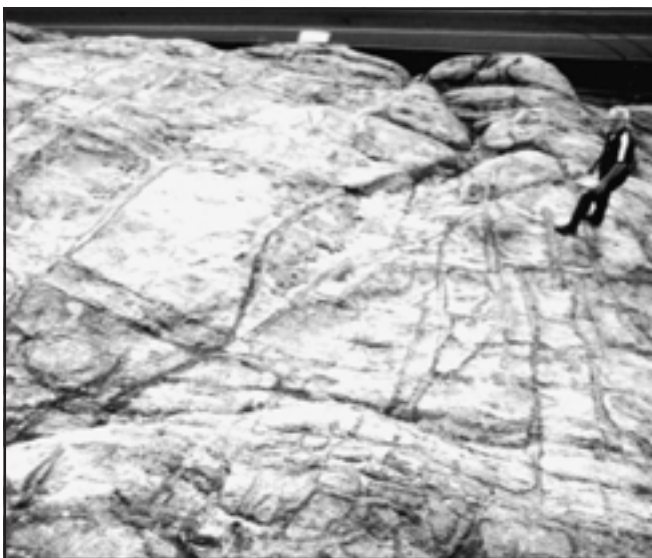


Figure 4. The surface of the granite at Granite Dells is crisscrossed by iron staining which has concentrated along the joints and fractures.

river erosion has exposed these once deep-seated intrusive rocks along the canyon sidewalls. However, the overburden remains intact above the granitic masses. The exposed granite basement rocks within the Transition Zone and Basin and Range were probably emplaced much like the granites found within the Grand Canyon, except the overburden has been removed. This speaks of tremendous erosional energy expended during the Flood!

Extrusives

Extrusive volcanic rocks cover much of Arizona. The VACRC facilities are built on extrusive rocks. Many studies have been conducted in an effort to explain these volcanic rocks within the history of the state (e.g., Lynch, 1982; Reynolds, Welty, and Spencer, 1986; VandenDolder, 1991). They testify to historical periods of intensive magmatic activity. Evidently these igneous rocks formed in a variety of environments, both subaerial and

subaqueous. In some cases the resulting volcanic features are recognized even by uniformitarians to have formed rather recently, within the last 2,000 years. Obviously, the timing of all of these magmatic episodes has a place within the Young-Earth Flood model, which is yet to be determined.

There are many volcanic areas in and around Arizona, such as the Mexican Volcanic fields, hydrothermal breccia pipes on the Colorado Plateau, hydrothermal environments within the Transition Zone, and volcanic features within the Basin and Range. Hence, there are plenty of volcanic features for a lifetime of investigation. Here we present a very limited sampling of some of the sites surrounding the VACRC where various types of igneous rocks were examined and are interpreted within the young earth framework.

Basalts of the Chino Valley

The VACRC is located within Chino Valley which in many places is capped by the Hickey Basalt. Because of



Figure 5. A closeup photograph of jointed granite showing the "rings" of iron which form within the granite. This particular feature is commonly referred to as Liesegang rings.



Figure 6. Columnar basalt outcrops in drainage channel which originates from Sullivan Lake. This former lava flow is identified as the Hickey Basalt, and it covers much of north-central Arizona.

the large areal extent and thickness of this basalt layer it should probably be considered a subaerially emplaced flood basalt. Approximately one mile northeast of the facility is a prominent outcrop of this basalt which has become exposed as a result of the erosion associated with the outfall of Sullivan Lake (Figure 6).

We would interpret this basalt flow as probably having formed following the withdrawal of the Floodwater during the Ice Age Timeframe. This is because no structures or features are present which would suggest a Floodwater related subaqueous environment during its emplacement. In fact, the basalt exhibits large-scale vertical columnar jointing, and is not highly vesicular. Both of these conditions suggest probable slow subaerial cooling.

Other volcanic strata found throughout Chino Valley (Krieger, 1965; Stefanov, 1993) require further investigation and interpretation within our young earth framework.

Monogenetic Volcanic Ash Deposits

Within the Transition Zone to the north of the VACRC (five miles south of Ash Fork) are several "borrow pits" near some low-lying cinder cones (Location 2 in Figure 2). The sidewalls within these pits exhibit volcanic strata which reflect andesitic volcanic activity which is commonly associated with the formation of cinder cones



Figure 7. A typical cinder cone with an ash-pit along its side. Strombolian style eruptions usually form this type of volcano. The ash generated is not fine-grained, but rather occurs as cinders (like you find in a gas barbecue grill). The explosive eruption does not carry the cinders far from the throat of the volcano.

(Figure 7). These deposits appear to reflect a strombolian eruptive style yielding typically monogenetic deposits. Figures 8 and 9 show volcanic layers along the sidewalls of the pit which have differences in both color and texture. However, these variations do not require different volcanic sources or even different periods of eruption. Rather, they indicate that the eruptive style varied as water (probably groundwater) interacted with the magma during the eruption. The lighter layers reflect what were likely “wet” phreatic explosions or eruptions which generated the fine-grained ash, while the darker and more

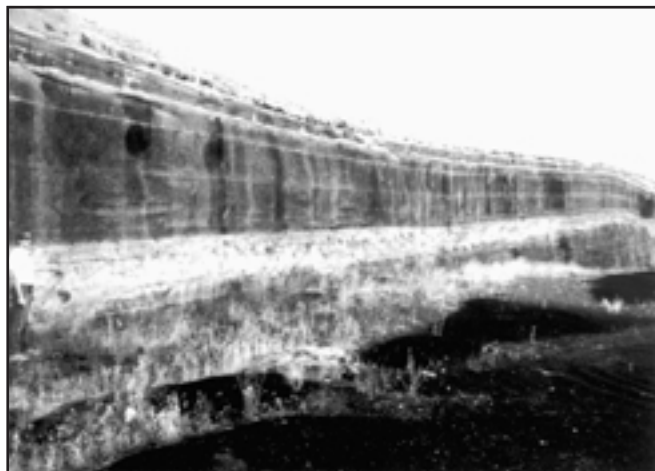


Figure 8. A sidewall of an ash pit showing the variation in strata. The dark material is coarse-grained, horizontally-bedded scoriaceous cinders while the lighter layers are finer-grained volcanic ash. The differences were the result of water contact with the magma which varied the eruptive style of the volcano, and produced the variation in volcanoclastics.

coarse-grained layers reflect “dry” cinder-producing eruptions. As groundwater came into contact with the erupting magma it created a difference in eruptive styles even from the same vent! The contact between each of the layers is sharp (no paleosols were noted) and this indicates that volcanoclastic deposition was continuous.

These deposits represent one or more volcanic eruptions which probably occurred during the Ice Age Timeframe. This interpretation is based on the variation in “wet” and “dry” volcanic deposits which suggests that groundwater played a major role in particulate formation, and in the style of the eruption. The missing paleosol(s) suggests that little time passed as layer followed layer in forming these deposits.

Complex Subaerial Volcanic Deposits

Another location within the Transition Zone near Mingus Mountain (approximately 18 miles to the east of the VACRC), provides exposures of subaerially derived rhyolitic volcanic deposits (Location 3, Figure 2). These strata reflect volcanic activity similar to that experienced at Mount St. Helens (i.e., a plinian style eruption). Figures 10, and 11 show a succession of volcanoclastics which correspond (from bottom to top) with several base surge layers which are followed by an air-fall ash layer, and capped by a blocky rhyolitic lava flow. The sharp contacts between the different layers suggests that little to no time passed between deposits. The source volcano for these deposits is unknown. We propose that these deposits likely formed in the Ice Age Timeframe, recognizing that



Figure 9. Another photograph showing the alternating layers of scoriaceous cinders and ash along the sidewall. If “time” passed between eruptions then a paleosol or other feature should be reflected along contacts between layers. None were noted. This indicates that this was indeed a monogenetic eruption (i.e., almost continuous until the volcano ceased erupting—permanently).



Figure 10. This exposure near Mingus Mountain shows a succession of volcanic deposits which are typical to the eruptive outpourings of stratovolcanoes such as Mount St. Helens. The “source” direction could not be determined.

further refinement regarding the timing and conditions associated with the formation of these volcanic deposits, within the framework of the Young-Earth Flood model, will require additional field work.

Volcanoes on the Colorado Plateau

Numerous volcanoes and associated features are located on the Colorado Plateau (Location 4 and 5, Figure 2). This area contains stratovolcanoes (similar to Mount St. Helens), cinder cones, lava domes, and lava fields (Figures 12 and 13). We believe that the majority of these volcanoes were active in a post-glacial setting (i.e., Upper Ice Age/Lower Present Age Divisions). Some of these volcanoes erupted as recently as 934 years ago! In fact, many still retain their youthful conical shape which likely reflects an arid environmental setting like that experienced by the region today.

Conclusion

In this article we have provided a broad overview of just a few locales which illustrate different types of intrusive and extrusive igneous rocks found near the Van Andel Creation Research Center, Chino Valley, Arizona. Many more excellent outcrops exist within this area which have yet to be investigated and interpreted within the framework of the Young-Earth Flood model. We propose that the exposed intrusive igneous rocks found within this broad area reflect the high-energy geologic forces which



Figure 11. A photograph showing the transition in volcanic rocks from several base surge layers, to an air-fall deposit, followed by a blocky lava flow. The sharp contacts between layers indicates that these deposits followed in rapid succession and little time passed between each deposit. No features were noted which might indicate that scouring removed an older “paleosurface” as the next layer of volcanic rock was deposited.

likely created and exposed them during the Flood. It would appear that most of the extrusive igneous rocks were formed in a post-Flood environment, although detailed investigations might demonstrate various strata formed subaqueously during the Flood. Plenty of work remains to be conducted in understanding the geology of this area. Thankfully, the Van Andel Creation Research Center provides an excellent base from which these activities can occur. Much has been written about the igneous rocks of this area within a uniformitarian position, and we need to use that information and combine it with our own observations to reinterpret the strata within the framework of the Young-Earth Flood model.



Figure 12. The San Francisco Peaks are a complex of stratovolcanoes which grew to overlap each other, and then later the center of the structure collapsed. It has the same “horse-shoe” shaped as Mount St. Helens, but without a lava dome within the interior.



Figure 13. Looking southeast from U.S. Highway 89 toward O’Leary Peak. This is a dormant volcano northwest of Sunset crater, within the San Francisco volcanic field. O’Leary Peak is capped by a dacite lava-flow dome, formed in the final eruption. The volcanic peak rises approximately 1970 feet above the surrounding area.

Glossary

Andesite—A dark-colored, fine-grained extrusive rock. See volcanic rock types.

Basalt—A dark-colored, fine-grained dense extrusive rock. See volcanic rock types.

Extrusive—Said of an igneous rock that has erupted onto the surface of the Earth. Extrusive volcanic rocks include lava flows, volcanic ash and cinders, etc.

Intrusion—The process of magma emplacement into overlying rock. This activity results in the formation of a pluton of rock mass of granitoid texture.

Liesegang rings—Secondary, nested rings or bands caused by rhythmic precipitation within a fluid-saturated rock. Also known as Liesegang banding.

Monogenetic eruption—A volcano formed from almost continual eruptive activity, where the resulting deposits are all derived from a single source.

Phreatic explosion—A volcanic eruption and/or explosion that occurs due to the contact of magma with water. In our case this explosion/eruption occurred due to contact with water probably beneath the ground surface (i.e., groundwater).

Rhyolite—A light-colored, fine-grained extrusive rock. See volcanic rock types.

Stratovolcano—A volcano constructed of alternating layers of lava and pyroclastic deposits (e.g., Mount St. Helens).

Strombolian eruption—This eruptive style produces frequent, but moderate-sized eruptions. Typically the lava is basaltic to andesitic and of sufficient viscosity (it is “sticky”) allowing entrapped gases to build-up pressure which is released in repetitive small explo-

sions. The lava exploding from the throat falls to the sides and results in the formation of a steep-sided cone of interbedded lava and sometimes tephra (i.e., ash). Lavas flows typically breach the flanks of this style volcano, and can flow for great distances (up to several miles).

Volcanic Rock Types—As a generality, volcanic rocks fall into four basic categories based on changes in the content of magnesium/iron and quartz. *Basalt* has little to no quartz and has the highest amounts of magnesium and iron, making it a dense, dark, and heavy rock. *Andesite* has some quartz and less magnesium/iron. *Dacite* is even more quartz rich with still less magnesium and iron. *Rhyolite* has the greatest amount of quartz and little to no magnesium or iron, making it a less dense, lighter-colored rock. Other minerals (e.g., Ca-, Na-, and K-aluminosilicates) form minor components within these volcanic rocks

Volcaniclastic—Volcanic materials that are in particulate form such as clasts, ash, cinders, etc.

Volcanology—The branch of geology that deals with volcanism, its causes and phenomena.

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Williams kindly reviewed and supplied helpful comments on an earlier version of this manuscript. The peer-review comments were also most helpful. We give all the glory to God our creator for this opportunity to study His creation in the area surrounding the VACRC.

References

- Austin, S. A. 1984. Rapid erosion at Mount St. Helens. *Origins* 11(2): 90–98.
- . 1986. Mount St. Helens and catastrophism, in Walsh, R.E. et al., editors,
- . 1991. Mount St. Helens: A slide collection for educators. Geology Education Materials. El Cajon, CA.
- Froede, C. R., Jr. 1995. A proposal for a creationist geological timescale. *CRSQ* 32:90–94.
- . 1995. Stone Mountain, Georgia: A creation geologist's perspective.
- . 1997. Xenoliths in Stone Mountain Granite: Evidence for rapid emplacement and cooling of the granitic magma.
- . 1998.
- Froede, C. R., Jr., G. F. Howe, J. K. Reed, J. R. Meyer, and E. L. Williams. 1997. An overview of the geomorphology of Arizona. Van Andel Creation Research Center Report Number 1. *CRSQ* 34:68–74.
- Froede, C. R., Jr., E. L. Williams, and J. Brelsford. 1998. Panola Mountain, Georgia: Exfoliation evidence in support of Flood exposure. *CRSQ* 35:41–44.
- Jenny, J. P. and S. J. Reynolds. 1989. (editors). *Geologic evolution of Arizona*. Arizona Geological Society Digest Number 17. Tucson.
- Krieger, M. H. 1965. *Geology of the Prescott and Paulden Quadrangles, Arizona*. U.S. Geological Survey Professional Paper No. 467. Washington, D.C.
- Lipman, P. W. 1984. The roots of ash flow calderas in Western North America: Windows into the tops of granitic batholiths. *Journal of Geophysical Research* 89(B10):8801–8841.
- Lynch, D. J. 1982. *Volcanic processes in Arizona*. Arizona Bureau of Geology and Mineral Technology. *Fieldnotes* 12(3):1–9.
- Nations, D. and E. Stump. 1996. *Geology of Arizona*, second edition. Kendall/Hunt Publishing. Dubuque, IA.
- Reed, J. K., C. R. Froede, Jr., and C. B. Bennett. 1996. The role of geologic energy in interpreting the stratigraphic record. *CRSQ* 33:97–101.
- Reynolds, S. J., J. W. Welty, and J. E. Spencer. 1986. Volcanic history of Arizona. Arizona Bureau of Geology and Mineral Technology. *Fieldnotes* 16(2):1–5.
- Snelling, A. A. and J. Mackay. 1984. Coal, volcanism and Noah's Flood. *Creation Ex Nihilo Technical Journal* 1:11–29.
- Stefanov, W. L. 1993. *Geologic map of volcanic rocks along the east side of central Chino Valley, Yavapai County, Arizona*. Arizona Geological Survey Contributed Map CM-93-E. Tucson.
- VandenDolder, E. M. 1991. The once and future past. Arizona Geological Survey. *Arizona Geology* 21(3):2–3.
- Walker, T. 1994. A Biblical geologic model, in Walsh, R.E. (editor), *Proceedings of the Third International Conference on Creationism*. Technical Symposium Sessions. Creation Science Fellowship. Pittsburgh, PA. pp. 581–592.

G. K. Chesterton on Missing Links and Monkey Men

Nearly all the “skulls,” out of which Missing Links and Monkey Men have been made, have been only bits of bone. I do know that even of these bits of bone there are only about two or three in the whole world. But as long as those bits of bone were supposed to point, like the pebbles in the fairy-tale, along a particular path, a very gradual upward path of evolution, of scientific progress, nobody dared to suggest that such evidence was rather slight. Nobody ventured to complain that one skull was

insufficient, or that one scrap of one skull was insufficient. Any minute bit of any mouldy bone was good enough for the purpose, so long as the evolutionists recognised it as a good purpose. Anything proved anything, so long as it proved the proper, progressive, really evolutionary thing.

“Outlines of History”
The Illustrated London News
 13 January 1923

The Transitional Form Problem

Jerry Bergman*

Abstract

Naturalistic evolutionists often claim that the strongest proof of their theory is found in the science of paleontology. If naturalistic non-life to human life evolution is true, multi-billions of links are required to bridge modern humans with the chemicals which once existed in some primitive “soup” found in the ocean or mud puddles and which were assumed to have given birth to life more than 3.5 billion years ago. Furthermore, these multi-billions of intermediate links would be a prominent part of the fossil record. And multi-millions more links are needed to connect

humans with our primitive apelike ancestors that are hypothesized to have existed eons ago.

Scientists tend to find fossils of comparatively “simple” life forms in the “older” layers of earth strata, and the so called “higher” forms of life are more common in the more “recent” strata. It was therefore assumed that, as new layers were deposited, the fossils being formed in them would reveal a clear picture of life progressively evolving from comparatively simple to complex forms. Unfortunately for evolutionists, this is not what has been found in the record of the rocks.

Introduction

The transitional forms problem has “a high priority to the evolutionists” (Wise, 1995). When evolutionists discuss “missing links” they imply that only a few links are missing in what is a rather complete chain that can connect the chemical precursors of life that existed an estimated 3.5 billion years ago to humans. Standen noted almost 50 years ago that the term “missing link” is misleading because it suggests that only one link is missing and it is more accurate to state that *so much of the chain is missing* that it is not evident whether there was ever a chain (Standen, 1950, p. 106, emphasis mine). This assertion has been well documented by creationists (for example see Rodabaugh, 1976; Moore, 1976).

The situation has not changed since then; scientists have yet to find a *single undisputed link* that clearly connects *any two of the hundreds of major family groups*. Nor have they even been able to produce a plausible starting point for their hypothetical evolutionary chain (Shapiro, 1986). The first link—which is actually the largest gap—is still a missing link (Behe, 1996, p. 154–156)!

The Search for the Earliest Life

Evolution does not even have a proven starting point; theories abound, but no demonstrated beginning of the theoretical evolutionary climb has been discovered. The ancients believed they had the answer in spontaneous

generation of life from inanimate matter: Aristotle taught that “simple animals”—worms, fleas, mice and even dogs—sprang to life “spontaneously” from moist “Mother Earth.”

In 1668, Redi proved that maggots appeared in meat *only* after flies had deposited their eggs in it. When the microscope proved the existence of bacteria in 1683, many scientists concluded that these “simple” microscopic organisms must have “spontaneously generated” to provide evolution with its start. Pasteur’s research, though, soon disproved this idea, and microbiology has since eloquently documented the enormous complexity of these compact creatures.

By the latter half of the nineteenth century, almost all biologists were convinced that spontaneous generation was disproved for all forms of living organisms (Bergman, 1993a). The difficulties of abiogenesis are so great that some evolutionists have even seriously explored the theory that life must have come from another planet via star dust, meteors, comets, or even spaceships (Bergman, 1993b)! This does not solve the origins problem but merely relocates it elsewhere.

Darwin once conceded that all terrestrial organic beings which ever lived descended from some primitive

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form which was first called into life “by the Creator” (1859, p. 306). But to admit the possibility of *one or a few creations is to open the door to the possibility of thousands!* If God made one animal type, He could also make two or many thousands. No hypothesis today has provided a viable explanation for the abiogenesis origin of life or of naturalistic evolution. The problems are so major that the majority of evolutionists today shun the subject of abiogenesis.

Granting a cell as a starting point, how did this cell evolve into humans? Each new explanation that has been advanced was eventually discarded in the face of advancing knowledge. More than a century ago the French evolutionist Lamarck concluded that creatures acquired certain characteristics after interacting with their environment which they passed on to their offspring. Their offspring then further developed these traits and eons of slow changes eventually produced a new species. The fallacy of Lamarck’s theory is that acquired characteristics are *not* inherited. Until 1920 many biologists assumed that some characteristics which both plants and animals acquired from their environment were passed to their offspring. Modern genetics research has disproved this view.

Darwin noted the struggle for existence all around him and incorrectly concluded that only useful variations usually survived while less useful ones perished. While this *tends* to be true in some situations and with some traits, it is a gross over-simplification and over-generalization. As a whole, chance and good luck tend to be far more important in aiding species survival than good genes (Raup, 1991).

The most fundamental objection to the natural selection theory is that it cannot originate traits; it only selects among those already existing. Selection of characteristics already present in an animal line is one thing; to evolve an entirely new organ is something quite different. Selection, whether natural or artificial, does not have the power to create a new structure or organism. It can only change the *frequency* of a trait in the population. The famous French scientist Hugo de Vries long ago noted that although natural selection may explain the survival of the fittest, it cannot explain the arrival of the fittest (1910, p. 185). He proposed that mutations, the copying errors which are responsible for over 4,000 diseases in humans, were the source of the “arrival of the fittest.” Today we know that the gap between variable traits and copy errors is enormous, and it is increasingly being recognized as being unbridgeable (Spetner, 1997).

The Cambrian Era

The fossil record blossoms in rock layers that geologists refer to as the “Cambrian era,” currently estimated to be-

gin some 570 million years or so ago at the beginning of the Paleozoic era. It is in these layers that life first appears in large numbers, suddenly bursting into the record of the rocks in enormous diversity representing every phyla. The Cambrian explosion is “a biological puzzle that confounds the Darwinists” because none of the creatures found here gives a hint of age-long periods of gradual development from simple protoplasm forms (Chien, 1997, p. 1).

The claim that life flourished well over a billion years before the time of the Cambrian strata as required by evolution is also based on a few highly debatable examples of fossil evidence. According to Johnson (1991, p. 54):

The single greatest problem which the fossil record poses for Darwinism is the ‘Cambrian explosion’... Nearly all the animal phyla appear in the rocks of this period, without a trace of the evolutionary ancestors that Darwinists require.

The Precambrian rock layers, those immediately *beneath* the layers where a huge number and variety of fossils are found, *lacks evidence of the multimillions of fossils needed to produce the diversity found in the Cambrian era.* If macroevolution occurred, the stage of development represented by the Cambrian animals and plants require enormous numbers of advanced life forms before the Cambrian.

Also, the estimated 100,000 different human proteins and the multimillions of different plant and animal proteins and other organic compounds used for life also require multibillions of transitional forms. Evidence of these are also completely lacking in the fossil record and in modern animals, a gap even greater than the fossil hard parts commonly preserved (for example see Avancini, Walden, and Robertson, 1996). I have yet to locate even one clear example, although some have been proposed. Extensive studies of putative ancient cells, even DNA located in insects and other life trapped in amber and other preservatives, have found these organisms to be almost identical to those existing today (Schopf, 1993).

