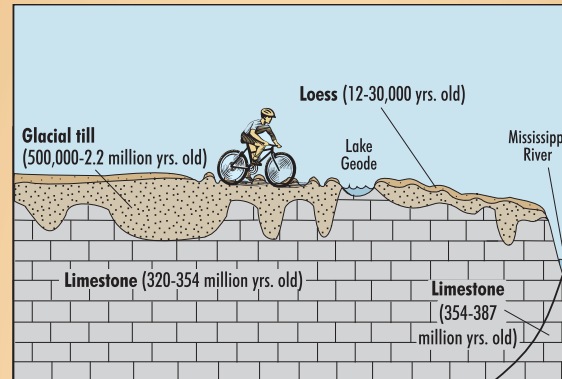


RAGBRAI Geo-quiz

1. This year's RAGBRAI route travels over the land form region known as _____.
a. Iowan Surface b. Des Moines Lobe
c. Southern Iowa Drift Plain
2. Roughly how much of Iowa was once grasslands.
a. 1/4 b. 1/2 c. 2/3
3. One hundred thirty-three _____ wells have been drilled in Iowa.
a. deep water b. oil exploration c. ag drainage
4. Glacial erratics are _____ deposited by glaciers.
a. stones b. fossils c. vegetation
5. Rock units are often named after _____.
a. rock stars b. famous geologists c. nearby places
6. Iowa's first "destination" state park is _____.
a. Backbone St. Park b. Honey Creek Resort
c. Geode St. Park
7. A paleosol is a(n) _____.
a. ancient soil b. ancient sun c. dinosaur femur
8. Iowa's State Rock is the _____.
a. Oakley Shale b. Whitebreast Coal c. Geode
9. Iowa was once a leader in producing this natural resource.
a. oil b. gold c. coal
10. The Illinoian till plain covers _____ Iowa.
a. central b. southeast c. northeast

Answers: 1.c, 2.c, 3.b, 4.a, 5.c, 6.b, 7.a, 8.c, 9.c, 10.b

Day 7 Milestones



Start: Mt. Pleasant

Big Creek: 4.7 miles

Skunk River: 0.1 mile after Lowell

Geode State Park: 3.3 miles after Lowell

Quarry: 1 mile after Geode State Park

Entering Mississippi Valley: Burlington

Finish: Burlington – 42 miles

For more information...

about the water quality improvement plan for Lake Geode: www.iowadnr.gov/water/watershed/tmdl/files/final/geode09tmdl.pdf

For more detailed information on the formation and location of geodes in Iowa, visit:

www.igsb.uiowa.edu/browse/geodes/geodes.htm

Lake Geode has been the subject of an intensive beach monitoring study. This report can be viewed online: www.igsb.uiowa.edu/gsbpubs/pdf/WFS-2005-06.pdf

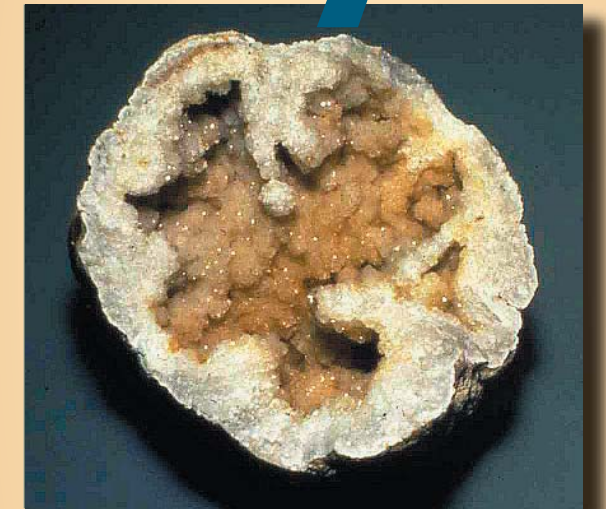
COVER PHOTO: A geode from southeast Iowa.

