
NEWS IN BRIEF

Compiled by Mark A. Gonzalez, Editor



Geologists in the Public Eye

John Hoganson and Ed Murphy have been working on a book that examines the geology of the Lewis and Clark Trail in North Dakota. This work has led to numerous invitations to give programs to various groups across the state. Recently, John Hoganson has given presentations on the "Geology of the Lewis and Clark Trail in North Dakota" at the National Buffalo Museum in Jamestown on May 18, 2002; the Lewis and Clark Association meeting in Williston on June 6, 2002; the Fort Buford Symposium, Williston State College on June 29, 2002; and the University of Mary on October 3, 2002. Ed Murphy joined Hoganson for a presentation to the North Dakota Archeological Association on September 21, 2002. Interested readers should look for the release of the book, which is scheduled for May 2003.

On September 6, 2002, Ed Murphy and John Hoganson took Cliff Naylor from KFYZ-TV in Bismarck on a 16-hour whirlwind tour of three sites of geologic interest in western North Dakota: 1) the Ice Caves in northern Billings County, 2) a burning coal bed in western McKenzie County, and 3) an area in northeastern McKenzie County that overlooks the Missouri River at a point where William Clark walked on April 18, 1805, and commented on the profusion of clinker. Cliff Naylor was filming for his Friday evening segment called "Off the Beaten Path." The burning coal area was too subtle to film but Cliff did obtain footage from the other two sites. The Lewis and Clark segment aired on KFYZ-TV's evening news programs on October 4th and the Ice Caves segment on October 11th.



John Hoganson being interviewed by Cliff Naylor (KFYZ-TV) at Ice Caves in northern Billings County. The caves were formed by blocks that broke off and slid or tumbled down the sandstone-capped butte in the background (photo by Ed Murphy).



Lorraine Manz is a rising "rock star" and has been in high demand by school groups and camps. On June 27, 2002, she gave a program on "Dinosaurs in North Dakota" to the Riverside Elementary School's "Camp Adventure" in Bismarck. On September 5 and 6, 2002, she traveled to LaMoure County Memorial Park and gave two presentations, one on the "Geology of North Dakota" and the other on the "Dinosaurs in North Dakota" to participants of the LaMoure County Eco-Ed Camp. Most recently, on November 1, 2002, she visited Roosevelt Elementary School in Bismarck and presented her program on "Dinosaurs in North Dakota."

Mark Gonzalez was invited to the Open House held by the Lostwood National Wildlife Refuge on June 22, 2002. He gave a PowerPoint presentation on the glacial history and formation of the Missouri Coteau and landforms of the refuge. After the talk, he led a field trip through the mixed-grass prairie and prairie pothole country of the Coteau. Darla Lenz, botanist with the Dakota Prairie Grasslands office in Bismarck, led a simultaneous field trip on plant identification.

Hoganson has also been busy with talks and tours at the North Dakota Heritage Center. On May 14, he gave a presentation on the Rise and Fall of Dinosaurs to the general public. And on the third Tuesday of every month, he gives tours of the Johnsrud Paleontology Laboratory to groups. Two second-grade classes from Will-Moore School in Bismarck took the tour in November. Tours must be prearranged.

Randy Burke and Tom Heck have represented the NDGS at three meetings this past year dealing with the Weyburn CO₂ sequestration project in Saskatchewan. See Burke's article beginning on page 15 of this volume for more information on the Weyburn CO₂ project.

The NDGS also has been a long-time member of the Potential Gas Committee (PGC), and Tom Heck has become the

survey's latest representative on the PGC. During 2002, Tom attended two meetings of the Rocky Mountain section of the PGC. His area of responsibility has become the entire Williston Basin. He uses his knowledge of the basin's geology to determine which rocks may contain gas and how much natural gas remains to be discovered from them. The next biennial report is due on December 31, 2002, and will continue the series of estimates that began in 1964.

Ed Murphy was invited to present a talk on the sources of clay and claystone in western North Dakota to a ceramics class at Bismarck State College on September 10, 2002. From November 13-15, 2002, Ed attended a meeting of state geological surveys in the central portion of the U.S. Geological surveys from ten states (Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, and Texas) met to discuss common topics. Representatives from the U.S. Geological Survey attended the meeting on the 14th.