Naturalism requires enormously long periods of time to allow non-living matter to evolve into the hypothetical speck of viable pre-protoplasm needed to start the chain, and even more time is needed to evolve the pre-protoplasm matter into the enormous variety of highly organized complex life forms that are abundantly found in the Cambrian rocks. Darwinism requires that life originated over three billion years ago, but a rich fossil record for only less than about a 600 million years is commonly claimed. Consequently, almost all of the record is missing, and evidence for the most critical two billion years of evolution is sparse and highly equivocal. And, the gap between non-life and the simplest cell is illustrated by the bacterium known as mycoplasma which:

is estimated to contain a total of 40,000 protein molecules, of about 600 different kinds [and] is so complex that [why] cells exist at all is a marvel... even the simplest of the living cells is far more fascinating than any human-made object (Alberts, 1992, p. xii).

Many very complex animals appear very early in the fossil record and many “simple” animals thrive today. The earliest fossils known, which are believed to be of cyanobacteria, are structurally and biochemically very similar to bacteria living today. Yet they are claimed to have thrived almost as soon as earth is believed to have formed (Schopf, 1993). Estimated at 3.5 billion years old, these earliest known forms of life are incredibly complex. Further, remarkably diverse types of animals existed in very early earth history—no less than 11 different species have been found so far (Pendick, 1993). A concern Corliss raises is:

why after such rapid diversification did these micro-organisms remain essentially unchanged for the next 465 million years? Such stasis, common in biology, is puzzling (1993, p. 2).

Many Fossils Were Once Claimed to be Transitional

In their enthusiasm to prove evolution, scientists also have often grasped at straws which have turned out to be false. For years, one of the most famous human evolution links was “Java Man,” scientifically called *Pithecanthropus erectus*, which means “erect-walking ape-man.” In 1891 Dubois discovered a few skull fragments and some teeth in the river gravel along the Solo River bank in Java. Later he located a femur leg bone at a point 50 feet away.

Although the circumstances of their discovery and other evidence both indicated that the fossil fragments came from different animals, he built from them a creation that he called *Java Man*. For years it was referred to as *Pithecanthropus erectus* but most experts later confirmed that the skull fragment and femur did not belong to the same individual (Lewin, 1987, p. 23). The skull was from a Neanderthal-like race and the femur bone was Caucasian. The fossil records in many other cases are so problematic that it is difficult to draw any firm conclusions from them.

One of the more famous fossil fiascos is the Piltdown hoax which involved Charles Dawson, an antiquary solicitor (a low-level lawyer) and amateur geologist. He claimed that he noticed small pieces of brown flint when workers were digging gravel from a pit to repair a road near the Sussex, England, village of Piltdown. Dawson felt that the flint indicated the site might be rich in hu-

manoid fossils, and so told the workers to contact him if they found any bones.

He later claimed that the men did find some “old bones” and four years later, on December 18, 1912, Dawson introduced to the world what became known as the Piltdown Man. The evidence consisted of skull fragments, a jawbone, and a single tooth. The Piltdown brain capacity was at first estimated to be about half-way between that of humans and apes, but later more detailed research indicated that its brain size was actually 1,400 cubic centimeters, close to modern Piltdown residents. Later called *Eoanthropus dawsoni* in honor of Dawson, the skull was pieced together from fragments that had been deposited during the Pleistocene era, roughly around the last ice age.

Many scientists—and much of the world—were elated at the discovery. For the first time they felt they had empirical proof of human evolution. This creature bridged the gap between us and lower primates and was neither a monkey nor a human but an ape-man link. It became the basis for ideas about the so-called “missing links” discovered since then. A close associate of Dawson, Sir Arthur Smith Woodward who was then head of the geology department at the British Museum, was most enthusiastic about the find.

With the support of this eminent scientist, it was easy to convince many of the experts that a valuable and unique find had been made. Roman Catholic Priest Pierre Teilhard de Chardin helped Dawson with the digs to improve Dawson’s credibility. The Jesuit priest, who was then teaching at a seminary in Hasting, soon uncovered another part of the missing link, this time a canine tooth. With the church on his side and further discoveries to come, major challenges to Dawson’s find were then unlikely. The renown of Piltdown Man rapidly spread throughout the world; replicas of the famous skull made from the original (which was regarded as priceless and kept safe in the British Museum) found their way into many museums and colleges.

To some creationists and critical scientists, though, the skull did not seem right. The jaw was too much like an ape jaw and the cranium too much like an Anglo-Saxon human cranium. Many others came to believe the two did not belong together.

Finally, in 1949, British geologist Kenneth Oakley, who evidently also questioned the Piltdown find, read a 1892 paper by the French scientist Carnot. Carnot demonstrated that the fluorine content of bone generally *increases with age*. Thus, by ascertaining the fluorine content, one can obtain an estimate the age of previously living bone. With this new knowledge, Dr. Oakley decided he would test the famous Piltdown skull. The fluorine content Oakley found showed that the Piltdown

Man had made a monkey out of everyone. According to this technique, Piltdown Man was closer to 10,000 years old and not up to 500,000 years old as was originally claimed. This finding raised serious questions about the Piltdown find which led to its eventual exposure (Gee, 1996).

The skull is now known to be a modern human, and the jaw and tooth both belonged to a recently deceased chimpanzee (Spencer, 1990). These conclusions were published in the 1953 British Museum bulletin by Dr. Oakley and two scientific collaborators in a paper titled "The Solution of the Piltdown Problem." The paper concluded that the canine tooth had been filed down to appear more primitive and was stained, and impregnated with grains of sand so as to "imitate" fossilization. In light of this background, an account written in 1948 is enormously revealing about the tendency to reach sweeping conclusions from a small amount of data:

...Piltdown Man, long considered one of mankind's oldest ancestors, is a mere anthropological infant, not more than 10,000 years old, Dr. K.P. Oakley of the British Museum disclosed to the British Association for the Advancement of Science.... Previously considered to be between 100,000 and 500,000 years old, the jawbone and skull are now proved by analysis of their fluorine content to be definitely of the last interglacial period. Fossil animal bones of known geological age, dating from the Pleistocene or glacial period, unearthed nearby the human bones at Piltdown, England, had the same content of the chemical fluorine picked up from the ground water of the locality ("Old Piltdown," 1949, p.185).

The scientific world was stunned by the Piltdown exposure because one of the more important evidences for evolution had turned out to be a hoax. The only question remaining was: who was the culprit? Blame fell first on the discoverer, Charles Dawson, but his role was difficult to research for he had by then been dead for 37 years. Also accused was Father de Chardin who was well known for his religion of evolution and his research into the putative evolutionary origins of humans. Most early researchers concluded that the distinguished paleontologists and archeologists who originally took part in the investigations of Piltdown were either the perpetrators or the victims of a carefully planned hoax.

Since then a number of other possibilities have surfaced, but none of them has produced conclusive evidence. The latest is Martin A.C. Hinton, a Curator of Zoology at the British Museum in the early 1900s. A trunk that belonged to him was found to contain bones and teeth artificially stained in a way very similar to those of the Piltdown hoax (Gee, 1996, pp. 261-262). This and other evidence have caused some that were close to the case to conclude that the evidence for "Hinton having

been the sole hoaxer is now conclusive" (Gee, 1996, p. 262). To others, though, the case still remains a mystery, an unsolved hoax.

Other Examples of the Reclassification Due to Advancing Knowledge

Many other fossils have also fallen from grace. The Heidelberg Man fossil (called by some Mauer mandible) is now classified as an archaic *Homo sapiens* and is considered a member of a race of modern humans (Fix, 1984). His jaw is similar to that of modern Eskimos. In China, evolutionists once thought a set of fossils called *Sinanthropus* (commonly termed Peking Man) was a clear link, but the original "priceless" bones have since mysteriously disappeared and all we have left are the flawed casts. Fix (1984, p. xii) claims that the human ancestor status of this fossil, discovered by Davidson Black, is "highly questionable" (1984, p. xii).

Dryopithecus (Gr. *drys* tree, *pithekos* ape) is now recognized as an extinct anthropoid ape of Europe, Africa and Asia from the late Miocene and early Pleiocene period. Another fossil, *Ramapithecus*, a primate similar to *Kenya-pithecus* originally discovered in the Siwalik Hills of northwestern India, is also probably an extinct ape (Johanson and Edey, 1981; Johanson and Shreeve, 1989). Neanderthal Man is yet another race long held to be some sort of link but is now believed to fall within the varieties of present-day humans. They also are no longer considered an evolutionary ancestor of humans but another "race" that was either massacred by their fellow humans during war or feuds or intermarried and blended in with other Europeans long ago.

Many researchers have also concluded that most other so-called ape-men such as *Australopithecus* and *pithecanthropines*, are non-human extinct primates and may not be human ancestors. Many extinct primate bones have been found by the Leakey family and others, some of which scientists argue are evidence of the so-called missing link. The significance of one bone set, the famous chimp-like "Lucy" bones (*Australopithecus afarensis*) discovered a few years ago, is still being debated and may consist of parts of several animal types. Called *Homo habilis*, Latin for "skillful man," the fossil remains of this extinct species were discovered in the Olduvai Gorge, Tanganyika, in 1964.

Evolutionists hoped that research on the latest *Homo habilis* fossils, a species that lived in Africa "almost two million years ago," would at last "settle the dispute that this is an older human fossil than *Telanthropus*," yet the controversy remains as strident as ever. The modern division of Ape-men is still extremely controversial, even among the experts (Fix, 1984). And a major reason for

many views on evolution is at least in part the result of different philosophical approaches. Several other early fossil hominids are now being studied by various researchers, but the word on the paleontology grapevine is that the confusion is likely to get worse before it gets better, if it ever does (Beardsley, 1995, p. 37).

New Fossil Finds Create More Problems

The millions of modern fossil discoveries have not resulted in filling in missing links, but required the need for even more links to bridge the gaps between existing life and the many new animal types found. Arranging *skeletons* according to their outward appearance, from primitive chordates to humans, may give the impression that fossil gaps are few, but multi-thousands of unbridgeable gaps are consistently found everywhere when the *whole animal* organism is carefully examined. Each new discovery results in a more complicated genealogical tree and the new fossils usually form new branches instead of connecting existing groups. The evolution tree increasingly resembles a large set of isolated branches as more and more new groups are found which need to be connected to the tree. This is usually not the story presented to the lay public and science magazines and television science programs often use much artistic speculation to produce a tree. Rensberger states:

Unfortunately, the vast majority of artist's conceptions are based more on imagination than on evidence... a handful of expert natural-history artists begin with the fossil bones of a hominid and work from there... Much of the reconstruction, however, is guesswork. Bones say nothing about the fleshy parts of the nose, lips, or ears. Artists must create something between an ape and a human being; the older the specimen is said to be, the more apelike they make it...skin color [and]... Hairiness is a matter of pure conjecture. The guesswork approach often leads to errors (1981, p.41).

John Gurche, a primate facial anatomy expert and artist (Johanson, Gurche, and Ferorelli, 1996, p.109) even admitted in reference to his *Australopithecus afarensis* work for the National Geographic, "I wanted to get a human soul into this apelike face, to indicate something about where he was headed."

Nevertheless, evolutionary naturalism must infer humankind's relationship to an ape past (or, as it is often explained, humans and the "apes" have a common ancestor) and this belief requires scores of ancestral links. Yet, it is difficult to draw firm conclusions from fossils finds limited to a tooth and femur found in one place, and a skull fragment found somewhere else, all of which must be assumed to have belonged to one animal or one

animal type and from which are constructed hypothetical transitional forms.

This problem is one reason paleoanthropologist Everett Olson said that he takes "a dim view of the fossil record as a source of data" (Lewin, 1980, p. 883). Even if the putative evolution path actually occurred, natural selection cannot explain *why* it occurred. Many ape features are far more advantageous for survival than the corresponding human feature, including the apes' larger more protective brow ridges, and more functional massive jaw.

Given the existing scattered, fragmentary and controversial evidence, it is almost impossible to determine much for certain about most extinct creatures. Lewin (1987) convincingly argues that determining what "hominid" fossils are transitional between humans and their alleged primate ancestors is exceedingly difficult. If macroevolution was true, though, what we would expect to find *hundreds of thousands* of unambiguous transitional types in the fossil record. Research on human evolution has increasingly supported the conclusion that the many putative extant transition fossils are clearly fully human such as the Neanderthals, or an extinct or modern type of primate. Virtually all existing fossils fit quite comfortably into these two distinct categories (Lubenow, 1992). Those that do not are typically the subject of endless controversy.

An example of a recent controversy involves "four well preserved foot bones" discovered in a cave near Johannesburg which Beardsley (1995, p. 36) noted rekindled a "long standing dispute." The reconstructed foot, estimated to be 3.5 million years old and dubbed "Littlefoot," appears to be a chimpanzee's and, the author suggests, was probably used to help its owner climb trees. Other foot bones from that time have been described in the literature, but Littlefoot's specimens are unusual for the reason that they fit together exactly. Randall L. Susman a specialist in the behavior and functioning of living apes at the State University of New York at Stony Brook counters that "if they didn't climb trees they wouldn't have tree-climbing bones" (Beardsley, 1995, p. 36). Susman believes australopithecines from this era walked on the ground and would only on occasion climb trees using their curved toes to grip the trunks.

Donald C. Johanson, Institute of Human Origins in Berkeley, CA, has reservations about whether these well-preserved fossil foot bones are as old as assumed. The bones' discoverers were forced to rely on detailed comparisons of other bones found in the cave with bones from elsewhere in Africa for their dating estimate. Johanson is likewise "not terribly convinced there is strong evidence of a highly diverged big toe." On the other hand, Johanson says he is "not opposed to the view that these creatures would have from time to time climbed in trees "

(Beardsley, 1995, p. 36). Similar controversies exist in virtually every area of paleontology.

Difficulties in Proving a Fossil is a Transitional Form

The most direct evidence for evolution consists of fossil remains. Unfortunately numerous problems exist in understanding, interpreting, dating and applying the seriously problematic fossil evidence to a phylogeny. In the words of Lewin:

It is an unfortunate truth that fossils do not emerge from the ground with labels already attached to them. And it is bad enough that much of the labeling was done in the name of egoism and a naive lack of appreciation of variation between individuals: each nuance in shape was taken to indicate a difference in type rather than natural variation within a population. ...applying the correct label is astonishingly difficult, not [the] least because such labels are in a sense arbitrary abstractions; and especially so when the material on which the analysis is being done is fragmentary and eroded. "It is an incredibly difficult problem," says Lord Zuckerman. "It is one so difficult that I think it would be legitimate to despair that one could ever turn it into a science" (1987, p. 27).

Moreover, animals found which are morphologically in between living animals cannot be scientifically proven to be links. Even if a fossil skeleton were exactly intermediate between humans and our hypothetical primate ancestors, this would not prove that the fossil was *in fact* a human evolutionary ancestor. To prove the latter requires a knowledge of *history*, specifically what animal begat which progeny, information which is not possible without personal or reliable direct knowledge of the breeding generations.

The discovery of an exactly intermediate skeleton type would at most prove *only* that an organism morphologically intermediate between humans and apes once existed—not that humans specifically descended from this primate. Although naturalism would cause one to accept that conclusion, it nonetheless is an assumption. Referring to claims that a bacterium found in ancient amber is an evolutionary link because it is in some ways morphologically and genetically in between two other bacterium types, Fischman (quoting Pace) asserts the:

ancient and modern microbes could belong to different strains of *B. sphaericus*... so you can't claim that the modern gene derived from the ancient one, much less conclude anything about the time it takes for such changes to occur. "Unless you know this or-

ganism is a specific ancestor, you can't say anything." (1995, p. 977).

Although the estimated 10 million species can be arranged to appear to support macroevolution, Eldredge argues in a text supporting atheistic evolution that, when looked at closely:

within individual fossil species in both the horse and human lineages, there is little evidence of gradual progressive change of the sort we would expect from the operation of pure natural selection. What we see, again, is persistence of species once they appear—and persistence in a virtually unchanged condition (1982, p.75).

The reason is very *few of the necessary linking fossils have been found*, and the vast majority that are found are modern animal or extinct types of a known animal variety. In Watson's words

The fossils that decorate our family tree are so scarce that there are still more scientists than specimens. The remarkable fact is that all the physical evidence we have for human evolution can still be placed, with room to spare, inside a single coffin! (Watson, 1982, p. 44).

In a review of Leakey's book *People of the Lake*, Peer stated that Leakey's conclusions about human evolution resulted from

...lab studies of language aptitude among chimpanzees, fieldwork with African tribes that are still at the hunting-and-gathering stage and the more than 300 fossil bones that have made the Lake Turkana site in northern Kenya perhaps the richest lode in anthropological history. Still, the evidence is sparse. All known remnants of our ancestors from 1 million to 5 million years ago could be spread out on two large trestle tables. (Peer, 1978, p. 80).

Peer may have made this judgment because many of the estimated over 4,000 "human" fossils (excluding Neanderthal) as of 1978 consist of small fragments. [The over 300 specimens that have been classified as Neanderthal do not help much in understanding the complete record, only in understanding one specific race (see Lubenow, 1992, and 1994, p. 70; Oard, 1994, p. 222).] Evolutionists today find it more difficult to argue for their theory from lack of evidence for at least human evolution because the problem is now a lack of *transitional* fossils, *not a lack of fossils*.

An editorial in *Further Evidence*, the journal of the Foundation for Research in the Origin of Man (Leakey 1978 p. 15) stated "the early days of our past are still quite mysteriously and poorly understood, and it will undoubtedly be [poorly understood for] many years..." One reason this is true is the important finds tend to consist merely of teeth, jaw fragments, and small fragments of

other skeleton parts. These parts are usually extremely damaged, deteriorated, distorted, decayed and generally in very poor condition. Actually, as Gould notes:

An old paleontological joke proclaims that mammalian evolution is a tale told by teeth mating to produce slightly altered descendant teeth. Since *enamel is far more durable than ordinary bone, teeth may prevail* when all else has succumbed to the whips and scorns of geological time. *The majority of fossil mammals are known only by their teeth* (1989, p.60, emphasis mine).

We may never be able to unravel the details of our earliest origins because the earliest days of our past are still quite mysterious and poorly understood and consequently:

...virtually all our theories about human origins were relatively unconstrained by fossil data," observes David Pilbeam. "The theories are...fossil-free or in some cases even fossil-proof." This shocking statement simply means that there is and always has been far more fleshing out of the course and cause of human evolution than can fully be justified by the scrappy skeleton provided by the fossils. As a result... "our theories have often said far more about the theorists than they have about what actually happened (Lewin, 1987, p.43).

Since macroevolution is not supported by the fossil record, evolutionists conclude that the multi-millions of transitional fossils that must have existed were lost to the ravages of time or have not yet been found. Arguing from non-evidence is not science and in science all conclusions are tentative until substantial evidence is located. The evidence involves major gaps that exist everywhere in the fossil record, and it may be years before we understand our earliest history, if we ever do:

At present the trail of fossil humanoids can be followed back with only minor gaps and breaks to about 4 million years ago. There we effectively lose the trail, since virtually no fossilized humanoids are known anywhere from the time period between 5 and 9 Myr [million years] ago. Beyond 9 Myr back to 20 Myr science has acquired from Africa and Eurasia a rich fossil record of fossil humanoids (that is, members of the superfamily that includes humans and apes). Taxa from this time range include *Sivapithecus*, *Gigantopithecus*, *Ramapithecus* and *Dryopithecus*, and so on. However, opinion is divided as to whether any of these forms can with confidence be identified as ancestors of mankind and/or as members of the hominidae.... Filling the 4-9 Myr gap [is]... a clear need in the advance of paleoanthropology (Isaac, 1978, p. 588).

The problem of lack of evidence producing many possible interpretations of the evidence is also a problem with dating fossils. As noted by Isaac:

Problems of chronology continue to hamper discussions of correlation and phylogeny; we do not know with sufficient precision the relative age of the Transvaal and the East African sites, or any of the African sites and the Indonesian sites... (1978, p. 589).

The extant evidence supports the conclusion that the fossil record gaps have not been bridged because evolution never occurred. For human evolution, fossil groups tend to be either distinctly "apelike" and or clearly humanoid, meaning they are closely related to modern humans. This information is generally available only in scientific journals but is common knowledge to scientists specifically studying this question. In the popular literature it is rarely stressed that paleontology has discovered only *more animal types* which have created not less but *many more gaps* in the fossil record. The central evidence for naturalistic evolution is lacking, producing serious problems for the entire hypothesis:

Darwin wrote that our imperfect fossil record is like a *book preserving just a few pages, of these pages few lines, of the lines few words, and of those words few letters*. Darwin used this metaphor to describe the chances of preservation for ordinary hard parts, even for maximally durable teeth. What hope can then be offered to flesh and blood amidst the slings and arrows of such outrageous fortune? Soft parts can only be preserved, by a stroke of good luck, in an unusual geological context—insects in amber, sloth dung in desiccated caves. Otherwise, they quickly succumb to the thousand natural shocks that flesh is heir to—death, disaggregation, and decay, to name but three (Gould, 1989, p.60).

If Darwinian evolution were true, the fossil record would show a history of life slowly drifting in a continual, gradual stream from one form to another, requiring many millions of years for the multibillions of needed changes to bridge each separate life form. These untold billions of changes would be revealed in the rock strata. Fish would be shown to slowly have become four-legged amphibians which in time evolved into reptiles whose front feet developed into wings and their scales would slowly have become feathers. Other reptiles and amphibians gradually become mammals, then apes and finally humans leaving untold millions more fossil transitional forms. Even the punctuated equilibrium theory calls for multimillions of transitional forms. The major difference between the older and new model is, "is evolution advance generally steady or jerky?" Both views require multimillions of transitional forms.

This lack of transitional forms is not due to a shortage of fossils. These changing creatures supposedly lived and died for hundreds of millions of years as geological strata were being deposited; yet of the millions of fossils that have now been unearthed, *not one* unequivocally fills the requirement for even one of the billions of necessary transitional forms (Lubenow, 1992). Some fossils are assumed to be transitional and a few appear to fit the requirements, but none, even the most famous example, *Archaeopteryx*, has been demonstrated to fill the gap with a high level of scientific confidence (Benton, 1983).

Many putative transitional forms are not intermediate between two basic types, but often are a *mosaic* as is the duck-billed platypus. Darwin's 1859 conclusion is still very true today:

Geology assuredly does not reveal any such finely graded organic chain; and this perhaps is the most obvious and serious objection which can be urged against the theory [of evolution]. The explanation lies, however, in the extreme imperfection of the geological record (1859, p. 49).

Actually, the record today suffers from far *greater* "extreme imperfection" in spite of a century of world-wide paleontological digs by multithousands of highly dedicated researchers. The multimillions of fossils uncovered since Darwin reveals the same pattern as it did in Darwin's time. The most obvious gaps are at the critical points where baramin must be bridged, yet the record tends to be perfectly adequate within each baramin. This problem with the fossil record is well known among paleontologists. In the words of Lewin most paleontologists believe that

...the principle feature of individual species within the fossil record is stasis, not change... for the most part, the fossils do not document a smooth transition from old morphologies to new ones. "For millions of years species remain unchanged in the fossil record," said Stephen Jay Gould, of Harvard, "and they then abruptly disappear, to be replaced by something that is substantially different but clearly related" (1980, p. 883).