RAGBRAI 2009

Learn about the Land

Saturday, July 25

Day 7



Iowa DNR – Geological and Water Survey

109 Trowbridge Hall
Iowa City, IA 52242-1319
(319)-335-1575
www.igsb.uiowa.edu

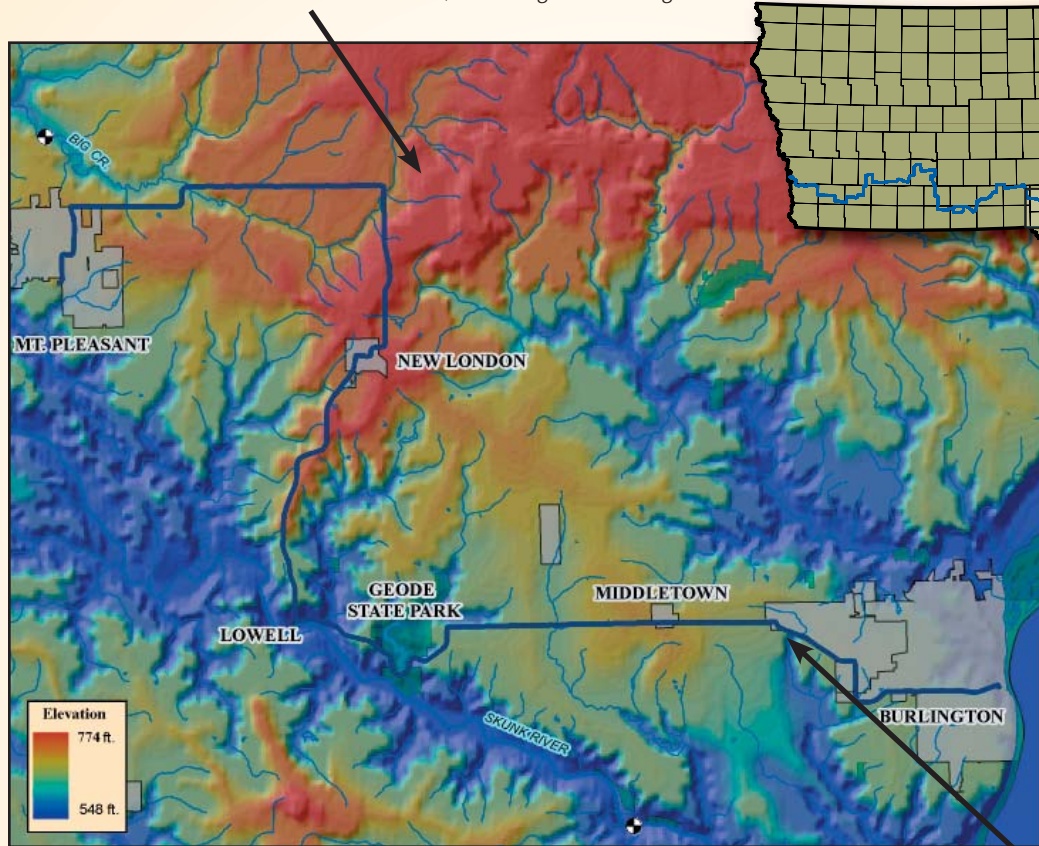
US Geological Survey

Iowa Water Science Center
400 S. Clinton St.
Iowa City, IA 52240
(319) 337-4191
<http://ia.water.usgs.gov>

After exiting Mount Pleasant, RAGBRAI will cross the **Illinoian till plain**. These glacial deposits are much younger than the Pre-Illinoian tills you have been biking over previously. The western margin is difficult to see while riding because of the loess cover, but the north-south RAGBRAI route along X23 follows very close to the boundary. The Illinoian Glacial Episode occurred around 300,000 to 130,000 years ago when the Lake Michigan Lobe glacier advanced from the northeast and reached into Iowa, diverting the drainage of the Mississippi River to the west. The Illinoian till is the only northeastern sourced till in Iowa, making its composition unique within the state. The Illinoian till extends from south of Fort Madison to the mouth of the Wapsipinicon River. The Illinoian exposure extends up to 20 miles into eastern Iowa.



Later today, and until the end of RAGBRAI, you'll be biking over the region of Iowa that provides us with our state rock, the **geode** (photo above). In Iowa, geodes are often exposed in small streams and ravines after heavy rains. The outer shell is often limestone, and must be broken open to expose its inner beauty. Typically quartz crystals and chalcedony form the inside of a geode.



● USGS streamflow station
 ■ Parks and Preserves



A beautiful display of Iowa's state rock can be seen at the **Our Lady of Grace Grotto** (photos above and to the left), just east of St. Mary's Church in West Burlington. The grotto, begun in 1929 by two Benedictine priests, was completed by depression era volunteers. The grotto includes rocks from many nations and the holy land, but is dominated by an impressive domed interior lined with hundreds of split geodes with quartz crystal interiors framed by unsplit geodes. The grotto fell into disrepair in the 1950s and 60s, but was renovated in the early 1970s with additions of a fountain, the seven stages of the cross, and other features. Today the grotto ranks as one of the best displays of geodes in Iowa. The Our Lady of Grace Grotto can be seen at 420 West Mt. Pleasant Street in West Burlington.

Lake Geode is located in Henry and Des Moines counties in southeast Iowa. The lake is nestled within scenic Geode State Park, and is a man-made reservoir constructed in the 1950s. Lake Geode is well known for fishing, and offers significant economic value to the region. The Iowa DNR identified Lake Geode as a major recreational area based on factors including visitation rates, campground use, and population within a 50-mile radius of the lake. The Center for Agricultural and Rural Development (CARD) at Iowa State University estimates that between 2002 and 2005, Lake Geode averaged over 99,700 annual visitors. Those visitors spent an average of \$7.35 million per year, which supported 146 jobs and \$1.97 million of labor income in the region. In 2009 the DNR completed a Water Quality Improvement Plan for Lake Geode.