**Joint NDGS-USGS Geochemical Mapping
Survey of North Dakota
by Lorraine Manz**

The North Dakota Geological Survey has entered into a cooperative agreement with the US Geological Survey to conduct a statewide solid-phase geochemical study of North Dakota. This project is part of a nationwide effort to create a geochemical landscape for the continental US, Alaska, and Hawaii that will provide a valuable source of statistically valid, unbiased, background information on a suite of more than 20 elements including arsenic, mercury, and selenium. Soil and sediment samples for the study will be collected according to a grid consisting of 10 x 10 mile cells, which will amount to more than 700 samples for North Dakota alone and approximately 35,000 samples nationwide.

The geochemical maps and other products derived from such an enormous information base will enable each state and the nation as a whole to assess more accurately their energy and mineral resources. The study will also aid in the better understanding of the relations between geochemistry, geologic processes, human health, and environmental issues.

Weather permitting, sample collection will have commenced by the time this *Newsletter* goes to press and is expected to be completed by fall 2003. Geochemical and mineralogical analyses will be performed by the USGS with an estimated turn around time of 3 to 6 months.



NDGS Web Site Gets an Overhaul and Update

NDGS Webmasters, Jim Martel and Julie LeFever, have been busy redesigning all aspects of the North Dakota Geological Survey and Paleontology Websites. One of their primary roles recently has been the creation of a section where web visitors can download all of the NDGS publications that are out-of-print. Linda Johnson and Linda Hagen have been helping the webmasters by scanning all of our out-of-print documents to create PDF files, which can be read using Adobe Acrobat software. The website contains nearly all of the NDGS Circulars, which provide detailed information on approximately 275 wells throughout the state.

Other publications are being scanned and prepared for addition to our site. Regulations and regulatory forms will soon be added for download too. Stop by and take a look at our revised website and please feel free to leave comments in our feedback area.



**Glaciotectonics at Falkirk
by Lorraine Manz**

Dennis James, geologist at the Falkirk coal mine near Washburn, North Dakota, sent us this picture, along with others, of a particularly well preserved glacial structure that was uncovered during the recent opening of a box pit at the mine. The photograph shows a soft sediment deformational structure in the Pleistocene material overlying the Hagel coal bed, which forms the floor of the box pit. The view is to the east.



(Photograph by Len Friedt, Falkirk Mine)

Glacial structures like this are not uncommon in North Dakota. John Bluemle reports that during the early 1960s, when nuclear missile silos were being constructed around the state, excavations frequently revealed similar structures buried within Pleistocene sediments. What makes this one so remarkable, however, is its high visibility due to the alternating dark layers of detrital lignite and iron oxides with lighter ones consisting of primarily sand and gravel. Each layer measures about 9-10 inches (22-25 cm) in thickness, the overall height of the structure, denoted by the line AB, is approximately 25 feet (8 m). A lower sequence of beds, visible as a dark band extending from left to right across the center of the picture, shows little or no sign of deformation and is separated by a layer of sand and gravel from the upper, folded sequence. Further along the end wall, to the left of the picture, the two sequences run approximately parallel to each other. The vertical "stripes" are tool marks from the bucket of the drag line, and are not in any way related to the structure.

Although not clear from the photograph, the topmost part of the structure appears to have been sheared off and is overlain by a shallow boulder pavement. There is also evidence of channel fill to the right of the fold (top center). This is believed to be associated with a small meltwater channel that trends roughly east about 50 feet to the south of the box pit, and which clips its southeastern edge.

An interesting feature about the lignite contained in the structure is its apparent freshness and lack of weathering. In this part of North Dakota, weathering is associated with the young coals that lie above the Hugel bed, which suggests that the detrital coal found in the dark layers is probably, but not necessarily, from the Hugel bed. If this is so, then the nearest erodable source would have been about 3 miles to the northwest of the box pit.

Without a more careful examination of the structure it is not possible to conclusively identify the mechanism of its origin. That it is the result of glaciotectionic deformation is fairly certain, but whether it was formed by sediment/ice loading and represents a large scale flame-type structure or by lateral pressure from a readvancing ice sheet is open to debate.



New Faces

Trista Rychlik, a freshman at Bismarck State College, has been working with our staff in a career-exploration internship for the fall of 2002. She is working with Lorraine Manz on the compilation of data for the National Geologic Map Database. This database, which is managed by the USGS's National Cooperative Geologic Mapping Program in cooperation with the Association of American State Geologists, is a nationwide catalog of maps related to all aspects of earth science. Trista's work is therefore a valuable contribution to more than just North Dakota's geology.