The earth has preserved, in fossil form, millions of creatures from both extant and extinct forms, but very few of these are even claimed to be transitional forms. Of the roughly 25,000 extinct animal and plant types so far discovered, virtually none of them provides any evidence of a transitional or intermediate form. That this 25,000 is only a small percent of the 10,000,000 species estimated to be living today indicates a small percent of all species that have ever existed have become extinct, as few as a mere 0.1%. A summary by Morris based on data compiled by Harvard trained paleontologist Kurt Wise found:

...95% of all [existing] fossils are shallow marine invertebrates, mostly shellfish. For instance, clams

are found in the bottom layer, the top layer, and every layer in between. There are many different varieties of clams, but clams are in every layer and are still alive today. There's no evolution, just clams! The same could be said for corals and jellyfish and many others. The fossil record documents primarily marine organisms buried in marine sediments which (as discussed elsewhere) were catastrophically deposited. Of the 5% remaining fossils, 95% of them are algae and plant fossils (4.75% of the total). In that left over 5% of the 5% insects and all other invertebrates make up 95% (0.2375% of the total). All of the vertebrate fossils considered together, fish, amphibians, reptiles, birds, and mammals, comprise only 0.0125% of the entire fossil record, and only 1% of these, or 0.000125% of the total, consist of more than a single bone! Almost all of them come from the Ice Age...Where we have a good record, no evolution can be seen. For the very scanty vertebrate record an evolutionary story can be told, but the facts don't support it, and certainly don't prove it. (Morris, 1994, p.4).

Further, many of these extinct animal fossils have not produced evidence that supports the gradual evolution of the cell or organs. At best evidence exists of bone variations which prove little about the most critical evolution, that of molecular biochemistry and anatomy. This is the heart of evolution, not minor bone morphology variations. Likewise a conspicuous total absence of good fossil evidence (or contemporary observation) exists of scales changing into fur and feathers, fish fins evolving into feet, or gills developing into lungs. What is found in the fossil record is:

...stasis—nonchange—is the dominant evolutionary theme in the fossil record. It is characteristic of most species that have ever lived. Adaptive change is relatively rare, and usually associated with speciation, thus typically rather rapid. Once a species appears, if it is successful at all, the fossil record shows that it will tend to hang on unchanged for vast stretches of time. And this, we saw, destroyed the backbone of the major argument of the modern "synthetic theory" of evolution—the argument maintaining that absolutely all the features of the history of life could be seen as constantly on going adjustments to ever-changing environmental conditions (Eldredge, 1985, p.128).

And this is not due to a shortage of fossils: for dinosaurs alone over 2,200 skeletons world wide, and 325 types are known to exist. Fully half of these were found in the past quarter century. In spite of the billions of fossils found, "good examples of slow, progressive change from an ancestor into its descendant are few and far between" (Eldredge, 1982, p.75).

An examination of the entire fossil record therefore does not provide clear evidence for a slow evolution from family to family, but most often stasis and new families appearing suddenly with no hint of any of them having evolved through long periods of gradual development. The many exceptions to the standard fossil record generalization also include the fact that the order found in the fossil record is sometimes the opposite of that expected. Over a half-century ago Rogers et al. admitted that:

...in some regions, beds of almost unaltered Proterozoic sedimentary rocks [the layer just under the Cambrian] have been preserved. Here, if anywhere, we may expect to find the evidence of Pre-Cambrian life, and many able paleontologists have searched long and carefully for fossils in these rocks. The results have so far been discouraging.... Because of this scarcity of fossils, the whole of the vast period of time represented by Archeozoic and Proterozoic rocks have been called the *cryptozoic eon*, or the *age of hidden life* (1942, p. 352-353).

The situation is worse today because the discovery of thousands of more animal types since then have produced many more gaps that need to be filled in. The meager and wholly inadequate record of so-called Precambrian fossils is so unimpressive for more than three-fourths of the alleged history of the earth that the existence of a record at all is called into question and argues that the examples that exist must be reinterpreted. Extremely weak evidence for one view and very strong evidence for another indicates that the evidence for the former view has been misinterpreted.

A major assumption in geology has been the doctrine of uniformitarianism, the theory that earth history was dominated almost totally by slow, gradual geological changes. This dogma has also now all but been overthrown:

We [once] preferred to believe that what was important in geohistory was nature's long-term, gradualistic processes. The Grand Canyon was entirely a result of the Colorado River's daily removal of x soil-grains over millions of years. Sedimentary strata formed in a marine environment were interpreted as the little-by-little accumulation of particles raining down on the sea bed over aeons of time. What seemed to matter was the ceaseless tick-tock of the natural clock. That the sound of the ticking was occasionally drowned by a ringing of the clock's alarm seemed immaterial.

Now all is changed. *We are rewriting geohistory. Where once we saw a smooth conveyor belt, we now see a stepped escalator. Upon that escalator the treads are long periods of relative quiescence when little happens. The risers are episodes of relatively sudden change when the landscape and its inhabitants*

are translated into some fresh state. Even the most staid of modern geologists are invoking sedimentary surges, explosive phases of organic evolution, volcanic blackouts, continental collisions and terrifying meteoroid impacts. *We live in an age of neocatastrophism...*

Catastrophism was originally born during the seventeenth century in an attempt to cram some inkling of the complexity of geohistory into the pint pot represented by biblical chronology... catastrophists of that distant age might well find themselves far more at home in our modern departments of geology than would their uniformitarian successors in the nineteenth century (Davies, 1993, p. 115, emphasis mine).

Further, many of the fossils labeled transition forms, a term that has meaning only within the evolution model, can be explained from a creationists worldview (Wise, 1995).

What the Fossil Record Actually Tells Us

The record in the rocks indicates that enormously complex life forms appeared suddenly and whole new families abruptly came into existence without any apparent predecessors. The fossil record testifies that life never crosses the boundaries of family groups or "kinds" though it varies widely within these boundaries. Paleontological research has found that the first bats were very similar to modern bats, and the first birds including *Archaeopteryx* had perfectly formed feathers as well as most other avian traits. Even the early insects were very well developed according to the over one-quarter of a million known examples that have been preserved in amber, many complete down to their smallest body hairs (Fischman, 1995). This is also true of all animals.

French biologist Lecomte du Nouy concluded a half-century ago that each group, order, or family seems to be born *suddenly* and we hardly ever find reasonable candidates to link a modern with an ancient one (1947, p.79). In 1929, Dr. Austin Clark observed that no links have been found to connect the major groups of animals, and that "every developmental line has certain gaps, which are not due to a deficiency in the record." In the same year Funk stated the following about Clark's conclusions:

Instead of evolution by a process of gradual developments... [Dr. Clark] believes it has come about by a series of jumps from one major form of life to another. "So far as concerns the major groups of animals," he says, "the creationists seem to have the better of the argument. There is not the slightest evidence that any one of the major groups arose from any other. Each is a special animal-complex,

related more closely to all the rest and appearing, therefore, as a special and distinct creation." According to Dr. Clark's belief "man appeared in the Pliocene age... suddenly and in substantially the same form as he is in to-day. There is not the slightest evidence of his existence before that time.... Dr. Clark holds that there are no missing links. "Missing links he says—"are misinterpretations." (Funk, 1929, p. 7).

This is largely still the situation today, two-thirds of a century later (Lubenow, 1992). Evolutionists now often explain this relatively sudden appearance of basic animal groups as a result of *mega-mutations* or *punctuated equilibrium*. Many evolutionists also recognize that it is "amazing" that their theory could produce a human:

...it also *fills us with a new kind of amazement* (also a *frisson* for the improbability of the event) *at the fact that humans ever evolved at all*. We came this close (put your thumb about a millimeter away from your index finger), thousands and thousands of times, to erasure by the veering of history down another sensible channel. *Replay the tape a million times from a Burgess beginning, and I doubt that anything like Homo sapiens would ever evolve again*. It is indeed, a wonderful life! (Gould, 1989 p. 289, emphasis added).

The Many Difficulties in Evaluating Fossil Evidence

Among the many problems in interpreting the fossil evidence is distinguishing juvenile and adolescent animals from adult types. It is not uncommon to identify an adolescent type as a new species because adolescent animals can vary in significant ways from the adult type. This fact confuses paleontologists making it more difficult "to identify new species from an imperfect and hard-to-read fossil record" (Seachrist, 1996, p. 1056). Seachrist cites a case of a new species of lemur that turned out "to be an old species with a previously unrecognized pattern development" (p. 1056).

The mandible was from the lemur genus *Mesopropithecus* which is believed to have become extinct about 2,000 years ago. The lower jaw, though, was morphologically different from an adult *Mesopropithecus* jaw which is not only longer but also deeper and of different proportions. Instead of a new species, researcher Laurie Godfrey concluded she had found the jaw of a juvenile *Mesopropithecus*. Fortunately, many clear examples of this fossil existed, and consequently it could be confidently determined that the jaw was not that of a new species but a juvenile of a well established species.

For many animals, though, it may not be so easy to distinguish juvenile from adult forms, and this problem has historically produced much confusion in classifying fossils. Part of the difficulty was the juveniles develop their adult teeth at a very early age, making judgments more difficult. This example illustrates the difficulties in determining much about evolution from fossils, especially because virtually the only parts that are fossilized are the bone fragments and teeth.

The fact is, as Lewin and the authorities whom he quotes admit, "virtually all of our theories about human origins were relatively unconstrained by fossil data" and are "...fossil-free or in some cases even fossil-proof" (1987, p. 43). As long ago as 1929 Smithsonian biologist Dr. Austin Clark concluded that all of the extant "missing links are misinterpretations" (Funk, 1929, p. 27). The results of paleontology since then still have not supported the gradualist record as Darwinism predicted, but

...the certainty so characteristic of evolutionary ranks since the late 1940s, the utter assurance not only that natural selection operates in nature, but that we know precisely how it works, has led paleontologists to keep their own counsel. Ever since Darwin, as philosopher Michael Ruse (1982) has recently said, paleontology has occasionally played the role of the difficult child, stirring up trouble and muddying evolutionary waters. But our usual mien has been bland, and we have proffered a collective tacit acceptance of the story of gradual adaptive change, a story that strengthened and became even more entrenched as the synthesis took hold. We paleontologists have said that the history of life supports that interpretation, all the while really knowing that it does not (Eldredge, 1985, p.144).

The enormous level of controversy in this area vividly illustrates both the influence of preconceived ideas and the sparseness of evidence which allows numerous interpretations. The conflicts and ego which researchers have invested in their work in this field are legion. In Lewin's words, many scientists possess their own ideas like a jealous lover, and regards one who disagrees with their interpretation as a personal enemy (1987, p. 23). The arguments, debates, and endless squabbling among paleontologists soon become incredibly tedious and the controversies tiresome. One researcher even concluded on the basis of molecular evolution:

Chimpanzees may have once walked upright, but lost the ability and returned to the trees, [and]... that humans diverged from chimpanzees between 3.6 and 4 million years ago, much later than the 5 million years or earlier that anthropologists generally believe. Simon Easteal... of the Australian National University in Canberra arrived at

their conclusions after conducting a broad based recalibration of the “molecular clock” in a number of mammalian species . . . If Easteal is right, then *Australopithecus afarensis*, assumed to be an early hominoid, is possibly the ancestor of both chimpanzees and humans. *A. afarensis* was a biped, so early chimpanzees must have walked upright. “We didn’t come down out of the trees,” they went up into the trees,” says Easteal. The earliest fossils that appear to be human are about 4.4 million years old. But if Easteal is right, these “human” fossils are not human after all. His results also suggest that *Australopithecus africanus*, a descendant of *A. afarensis*, did not die out, as most anthropologists believe, but was the ancestor of chimps. Another descendant of *A. afarensis*, *Australopithecus robustus*, which anthropologists believe also died out, could be the ancestor of gorillas. This would also explain why there are no fossil records of ancient chimpanzees and gorillas. . . Thomas Loy of the University of Queensland in Brisbane is supportive. “When it comes to morphology, the molecular approach will be more accurate than the fossil record,” he says. He hopes anthropologists will reexamine the fossil record in the light of Easteal’s work (da Silva, 1997, p. 18).

The relatively small number of fossil families discovered are usually extremely damaged and distorted by time, permitting the endless debates and disagreements to continue (Lewin, 1987). This is even true for relatively well-preserved fossils such as Lucy, the most complete putative human fossil ancestor discovered to date. Even here only 40 percent of the skeleton has been recovered. As a result Jones notes paleontologists still

do not agree about where modern humans came from... The fossil record is so incomplete that a cynic might feel that the main lesson to be learned from it is that evolution usually takes place somewhere else. The origin of humanity has been claimed as being in Asia, Africa and even the whole world at the same time. The human record has been investigated as intensively as any, but there are still enormous holes in it. Even the best known deposits are very incomplete. The area around Lake Turkana in East Africa is almost never off the television screen. Guesses about population size from the food available suggest that perhaps seventy million people lived there over its two-and-a-half-million-year history. Remains of only about two hundred have been found, mostly as small fragments. The fossil record will never provide the complete history

of human evolution, but it can give dates and places which genes can only hint at (1993, p. 102).

Proof of evolution requires the existence of, not four or five links, but a series of multi-millions of intermediate types between modern humans and our alleged primate ancestors. Ironically though, the arguments invariably focus on whether a certain fossil discovery is a human or an ape, causing researchers to dichotomize according to the stasis assumption. Because the fossil evidence is “very incomplete,” meaning it does not support any possible Darwinism scenario, enormous disagreements exist which are rarely even hinted at in the textbooks. One review of *Braindance* by Dean Falk at the State University of New York at Albany, said:

Drawing on new research (much of it the author’s) a leading paleoanthropologist... reexamines new and old assumptions (some passionately held) about our origins and evolution. The results are astonishing. The fossil that sparked the search for our beginnings—the celebrated hominid Tuang baby—turns out (on close inspection by Professor Falk) to have had an apelike brain. Likewise, Donald Johanson’s much heralded common ancestor, the putative “missing link” named Lucy, is shown to be neither the mother of us all nor even a member of the genus *Homo*. If bipedalism and brain evolution were linked, as science suggests, how can we explain Mary Leakey’s spectacular discovery of fossilized footprints of hominids that lived 3.5 million years ago? The footprint makers were bipedal long before brain size began its dramatic increase in *Homo*... employing new techniques to examine brain lateralization in humans, the author points out remarkable differences between the genders to indicate that female and male brains are not shared with other primates. It is not that the human brain has developed new structures markedly different from those of our relatives—past or present—rather it’s the overall choreography: the braindance, not the individual steps that define us (From publishers description).

As the evidence now stands, we cannot confidently trace modern humans directly back to any existing extinct types. Naturalism requires human evolution from lower primates, and therefore in the fossils record must be evidence for evolution—and no other interpretation can be considered. Interpretation problems are eloquently illustrated from the fact that in the past “racism of a particularly pure, intellectual form was a persistent theme of American and British anthropology” (Lewin, 1987, p. 55).

The Behavior Gap Between Animals and Humans

Evolutionists now generally believe that all humans are monophyletic because their differences are non-essential superficial traits such as skin color, facial variations and different gene frequencies of many traits. Hence, Chase's half-century old conclusion is still valid:

The story of Adam and Eve in the book of Genesis has been vindicated, in part at least, by science. Its main point is now generally accepted as true: namely, that there is only one human family... with a common origin (1948, p. 30).

The most recent genetic evidence has concluded that modern men are closely related genetically and share genes with one male ancestor, dubbed Y-chromosome Adam and that humans have very shallow genetic roots which go back very recently to one ancestor (Hammer, 1995). Actually, much evidence exists for the position that humans are devolving, and consequently are *less* fit and more imperfect today than in the past. A half-century ago Mackintosh noted:

Human remains have been disinterred by archaeologists, almost certainly pre-Flood, having characteristics that indicate longevity far greater than anything we can at present conceive. The most striking indication is the extraordinary way in which the teeth are worn right down into their sockets by long usage.... Actually there is ample secular evidence to show that there once existed on this earth of ours a race of men of magnificent physique, splendidly muscled, with a brain capacity exceeding that of modern man, and having all the signs of extreme longevity (Mackintosh, 1946, p. 342).

In contrast to evolution's teaching that humans evolved from some primitive ape-like animal, no evidence exists for the evolution of human speech from grunts and growls to our present complex communication system:

...older forms of the languages known today were far more difficult than their modern descendants; and the languages of primitive and barbaric peoples are frequently harder to learn and more complex than Latin, Greek, or Sanskrit. ...man appears not to have begun with a simple speech, and gradually made it more complex, but rather to have gotten hold of a tremendously knotty speech somewhere in the unrecorded past, and gradually simplified it to the modern forms (Hunt, 1948, p. 63).

In the innumerable varieties of life below humans exists little evidence of mental ability other than "instinct." No evidence of gradual evolution of mind, intelligence, or conscience exists to bridge the tremendous mental gulfs that exist between humans and the most intelligent ani-

mal. The instinct that the lower animals manifest sometimes shows a wisdom *greater* than humankind's typical behavior. This wisdom is not consciously exercised, though, but rigidly confined within very narrow bounds and void of reasoning power to cope with most novel or unique emergency situations.

Humans have progressed intellectually only because of their brain capacity and the accumulated knowledge gathered by previous generations, whereas animals will forever remain at the mental level of their ancestors. Only humans know that someday they may die, and humans alone have a conception of a Supreme Creator that was given by revelation. Only humans have ever felt the impulse to call upon a higher power for guidance and help. The theory of evolution, as Darlington put it, "released thinking men from the spell of a superstition, one of the most overpowering that has ever enslaved mankind" (1959, p. 60).

That "superstition," a belief in God as the Creator, has now been largely replaced in academia by another one which lacks most of the critical evidence or uses contrived evidence. Called *evolutionary naturalism*, it has caused many to lose their powers of objective thinking and base their faith in the vagaries of time, chance, natural selection, and random mutations as the creator of all life. What we see is only extinction, a loss of a life form in harmony with the second law of thermodynamics, not the creation of life:

Given a change in its environment, a species will be more likely to move out or to become extinct, rather than undergo the kind of transformation necessary to enable it to continue living there (Eldredge, 1982, p.75)

Conclusions

The term *Genesis kind* refers not to species, but is more comparable to the modern term *family* such as the cat, dog, or human families (Mehlert, 1995). Wide variation within each kind allows many races and species to breed from one pair of the originally created kinds, and many of the various forms within the kind or family are cross-fertile. No variation, though, has been clearly shown to cross the Genesis kind boundary, and individuals from different kinds or families cannot "cross breed" to reproduce. Breeding experimentation has created many types of "new" animals but has not yet achieved any clear links to another kind. Nor have animals that are clearly in between a domestic cat and an amphibian, or even a cat and a chicken, been produced.

Although some extinct animals such as *Archaeopteryx* have been claimed to be evolutionary links, further research has shown that these putative links are, at best,

unusual animals and not clearly transitional forms. When we use the term “links” we are referring to clear bridges between basic family kinds, such as dogs and cats (or insects and birds) beyond the tremendous variation that exists within an animal family. The extant paleontological evidence is sketchy and open to numerous interpretations. Referring to a major new discovery, Lemonick noted “Will this discovery win over the few who still think dinosaurs and birds are only distantly related? Probably not. Paleontology is much like politics: passions run high, and it’s easy to draw very different conclusions from the same set of facts” (1996, p.62).

Today, most evolutionists have retreated from pure Darwinism just as they previously had to retreat from the theories of the inheritance of acquired characteristics, spontaneous generation, and pure mutational selection. Hence, recent theories try to use megamutations or sudden major changes to explain evolution. On examination, though, even these theories fall apart. Trying to explain the creation without a creator has proved an exercise in futility. Although we have learned a great deal in our search, this journey has often resulted in many wrong turns. An accurate picture of reality would be far more fruitful in expanding humankind’s understanding of our world, yet most scientists reject a creator *a priori* world view (Bergman, 1996). They recognize that a watch requires a human watchmaker but reject the corollary that the human watchmaker also needs a human maker.

Lecomte du Nouy concluded a half-century ago that the reason evolutionists reject creationism is because belief in a Creator God is now heresy in science. Evolutionists often refuse to consider any and all evidence for creation even though evolution is unproved and unprovable and is believed only because the only alternative, special creation, is deemed outside of science by the scientific elite. Watson put it best when he said almost 70 years ago: “Evolution itself is accepted by zoologists not because it has been observed to occur or...can be proved by logically coherent evidence to be true, but because the only alternative, special creation, is clearly incredible.” (1929 p. 231, 233).

References

- CRSQ—Creation Research Society Quarterly
CENTJ—Creation Ex Nihilo Technical Journal
- Alberts, Bruce. 1992. Introduction in Karl Drlica, *Understanding DNA and gene cloning*. John Wiley and Sons. New York.
- Avancini, R.M., H.M. Walden, and H.M. Robertson. 1996. The genome of most animals have multiple members of the Tc1 family of transposable elements. *Genetics* 98(2):131–140.
- Beardsley, Tim. 1995. These feet were made for walking—and. *Scientific American* 273(4): 36–37.
- Behe, Michael. 1996. *Darwin’s black box*. Basic Books. New York.
- Benton, Michael. 1983. No consensus on *Archaeopteryx*. *Nature* 305: 99–100.
- Bergman, Gerald. 1996. Religious beliefs of scientists: A survey of the research. *Free Inquiry* 16(3): 41–454.
- Bergman, Jerry. 1993a. A brief history of the theory of spontaneous generation. *CENTJ* 7(1): 73–81.
- . 1993b. Panspermia—The theory that life came from outer space. *CENTJ* 7(1): 82–87.
- Chase, Stuart. 1948. How different are you? Here’s what science has to say about race. *Science Illustrated* 3(9):30–31, 71–72.
- Chien, Paul. 1997. Explosion of life. *The Real Issue* 15(3): 1–10.
- Corliss, William. 1993. *Science Frontiers* 1(88):2.
- da Silva, Wilson. 1997. Human origins thrown into doubt. *New Scientist* 153 (2075):18.
- Darlington, C. D. 1959. The origin of Darwinism. *Scientific American* 200(5): 60–66.
- Darwin, Charles. 1859. *Origin of the species*. Reprint of 6th edition, 1895. A. L. Burt. New York.
- Davies, Gordon L. 1993. Bangs replace whimpers. *Nature* 365:115.
- deVries, Hugo. 1910. *The mutation theory*. Open Court. Chicago.
- Drlica, Karl. 1992. *Understanding DNA and gene cloning*. John Wiley and Sons. New York.
- du Nouy, Pierre Lecomte. 1947. *Human destiny*. Longmans, Green. New York.
- Eldredge, Niles. 1982. *The monkey business*. Washington Square Press. New York.
- . 1985. *Time frames*. Simon and Schuster. New York.
- Falk, Dean. 1994. *Braindance*. Henry Holt. New York.
- Fischman, Joshua. 1995. Have 25-million-year-old bacteria returned to life? *Science* 268:1061.
- Fix, William R. 1984. *The bone peddlers: Selling evolution*. Macmillan. New York.
- Funk, Willard. 1929. New theory of man in the making? *Literary Digest* 100:27–28.
- Gould, Stephen. 1989. *Wonderful life*. W. W. Norton. New York.
- Gee, Henry. 1996. Box of bones ‘clinches’ identity of Piltown paleontology hoaxer. *Nature* 381: 261–262.
- Hammer, Michael. 1995. A recent common ancestry for human Y chromosomes. *Nature* 378:376–378.
- Hunt, Morton. 1948. On the origin of species. *Science Illustrated* 3(7):26–29, 63–65.

