

GEOLOGY AND GEOGRAPHY

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ABSTRACTS

The Cretaceous and Indiana. D. E. OWEN, Indiana State University. —The distribution of once very widespread marine and nonmarine Cretaceous deposits in North America has been greatly reduced by later erosion. Scattered outliers which have been recognized from time to time generally occur in freakish locations where there was unusual protection from erosion. Cretaceous fossils reported from the glacial drift of Iowa, Illinois, and Missouri indicate that Cretaceous seas extended considerably farther east than is shown by bedrock exposures. Gravels, sands and other deposits occur in Wisconsin, Minnesota, Iowa, Illinois and possibly Kentucky which have not yet yielded fossils but which are thought to be of Cretaceous age. It seems probable that these are fluvial deposits associated with a major outpouring of clastics and a related regression (Newcastle unit) near the end of Early Cretaceous time. Similar deposits may exist in Indiana. Mapping of the pre-Cretaceous paleogeology and Cretaceous onlap zero edges according to somewhat revised correlations in states west and northwest of Indiana shows progressive burial of an old erosion surface by units both marine and nonmarine. Similar onlap, which may have reached Indiana, is shown by the Late Cretaceous of the Gulf Coast Embayment.

Development of a Karst Valley in Monroe County, Indiana. RICHARD L. POWELL, Indiana Geological Survey.—A karst valley in western Monroe County has developed where the surface stream of a former southward-flowing tributary of Indian Creek was diverted westward underground into valleys that are minor tributaries to Richland Creek. The diversion of water from the karst valley was caused by a lower base level along Richland Creek. This subterranean diversion was channeled through three multi-level cavern systems, each with mapped passages in excess of 1 mile, that lie beneath the ridge of clastic rocks which separated the surface drainage of Indian Creek and Richland Creek. These caverns were dissolved within the westward-dipping limestone strata which are exposed in the floor of the valley and along Richland Creek. Segments of the karst valley presently drain into these three known cavern systems. Abandoned levels in the caverns and depositional and erosional terraces in the karst valley and in Richland Creek indicate that there were several distinct stages during the diversion of surface drainage of the karst valley to subterranean drainage. These erosion levels developed during the late part of the Tertiary Period and during the Pleistocene Epoch.

The End Moraines of the Cartersburg Till Member in Central Indiana.¹ WILLIAM J. WAYNE, Indiana Geological Survey.—The main advance of glacial ice into central Indiana during Wisconsin time had two distinct pulsations within a span of about 1,000 years. About 21,000 years B.P. the earlier of these reached the position commonly referred to as the Wisconsin glacial boundary, where a segmented moraine, generally identified as the eastward extension of the Shelbyville Moraine of Illinois, was built. After this brief moraine-building episode the ice of the East White Sublobe melted somewhat and then readvanced to a new position a few miles short of its previous extent. The till sheet left by the second advance is the Cartersburg Till Member of the Trafalgar Formation. The end moraine at the edge of the Cartersburg has never received an acceptable name, although Leverett regarded it to be a continuation of the Champaign Morainic System of Illinois.

A distinct, but narrow, ridge from a point northeast of Rushville where it separates from a morainic complex near the Ohio State line, this moraine trends southwestward toward Columbus and then northwestward as a broad massive rise through Trafalgar and Bargersville. The moraine becomes a high distinctive ridge past Danville and seems to split into two crests, one on either side of Crawfordsville, where the Champaign Moraine disappears beneath it. North of Attica, the double moraine can be traced northward to the place where it also crosses the Bloomington Moraine. It becomes indistinct north of the intersection with the Chatsworth Moraine 10 miles south of Fowler.

Many kames characterize this end moraine, and several large outwash plains emerge from it. Exceptionally rugged morainic topography in Montgomery County makes the area around Crawfordsville an excellent place to examine the moraine and its overriding relationships with the Champaign and Bloomington Moraines of the Lake Michigan Lobe.

A second end moraine on the Cartersburg till stands as a massive ridge from northeastern Shelby County to northeastern Henry County, where it merges with the westward extension of the Farmersville Moraine of Ohio. This moraine was considered by Leverett to be a continuation of the Bloomington Morainic System of Illinois, but the Bloomington, like the Champaign, disappears beneath the Cartersburg till in western Indiana. Some of the most rugged and distinctive topography of this morainic segment is in the area just west of Knightstown. As very little morainic topography is present in central Indiana, no logical boundary can be drawn to tie this morainic segment to any other recognizable moraines farther west in the State.

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