

GEOSCIENCE NEWSLETTER

Number 17 April 2009

GEOSCIENCE CALENDAR

June: Gloria Patri, a conference on religion, science and the humanities will meet June 4-8, 2009 in northern Italy. The theme of the conference is "Connecting to Our Apostolic Roots: Building a Faithful Scientific Heritage." Visit the website: <http://gloriapatria2009.blogspot.com> for further information. GRI is a co-sponsor of this event.

July: A Field School for Teachers is scheduled for July, 2009, starting in Denver, CO. For further information, visit <http://www.grisda.org/colorado/2009.htm> or e-mail tstandish@llu.edu.

August: A Conference on Teaching Origins will be held in Colorado Springs, CO from August 7-10, 2009. This meeting is focused especially on the interests of Seventh-day Adventist teachers and graduate students, but others are welcome to attend by prior arrangement. For further information, please contact GRI by snail mail, or by e-mail to jgibson@llu.edu.

GEOSCIENCE WEBSITE

Past issues of this newsletter are available at www.grisda.org.

Recent news in science and religion can also be found on the site, along with articles from the most recent issues of *Origins*, and publications in Spanish, Portuguese and French.

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Geologists from GRI and UNASP study a road cut while attending the creation conference in Brazil.

CREATION CONFERENCES IN BRAZIL AND AUSTRALIA

Nearly a hundred teachers and others attended a creation conference at Universidad Adventista de Sao Paulo in Brazil, from 15-18 January 2009. Ben Clausen, Raul Esperante, Ronald Nalin and Jim Gibson presented lectures at the conference, along with six lecturers from Brazil and one from Argentina.

Some 60-75 pastors, teachers and scholars took part in a Conference on Science and Faith at Avondale College in Australia from 6-9 February 2009. Tim Standish and Jim Gibson represented the GRI at the meetings, along with several theologians and scientists from Australia.



Presenters at the Faith and Science Conference at Avondale College take questions from the audience. Photo by Lyle Heise.

The Power of Prejudice

Book Review by Raúl Esperante

Worlds Before Adam: the reconstruction of geohistory in the age of reform. 2008. Martin J S Rudwick. University of Chicago Press. 614 pp.

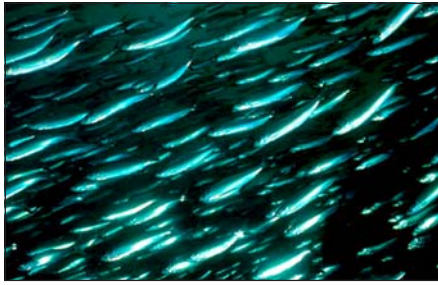
The principle of *uniformitarianism*, was stressed by the 19th century British geologist Charles Lyell in his book *Principles of Geology*, and is believed to have triggered a major breakthrough in science. Rudwick's book disputes this viewpoint.

Rudwick shows that Lyell's ideas were not accepted at first as has been traditionally assumed, but instead received with widespread criticism. Rejection was not caused by philosophical bias, but by scientific (geological) evidence that seemed contrary to Lyell's idea of uniform processes through long periods of time. Lyell's critics held that inquiry should be driven by evidence and observation rather than through privileged reasoning. What Lyell and his uniformitarian followers accomplished was to encourage geologists to say in advance how nature works (through uniform processes over long ages), before interpreting the evidence.

Rudwick's book illustrates how one person's agenda or epistemological project drives scientific research and establishes the basis for the development of one entire field of knowledge. Scientists in the last 60 years have been trying to break Lyell's uniformitarian corset that hinders full understanding of geological phenomena, without realizing that that corset was the result of a falsehood imposed by one man (Lyell) on other contemporary scientists who had good scientific reasons to oppose him.

SCIENCE NEWS

Gene Pools Large and Small



A school of herring. Photo courtesy of www.nmfs.noaa.gov.

Ellegren, H. 2009. Is genetic diversity really higher in large populations? *Journal of Biology* 8:41. (doi:10.1186/jbiol1135)

Summary. Genetic diversity within a species is thought to depend upon two factors — the rate of mutations and the number of reproducing individuals. This study questions the importance of population size.

A recent study published in *BMC Evolutionary Biology* concluded that genetic diversity in mitochondrial DNA (mtDNA) does not correlate with population size. Species with large or small populations have similar levels of mtDNA diversity. This finding has important implications for conservation biology, since variation in mtDNA is commonly used to estimate how large a population is. The study implies that such estimates are unreliable.

Another finding of the study is that calculated mutation rates vary more than ten-fold. This challenges the common practice of using a mtDNA “molecular clock” to estimate divergence times.

Neither avian nor mammalian mtDNA shows a strong effect of selection, so variation in mutation rate is the most likely explanation for variation in mtDNA diversity in birds.

Comment. This report provides another example of the problems that often arise when rates of processes are calculated using long time spans based on the geologic time scale rather than from real measurements of ongoing processes. A large number of studies have been conducted using the “molecu-

lar clock” hypothesis as a basis for conclusions. This report indicates that, at least for birds, such studies are likely to be flawed.

A Mind for the Divine

Brooks, M. 2009. *Born believers: How your brain creates God.* *New Scientist* 2694 (4 February):33-35.

Summary. Religious feelings seem to be nearly universal in humans, a fact that seems difficult to explain in evolutionary theory. One proposed explanation is that shared religious belief gives cohesiveness to a human community, helping bond them together in cooperation, and giving them an advantage over other groups that may not have that bonding. However, that idea may explain how religion spreads, but it does not explain how it originated.



Photo courtesy of: www.123rf.com.

Another proposal is that religious belief is indoctrinated into children and retained as adults. However, experiments seem to indicate that children often believe in supernatural forces without any indoctrination.

A final proposal is that the human brain is hard-wired for religious belief, perhaps as an accidental by-product of its evolution. Even atheists tend to explain events in their lives as if some agency was active in causing the events.

Comment. The proposal that religious belief is inherent in the structure of the human brain seems to be true, but the origin of religious belief is found in the creation story. Humans were made in God’s image, which includes a spiritual dimension. Religious belief comes from the design of a conscious mind created in the likeness of the Creator.

Burrowing Rates

Gingras, M.K., S.G. Pemberton, S. Dashtgard, L. Dajoe. 2008. How fast do marine invertebrates burrow? *Palaeogeography, Palaeoclimatology, Palaeoecology* 270:280-286.

Summary. Many marine invertebrates burrow into the substrate to obtain food or shelter. Their burrowing activities destroy the layering in the sediments in a process called bioturbation. The purpose of this study was to determine how much time is required to completely bioturbate a sedimentary layer.

Observations revealed that deposit-feeding animals such as burrowing crabs and echinoderms bioturbated the sediments at rates of ten to 100 times as fast as suspension-feeding organisms such as some bivalves and worms. The fastest bioturbation rates observed indicated that an area of one square meter could be completely bioturbated to a depth of 10 cm in about one hour.

The study concluded that sediments highly bioturbated by *Skolithos* type burrows indicate high population densities and period of time extending at least into months. Highly burrowed sediments with *Cruziana* type burrows may indicate short periods of time and moderate population densities.

Comment. The abundance of burrowing marine invertebrates means that seafloor sediments should rarely, if ever, retain their sedimentary structure. Yet in the fossil record, it is common to find marine sediments that retain fine laminations and other sedimentary structures. This implies that such sediments were laid down fairly rapidly.



Fossil burrows in street stones in Siresa, Spain.