- Isaac, Glynn. 1978. Early man revisited. *Nature* 273: 588–589.
- Johanson, Donald and Maitland Edey. 1981. *Lucy, the beginnings of humankind*. Simon and Schuster. New York.
- and James Shreeve. 1989. *Lucy's child: The discovery of a human ancestor*. William Morrow. New York.
- Johanson, Donald, John Gurche and D. Ferorelli. 1996. Face-to-face with Lucy's family. *National Geographic* 189(3):96–117.
- Johnson, Phillip. 1991. *Darwin on trial*. Regency Gateway. Washington, D.C.
- Jones, Steve. 1993. *The language of genes*. Anchor Books. New York.
- Leakey, Richard. 1978. Ethiopia contributes important evidence for human evolution. *Further Evidence* 1(1): 4–15.
- Lemonick, Michael. 1996. Parenthood, dino-style. *Time* 147(2): 62.
- Lubenow, Marvin. 1992. *Bones of contention*. Baker Book House. Grand Rapids, MI.
- . 1994. Human fossils. *CRSQ* 31: 70.
- Lewin, Roger. 1980. Evolutionary theory under fire. *Science* 210: 883–887.
- . 1987. *Bones of contention*. Simon and Schuster. New York.
- Mackintosh, Hugh. 1946. Longevity. *British Medical Journal* 1(9): 342.
- Mehlert, A.W. 1995. On the origin of cats and carnivores. *CENTJ* 9(1):106–120.
- Moore, John. 1976. Documentation of absence of transitional forms. *CRSQ* 13(2):110–111.
- Morris, John. 1994. Does the geologic column prove evolution? *Acts and Facts* 23(7): 1–4 (ICR “Back to Genesis” insert 67).
- Oard, Michael J. 1994. Review of *Bones of contention*. *CRSQ* 30(4): 222–223.
- Old Piltdown Man is only about 10,000 years old. 1949. *Science News Letter* 56(23):185.
- Peer, Elizabeth. 1978. Review of *People of the Lake*. *Newsweek* 92:80.
- Pendick, D. 1993. Fossils show early diversity of life. *Science News* 143:276.
- Raup, David. 1991. *Extinction; bad genes or bad luck?* W.W. Norton. New York.
- Rensberger, Boyce 1981. Ancestors: A family album. *Science Digest* 89(3):34–43.
- Rogers, J. Speed, T. Hubbell, and C. Byers. 1942. *Man and the biological world*. McGraw-Hill. New York.
- Rodabaugh, David 1976. Probability and missing transitional forms. *CRSQ* 13(2):116–118.
- Schopf, J. William. 1993. Microfossils of the early archaean, Apex chert: New evidence of the antiquity of life. *Science* 260:640–646.
- Seachrist, Lisa. 1996. Chewing up the fossil record. *Science* 271:1056.
- Shapiro, Robert. 1986. *Origins: A skeptic's guide to the creation of life on earth*. Summit Books. New York.
- Spencer, Frank. 1990. *Piltdown: A scientific forgery*. Oxford University Press. New York.
- Spetner, Lee. 1997 *Not a chance! Shattering the modern theory of evolution*. Judaica Press. New York.
- Standen, Anthony. 1950. *Science is a sacred cow*. E. P. Dutton. New York.
- Watson, D.M.S. 1929. Adaptation. *Nature* 124:231–233.
- Watson, Lyall. 1982. The water people. *Science Digest* 90(5):44.
- Wise, Kurt. 1995. Towards a creationist understanding of “transitional forms”. *CENTJ* 9(2): 216–222.

Announcement of Proposed Constitutional Change

In accord with Article VII, Amendments, of the CRS Constitution, the following change is proposed to Article III, Section 3, Other Categories:

Add the following to paragraph a: Fellow:
 “Nominations of candidates for consideration as Fellows must include a biographical sketch of the candidates to

be submitted by a Board member to the Secretary for distribution to the entire board in advance of the annual meeting”

This provision for designation as Fellow was voted unanimously by the 1975 Board of Directors.

Rapid Canyon Formation: The Black Canyon of the Gunnison River, Colorado

Emmett L. Williams*

Abstract

How the Black Canyon of the Gunnison may have developed within a young-earth Flood model is discussed. Subaqueous currents during the Flood eroded the sediments on the Gunnison uplift. Later, retreating Flood-

water continued to carve a canyon into the Precambrian basement. Vast regional volcanic activity introduced abrasive particulate matter into the flowing water aiding the erosional processes.

Introduction

Acceptance of a recent Creation and Flood model of earth history indicates that many natural events, such as canyon formation, would have occurred rapidly. This necessitates rapid erosion, a topic often discussed in the Quarterly.

Many monographs and articles have appeared in creationist literature in the last 25 years on the formation of various canyons. For instance, the Grand Canyon of the Colorado River, Pine Creek Gorge in Pennsylvania, Bangs Canyon in Colorado, gorge formation during the 1993 Midwest floods, Providence and Cloudland Canyons in Georgia, Santa Elena Canyon in Big Bend National Park (Texas), Kanab Canyon in Arizona and Utah and Little River Canyon in Alabama have been investigated by creationists. A bibliography containing selected creationist works on rapid erosion and canyon formation is contained in Appendix I.

This treatise on the Black Canyon of the Gunnison in Colorado is another introductory study reflecting the continuing field work of the Society on these topics, which are important aspects of Flood geology. A glossary of geologic terms used in this paper is provided after the acknowledgments.

Impressions of the Canyon

In 1904 a Reclamation Service engineer, I.W. McConnell, had this to say about the Black Canyon,
 . . . the Gunnison flows through a profound canyon,
 a chasm with almost vertical walls varying in depth

from 1,000 feet to nearly 3,000 feet. The width is not great, being in some places only 1,700 feet, so that one standing on the rim has spread before him the great rent in the earth with its frightful crags and its wonderful spires, all so near that its grotesque details and its awful sublimity make a direct appeal to the eye (pp. 162–163).

Chronic (1980, p. 281) claimed that: "Within the 12-mile stretch set aside as a National Monument, the Black Canyon is narrower and deeper than any other canyon in the country..."

Hansen (1987a, p. 9) observed that:

After the first emotional impact of the canyon, the same questions come to the minds of most reflective viewers, and in about the following order: How deep is the Black Canyon, how wide, how does it compare with other canyons, what are the rocks, how did it form, and how long did it take? Several western canyons exceed the Black Canyon in overall size. Some are longer, some are deeper, some are narrower, and a few have walls as steep. But no other North American canyon combines the depth, narrowness, sheerness, and somber countenance of the Black Canyon.

Obviously the canyon within the National Monument makes a vivid impression on those who view it. You marvel at the combined depth and narrowness of the feature such that often it is easy to forget the surrounding geography that makes the entire region so beautiful and awe inspiring.

Canyon Observations

Hansen (1981, p. 145) divided the Black Canyon physiographically and geologically into three distinct sections

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(upper, middle, and lower), "...which merge gradually with one another but have marked differences." The upper section "...extends from Blue Mesa dam downstream to the mouth of Cimarron Creek..." [Figure 1] (Hansen, 1987a, p. 12). The walls of the canyon are not as steep and the depth is not as great in this section compared to the middle portion. Remnants of volcanic rocks overlie the crystalline rocks of the inner gorge of the upper section (Figures 2a and 2b). The middle section, which includes the Black Canyon of the Gunnison National Monument, is where "...the inner gorge attains its greatest depth and grandest development..." (Hansen, 1981, p. 146). Between Pulpit Rock and Painted Wall (Figure 3), the depth of the canyon is 1.5 times its width. This middle section (Figures 4a and 4b) extends from Cimarron Creek downstream to Chukar Canyon (Figure 1). The lower section goes from Chukar Canyon to the confluence of the North Fork with the Gunnison River (Figure 1). Very few people see the lower section, and it is not as imposing as the upper and middle portions. Outcrops of sedimentary

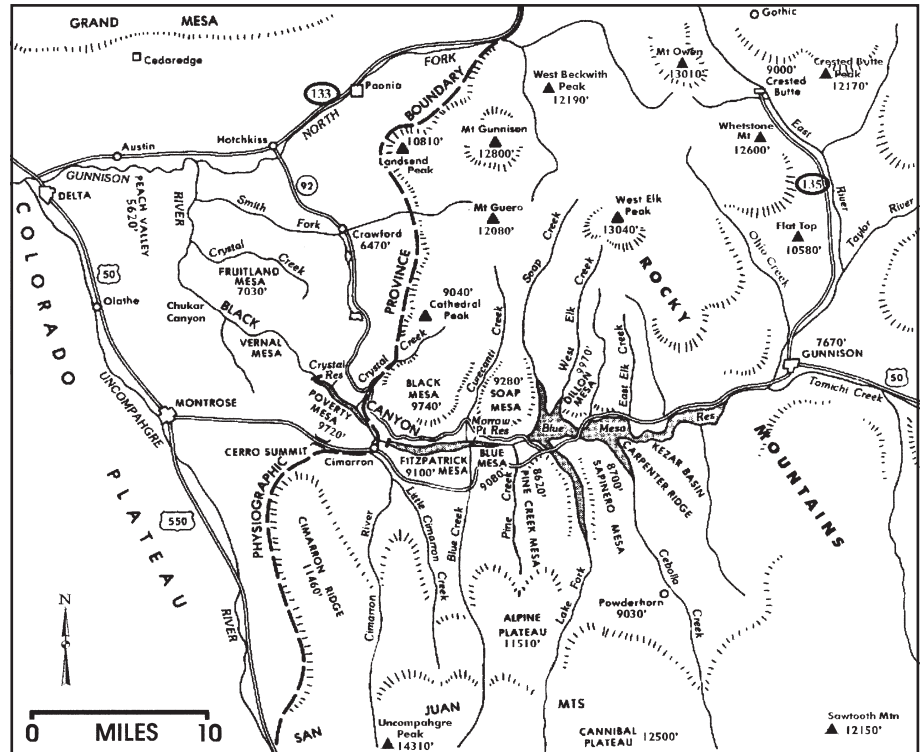


Figure 1. The Black Canyon of the Gunnison region of western Colorado. The canyon commences at the Blue Mesa Reservoir Dam and the mouth of the canyon is at the confluence of the North Fork with the Gunnison River. The approximate maximum altitudes of some of the geographic features are given in feet. Most major cities, towns and highways are included. The canyon lies in two difference physiographic provinces (see dashed line), the Colorado Plateau to the west and the Southern Rocky Mountains to the east (after Hansen, 1981, p. 145; USGS, 1977).



Figure 2a. Upper section of the Black Canyon of the Gunnison along Morrow Point Reservoir (pool level, 7160 ft.) in the inner gorge. Note the crystalline rock on the canyon wall to the left. Douglas fir trees can be seen on the opposite wall (right). The outer wall of the canyon at Soap Mesa in the distance is capped by Blue Mesa Tuff. See Figure 2b for a closer view of this formation.



Figure 2b. View of Blue Mesa Tuff on Soap Mesa, which overlies a deposit of cobbles and volcanic debris on the outer rim of the upper section of the Black Canyon. (See Olson, Hedlund and Hansen, 1968.)



Figure 3. A portion of the Black Canyon of the Gunnison River National Monument showing the various overlooks and viewpoints in the Monument where some of the specific locations mentioned in this article can be seen (from National Park Service, 1995).

Mesozoic rocks can be seen on the walls of the canyon in the lower region (Figure 5). Common to all three sections, except at the mouth of the canyon, is the inner gorge of crystalline rock (Hansen, 1981, pp. 145-146). See Table I for the stratigraphy of the Black Canyon region.

"The dominant structural feature of the region is the Gunnison uplift..." [Figure 6] (Hansen, 1981, p. 149)—an upraised composite tilted fault block. The entire canyon region apparently was once covered with tertiary volcanics (Figure 7). Volcanic activity occurred in the West Elk Mountains located to the north as well as the San Juan Mountains to the south. The Black Canyon has

Table I. Rock Formations of the Black Canyon Region*

Formation	Approximate Thickness (feet)
Alluvium, talus	~100
Hinsdale Formation	<150
Carpenter Ridge Tuff	<225
Fish Canyon Tuff	<300
Sapinero Mesa Tuff	<220
Dillion Mesa Tuff	<80
Blue Mesa Tuff	<250
West Elk Breccia	~1100
Mancos Shale	~2200
Dakota Sandstone	<100
Burro Canyon Formation	<120
Morrison Formation	
Brushy Basin Member	<360
Salt Wash Member	~150
Wanakah Formation	<225
Junction Creek Sandstone Member	<90
Pony Express Limestone Member	<7
Entrada Sandstone	<100
Diabase	<300
Pegmatite	<100's
Curecanti Quartz Monzonite	—
Vernal Mesa Quartz Monzonite	—
Pitts Meadow Granodiorite	—
Metamorphic rocks	>1000's

*After Hansen, 1981, p. 147; 1987a, p. 23; not all of the formations are found in every place in the region.

been incised into a synclinal feature (Hansen, 1981, p. 152). The walls of the canyon have a V-shaped profile which is indicative of water being the agent of formation as opposed to a fault feature. Even in the imposing middle section, the V-shaped walls are evident (Figure 8).

Uniformitarian Speculations on the Development of the Black Canyon

Wallace Hansen has done the majority of the modern geologic work on the erosion of the Black Canyon. Thus I will summarize his geologic model for the formation of the canyon using the uniformitarian time scale. Hansen (1987b, p. 321) stated that:

... this world-class gorge is an excellent example of superimposed drainage in a youthful river valley deepened by rejuvenation,... Although the drainage pattern was set by superposition... the canyon itself is a product of continued downcutting through the crystalline basement, in response to a gradual rise of the Gunnison uplift...



Figure 4a. Pulpit Rock overlook in the Black Canyon of the Gunnison National Monument (middle section of canyon), view looking upstream. Depth of inner gorge is 1770 ft. Note talus on the slopes. See Figure 3 to locate this overlook.

According to Hansen (1981, p. 151), the uniformitarian geologic history of the region is as follows. Before 1.7 billion years ago, sandstones, graywackes, shales and possibly volcanic rocks were deposited in the area. These rocks were subjected to folding and metamorphism yielding the Precambrian rocks found in the region today. Later, plutons and dikes were intruded into this basement during a period of tectonism along with some possible faulting at the same time (Hansen, 1964; Hansen and Peterman, 1968). At a later date, diabase dikes were injected into fracture zones of the Precambrian rock during a time of tectonic activity. Hansen then postulated a sequence of orogeny followed by a period of erosion. During the Jurassic and Cretaceous, sedimentation commenced again. The Gunnison uplift developed during the Laramide orogeny as:

Block uplift proceeded along preexisting fault lines . . . Early Tertiary erosion subsequently reduced the uplift to a low rolling plane, partly stripping away



Figure 4b. Painted Wall in the Black Canyon of the Gunnison National Monument (middle section of canyon). The wall consists of metasedimentary gneiss interlaced with pegmatite dikes. Depth of gorge is 2240 ft. making the Painted Wall the highest cliff in Colorado. See Figure 3 to locate the viewpoint.

the Mesozoic cover and exposing the Precambrian basement. The entire area was buried beneath a thick accumulation of Middle Tertiary . . . pyroclastic rocks and gravel. Finally the Gunnison River—in a superimposed course—entrenched itself down through the volcanic cover, through the remaining Mesozoic rocks, and into the crystalline core of the uplift, where it cut the present canyon (Hansen and Peterman, 1968, p. C80).

Hansen (1987a, pp. 18-19) suggested that the walls of the Black Canyon are so steep because down-cutting proceeded rapidly as the hard crystalline walls prevented much lateral erosion from occurring. He noted that (1987a, p. 19), "...the actual cutting of the canyon started perhaps a scant 2 million years ago," which is a mere drop in the uniformitarian bucket of time. Chronic (1980, pp. 280-284) essentially agrees with Hansen's view of canyon cutting.

Prior Creationist Studies on the Black Canyon

Walter Brown (1995, pp. 94-95) discussed the formation of dikes in the walls of the Black Canyon in the context of his hydroplate model. He commented on the tectonic forces and magmatic activity that would have been necessary to fracture the walls and inject intrusive material into the matrix rock. Brown emphasized the rapidity of the process as all of his postulations are developed in a young-earth framework.

Edmond Holroyd, III conjectured in a research proposal (1991, pp. 5-8) that strain, which developed on the crystalline rock core of the Gunnison uplift by tectonic forces, was relieved by cracking within the rock. The Gunnison River was captured by this rent in the rocks, thus the Black Canyon formed by such a mechanism. Holroyd also considered the existence of post-glacial lakes in the region that could have eventually drained through this crack causing erosional downcutting in the canyon walls.

Canyon Formation: Flood, Young-Earth Model

The geomorphology of the western United States has been strongly affected by canyon formation. A creationist explanation of the geologic history of this region must address these important features. This work has started (See Appendix I and, particularly, Austin, 1994.) and the Black Canyon presents another opportunity to demonstrate the superiority of the Flood model over uniformitarian speculations. I encourage creationists to offer other models of canyon formation besides mine for comparison to published uniformitarian interpretation (the excellent work of Hansen [1964; 1981; 1987a, b; Hansen and Peterman, 1968; Olson, Hedlund and Hansen, 1968]). Although this

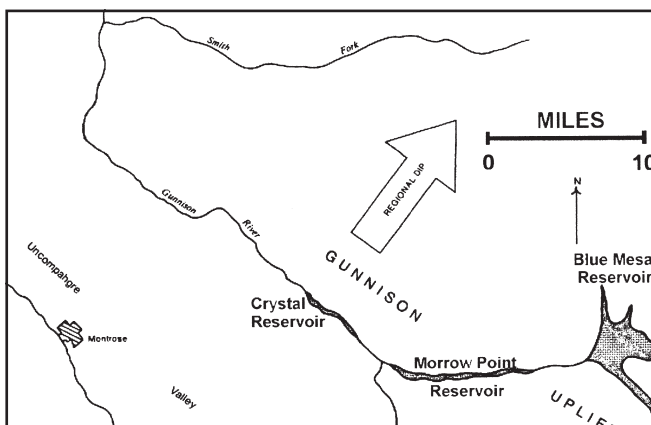


Figure 6. Location of the Gunnison uplift (after Hansen, 1981, p. 150; 1987b, p. 321).



Figure 5. The mouth of the Black Canyon of the Gunnison looking upstream from the confluence of the North Fork with the Gunnison River. The North Fork is to the immediate left of the photograph. The walls of the canyon are Entrada Sandstone topped by Dakota Sandstone. River level is approximately 5100 ft.



Figure 7. Dillon Mesa as seen from the south across Blue Mesa Reservoir. The palisade consists of West Elk Breccia capped by Blue Mesa Tuff. Volcanic activity blanketed the region from the north and south. The volcanism in the West Elk Mountains formed the West Elk Breccia which covered the sedimentary rock on Dillon Mesa to a depth of about 600 ft. The breccia is mainly composed of a mixture of igneous rock clasts in a volcanic ashy matrix. Later volcanic eruptions in the San Juan Mountains ejected hot ash which formed the welded tuff over the West Elk Breccia. This is evidence of extensive volcanism in the region. (See Olson, Hedlund and Hansen, 1968.) Note the pinnacles and spires that have formed on the face of the breccia due to weathering.

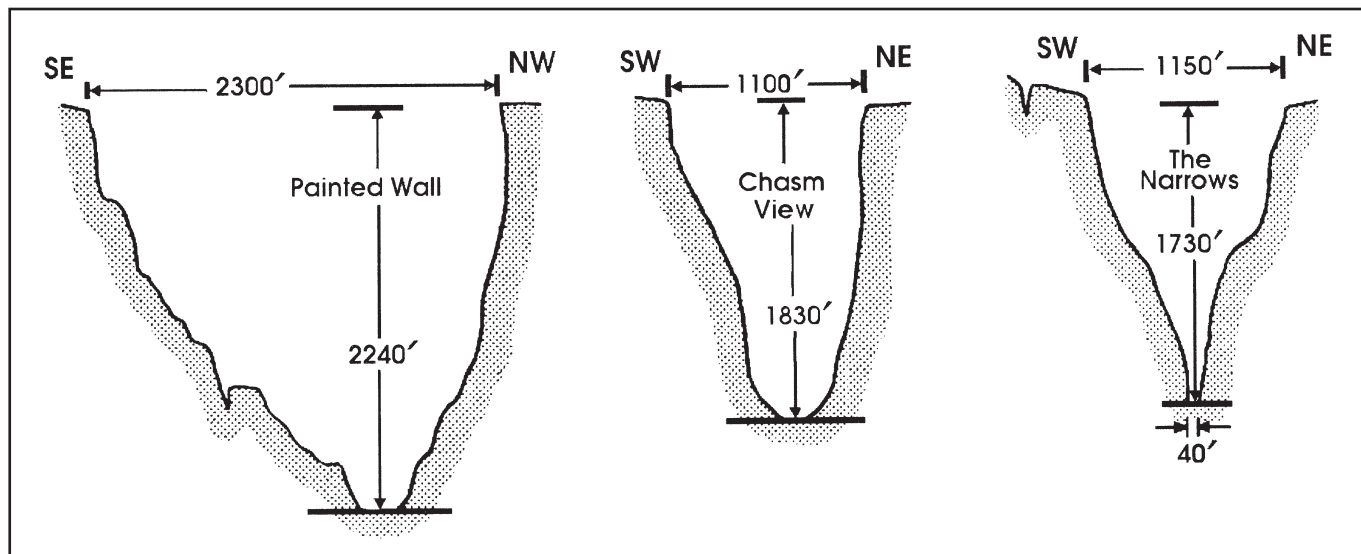


Figure 8. Drawings of particular cross-sections of the middle portion of the Black Canyon of the Gunnison within the National Monument. Note the V-shaped nature of the walls indicating erosion by the action of flowing water. Locations of these viewpoints can be seen in Figure 3 (after Hansen, 1987a, p. 11; Parker, 1993).

paper provides a brief interpretive sketch, much work remains to be done. Future work could profitably focus on some aspects of the following issues.

