GEOSCIENCE NEWSLETTER

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UPCOMING EVENTS ESPECIALLY FOR . . .

The Ortner Building, home to the Geoscience Research Institute.

University Science Professors

A second Faith and Science Seminar is scheduled to take place in Loma Linda, California, from 13-25 July 2008. The seminar is intended for Seventh-day Adventist college and university science teachers who wish to explore the relationship of faith and science.

The Seminar will follow the model of the Faith and Learning Seminars sponsored by the GC Department of Education. In this model, each participant selects a topic and prepares a publishable paper to be completed and read at the Seminar. For further information, see: *http://www.aiias.edu/ict/sessions/future.html*.

European Scholars, et al.

Gloria Patri, a conference on God and creation is scheduled for 26-29 June, 2008 (note new dates), at Cambridge University in England. The Conference will emphasize three themes: A Christian View of the Natural World; The Nature of God and Humanity; and God, Humanity, and the Future. For further information, visit: *http://Cambridge2008.blogspot.com*, or e-mail: Karen@andrews.edu.

Cambridge University. Photo courtesy of: www.scitech.ac.uk.

Science Teachers

A Field School for Teachers is scheduled for 12-23 July 2009, in Denver, Colorado. The Field School will feature lectures and numerous field trips to nearby field localities, including Dinosaur Ridge and Rocky Mountain National Park. Academic credit will be available by arrangement with one or more universities. Teachers should plan now to participate in this valuable professional experience. More information is available at: *http://www.grisda.info/main/field_trips/teachers_2009.html*.

Teachers will have an opportunity to look for fossils at the commercial Florissant quarry in Colorado, pictured here.

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To subscribe, please contact us at newsletter@grisda.org.

GRI NEWS

The Geoscience Resource Center Committee meeting in Johannesburg.

Geoscience Committee Established in South Africa

A Geoscience Resource Center was established in South Africa in November, 2007, at the year-end meetings of the Southern Africa- Indian Ocean Division of the Seventh-day Adventist Church. The Center will be guided by a Geoscience Resource Center Committee, with Dr. Ella Kamwendo, Director of Education, serving as the Chair. The Committee will work in close association with GRI.

The purpose of the Committee is to provide resources and lines of communication for teachers of courses that involve issues in earth history. Resources are being collected, including textbooks and supplemental reading, fossil collections and web resources.

NOTICE

When remembering the GRI in your will, please identify the beneficiary as the General Conference of Seventh-day Adventists, and indicate the gift is ***for*** the Geoscience Research Institute.

SCIENCE NEWS

Biogeography: Dispersal or Vicariance of Tropical Trees?

Ceiba pentandra *(the kapok tree). Photo courtesy of http://www.agrofolio.eu/.*

Dick CW, Bermingham E, Lemes MR, Gribel R. 2007. Extreme long-distance of the lowland tropical rainforest tree Ceiba pentandra *L. (Malvaceae) in Africa and the Neotropics. Molecular Ecology 16:3039-3049.*

Summary. *Ceiba pentandra,* commonly called the kapok or cotton tree, is widely distributed in the tropical rainforests of Africa and the New World. More than 100 species of flowering plants are shared between the two continents. The presence of similar plants in both Africa and South America has often been explained as the result of vicariance, that is, a splitting of an ancestral range that occurred as African and South American plates diverged. An alternative explanation is dispersal of seeds across the Atlantic Ocean. This paper reports the results of a molecular test to distinguish vicariance from dispersal in the case of the cotton tree.

If the cotton trees of Africa and South America have been separated for 100 million years as in the vicariance explanation, there should be a large difference in the DNA sequences of trees from the two regions. A small difference would indicate a more recent separation, which would imply dispersal. The molecular test showed only a small difference between trees from Africa and South America, ruling out the vicariance explanation and indicating that the cotton tree has somehow been able to disperse across the Atlantic Ocean, probably from Africa to South America.

Comment. Floral and faunal similarities among the southern continents have been interpreted as evidence for vicariance caused by a long history of movement of tectonic plates. However, few of the proposed examples have withstood testing based either on molecular comparisons or on fossil evidence. Present understanding indicates that dispersal played the major role in distributions of organisms restricted to the southern hemisphere, especially among plants, marine organisms, and invertebrates. These results are generally consistent with creationist expectations.

More Overwater Dispersal

Sphenodon, *the tuatara. A native of New Zealand, it must have dispersed across the sea because New Zealand seems to have been submerged in the Oligocene, according to: Trewick SA. 2007. Hello New Zealand. Journal of Biogeography 34:1-6. Photo by Jim Gibson.*

Paleoclimate: Similar Tree Rings in Permian and Triassic

Taylor EL, Ryberg PE. 2007. Tree growth at polar latitudes based on fossil tree ring analysis. Palaeogeography, Palaeoclimatology, Palaeoecology 255:246-264.

Summary. Fossil logs with growth rings were collected from the Transantarctic Mountains, and the rings were analyzed for clues to the paleoclimate. Antarctica was located above 70° S, within the Antarctic Circle, when the trees were growing. The wood was from gymnosperm trees and was collected from Upper Permian (dominated by *Glossopteris*) and Middle Triassic (dominated by *Dicroidium*) deposits. Tree rings form because cells grow larger under favorable environmental conditions such as in the early growing season, and are much smaller as conditions deteriorate at the end of the growing season.

Analysis of tree rings showed the rings contained mostly earlywood, with only very small amounts of latewood. This was true of both the Permian and Triassic wood, indicating similar conditions of growth for both samples. The tree rings were found to be similar to those from Lower Permian fossils from Victoria Land, also in Antarctica. The preponderance of earlywood indicates temperate growing conditions, while the very small amount of latewood indicates a rapid end to the growing season. This is interpreted as indicating a temperate climate with a growing season limited by light rather than by temperature or water. Similarity of rings in both Lower and Upper Permian and in the Middle Triassic suggests a similar climate for these fossil trees.

Comment. As noted by the authors, the similarity of Lower Permian and Upper Permian tree rings was not expected. The Lower Permian is thought to represent a time of cold climates and glaciation, while the Upper Permian is thought to represent a more moderate climate. The results here may bring that inference into question, and seem difficult to reconcile with the idea of glaciation during the time these trees were growing. The authors suggest the possibility of a series of Lower Permian ice ages, interrupted by warmer periods. If this suggestion is not confirmed, the whole question of Permian ice ages might merit re-study.

Fossil tree rings from Petrified Forest National Park, Arizona. Photo by Jim Gibson.