Hansen (1981, 1987a, b) explains the location of the present canyon as a function of drainage redirection around accumulating volcanics during uplift of the Black Canyon region. Is this a sufficient explanation? Are the unique morphologic features of the canyon (steepness of the walls, narrow width, channel gradient, etc.) better explained by uniformitarian or catastrophic processes? What is the relative timing of canyon formation to the surrounding geologic events? Hansen (1981) interprets canyon cutting as the last event in a long history of the area. To what extent is he constrained by physical evidence as opposed to his uniformitarian paradigm? Why are Paleozoic and Mesozoic strata generally missing from the uplift? What is the relationship of the canyon to the abundant, late-forming volcanics in the area? Are these volcanics subaerial, subaqueous, or a mixture of both? Finally, what are the regional implications of any interpretation of the Black Canyon for other similar features? Although this paper is not an exhaustive evaluation of the canyon or the region, the preliminary interpretation that follows attempts to outline possible answers for some of these questions.

I propose that the sedimentary strata, which were eventually metamorphosed into the hard, crystalline rock core of the Gunnison uplift, were deposited during the early stages of the Flood. Metamorphism resulted from heat generated by regional igneous activity, and pressure from regional tectonism and the overburden of rapidly depositing masses of sediment. Plutonic and dike intrusion followed.

Ongoing tectonism resulted in the uplift of the region (Figure 6) with accompanying folding and faulting. Uplift resulted in the erosion of sedimentary overburden on the newly metamorphosed and intruded core during the Flood. In the late stages of the Flood, subaqueous volcanism was initiated in the San Juan and West Elk areas. As uplift continued, volcanic activity became subaerial, and lahars, lava flows, and ash deposits continued to accumulate. These volcanics quickly covered the Gunnison region, and buried the thin remaining sediments on the uplift. During later Flood stages, falling base level and continued uplift resulted in further erosive drainage of waters across the uplift (Figure 9). Flood drainage (generally moving east to west) carried abrasive particles,

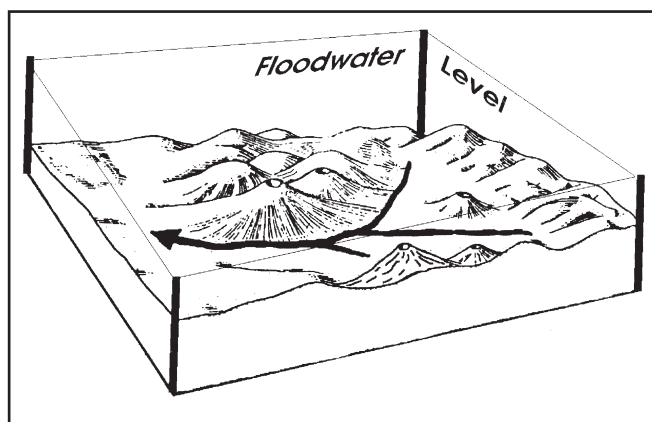


Figure 9. Proposed representation of regional Flood currents (noted by arrow) flowing across the Gunnison uplift which eventually formed the Black Canyon of the Gunnison. For an interesting discussion of the Flood currents, see Baumgardner and Barnette, 1994.

gravel, and boulders, which enhanced erosion, even into the crystalline core in places. As uplift continued and the base level fell, the core began to be more strongly eroded. The erosive power of the receding Floodwater was directed into the area of the current Black Canyon by ongoing volcanism. The drainage could also have been directed and enhanced along preferential pathways defined by structural zones of weakness. Mature canyon development could have been augmented by episodic flooding events triggered by the restriction and release of drainage by continued uplift and breaching of temporary volcanic deposits even into the wet, post-Flood ice age (Oard, 1990). Rapid uplift is evident from the steep, narrow channel carved into the crystalline core, and by the steep gradient of the present river channel.

Summary

One important aspect of Flood geology is how canyons formed during and after the Flood within the context of a young earth. Several canyons have been studied by creationists in an effort to provide models of canyon formation employing catastrophic processes. This introductory investigation concerns the Black Canyon of the Gunnison River, a unique feature considering the steep walls and narrow width of the middle section within the National Monument.

W. R. Hansen has provided an outstanding model of canyon formation from the uniformitarian perspective. His model was reviewed and a new approach to canyon development from a catastrophic viewpoint was outlined. To understand fully how the canyon may have formed, all sections (upper, middle, lower) were investigated as well as the regional geology and geomorphology. A brief summary of this new tentative model is given below.

First, Flood currents established the original drainage pattern across the Gunnison uplift. Retreating Flood water followed this same path (generally east to west) being hemmed in by the high peaks of the mountains to the north and south. In this region, the wet post-Flood ice age (Oard, 1990) created conditions where sediment-choked water flowed from the volcanic highlands along the now firmly established drainage pattern. This sediment-laden water continued downcutting along the channel in the uplift, but with less effective lateral erosion. I propose that the Black Canyon of the Gunnison formed in this manner in a very short period of time (from the late stages of the Flood through a period of Flood water retreat to the end of the ice age). When cutting of the canyon commenced, the path of flow through the uplift could have followed along fault lines in the core, however, water, loaded with abrasives, did the work of canyon cutting.

This proposal needs further refinement as more field work is conducted in this beautiful region of southwest Colorado.

Appendix I: Creationist Bibliography for Rapid Erosion and Canyon Formation

Several articles have appeared in the *Creation Research Society Quarterly* (CRSQ) on rapid erosion and canyon formation. The most recent in the series is:

Williams, E. L., R. L. Goette and J. R. Meyer. 1997. Kanab Canyon, Utah and Arizona: Origin speculations. *CRSQ* 34:162–172.

References to past Society field work on these subjects can be found in the above article, and interested readers and investigators can follow the series to find other references on the topics in earlier reports. The works of Steven Austin, Walter Brown, and Edmond Holroyd, III, among others, are referenced in the series.

Several references not contained in these reports are noted in this Appendix in an attempt to be complete as of the writing of this manuscript:

Akridge, A. J. 1998. A Flood-based origin of Little River Canyon near Fort Payne, Alabama. *Proceedings of the Fourth International Conference on Creationism*. Creation Science Fellowship. Pittsburgh, PA. Preprint.

Froede, Jr., C. R. 1995. Dauphin Island, Alabama: Evidence for rapid erosion. *CRSQ* 32:143–148.

Froede, Jr., C. R. 1997. Cloudland Canyon State Park, Georgia: 300 million years of erosion? *CRSQ* 34:38–43.

Shaver, M. 1998. Flood geology sheds light on Unaweep Canyon mystery. *CRSQ* 34:219–224.

Williams, E. L. 1991. Catastrophism and rapid erosion III. *CRSQ* 28:109–110.

Williams, E. L. 1997. Canyon formation by solution and collapse of limestone, Trans-Pecos Texas. *CRSQ* 34:183–184.

Williams, E. L., T. L. Bruce and J. R. Carson. 1996. Tropical Storm Alberto 1994, some catastrophic geological consequences in Georgia. *CRSQ* 33:175–178.

Glossary

Clast—An individual fragment of a detrital sediment or sedimentary rock, produced by physical disintegration of a larger rock mass.

Diabase—An intrusive igneous rock consisting essentially of labradorite and pyroxene, and characterized by ophitic texture.

Dike—A tabular body of igneous rock that cuts across the structure of adjacent rocks.

Fault block—A crustal unit bounded by faults either

completely or in part.

Gneiss—A foliated rock with coarse crystals formed by regional metamorphism, in which bands of granular minerals alternate with bands of minerals with flaky or elongate prismatic habit.

Graywacke—A term generally applied to a dark gray firmly indurated coarse-grained sandstone.

Intrusion—The process of emplacement of magma into a pre-existing rock reflecting magmatic activity.

Lahar—A landslide or mudflow of pyroclastic material.

Magmatic—Derived from magma.

Metasediment—A sedimentary rock that shows evidence of having been subjected to metamorphism.

Orogeny—The process of mountain formation.

Pegmatite—A coarse grained igneous rock usually found as irregular dikes, lenses, or veins.

Pluton—An igneous intrusion.

Pyroclastic—Pertaining to clastic rock formed by volcanic explosion or expulsion from a volcanic vent.

Superimposed stream—A stream that was established on a new surface which maintained its course despite changes in lithology and structure encountered as it eroded downward into underlying rocks.

Syncline—a configuration of folded stratified rocks in which the rocks dip downward from opposite directions to come together in a trough.

Tectonism—A general term for all movement of the crust produced by deformational processes.

Tuff—Consolidated pyroclastic fragments.

Welded tuff—A pyroclastic rock that has been indurated by the welding together of its glass shards under the action of heat retained by individual particles along with the pressure produced by overlying material.

Acknowledgments

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References

- Austin, S. A. (editor). 1994. *Grand Canyon: Monument to catastrophe*. Institute for Creation Research. Santee, CA.
- Baumgardner, J. R. and D. W. Barnette, 1994. Patterns of ocean circulation over the continents during Noah's Flood, in Walsh, R. E. (editor), *Proceedings of the Third International Conference on Creationism*. Technical Symposium Sessions. Creation Science Fellowship. Pittsburgh, PA. pp. 77–86.
- Brown, W. 1995. *In the beginning: Compelling evidence for Creation and the Flood*. Center for Scientific Creation. Phoenix, AZ.
- Chronic, H. 1980. *Roadside geology of Colorado*. Mountain Press. Missoula, MT pp. 281–284.
- Hansen, W. R. 1964. Curecanti Pluton, an unusual intrusive body in the Black Canyon of the Gunnison, Colorado. *United States Geological Survey Bulletin 1181-D*. Washington, DC.
- Hansen, W. R. 1981. Geologic and physiographic highlights of the Black Canyon of the Gunnison River and vicinity, Colorado, in Epis, R. C. and J. F. Callender (editors), *Western Slope Colorado*. New Mexico Geological Society Guidebook, Thirty-Second Field Conference. Socorro.
- Hansen, W. R. 1987a. *The Black Canyon of the Gunnison: In depth*. Revised second edition. Southwest Parks and Monuments Association. Tucson, AZ. First published as United States Geological Survey Bulletin 1191.
- Hansen, W. R. 1987b. The Black Canyon of the Gunnison, Colorado, in Beus, S. S. (editor), *Centennial Field Guide Volume 2: Rocky Mountain Section*. Geological Society of America. Boulder, CO. pp. 321–324.
- Hansen, W. R. and Z. E. Peterman. 1968. Basement-rock geochronology of the Black Canyon of the Gunnison, Colorado. *United States Geological Survey Professional Paper 600-C*. Washington, DC pp. C80–C90.
- Holroyd, III, E. W. 1991. *Indicators from the region of the Black Canyon of the Gunnison of climate desiccation since glacial times*. Research Proposal. Denver, CO.
- McConnell, I. W. 1904. Topographic work in the Grand Canyon of the Gunnison, in Newall, F. H. (compiler), *Proceedings of First Conference of Engineers of the Reclamation Service with accompanying papers*. United States Geological Survey. Washington, DC.
- National Park Service. 1995. *Black Canyon of the Gunnison National Monument, Colorado*. (Pamphlet)
- Oard, M. J. 1990. *An ice age caused by the Genesis Flood*. Institute for Creation Research. El Cajon, CA.
- Olson, J. C., D. C. Hedlund and W. R. Hansen. 1968. Tertiary volcanic stratigraphy in the Powderhorn-Black Canyon region, Gunnison and Montrose Counties, Colorado. *United States Geological Survey Bulletin 1251-C*. Washington, DC.
- Parker, T. S. 1993. *Black Canyon of the Gunnison National Monument: South Rim driving tour guide*. Southwest Parks and Monuments Association Tucson, AZ.
- United States Geological Survey. 1977. Montrose, Colorado (V502PNJ134) raised relief map edition 2—DMATC. Hubbard Scientific. Chippewa Falls, WI.

Demythologizing Uniformitarian History

John K. Reed*

When I use a word... it means just what I choose it to mean—neither more nor less. Lewis Carroll

Abstract

Although monolithically applied within historical geology, uniformitarianism itself is a non-scientific axiom. It represents the only possible hold on history for naturalists, since their positivism restricts knowledge to observation. It is demonstrably falsified by at least three tests for truth:

- (1) There is imprecision and potential contradiction in the definition itself.
- (2) Even a consistent definition contradicts empirical evidence of both modern processes

and products of past processes.

- (3) Finally, the underlying concept of the uniformity of natural law, a necessary condition for uniformitarianism, cannot be justified within the naturalist worldview.

Biblical history, which recognizes a revelatory basis for knowledge, is shown to be superior to uniformitarian mythology, and naturalism is shown to be without an adequate grasp on any history whatsoever.

Introduction—A Context for Debate

The twentieth-century theologian, Rudolph Bultmann, is known for his program of “demythologizing” the Bible. He attempted to strip away what was called the outer husk of superstition and myth from the Scriptural accounts, and find the essential kernel of divine truth inside. In a somewhat similar manner, this paper undertakes to “demythologize” uniformitarian history, and separate myth from reality. However, the program of demythologizing undertaken in this paper differs because it is not the husk of uniformitarianism that is disposable mythology, but the essential core of the concept that requires discarding.

The role of uniformitarianism in modern geology cannot be fully appreciated outside of its connections to naturalism and positivism. Those relationships are poorly understood absent an appreciation of the importance of worldviews (Noebel, 1991). Metaphysical Naturalism (also called secularism, materialism, etc.) is a worldview based on a fundamental denial of the existence of the supernatural (Nash, 1997; p. 119). Positivism is a way of thinking linked to modern manifestations of naturalism by a misplaced enthusiasm for the scientific method. Positivism has resulted from the substitution of a mechanistic metaphysic for a mechanistic methodology

(Glover, 1984), and has therefore closed off all other roads to truth save science. Although the rigorous positivism of the “Vienna Circle” has long since been abandoned, variants of the same principle enjoy widespread acceptance, especially in the sciences. Adler (1992, p. 32-34) reprinted an excellent litmus test for positivism first published earlier this century (Adler, 1941) that reveals the extent of the position, both then and now.

One of the drawbacks of positivism is the implication that knowledge is restricted to the constraints of human observation, both in space and time. Thus the naturalist has no grasp on history, especially the postulated prehistory of billions of years demanded by modern advocates. This is a severe dilemma, since naturalists (especially Marxists) use their interpretation of earth history as an argument against Biblical theism. The relationship of uniformitarianism to naturalism cannot be comprehended apart from the desperate need for a historical method created by the modern naturalist’s affinity for positivism. Noted skeptic, Antony Flew (1997, p. 49) recognizes this dilemma in his arguments against miracles.

The basic propositions are, first, that the present relics of the past cannot be interpreted as historical evidence at all unless we presume that the same fundamental regularities obtained then as still obtain today.

Quite apart from geology, uniformitarianism in a general, philosophical sense is the presumption that allows

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an escape from the temporal limits of positivism. Uniformitarianism is the only possible handle on history for naturalists. If a strict natural uniformity can be asserted, then a “scientific” explanation of history is possible, and no recourse to revelation is demanded by logical necessity (see Figure 1a). Philosophical uniformitarianism found its home within geology because that discipline is the repository of history for naturalists.

The application of uniformitarianism to geology in the works of Charles Lyell (1797-1875) illustrates this relationship. Gould (1965) asserted that early nineteenth-century geologists led by Lyell sought consciously to supplant the Biblical framework of earth history. He reiterated this point later stating, “Lyell had a vision of the earth and its history” (Gould, 1984, p.9). Although the author is not familiar with any discussion of the subject, it would be interesting to investigate the influences of David Hume’s skepticism and possibly, Immanuel Kant’s phenomenological method on Lyell and his peers. After all, Hume argued that repeatable observations outweigh the evidence of nonrepeatable ones. The implications of this position (as restated by Antony Flew) may have been apparent to Lyell.

If this assumption is correct... one should not believe in the historicity of any unusual events from the past (since none are repeatable). Likewise, even historical geology is unrepeatable in practice, since the fossil record was formed only once and has not been repeated. So also is the history of our planet unrepeatable. Yet it has happened. Hence, if Flew [and Hume] is right, the science of geology should be eliminated, too! (Geisler, 1997, p. 84; brackets added).

If Lyell and his followers were to accept the new skepticism and the new naturalism, their grasp on any historical interpretation would have to be consolidated. They may have been forced to a position of extreme uniformitarianism in order to save a skeptical approach to history.

Lyell and his followers did not directly attack the Bible. Instead they choose the indirect method of attacking the applicability of the derivative catastrophic paradigm to geological interpretation. Their goal of minimizing the Bible’s historical significance was achieved by the use of a bait-and-switch strategy that equated naturalistic gradualism with the fundamental methodology of science (Gould, 1984, p. 10). The template of the biblical historical record was replaced by a skeptically objective “empirical” science.

The entire geologic record, with all its evidence of vast upheaval and mass extinction, was, for the first time, integrated within the sphere of empirical investigation. (Gould, 1965, p. 224)

Contrary to Gould’s celebration, the early geologists did not lead geology from the bondage of Biblical history

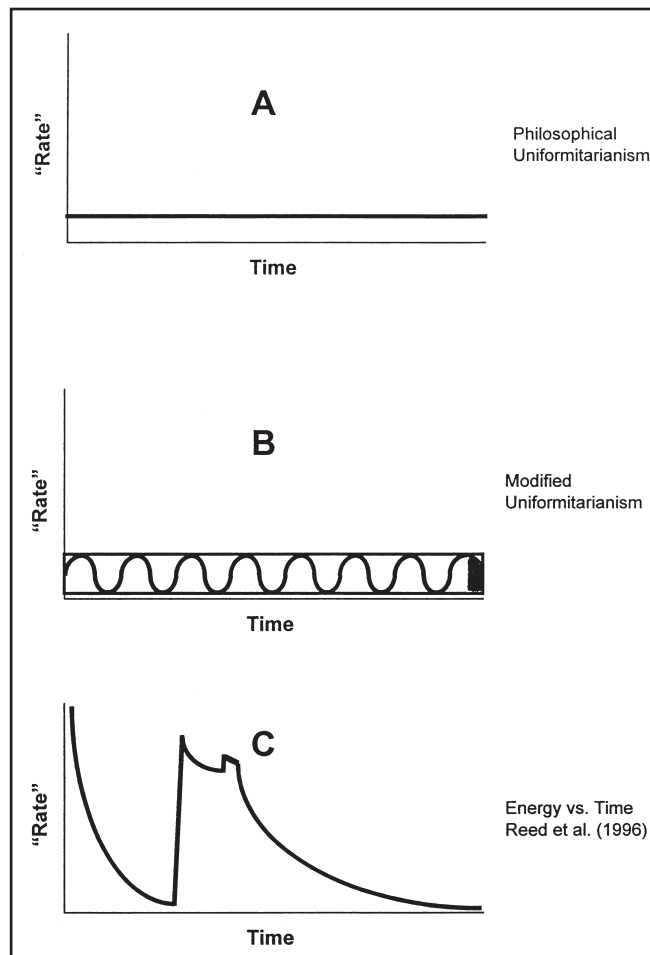


Figure 1. Comparative cartoon showing strategies for interpreting the past. Methods are referenced to rates of geologic processes. Figure 1A, labeled “philosophical uniformitarianism” shows an invariant rate of process required for confident extrapolation of interpretation into the past. This graph illustrates the Principle of Temporal Invariance. Figure 1B, labeled “modified uniformitarianism”, shows how the term is defined and applied at present. The shaded area represents historical observation of processes, although it cannot be shown to scale on the time axis (it would not be visible if it was). Figure 1C is the time vs. energy plot from Reed, Froede, and Bennett (1996). An entirely different method is employed; geologic processes are not extrapolated from present observations, but are deduced from revealed accounts found in the Bible.

into the promised land of empirical neutrality. Instead, they merely traded one set of presuppositions (Christian) for another (naturalist). In one of geology’s great ironies, Lyell and other early proponents of uniformitarianism not only failed to discover an objective approach to earth history, but even more importantly, they failed to understand that biblical theology remained a vital, but unseen, component of their own concept. Those connections are

summarized in Reed (1996), and this paper will illustrate them, partly by forcing a consistently naturalistic formulation of uniformitarianism. Unless terms are defined correctly and placed in their proper context, there can be no profitable debate on the relative merits of uniformitarianism and catastrophism in geology. As it stands at present, the issue of historical method within the larger debate between naturalism and theism cannot be considered adequately defined if naturalists are utilizing biblical theology to develop and propound an anti-biblical worldview.

Like many other modern enigmas, the challenges listed above reach below the surface and are linked to epistemological conflicts between theists and non-theists. These conflicts can be seen in different understandings of terms such as “science”, “philosophy”, and “theology”; and the relationships between them (Adler, 1965). Since Christians and naturalists differ with regard to these most basic definitions, it is unsurprising that derivative issues (e.g., uniformitarianism and catastrophism) are also confusing. For example, a positivist would define science as “knowledge”, while a Christian should define it as “a part of knowledge constrained by philosophical and theological axioms”. It is no wonder that most discussion about uniformitarianism between advocates of these worldviews often appears confusing at the outset. These issues cannot be addressed comprehensively in this paper, but will be touched upon as they relate to the present discussion.

Because naturalists easily ignore a multifaceted approach to knowledge, uniformitarianism is commonly considered scientific because of its application within historical geology. And, after all, is not all ‘knowledge’ science? However, application to scientific questions does not demonstrate that a principle itself is scientific. Close examination of uniformitarianism reveals that it is a principle that lies outside the reasonable bounds of science (Reed, 1996; Gould, 1984). Therefore, a thorough examination of the principle must transcend mere empirical analysis. This paper will examine uniformitarianism on two levels. The first level is a test for logical consistency in its definition and usage in geology, and this analysis will show that only a rigid definition of uniformitarianism can provide any confidence in naturalism’s history. However, this rigid definition cannot pass empirical tests. Modifications inherent in the current definition of uniformitarianism will be examined, and we will see that these changes cannot save uniformitarianism from empirical weaknesses, but that they exacerbate these problems while creating new logical ones. The second level analysis will examine the concept by reference to its underlying premise of uniformity of natural law; and will demonstrate a profound contradiction between uniformity and naturalism, while simultaneously demonstrating consis-

tency between uniformity and Christian theology. Demonstrating flaws in naturalist formulations of both uniformitarianism and uniformity should remove all credibility from the application of uniformitarianism within naturalism. The divorce of uniformitarianism from naturalism should also seriously weaken the hold of naturalism on history, reinforcing the necessity of revelatory knowledge in historical interpretation.

The First Level of Analysis: Weaknesses in the Definition

Bates and Jackson (1987) define uniformitarianism in the American Geological Institute Glossary of Geology as:

The fundamental principal or doctrine that geologic processes and natural laws now operating to modify the Earth’s crust have acted in the same regular manner and with essentially the same intensity throughout geologic time, and that past geologic events can be explained by phenomena and forces observable today; the classical concept that “the present is the key to the past”. The doctrine does not imply that all change is at a uniform rate, and does not exclude minor local catastrophes...

There are five weaknesses in the definition and usage of uniformitarianism in modern geology. These include:

- the ongoing confusion between what Gould (1965) termed substantive uniformitarianism and methodological uniformitarianism,
- the truncated usage of the term, “geologic process” in the definition (above),
- the inability to define the limits of “rates” as it is qualified in the definition (above),
- the indefinite usage of the term, “present” in the definition (above), and
- the contradictions between a consistent definition and observation, of both present processes and of past products.

Gould (1965) derived a dual definition of uniformitarianism; substantive (uniformity of rate) and methodological (invariance¹ of natural law), and further subdivided them later (Gould, 1984). Austin (1979) carefully noted four meanings of uniformitarianism, and correctly criticized the vagueness of usage. It is possible to picture the various uses of the term as forming a continuum with the more easily defended assertion of the uniformity of natural law at one end point all the way over to

¹Gould betrays his naturalist worldview by using the term, “invariance” in an absolute sense. For a Christian, this usage is theologically unacceptable, and therefore, I choose to use either “uniformity,” “regularity,” or “predictability” with reference to natural law.

a rigid regularity of process (including rate) at the other, with more or less flexibility of processes comprising the interior points. Even a passing acquaintance with geological literature demonstrates that the application of uniformitarianism in field interpretation usually tends toward the latter endpoint. However, when the axiom is questioned, it is defended by reference to the endpoint of the uniformity of natural law. This position is deemed unassailable, since the uniformity of natural law is a prerequisite for scientific inquiry. It is interesting to speculate about a correlation between the desire for the unknown (e.g., strata) to be correlated to the most familiar context possible (observable modern environments), and the resulting consistent pressure to force interpretation by reference to modern processes in a rigid fashion, a situation lamented by Gould (1984). He illustrated that mindset by documenting opposition to Harlan Bretz's (1969) interpretation of the Channeled Scablands of the Pacific Northwest (Sipes et al., undated).

What is the relationship between uniformity of natural law and uniformity of geologic process (or methodological and substantive uniformitarianism to follow Gould [1965])? The relationship cannot be univocal, since geologic processes are described by reference to more than the functioning of natural laws. As Gould (1965, 1984) stated, there is a difference between uniformity and uniformitarianism. Interaction between the two can best be seen as a unidirectional relationship between geologic processes and natural laws. That is, the underlying predictability of natural laws is a necessary condition to any predictability of geologic processes. However, it is not a sufficient condition. In other words, uniformity of natural law does not logically guarantee comprehensive predictability of geologic processes (since the two are not identical). For example, hydraulic principles governing the relationship between current speed and particles in sedimentary transport (uniformity of natural law) cannot predict whether the particles will be deposited in a fluvial, deltaic, or marine environment (geologic process).

This distinction between natural law and geologic process makes it clear that the use of the term, "*processes*" in the Bates and Jackson (1987) definition is incomplete, since processes have multiple aspects, most of which may vary. These include at least (1) *function*, (2) *scale*, (3) *rate*, (4) *environment*, and (5) the *potential for preservation* in the rock record. Of these aspects, only the first is directly linked to predictable natural law; the others can vary, even when *function* does not. For example, a delta has formed at the mouth of the Mississippi River where the conditions affecting the transport of the sediment load change as the river enters the Gulf of Mexico. Deltas can form when any moving volume of water transporting sediment enters another relatively quiescent body. The

physical processes by which sediment grains are deposited in a predictable relationship during delta formation have been studied and related to the discipline of hydraulics. There are general 'rules' of delta formation, and these define the aspect of *function* for that particular process. However, the variables that interact in history to form a particular delta cannot be uniquely defined by the resulting deposit. For example, did fine-grained sediment in a certain bed result from low current energy, or a fine-grained sediment source? Other aspects of geologic processes; *scale*, *environment*, *rate*, and *preservation potential* cannot be uniquely and comprehensively described by reference to the uniformity of natural law, or *function*.

That being so, it is not surprising that the definition of uniformitarianism supplied in Bates and Jackson (1987) does not explicitly address each of these aspects *per se*. It mentions "*rate*", "*intensity*", and "*manner*". If the "*manner*" is the equivalent of *function*, and "*intensity*" and "*rate*" refer to a similar (time-dependent) aspect of a given process, then clearly the term, "*processes*", is not completely defined. Therefore, uniformitarianism is not completely defined, either. Although Austin (1979) noted these shortcomings and proposed terminology to clarify the issue, his suggestions have not been widely applied in geology (compare Austin [1979] with Bates and Jackson [1987]).

Statements in the Bates and Jackson (1987) definition qualifying the relationship between *rate* and uniformitarianism deserve closer scrutiny. *Rate* appears to be defined, but there is an attempt to overcome a very obvious difficulty. Observable present processes do not operate at precisely uniform rates. Thus conceptual uniformitarianism requires modification, and the present definition appears to be placing boundaries on historic *ranges* of rates by reference to those limits observed in the present. The modified uniformitarianism defined by Bates and Jackson (1987) does not require a strictly invariant rate, but would require a strict invariance of the *range* of rates observed in the present. Therefore, uniformitarianism as currently defined requires invariance of *rate* within observed limits, and strongly implies that *scale* and *environment* fall within ranges observed in the present. Of course this reformulation leads immediately to the next big question about the definition.

The fourth weakness in the definition is the lack of precision in the term *present*. Does it mean this second, this minute, this hour, today, this week, this month, this year, this decade, this century, or this millennium? Or does it include the entire span of human observation, and therefore human history? Even though most historians would protest, the latter appears to be the common usage of geologists. If so, does that not imply that the "past" is therefore the period of time when no human

observations were made because no humans existed? A consistent positivism (apart from uniformitarian assumptions) cannot allow such a past. Only by assuming (without demonstrating) a *knowable* pre-human past can this definition be used. Thus, the definition of uniformitarianism itself tacitly requires that it be true even to be defined. Theists can honestly question whether or not this approach is logically circular, if naturalists do not admit that uniformitarianism is an indemonstrable axiom.

Another Logical Challenge: The Metaphysical Face of Uniformitarianism

Defining *rate* as a constrained variable rather than a constant creates a logical tension in the concept of uniformitarianism. Although field evidence forces *rate* to be a range rather than a constant, doing so adds uncertainty to the pure concept, and uncertainty is fatal because uniformitarianism must function as an axiom for naturalists. Most people understand the use of uniformitarianism as an epistemological tool. In other words, it is used as a means of understanding and explaining the rock record. It 'translates' the 'code' of the rocks. However, the use of uniformitarianism as an epistemological tool requires a metaphysical corollary of strict continuity. Ignoring for now the previous difficulty adduced from attempting to quantify the 'present', consider this point. If the present is the key to the past, and if the past is defined by events occurring in time, then this arrangement can be graphically represented by points on a line. If the present is the key to the past, then considering the present as another point on the line leads to the formula:

present point = any given point in the past

with respect to geologic processes. If present geologic processes are defined as P_n , and geologic processes at any time in the past are labeled $P_1, P_2, P_3 \dots P_{n-1}$, where P_1 is the oldest, and P_{n-1} is the youngest, then a geologist can interpret the record of points 1, 2, 3...n-1 by reference to point n. If you do not like numbers, then think of 1, 2, and 3 as Cambrian, Ordovician, and Silurian. Therefore, in mathematical terms:

$$P_n = P_1 \text{ and}$$

$$P_n = P_2 \text{ and}$$

$$P_n = P_3 \text{ and} \dots$$

$$P_n = P_{n-1}$$

If this is true, then by the logical principle of self-identity:

$$P_1 = P_2 = P_3 = \dots = P_{n-1}$$

This relationship defines the hidden constraint on uniformitarianism. Let us call it the Principle of Temporal Invariance. This principle would require that with respect to geologic processes, if the present is the key to the past, all points in the past must be identical to the present, and therefore identical to each other. Or as stated below by Lemon (1990, p.30): "The uniformitarian view of earth history held that all geologic processes proceed *continuously* and at a very slow pace." [emphasis added]

This principle requires geologists not only be able to interpret any one point in the past by reference to the present, but that there also be an interpretive continuity between any given points in the past. Observed differences outside the bounds of the "present" between any two parts of the rock record contradict uniformitarianism. Can philosophical uniformitarianism be saved by minor modification? It is evident from the uncertainties inherent in the definition and application of uniformitarianism that its proponents want as much "wiggle room" as possible for their concept to accommodate empirical evidence. This concept has developed from a simple idea of continuity (Figure 1a) to a present, modified version (Figure 1b) that seeks to incorporate observed variation. But does not the modification destroy the logical simplicity needed by naturalism? The Principle of Temporal Invariance greatly restricts any flexibility between the present and the past, and throughout the stratigraphic column. A corollary consequence further restricts it. For the naturalist, this Principle of Temporal Invariance must reside in nature (since nothing exists except nature) and must be absolute. If naturalism can explain natural history with certainty, invariance is required. If invariance is not observed, then either history cannot be explained, or naturalism is false. This is the dilemma of the natural historian.

Empirical observation should confirm the Principle of Temporal Invariance without exception. Please note that a universal assertion cannot stand under the weight of even one contrary piece of evidence. Based on the definition of uniformitarianism provided by Bates and Jackson (1987) and Lemon (1990), examples of past geologic processes must be the same (even in the aspects not explicit in their definition) as those operating in the present. Gould (1965) faced this dilemma. He wanted some uniformitarianism with respect to geologic processes, but recognized that empirical evidence does not support an absolute formulation (the only recourse to a non-absolute formulation of uniformitarianism is the recognition of an absolute historical reference outside of nature).

What does observation of modern processes and ancient products reveal? At best modern examples reveal that the limits of geologic processes are only invariant with respect to *function*. The observation of present variations over a few centuries cannot legitimately be used to

set a “range” of variation for past processes supposedly occurring over millions of centuries. With respect to the rock record, we find evidence of processes operating at wildly different *scales* and *rates*, and in singular *environments*. Precambrian iron formations, large, pure salt beds, regional-scale correlative strata, plateau or flood basalts, and glacial floods all find no place in the observable ‘present’, and directly contradict Lyell’s (1881) assertion that causes “*never acted with different degrees of energy from that which they now exert*” (see Figure 1a). Not only do they contradict the conceptually pure uniformitarianism demanded by the Principle of Temporal Invariance depicted in Figure 1a, but they are also difficult to reconcile with the modified uniformitarianism of Figure 1b. These failures reinforce the relevance of a different methodology, such as the one illustrated in Figure 1c.

Only one exception is needed to invalidate a self-consistent formulation of uniformitarianism. Geologists are so accustomed to finding exceptions to a consistent definition of uniformitarianism that they allow the logical force of one exception to be lost in the myriad of such examples. When challenged, the answer to these exceptions usually appears to flip back to the position of invariant natural law (not the same as invariant geological processes), and assumes that those comfortable and defensible confines somehow shelter invariance (within slightly broader limits than previously thought) of process; including *rate*, *scale*, *environment*, and *preservation potential*. Tension between the naturalist’s need for an absolute handle on history (temporal invariance) and observation (variation of process over time) rightly generates confusion. This confusion cannot be resolved by accommodating observed variation while imagining that invariance is still operative. But this has not stopped modern geologists’ attempts to formulate a “catastrophic” uniformitarianism based on the vast recent increase in geologic data in the latter part of this century. The Principle of Temporal Invariance requires more than Gould’s (1965) fallback position of “methodological uniformitarianism”. Invariance of process is either absolute or it is not. If not, then the present is *not* the key to the past in the way geologists have been assuming it is for almost two hundred years.

Matters are even worse for the naturalist when their “wobble room” is further restricted as the definition of the present is quantified and limited. For example the limits of variation allowable are much different if the present means “the last ten years” than if the present means “the last ten centuries.” There is only one last hope for the naturalist. Perhaps variations observed in present processes somehow form a predictable pattern that can be superimposed on ancient strata. But there are not enough “data” points to determine if this is true. Even this potential salvation through cyclicity is lost when we consider that the

geologic record itself is not regular with respect to time. In other words, the intervals between the ages of each bed in any given section of strata do not vary in a regular manner. Therefore, there can be no predictable cycle of time represented in the rock record that might receive an extrapolation of present patterns of variation in a predictable fashion (as is evidently desired by Bates and Jackson, 1987). The more-or-less randomized distribution of ages in the range of outcrops available for investigation demands that there is no time dependency of variation. Therefore, the Principle of Temporal Invariance must be true independent of time, and there should be no observed variation in geologic processes in the past or the present. The naturalist is in a trap of his own making; a more consistent approach to the observed non-regular variations in the “present” would be to conclude that variation increases with time into the past (Figure 2). And such a conclusion renders the presumption of only limited variation in the comparatively unlimited past, wishful thinking.

The Second Level of Analysis: How Can Uniformity be Justified?

The naturalist has trapped himself by his definition of uniformitarianism. Can an appeal to uniformity or “methodological uniformitarianism” get him out as Gould (1965) believes? As was shown above, no. However, to complete the argument, an examination of the relationship between uniformity, uniformitarianism, and naturalism is worth pursuing. First, uniformity of natural law is not unique to geology or the modern principle of uniformitarianism as it is applied in geology. Rather, uniformitarianism is a stepchild of uniformity, a fundamental principle of modern science predating uniformitarianism. If uniformitarianism is dependent upon uniformity, then it is worthwhile to examine the concept of uniformity by reference to the two competing worldviews, naturalism and biblical theism. What is the nature of the principle of uniformity, and how can it be reconciled with the tenets of each system? And if uniformity cannot be reconciled with naturalism, can there be any remaining shred of credibility for uniformitarianism?

No worldview can justify uniformity based on empirical observation. Most thinkers of the past tried to find a permanent point of reference by which observed changes could be explained. Plato preferred eternal, perfect forms, or “Ideas”. Aristotle traced all motion (change) back to an “Unmoved Mover”. Later, Christian thinkers recognized that the nature of God provided a stable reference point for observed changes. They accepted the connection between spiritual and physical reality inherent in such a position (based on the implication of spirit [God]

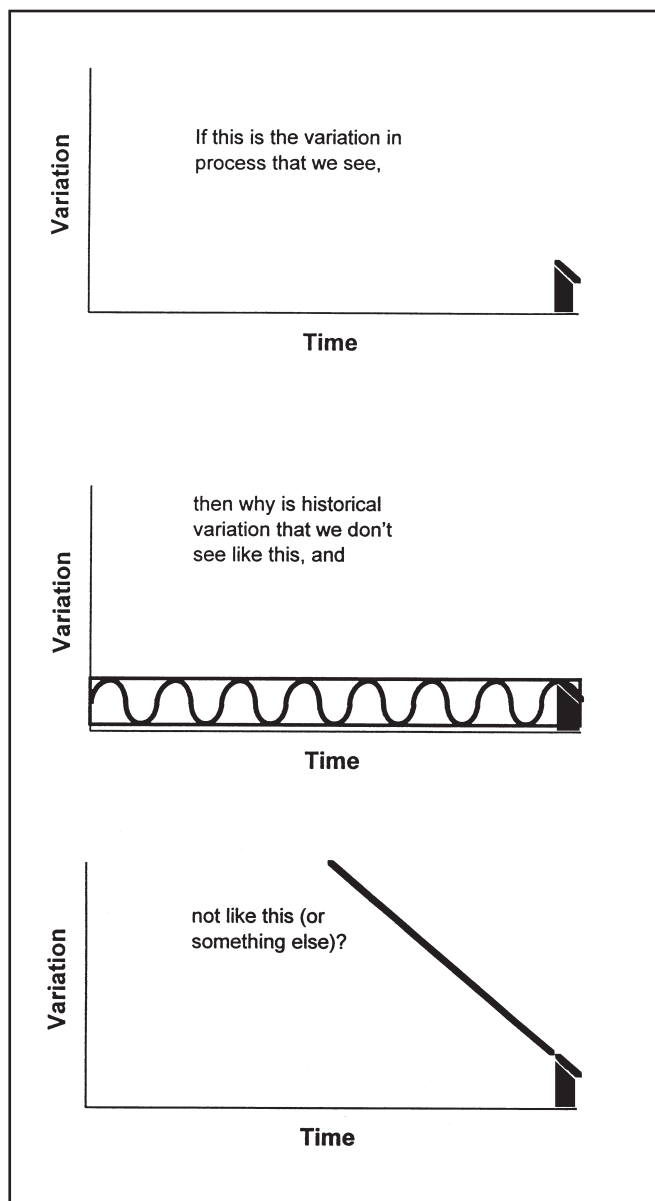


Figure 2. Cartoon illustrating the arbitrary extrapolation of modern observations into the past by modern uniformitarianism. The top figure shows a period of historically observed geologic processes. Note once again that it cannot be shown to scale with the proposed naturalist timeline of 4.5 billion years. The central figure shows historical extrapolation as done via the modern concept of uniformitarianism, with ranges of process function, rate, environment, scale, and preservation potential consistently extrapolated within limits observed during the present. The bottom figure shows a logical alternative, based on the present observation of variation in geologic processes over an extremely short period of time. The existence of a logical alternative to the extrapolation scheme demonstrates that the application of uniformitarianism is not logically or scientifically required.

creating the material universe). Modern naturalism, following Immanuel Kant, rejects an epistemological tie between the noumenal (spiritual) and phenomenal (material), and so are forced to reject God as a reference point for change. Unfortunately, since modern naturalism developed out of the cultural context of Christianity, it has never wrestled with the inconsistency of assuming on widely-accepted aspects of reality that have been historically justified by belief in God. In the new naturalist worldview, observation by man is the only possible way to truth; there is no absolute reference. Gould (1965, p. 223) states that allowing the direct providential control of nature by God violates the method of science. But if it turns out that Gould requires God to justify uniformity, then he will have a difficult choice to make – to jettison his naturalistic science, or to jettison his uniformity, naturalism's only possible hold on history.

Justifying uniformity as a universal principle is very difficult for the naturalist. Both the span and scope of human knowledge relative to earth history are just too limited. This impossibility is multiplied by the naturalist's required vast age for the earth and universe sufficient to allow the 'natural' evolution of what is currently observed². The difference between this required age and the span of human existence (much less scientific observation) is so great that it would be impossible even to posit an extrapolated statistical probability of uniformity based on human observation. Therefore uniformity is not a conclusion or deduction, but it is an axiom, or to use the definition of Bates and Jackson (1987), a "doctrine". The question then becomes how to justify this doctrine.

How can a naturalist justify the axiom of uniformity of natural law? At this point we may consider that naturalism can be subdivided into either materialism or non-rational mysticism (Schlossberg, 1983). Since we are discussing the scientific application of uniformitarianism, then the division of mysticism may be ignored here. As noted earlier, the materialist side of naturalism is consistently accompanied by its handmaid, positivism. Unfortunately, the positivist faces a major dilemma. His epistemology requires an empirical test of validity, by which he isolates science as the only path to truth. But scientific principles can only be extrapolated into the past (or future) by the presupposition of uniformity, and that presupposition cannot possibly be justified empirically. The naturalist, still caught in his logical trap, must deny one of his major presuppositions—posi-

²Naturalism must conclude that the material universe is eternal, not just very old. Empirical evidence of change and decay contradict that supposition. However, relative to the problem at hand, even a very old universe imposes the same limits on justifying uniformity.

tivism or uniformity. He must either deny his epistemological base (allowing revelation back onto the playing field) or deny uniformity (rendering true knowledge unachievable). Gould (1965, p. 226) addresses this problem, but does not answer it (note that he does not say what justifies the assumption of invariance). He states:

However, the assumption of spatial and temporal invariance of natural laws is by no means unique to geology since it amounts to a warrant for inductive inference which, as Bacon showed nearly four hundred years ago, is the basic mode of reasoning in empirical science. Without assuming this spatial and temporal invariance, we have no basis for extrapolating from the known to the unknown and, therefore, no way of reaching general conclusions from a finite number of observations. (Since the assumption is itself vindicated by induction, it can in no way "prove" the validity of induction - an endeavor virtually abandoned after Hume demonstrated its futility two centuries ago).

It appears that someone forgot to tell the disciples of uniformitarianism. Only by ignoring these blatant contradictions (wishful thinking) may they escape this problem. This dilemma starkly illustrates the historical irony of uniformitarianism developing within the cultural context of Christianity, attempting to replace theology with science, and then finding that the brave new world it has helped pioneer is an intellectual desert.

The issue of uniformity provides yet another problem for naturalism. The early development of modern science hinged in part on the ability of man to see the world mechanistically, and to remove the mystery of nature from the domain of the scientist into that of the theologian. Such a move was validated by the belief in a rational, immutable God who freely created and controlled physical reality. The resolution of the superiority of the Bible to Aristotle (Myers, 1987; Glover, 1984) provided a theological basis for partitioning explanation (i.e., Aristotle's four causes); removing non-mechanistic explanation from science to philosophy or theology. Gould (1965, p. 223) unwittingly notes that Lyell and his followers wanted the benefits of biblical theology without the Bible. He states:

To become a science, they affirmed, geology needed not only an empirical theory unencumbered by biblical preconception, but also a methodology which affirmed the potential natural explanation of terrestrial development and relegated intrinsic mystery to its proper theological realm.

Unfortunately, there can be no empirical theory without some kind of preconception. If it is not the Bible, then what is it? Gould (1965) supplies no answer. Intrinsic mystery cannot be relegated to the theological realm

unless there is a real theological realm, and there is communication of truth between science and theology. It is inconvenient for Gould that Christian theology includes statements of historical truth that influence geological understanding—the very thing that Lyell was trying to escape.

You cannot have it both ways. Modern naturalism does not recognize theology or first-order philosophy as knowledge-equivalents of science. However, if *some* aspects of Christianity are to be erased, then it is only fair that *all* of the Christian trappings be stripped away, allowing the return to... *Aristotle*! But not even a return to Aristotle could satisfy modern naturalism. A strictly empirical, positivist approach would more consistently note that the discontinuities and changes in variation observed within the human timeframe demand unconstrained variation in the past. In which case they have regressed beyond Aristotle to Heraclitus³. Of course, that conclusion renders history incomprehensible and the discipline of historical geology invalid.

Let us be fair. Can the biblical theist justify the axiom of uniformity of natural law? Logically and historically it has always been done by reference to theology, understanding that science rests on principles derived from theology. These include the rationality of God, the immutability of God, the providence of God, and the ability of man created in His image to understand truthfully, even if not completely. For the purposes of science, nature is presumed to behave mechanistically and predictably because of the rational nature of God. This behavior is consistent through time because God is immutable. This formulation must recognize that the invariance of natural law is not absolute, because this law represents the desire of the lawgiver. Or, as stated by Moore (1986), man's perception of natural laws is descriptive, rather than prescriptive. Therefore, the possibility of supernatural intervention contrary to regular natural process is left open. Naturalists have always pointed to this exception as the reason for positing a contradiction between biblical theism and the scientific method. According to Gould (1965, p. 224), Lyell wanted to postulate:

...another, very different type of uniformity that asserted the invariability of natural laws in space and time as a necessary condition to his contention that reference need only be made to observable processes in explaining past changes. The main force of this proposition was to eliminate supernatural explanations of material phenomena; for this uniformity

³Heraclitus was the pre-Socratic philosopher who advocated continuous change. He is remembered for his illustration that no one could step into the same river twice, because some aspect of the river (or the man) would have changed before it could be recrossed.

mity denies divine intervention (the suspension of natural laws) and affirms that elucidation of earth history belongs to the domain of science. (Gould, 1965, p. 224)

It is understandable that Lyell (and his followers) would want to start their work by postulating the necessary conditions for, and conclusions of, their research. However, this practice is referred to in logic as “begging the question”. Lyell wanted the ability to pretend that an absolute reference point existed, against which he could integrate observed change, but he did not want it to be God. However, this position is revealed as merely wishful thinking, and wishful thinking seems a flimsy base from which to launch an attack on the integrated and historically successful Christian formulation of uniformity, which helped birth modern science. The consequences for uniformitarianism are clear; if uniformity cannot be justified within the naturalist framework, then there is no hope for the more extreme uniformitarianism. If uniformity can only be justified within biblical Christianity, then the accompanying propositions of God as the Creator, Intervener, Revealer, and Judge must also be accepted. As C. S. Lewis stated:

The philosophy which forbids you to make uniformity absolute is also the philosophy which offers you solid grounds for believing it to be general, to be almost absolute. The Being who threatens Nature’s claim to omnipotence confirms her in her lawful occasions. Give us this ha’porth of tar and we will save the ship. The alternative is really much worse. Try to make Nature absolute and you find that her uniformity is not even probable. By claiming too much, you get nothing. You get the deadlock, as in Hume. Theology offers you a working arrangement, which leaves the scientist free to continue his experiments and the Christian to continue his prayers. (Lewis, 1961, p. 106).

Conclusion

Uniformitarianism fails on multiple fronts. Observed and inferred changes in geologic processes, both present and past, are recognized and cannot be reconciled with Lyell’s rigid formulation. The modern attempt to preserve some control on the limits of change also cannot be reconciled with the naturalist worldview. Flaws in the modern definition and application of uniformitarianism discussed above demonstrate the weaknesses in this attempted reconciliation. The tension between the improbability of absolute temporal invariance on the one hand, and the naturalist’s requirement that history be accessible and referenced only to nature on the other, cannot be overcome by an appeal to “methodological uniformitarian-

ism” (Gould, 1965). Geologic interpretation requires that geologic processes (including *function*, *rate*, *scale*, *environment*, and *preservation potential*) be invariant, and thus able to be extrapolated to any point in the Earth’s crust. Alternatively, geologic interpretation could be performed if the processes were not invariant, but were known at least generally from historical record (i.e., revelation of a global flood). A compressed time frame would logically add confidence to extrapolation. Thus a position that appeals to biblical revelation as the basis for understanding history is superior to naturalism.

In the biblical theist worldview, God provides an absolute external reference, and uniformity is upheld. There is no rational necessity of invariant *rates*, *scales*, or *environments* because there is a change agent (God) that has the power to intervene. Even if the intervention is done within the divinely imposed guidelines of natural law, or *function*, there is no constraint on *scale*, *rate*, *environment*, or *preservation potential*. Therefore, historical investigation in the biblical theist worldview is open to empirical investigation unbounded by the present in these aspects. And that empirical investigation is guided by the historical record that is part and parcel of the biblical worldview. Confidence in uniformity, based on theological considerations, allows an analogical comparison of past and present processes, based on an underlying uniformity of natural law. Empirical evidence from the rock record certainly supports the biblical-theist approach to uniformity, rather than the naturalists’ straitjacket of uniformitarianism. Historical investigation in the naturalist worldview continues to be done under the axiom of uniformitarianism because the only alternatives, (1) man cannot understand the past, or (2) man cannot understand the past apart from revelation are both irreconcilable with fundamental tenets of the system. The uniformitarian motto, “the present is the key to the past” is shown to be logically inconsistent wishful thinking by those who also wish to reject God.

Summary:

Challenges for Uniformitarianism

1. Geologic processes are not identical to natural laws. Therefore, agreement regarding the invariance of natural laws does not imply the invariance of geologic processes. Variations in *scale*, *rate*, *environment*, and *preservation potential* are all independent of invariant natural law.
2. Change is observed. Therefore, uniformitarianism cannot be absolute. However, positing ranges of energy for historical processes based only on the empirical observation of present processes is invalid. The observation of unpredictable variation in the present

can only lead to the conclusion of much greater unpredictable variation in the past. And if expanding the time scale used in the definition of the 'present' allows greater limits of variation, then extrapolation into the much greater 'past' implies unlimited variation, rather than inflexible limits. Only by adding other assumptions can such an assertion be justified.

3. The assumption that the term, "present" is equivalent to the history of human observation, and that the term, "past" is everything outside of human history involves metaphysical assumptions about reality that cannot be reconciled within a positivist approach to knowledge.
4. If uniformitarianism is valid as an epistemological tool to "translate" the "code" of strata, then the corollary Principle of Temporal Invariance must also be universally valid. The logical conclusion that all processes are invariant and thus independent of time is required if extrapolation into the distant past is valid. However, as noted in point number two above, this requirement is contradicted both by human observations in the 'present', and by the rock record of the 'past'. If the Principle of Temporal Invariance is not valid metaphysically, then neither is the assumption of uniformitarianism.
5. Even the fallback position that natural law is invariant cannot be axiomatic in a positivist approach, since the range of empirical observation is not absolute. Even a statistical extrapolation is invalid, given the percentage of time available for observation relative to the asserted age of the earth. Conversely, a theist can theologially justify the continuity of natural law as consistent with the character of God, and the guarantee of truth apart from human observation.

References

- CRSQ—*Creation Research Society Quarterly*
- Adler, M.J. 1941. "God and the professors." *Science, philosophy, and religion: A symposium* (Conference on Science, Philosophy, and Religion in their relationship to the democratic way of life, 1940). Kraus Reprint Co. New York. Chapter 7. pp. 120–130, 134–135.
- Adler, Mortimer. 1965. *The conditions of philosophy*. Atheneum Press. New York.
- Adler, Mortimer. 1992. *A second look in the rearview mirror*. Macmillan Publishing Co. New York.
- Austin, S. A., 1979. Uniformitarianism—A doctrine that needs rethinking. *The Compass of Sigma Gamma Epsilon* 56(2): 29–45.
- Bates, R. L., and J. A. Jackson, editors. 1987. *Glossary of geology*. American Geological Institute. Alexandria, VA.
- Bretz, J. Harlen. 1969. The Lake Missoula floods and the channeled scabland. *Journal of Geology* 77: 505–543.
- Flew, A. 1997. Neo-Humeian arguments about the miraculous, in Geivett, R.D. and G. R. Habermas, editors, *In defense of miracles*. InterVarsity Press. Downers Grove, IL. pp. 45–57.
- Geisler, N. 1997. Miracles and the modern mind, in Geivett, R.D. and G. R. Habermas, editors, *In defense of miracles*. InterVarsity Press. Downers Grove, IL. pp. 73–85.
- Glover, Willis. 1984. *Biblical origins of modern secular culture*. Mercer University Press. Macon, GA.
- Gould, S.J. 1965. Is uniformitarianism necessary? *American Journal of Science* 263: 223–228.
- Gould, S.J. 1984. Toward the vindication of punctuational change in W.A. Berggren, W. A. and J. A. Van Couvering, editors, *Catastrophes and earth history*. Princeton University Press. Princeton, NJ. pp. 9–34.
- Lemon, Roy R. 1990. *Principles of stratigraphy*. Merrill Publishing Co. Columbus, OH.
- Lewis, C.S. 1966. *Miracles*. Macmillan Publishing Co. New York. p. 106.
- Lyell, K.M. 1881. *Life, letters and journals of Sir Charles Lyell*, John Murray, London, as quoted in Gould, S.J. 1965. Is uniformitarianism necessary? *American Journal of Science* 263:223–228.
- Moore, J. N. 1986. How would you teach about scientific laws? *CRSQ* 23: 45–47.
- Myers, E. 1987. Aristotle and creationism: a comparison. *CRSQ* 24: 5–9.
- Nash, R. H. 1997. Miracles and conceptual systems, in Geivett, R.D. and G. R. Habermas, editors, *In defense of miracles*. InterVarsity Press. Downers Grove, IL. pp. 115–131.
- Noebel, D.A. 1991. *Understanding the times: the religious worldviews of our day and the search for truth*. Harvest House Publishers. Eugene, OR. 891 pp.
- Reed, J.K. 1996. A biblical Christian framework for earth history research, Part I—Critique of the naturalist-uniformitarian system. *CRSQ* 33:6–12.
- Reed, J. K., C.R. Froede, Jr., and C.B. Bennett. 1996. A biblical Christian framework for earth history research, Part IV—The role of geologic energy in interpreting the stratigraphic record. *CRSQ* 33: 97–101.
- Schlossberg, Herbert. 1983. *Idols for Destruction*. Thomas Nelson Publishers. Nashville, TN.
- Sipes, James L. (Producer/tape editor), Michael D. Spencer, Bruce Marrow, Andrea L. Blake (Producers/animators), Mike Fitzsimmons (Narrator), Dan Brown (Writer), and Michael D. Spencer (Tape editor). undated. *The great floods, cataclysms of the ice age* (video tape). Washington State University, Landscape Architecture Program.

Notes from the Panorama of Science

Speculation Regarding the Albedo of the Antediluvian Moon

The Moon's albedo is the brightness reflected from its surface. This article poses an idea about the albedo of our moon during the Antediluvian Timeframe based on our present knowledge of the moon's surface and weathering processes. *We readily admit that our idea can never be answered.* However, by posing these types of questions and raising these types of issues we can perhaps better understand the possible impact that the Flood had, not only on planet Earth, but also on the various satellites and planets found within our Solar System. We view the Flood event as not necessarily limited to the earth's surface and sub-surface—it was an event which affected our entire solar system. We believe evidences for this interpretation can be found as impact craters on the Earth, Moon, and other satellites and planets within the solar system.

The Moon's Outer Surface

Much scientific research has been conducted on the rocks constituting the outer surface of our moon as a result of the various NASA Apollo projects. Previously, much of this work has been summarized and published within the young-earth framework by Whitcomb and DeYoung (1978). Their work remains an excellent source of information about the moon, and should be consulted for further details.

The moon's outer surface is generally composed of three types of rock: impact breccia, basaltic/mafic rock, and anorthite (there are some eruptive volcanic ash layers covering small portions of the moon's outer surface, but they are considered minor in extent). In terms of albedo, the basaltic rock is the darkest, followed by the impact breccia, and finally the anorthite. The albedo of the moon is a function of the surface rock chemical composition. The mineral of interest for this article is anorthite.

Anorthite

Anorthite is a calcium rich aluminosilicate (plagioclase) mineral ($\text{CaAl}_2\text{Si}_2\text{O}_8$) which is cream to white in color in an unweathered state. According to Glass (1982, p. 209) lunar plagioclase is Ca-rich with compositions usually between 80 to 90% anorthite. Hence, the albedo from an unweathered surface of this rock would be very high.

Solar flares originating from the sun's surface create solar winds of ionic plasma which move across the solar



Figure 1. Photograph showing a large solar flare coming off the surface of the sun. This material is plasma which ionizes objects with which it comes in contact. The moon's outer layer is ionized due to solar wind coming from the Sun. (NASA Photograph)

system and ionize (chemically weather) anything in its path (Figure 1 and Figure 2). The moon's outer surface is subject to weathering by these ionizing particles. Anorthite rock outcrops are weathered by this ionic method, resulting in the development of a brown coating or patina. The resulting patina is only a few millimeters in thickness, but is sufficient to greatly reduce the original albedo of the rock. Occasionally micro/macro-meteoroids impact the surface of the anorthite and break off portions of its weathered outer surface, exposing a fresh white surface for patina development. The amount of time to fully develop a patina has been approximated by uniformitarians at less than 10,000 years. Hence, a fresh surface of anorthite would slowly darken as the patina develops on its outer surface, due to solar flare activity.



Figure 2. Photograph showing a large solar flare coming off the surface of the Sun. Features like this serve to generate solar winds which contain ionized gas. These gases are what weather the surface of the moon. (NASA Photograph)

Modern Moon's Albedo

Most of the outer surface of the earthward side of the moon is covered by basalt lava flows and dust (i.e., lunar soil) created by past impact events. Adjacent to and lying beneath these impact and basaltic deposits is believed to be the moon's original crust composed of anorthite. Some uniformitarian scientists have speculated that the moon's original crust might have been completely composed of anorthite (The albedo of this earlier moon could have been far greater than what it is today). A period of impacts following this time is believed to have resulted in the generation of basalt lava flows and impact ejecta. Of course, all of this is suggested to have happened very early in the moon's history—billions of years ago. So the moon's outer surface according to the uniformitarian model would suggest that it has remained basically unchanged for billions of years.

A Proposal Within our Model

In a previous article, Froede and DeYoung (1996) noted that several young-earth creationists have proposed that the Flood event was also a period of solar-system-wide bombardment. The outer surface of our moon shows evidence that supports this interpretation (Figure 3). These impact events resulted in the generation of impact ejecta and massive basalt lava flows (Figure 4).

Antediluvian Moon's Albedo

This is where we come to our speculation regarding the antediluvian moon's albedo. *If the moon's outer surface were originally composed of anorthite at its creation on Day 4 it would have had a much greater albedo than present, at least two to ten times its present state.* This possibility brings new meaning to Genesis 1:16, which states: "And God made two great lights; the greater light to rule the day, and the lesser light to rule the night..." (KJV). With the advent of the Flood, the reflectance (i.e., albedo) of the moon would have forever changed. Impact events, basalt lava flows, and the development of a patina through the ionizing of the outer rock surface would serve to decrease the moon's original albedo. We speculate that the Flood played a larger role in affecting the amount of light that we have reflecting from the moon today.

References

CRSQ—*Creation Research Society Quarterly*
Froede, C. R., Jr. and D. B. DeYoung. 1996. Impact events

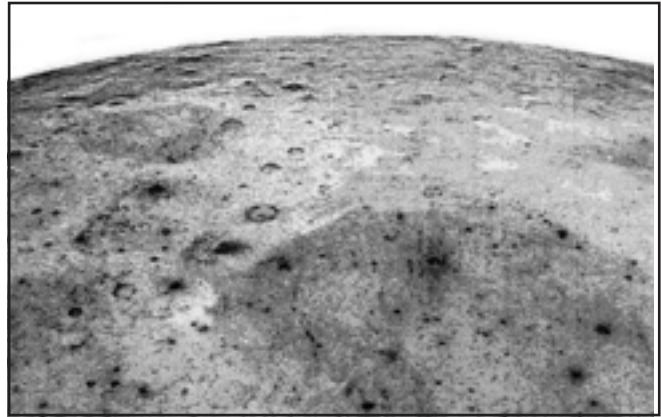


Figure 3. Computer-enhanced and black and white reversed photograph showing the surface of the Moon with numerous impact craters covering just a small area. Clearly this surface has been subject to the impacts of many objects. We believe that this impact period coincides with the time of the Flood. If this is true then the moon's former surface is like nothing observed today. (Modified from a NASA Photograph)



Figure 4. Photograph showing the surface of the moon. Note the large numbers of impact scars and the dark areas where basaltic lava has issued out at the surface and covered over what might have originally been the white to cream colored anorthite outer surface of the moon. (NASA Photograph)

within the Young-Earth Flood model. CRSQ 33:23-34.
Glass, B. P. 1982. *Introduction to planetary geology*. Cambridge University Press. New York.
Whitcomb, J. C. and D. B. DeYoung. 1978. *The moon: Its creation, form and significance*. BMH Books. Winona Lake, IN.

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Letters to the Editor

Day and Night at the Beginning

One of the problems for those who wish to reconcile the Bible and evolution is: How could plants, created on the “third day,” continue through long geologic time before the sun was created on the “fourth day”? Dr. Scofield, in his famous Bible notes, and now Dr. Hugh Ross, presently the most popular promoter of a type of theistic evolution, say the sun was created “in the beginning” instead of on the fourth day. They explain that on the fourth day the sun was revealed by the removal of a cloud. On the third day sufficient light penetrated the cloud to accommodate the plants.

Dr. Arnold Fruchtenbaum, a Hebrew scholar of Ariel Ministries, assures me the Hebrew text of the Bible declares the sun was created on the fourth day, together with the moon and the stars.

In Genesis 1:3-5 we read, “And God said, Let there be light, and there was light. And God saw the light, that it was good. And God divided the light from the darkness.

And God called the light Day, and the darkness he called Night.”

This light was not sunlight, for if it had been sunlight, God would not have needed to divide the light from the darkness. The opacity of the earth would have done it from the start. Until God made the division, before the creation of the sun, there was light everywhere. God divided darkness from the light and called them Day and Night. So the plants on the third day had day and night from the original light and its division. After the fourth day the plants had light from the sun as now.

According to Drs. Scofield and Ross, God did no creating on the fourth day and merely removed a cloud. He would have taken the rest of the day off.

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Symmetric Variation, Mendel, and Garther

This letter is in response to certain of questions about my coining and using the term “symmetric variation.” My real interest in creation started in 1970 and among the many subjects I selected to study was the question of why life forms remained within their kinds. After considering many options, I came to my present views in 1978, but had nowhere to publish them since I was unaware of the existence of the CRSQ at that time. I got my first paper published in 1980 thanks to John N. Moore and the late Harold Armstrong. As my ideas developed, I eventually published another paper: Brown (1987).

As far as I am aware I am the only creationist to adopt the view that the arrangement of codons for amino acids (and the family groups into which these codons are arranged) is the main reason why life forms will remain within their kinds. A change from one codon for valine, for example, to another valine codon will produce only symmetric changes or variations within the kind. Other papers speak of mutations producing variations and not evolution, but their authors do not tell why such changes prove inadequate to yield evolutionary change.

I adopted the word “symmetric” after I heard it being used in particle physics and realized that in biology there was something about dogs, for example, that was always the same, despite the many variations among dogs. I needed to find this at the chemical level in terms of the code.

Another term used for this phenomenon is “same sense” mutations. It is found that a change from one of these codons to another in the same set produces the same amino acid. Then some refer to these as “synonymous” codons or “silent” mutations. One of these changes makes no noticeably different protein. I believe “symmetric” is a better and easier way to refer to such synonymous substitutions and the word “symmetric” suggests that the Creator ordained this as one of the means by which He keeps life forms within their respective kinds. One of Britain’s leading mathematicians supports this meaning of symmetric (Stewart, 1994). If we are wondering what mathematics is doing in biology, then we may consider the article in *Bulletin of Mathematical Biology* where Swanson spoke of amino acid “families” in a similar way to the list I have used (Swanson, 1984). Symmetric is a term that fits and one which I recommend because of its design overtones.

At this point I would like to give a few examples from history. Mendel is the founding father of genetics, but how many of us know that Garther separately described nearly all of the phenomena associated with the Mendelian laws of heredity, except for numerical segregation ratios? How many of us know that Mendel had access to Garther’s work and had made his own notes on the pages and flyleaf—Orel (1984, p. 38-39)? Mendel clearly saw something in Garther’s work that Garther himself did not

see. Garther was ignored. Even Mendel's work was neglected in his lifetime. However, the fact that Mendel used something already known, added something to it, and gave it a new interpretation may have contributed to the bypassing of Garther's work. The model of DNA produced by Crick and Watson is a similar story. Chargaff gave them the pairing of bases; Franklin's work helped them realize it was a double helix; and Donohue told Watson about the right shapes the bases would be in (the "enol" form) which led Watson to put the remaining part of the jigsaw together. From this, Crick and Watson started to arrange the already familiar data into a model of which they had the best overall view—Gribbin (1984, p. 237-238). While Watson did little in science after this event, Crick went on to become a great research scientist who carried on with studies about the genetic code. Crick said that there was more than one form of RNA and that amino acids were coded for by a three-base system and both points turned out to be true. All I have done is to take this code and put an interpretation on it in a certain way. Those that take a different view are at liberty to do so. One of my prized possessions is a signed copy of one of Crick's more recent books, *The Astonishing Hypothesis*. Newton was correct when he said everyone stands on someone else's shoulders.

George Howe (1965, p. 19) published a paper on plants and in it he said that the shared features between different kinds were the result of the creator having created those similar features in separate created kinds. This

view in plants is similar to my view in animals in what I have called the "gene-theme" model, where the creator either created all the shared features among different kinds or He created some of them while others came about by means of the organism's variational potential—Brown (1987). I recommend the use of the term "symmetric variation" and "gene-theme" model as noted here and I invite comments from others.

References

- CRSQ—*Creation Research Society Quarterly*
 Brown, C. 1987. Symmetric variation and the gene-theme model. *CRSQ* 24: 75-80.
 Gribbin, J. 1984. *In search of the double helix*. Corgi. London.
 Howe, G. 1965. Homology, analogy, and creative components in plants. *CRSQ* 2: 14-21.
 Orel, V. 1984. *Mendel*. Oxford University Press. Oxford, England.
 Stewart, I. 1994. Broken symmetry in the genetic code? *New Scientist* 141(1915): 16.
 Swanson, R. 1984. A unifying concept for the amino acid code. *Bulletin of Mathematical Biology* 42: 187-203.

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Book Review

*The Heavens Declare the Glory of God:
 Daily Devotionals in Defense of Biblical Christianity* by Henry M. Morris.
 World Publishing, Grand Rapids, MI. 1997. 374 pages. \$14.95
 Reviewed by Emmett L. Williams

Dr. Morris, of all of the creationists I know, has followed the injunction of I Peter 3:15, "But sanctify the Lord God in your hearts, and always be ready to give a defense to everyone who asks you a reason for the hope that is in you with meekness and fear" (NKJV). This book of devotionals, covering a complete year, is aimed at this goal. Using scientific and Scriptural concepts, the author defends Christianity and creationism as well as attempting to stir the reader into action for the Creator. For example, one of the devotionals is entitled "The Entropy of Unconcern" and refers to "entropic" Christians; another discusses spiritual entropy.

Each devotional concerns a page of text with ample Scriptural references. A subject and a Scripture index are included in the book. A personal devotional could be brief or in-depth depending on the time a person wishes to allot for study. The gospel is presented in many of the selections.

This is a unique, practical collection of devotionals that could inspire a person to serve the Creator as well as increase his understanding of the creation, both biblically and scientifically. Henry Morris continues to offer some of the best work in biblical and scientific creationism.

Minutes of 1998 Creation Research Society Board of Directors Meeting

On Thursday 21 May 1998 the first session of the Board of Directors (BOD) meeting was held at the Institute of Creation Research (ICR), Santee, California, from 2000 hours to 2145 hours to discuss where and when to hold the 1999 BOD meeting. A motion was passed to hold the 1999 BOD meeting at Albert Lea, Minnesota, Thursday, March 25th to Saturday, March 27th. On Friday 22 May 1998 between the hours of 0815 and 1700 the Research, CRSnet, VACRC, Membership, Quarterly Editorial, Constitution/Advanced Planning, Publications, Young Earth/Radioisotope, and Finance Committees each met separately for approximately two hours to plan for the Saturday business meeting. On Friday evening a social with the ICR staff including a tour of the Creation Science Museum was held. Special recognition and acknowledgements were given to Dr. Henry Morris, founder and President Emeritus of ICR.

On Saturday 23 May 1998 the closed business meeting of the BOD was called to order at 0815 hours. Present: T. Aufdemberge, D. Boylan, E. Chaffin, D. DeYoung, W. Frair, R. Gentet, D. Gish, G. Howe, R. Humphreys, D. Kaufmann, L. Lester, G. Locklair, J. Meyer, E. Williams, and G. Wolfrom.

The minutes of the 1997 BOD meeting were accepted as distributed prior to the meeting. Secretary Kaufmann reported that the following were elected for a three-year term: D. DeYoung, R. Goette, R. Humphreys, D. Kaufmann, G. Locklair, E. Williams.

The Treasurer's report by Gentet was presented and accepted.

The membership report by Wolfrom was given as follows: total membership for 1997/98 was 1577 (602 voting, 634 sustaining, 323 subscriber and 18 student) Frair and DeYoung were authorized to send out a letter encouraging delinquent members to renew their subscription to CRSQ.

The Creation Matters report was given by Wolfrom and accepted.

The young earth radioisotope report by Humphreys was given and accepted.

The *Quarterly* editorial report by Chaffin was given as follows: 206 articles were received, 77 were accepted and 79 were rejected. A motion was passed to place a statement in the CRSQ that "all rights to the articles published in the CRSQ are reserved to the CRS."

The membership committee report by Kaufmann was given as follows: it was recommended that the BOD not change the standards for voting membership and not add a new category of Associate Voting Member. It was recommended not to use Bulletin Board Information sheets

sent to colleges or to run paid advertisements in scientific journals to attempt to increase membership in the CRS. It was recommended to continue to promote membership by using our Web site on the Internet, by making a membership drive at the CRS Hospitality Hour at the 1998 International Conference on Creationism at Pittsburgh and at our public presentations at the 1999 BOD meeting in Albert Lea, Minnesota.

The VACRC report and budget, given by DeYoung, were accepted.

The constitution/advanced planning committee report by Boylan was given. Motions were passed to: 1) place a notice in the CRSQ of a proposal to change the Constitution, Article III, Section 3, Other Categories, by adding to paragraph *a: Fellow*, the following: "Nominations of candidates for consideration as Fellows must include a biographical sketch of the candidates to be submitted by a board member to the Secretary for distribution to the entire Board in advance of the annual meeting." Note: This provision for designation as Fellow was voted unanimously by the 1975 BOD. 2) change the Bylaws, Article II, Board of Directors, Section 4 as follows: a) change the name of the Constitution and Bylaws Committee to Constitution/ByLaws and Advanced Planning Committee b) add the name of the Van Andel Creation Research Center Committee 3) change the ByLaws, Article III, Election of Directors, Section 2 by adding the following paragraph: "Nominees for the Board of Directors shall have written some scholarly publications in creation research which is to include papers in the *Creation Research Society Quarterly*, papers in other peer reviewed journals, symposium chapters, or major books." Note: This qualification for director was voted by the 1975 BOD. 4) change the goals and strategies, Goal No. 2 by eliminating the words "and uniformitarianism" 5) change the Goals and Strategies, Goal No. 3 by substituting the words "do not conflict" for the word "fit." and 6) endorse the proposal for Dr. David A. Kaufmann to lecture and provide courses in creation/evolution in the Department of Natural Sciences of Novosibirsk State University with the provision that the financial support be from contributions sent to the Russian Project, Concordia Theological Seminary, Fort Wayne, Indiana. CRS will assist this effort by placing a notice of this provision in the CRS publication, *Creation Matters*

The publications committee report by Howe stated that 1,476 books were sold wholesale from May, 1997 to May, 1998, in addition to those sold retail.

The financial committee report by Aufdemberge resulted in the following actions. A motion was passed to 1)

automatically reinvest the dividends from the American Bond Fund, 2) invest \$1,000 of the VACRC money market account in the mutual growth fund, Investment Co. of America, 3) invest the \$10,000 received when the CD from MBNA America Bank matures into the mutual growth fund, Investment Co. of America, 4) invest the \$100,000 received when the Shawmut Bank CD and two U. S. Treasury notes mature as follows: 75% in interest bearing instruments and 25% in mutual growth funds, and 5) authorize the Treasurer \$3,000 to purchase a replacement computer and accounting software.

A motion was passed to nominate Michael Oard for the BOD election in 1999.

A motion was passed to nominate the following current Board members for the BOD election in 1999: T. Aufdemberge, W. Frair, R. Gentet, G. Howe.

The following officers were elected for 1998/99: Presi-

dent: E. Williams, Vice president: D. DeYoung, Secretary: D. Kaufmann, Membership Secretary: G. Wolfrom, Treasurer: R. Gentet, Financial Secretary: T. Aufdemberge.

R. Lumsden was elected posthumously to Fellow of the CRS.

The 1998 budget was adopted.

A motion was passed to offer a special membership of \$20 to those who join CRS at the International Conference on Creationism at Pittsburgh in August. The BOD stated its appreciation to Dr. Duane Gish for 36 years of service to the CRS.

It was decided that the BOD will meet in Atlanta, Georgia in 2000 and in Chino Valley, Arizona in 2001.

The meeting was adjourned at 1350 hours.

Respectfully submitted,

David A. Kaufmann, Secretary

Book Review

Shattering the Myths of Darwinism by Richard Milton
Park Street Press, Rochester, VT. 1997. 308 pp. \$24.95.
Reviewed by Jerry Bergman

In the past 20 years several dozen books have been published critiquing Darwinism from a scientific and secular perspective by non-creation scientists. The latest is Milton's interesting, well documented book which will likely become required reading for creationist students. The author reviews many of the common arguments creationists utilize against Darwinism but adds much new material and insight on the many major problems with the Darwinian paradigm.

In this highly readable, entertaining, and informative account, the author makes an elegant case against Darwinism that will be compelling for many, and will at the least force committed Darwinists to think about the many shortcomings of their worldview. Milton is a science journalist who presents a convincing case that should appeal especially to Darwinists whether they have a limited or an extensive science background. Milton is a member of Mensa, which requires an I.Q. above the 98 percentile for admission, and was helped by fellow Mensans in the review process.

Although many secular critiques of Darwinism ignore the age question, Milton does an excellent job critiquing some of the assumptions utilized in the long age world view argued for by Darwinists. One of Milton's major concerns in writing the book is that he wants his

daughters to have access to the fruits of scientific inquiry, whatever those findings should prove to be [and]... I am seriously concerned, on purely rational

grounds, that generations of schools and university teachers have been led to accept speculations as scientific theory and faulty data as scientific fact; that this process has accumulated a mountainous catalog of mingled fact and fiction that can no longer be contained by the sparsely elegant theory; and that it is high time that the theory be taken out of its ornate Victorian glass cabinet and examined with a fresh and skeptical eye (p. 4).

His reasons for concern are that, as a science writer, Milton has reported many discoveries which have an important bearing on evolution but which have received little publicity. Furthermore, evolutionary naturalism is taught as fact in schools, museums and most secular publications and the arguments often used to defend the theory are fallacious or misleading. Part of the purpose of this book is to review new discoveries and evaluate how they affect evolution theory and assumptions. One of the concerns Milton notes is the fact that over a thousand of years of guided selection by humans has resulted in only trivial sub-specific variation, and the research indicates natural selection is a conserving force—not a creative force as required for evolution (p. 9).

The author eloquently argues how important blind faith is in accepting the Darwinism worldview. When the appallingly slight probabilities of individual aspects of Darwinism are multiplied together, Darwinism is rendered impossible. Evolutionists usually fall back on the

claim that, however improbable, evolution *must* be true since we are here and cannot invoke an intelligent creator because Darwinism has determined the rules of science require a non-theistic world view, commonly called atheism.

One of Milton's major contributions is to show how important beliefs are in arriving at conclusions about world views and how they in the long run interfere with evaluating empirical evidence and the relationship of the evidence to the overall set of beliefs that enter into a worldview. The two primary world views today, theism and atheism, hinge upon the creation-evolution question. A central concern, if not the central concern, of science and the human future is validating one of these world views.

The common reaction of scientists to books such as Milton's helps us to understand the emotions involved. All scientific disciplines gain much from criticism—criticism helps to solidify a theory, furthers our understanding of it, or serves to question its validity. Either way, criticism serves science. Criticism of Darwinism, though, often causes an irrational response in many scientists, such as a *Nature* (volume 358, p. 698) article which, instead of welcoming criticism, advocated censorship. After the well known British edition of the *Sunday Times* objectively reviewed Milton's book, the *Nature* commentator stated, "Why serious newspapers do this thing is beyond belief." The *Nature* article then tried to claim that the concerns Milton raised have already been adequately answered. Not only would many disagree with this, but this claim is a common way of trying to dismiss arguments that cannot be adequately answered. Other controversies exist in science such as the recent widely publicized controversy as to whether or not microstructures in putative Mars rocks are remnants of life. Both sides were often heard, and thus evidently no attempt to censor information occurred.

Milton included much discussion on the problems of radioactive dating, all of which rely upon the rate of change of some natural process. The author concludes that Darwinism has enormously influenced the dating methods, techniques, and assumptions which have become orthodox. Milton also includes excellent examples of the problems of natural selection and Darwin's attempt to compare natural selection with artificial selection i.e. intelligence-directed selection, an analogy which has limited usefulness.

Many of the problems with Darwinism which the author discusses are well known to creationists. His concern is that, in view of these problems one would expect vigorous public debate on neo-Darwinism. Instead only a nervous artificial consensus exists among academics which results in a complete absence of dialogue in the media about these issues. The problem, as summarized by Rob-

ert Sheldrake, is, "Many biologists have one set of beliefs at work, their official beliefs, and another set, their real beliefs, which they can speak openly about only among friends" (p. 274).

Milton shows why scientists must be guarded about what they reveal to the public. Most scientists today earn their living from public funds and if they were too open about what they really believed about religion, support for their work would likely erode (p. 276). Milton also discusses why it is now "virtually impossible for any scientific paper that has anti-Darwinian implications to be published in *Nature* or any serious peer-review scientific journal, regardless of the scientific merits of its findings." (p. 263). Milton cites the case of biologists Warwick Collins who studied under John Maynard Smith at Sussex University. Collins had doubts about Darwinian theory, and consequently repeatedly found his career blocked so that he eventually left the field of biology (p. 264).

Milton notes that the situation is worse in Britain than USA, concluding "Darwinism is such a strictly observed taboo subject that no science program has ever been shown or is ever likely to be shown questioning any aspect of the Darwinian theory. One British film maker told me that few of his fellow directors would risk making a television film that questioned Darwinism because to question such a scientific sacred cow would be bad for his or her career." (p.267–268). Milton provides numerous examples of editors who were pressured into not publishing articles by authors that might be a "secret creationist" or a "creationist ally." Such is sufficient reason not to even try to publish articles critical of Darwinism, even by veteran science journalists. The examples Milton uses to illustrate the absolute viscosness and unscrupulous "Nazi mind set" of the Darwinist may surprise many academics.

Milton's thesis is that the most reasonable nontheistic view is completely unreasonable when all of the evidence is evaluated. Darwinism is accepted by default because only the best non-theistic explanation can be accepted. A comparable example is the fact that the court has ruled that O.J. Simpson is innocent means he can no longer be a suspect. Consequently, the next most likely suspect in this case, Ron Goldman's father, must be guilty. That a case against him is weak is irrelevant—he must be convicted as the best suspect among the possible pool of suspects.

Milton is confident that the great strength of science, its openness to debate, will in the long run destroy the Darwin paradigm. Science does not flourish when scientists appoint themselves to guard their gates against heretics. If a heresy is true, it will eventually triumph. To delay its acceptance by unethical and unscrupulous tactics such as censorship and refusing to objectively consider objections will not only delay the inevitable, but will win one a place in the hall of fools.

Book Review

The Hunt for Life on Mars by Donald Goldsmith
Dutton, New York. 1997. 267 pages. \$24.95.
Reviewed by Danny Faulkner

Donald Goldsmith begins his book with a chapter entitled, "The Day the World Changed," referring to the August 7, 1996 press conference in which President Clinton announced the NASA discovery of the evidence that primitive life might have once existed on Mars. Indeed, this press conference contained so many good lines that portions of it were edited and included in the movie *Contact* about the first contact with an alien civilization. After a few weeks, press attention waned and the notion that definitive evidence for ancient Martian life has persisted in the minds of the general public. Thus most people are not aware that this whole issue is quite controversial. Goldsmith has produced a very readable, objective, and complete discussion of the whole issue. If he has any bias concerning this topic, it was not detectable.

The first chapter explains exactly what was found in ALH 84001 (a.k.a. "the Mars rock") that could be taken as evidence of early Martian life. The second chapter is a total history of the rock, as we know or conjecture it. For instance, its discovery in Antarctica in 1984 and its subsequent handling are well documented. The argument for its Martian origin, as well as its alleged history since its formation 4.5 GYr (billion years) ago is explored. All of this is based upon some very subtle chemistry and other properties of the rock. The third and fourth chapters present both sides of the argument as a court case, with the prosecution being those who insist that the rock shows evidence of early Martian life. As many now know, the evidence for ancient Mars life in the rock consists of four items:

- carbonate globules
- magnetic minerals in the globules
- polycyclic aromatic hydrocarbons
- micro fossils

The prosecution contends in their papers that each one of these can be explained individually by nonliving means, but that collectively they offer a persuasive case.

Contrary to sparse press reporting, the defense (that evidence for ancient Martian life has not been presented) has a formidable case. Leading the defense is UCLA scientist J. William Schopf, who frequently quotes a dictum that he attributes to the late Carl Sagan, "Extraordinary claims require extraordinary evidence." Schopf's position is given a very fair hearing in the book. In all of this it is clear that nearly everyone involved in the debate agrees that ALH 84001 is from Mars and is as old as alleged.

Another chapter is devoted to abiogenesis, and is a

pretty good summary of the current thinking. Long cherished ideas on this topic are shown to no longer be tenable. For instance the "facts" (Goldsmith's quotes) of the tidal pool origin of life and the evolution of eukaryotes from prokaryotes are questioned (p. 141). Two decades ago this would have been unthinkable. Page 144 has a gem of a quote on life's origin:

The fact that none of the Archaea were known to science a few decades ago teaches us that we should not be overly quick to believe that we possess all the information needed to unravel the mystery of life's origin.

This quote is followed by another, "Fortunately, we have another arrow in the quiver in addition to finding and studying the oldest forms of Earth life: We can attempt to make life ourselves" (p. 144). What follows is a discussion of the Miller-Urey experiment. That has to be one of the biggest "gimmie's" of all time: A cooked demonstration that the early atmosphere of the earth could have produced simple amino acids means that we are on the verge of creating life!

The book gives an all too brief comparison of this rock to the Orgeuil meteorite from more than 30 years ago. This was just a bit before my time, so I have no recollection of ever hearing about it. That meteorite, found near the French town by the same name, also contained structures that hinted that it held evidence of extraterrestrial life. Ultimately it was determined that the evidence had invaded the Orgeuil meteorite once it was on the ground. Goldsmith points out that the researchers of ALH 84001 were well aware of that earlier fiasco, and so not wanting to repeat history, went to great lengths to demonstrate that contamination had not occurred.

The final chapter consists of a discussion of science as a way of life. A few pages deal with the response of religion to the discovery, and as expected, special creationists are portrayed as hopelessly naive and ill informed. While the responses of a few religious leaders were quoted, creation scientists were not even mentioned. It is bad enough that creationists are classed as being out of the mainstream, but apparently creation scientists are even marginal in this marginal group!

Other than that, this book is very good, despite Goldsmith's prediction that people like me would conclude that "...the words in this book deserve no respect, since they contradict the word of God" (p. 236). It is highly recommended for anyone who wants to learn more about this topic.

Book Review

Darwin's Leap of Faith: Exploring the False Religion of Evolution by John Ankerberg and John Weldon
Harvest House Publishers, Eugene, OR. 1998. 392 pages. \$10.99
Reviewed by Karl Priest

Authors Ankerberg and Weldon state up front that they do not have science backgrounds. They also point out that they frequently use quotations and request being informed of any inaccuracies. In fighting the creation-evolution battle on a local level I am in total agreement with the authors that evolutionists are condescending to Christians by accusing Christians of taking an irrational leap of faith:

We (Ankerberg and Weldon) seek to show evolutionists themselves take an incredible "leap of faith" that far exceeds in credulity anything Christians ever believed." (p. 14)

There is chance and non-living matter to begin with, ignoring the question of where the matter came from. A prebiotic molecule takes a leap to a larger molecule which takes an even greater leap to a cell. Then there is the extreme leap to the first form of complex life. Finally evolution blindly produces every living thing. The authors say evolution belongs in the realm of *Alice in Wonderland* where the Red Queen said, "Six impossible things can be believed before breakfast." (p. 309)

I found few things to criticize about this book. The only major shortcoming is a lack of an index. Ankerberg and Weldon also could have included a few more paragraphs about the feasibility of Noah's ark. Also, they left me wondering when they said "...one prominent highly influential evangelical scientist is so enamored with the Big Bang theory he required us to delete a one paragraph criticism of it..." (p. 269) and then omitted the name of the person. These things said, I gauge the worth of a book by how many passages I mark as valuable. I wore out my marker on this book.

Darwin's Leap of Faith: Exposing the False Religion of Evolution has three sections. The first section is "Evolution and the Modern World." Here the theme is that ideas have consequences. Our view of origins can dramatically affect how we function as a society. Two worldviews, scientific materialist and Judeo-Christian, clash on fundamentals. If the universe is meaningless why shouldn't the more powerful manipulate others for whet the powerful deem "good"?

The next part, "Evolution and the Politics of Science," is based on the irony that when evolutionists teach silliness in the name of science they demand, and receive, credibility and respect. Even as more damaging evidence accumulates against evolution, it is presented more forcefully as fact. Committed evolutionists will likely not be convinced by persuasive creationist arguments because their philosophical assumptions prevent it. As Romans 1:22 says, "Professing themselves to be wise they became fools."

Last, "Evolution and the Scientific Evidence" reveals how Darwinism has become a pseudoscience held by its devotees in spite of overwhelming contrary evidence. This section covers molecules, fossils, mutations and other common categories. It is heavy, from a layman's view, on mathematical probability and logic methods. Ankerberg and Weldon give good advice to evolutionists by stating we must not reject a theory we do not like if the evidence supports it. It is absurd for evolutionists to ridicule creationists for believing God made everything out of nothing while evolutionists maintain that somehow nothing turned itself into something.

The last chapter has a great title, "The Ultimate Con." It homes in on the book's theme that evolution is a religion of blind irrational faith. The spin doctrine, which has been used so effectively in politics, has proven to be a fact of life in our modern society. Therefore creationists need to be aware of this reality that greatly influences the masses. Most people think in sound bites and slogans. For example, the man-on-the-street thinks primarily of an attractive car which has his attention. He begins to think of expenses and safety when something happens to motivate him to think more deeply such as the payments or safety recalls. Then he will expend the effort to get more informed and take action.

Creationists must counter the "advertising spins" of evolutionists and get Joe Average to think of how wonderful our "product" is. Ankerberg and Weldon provide a wealth of material for laymen to use to reach the non-scientists. Once we get them into the showroom the scientists can provide whatever details Joe wants.

One reason why many people find Creative Evolution so attractive is that it gives one much of the emotional comfort of believing in God and none of the less pleasant consequences.

Lewis, C.S. 1943. *Mere Christianity*. Macmillan. New York. P. 35.

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Creation Research Society

History—The Creation Research Society was organized in 1963, with Dr. Walter E. Lammerts as first president and editor of a quarterly publication. Initially started as an informal committee of 10 scientists, it has grown rapidly, evidently filling a need for an association devoted to research and publication in the field of scientific creation, with a current membership of over 600 voting members (graduate degrees in science) and about 1000 non-voting members. The *Creation Research Society Quarterly* has been gradually enlarged and improved and now is recognized as the outstanding publication in the field. In 1996 the CRSQ was joined by the newsletter *Creation Matters* as a source of information of interest to creationists.

Activities—The society is solely a research and publication society. It does not hold meetings or engage in other promotional activities, and has no affiliation with any other scientific or religious organizations. Its members conduct research on problems related to its purposes, and a research fund is maintained to assist in such projects. Contributions to the research fund for these purposes are tax deductible. As part of its vigorous research and field study programs, the Society operates The Van Andel Creation Research Center in Chino Valley, Arizona.

Membership—Voting membership is limited to scientists who have at least an earned graduate degree in a natural or applied science and subscribe to the Statement of Belief. Sustaining membership is available for those who do not meet the academic criterion for voting membership, but do subscribe to the Statement of Belief.

Statement of Belief—Members of the Creation Research Society, which include research scientists representing various fields of scientific inquiry, are committed to full belief in the Biblical record of creation and early history, and thus to a concept of dynamic special creation (as opposed to evolution) both of the universe and the earth with its complexity of living forms. We propose to re-evaluate science from this viewpoint, and since 1964 have published a quarterly of research articles in this field. All members of the Society subscribe to the following statement of belief:

1. The Bible is the written Word of God, and because it is inspired throughout, all its assertions are historically and scientifically true in all the original autographs. To the student of nature this means that the account of origins in Genesis is a factual presentation of simple historical truths.

2. All basic types of living things, including humans, were made by direct creative acts of God during the Creation Week described in Genesis. Whatever biological changes have occurred since Creation Week have accomplished only changes within the original created kinds.

3. The Great Flood described in Genesis, commonly referred to as the Noachian Flood, was a historical event worldwide in its extent and effect.

4. We are an organization of Christian men and women of science who accept Jesus Christ as our Lord and Savior. The act of the special creation of Adam and Eve as one man and woman and their subsequent fall into sin is the basis for our belief in the necessity of a Savior for all people. Therefore, salvation can come only through accepting Jesus Christ as our Savior.



Kanab Creek, a grossly underfit stream, courses through the White Cliffs, consisting of Navajo Sandstone, in the high plateaus region of Utah. One could imagine that millions of years of erosion by the waters of Kanab Creek slowly created this massive pass through the White Cliffs. From a young-earth perspective, one could postulate that much of the erosion evident in the high plateaus region was caused by retreating Floodwater. Later a dam, possibly ponding a post-Flood lake on the Colorado Plateau, could have been breached and the water surging from this lake could have eroded this pathway through the White Cliffs. These possibilities are discussed in an article in the Quarterly (Williams, E. L., R. L. Goette and J. R. Meyer. 1997. Kanab Canyon, Utah and Arizona: Origin speculations. CRSQ 34:162-172).

Emmett L. Williams and Robert L. Goette

During a field trip to Big Bend National Park, we stopped our rental automobile at a vista and walked a short distance to view a canyon. When we returned to the vehicle, a snake was crossing the pavement of the parking area. Finding himself confronted and surrounded by three humans, the creature went to the first and only cover he could find quickly, a perforated hub cap on our car! If we were evolutionists, possibly we could have marveled at how reptiles amazingly evolved the ability to employ hub caps for protection or camouflage. Likely this species developed an adaptation to use hub caps? Actually the snake was making the best of a bad situation. But that is too simple an explanation.

Emmett L. Williams and George F. Howe

