

2. J. MARVIN WELLER AND L. E. WORKMAN, Illinois State Geological Survey, Urbana, Illinois, "Structural Development of Eastern Interior Basin."\*

Much of the early Paleozoic history of the Eastern Interior basin is obscure because of the general lack of drilling to pre-Cambrian rocks. From earliest Paleozoic time, however, a gentle slope seems to have been present southward from Wisconsin. The Ozark region also appears to be a very ancient positive area that has been periodically subject to differential uplift.

Slow subsidence may have occurred during the Cambrian in the Eastern Interior basin but at that time the basin was probably only a part of a much larger basin that extended eastward to Appalachia and southward for an unknown distance.

The first evidence of important structural disturbance is provided by the unconformity at the base of the St. Peter sandstone which overlaps progressively older Ordovician and Cambrian formations in northern Illinois and southeastern Wisconsin. It appears to be related to the uplift of a northwest-southeast arch extending through southeastern Wisconsin, more or less in line with the Kankakee arch as the latter occurs in northwestern Indiana. This movement may have been an early stage in the separation of the Michigan and Eastern Interior basins.

At the end of Ordovician time there was sufficient uplift to permit deep erosion of the Maquoketa formation near this arch and also along the borders of the Ozark uplift and the Mississippi River arch. This can be interpreted either as broad regional doming with the principal erosion on the borders of the domed area or as differential uplift and erosion of the borders of a basin which was an early expression of the Eastern Interior basin.

Silurian sedimentary rocks in the basin provide little evidence of important structural changes. Cayuga strata, however, are absent in most if not all of the eastern Interior basin, although present in considerable thickness in the Michigan basin.

Beginning in late Silurian or early Devonian time, a broad gentle transverse uplift, the Pana arch, restricted lower Devonian deposits on the southeast, separated Middle Devonian limestones on the northwest and southeast, and restricted Kinderhook deposition mostly on the northwest. It may have had some effect on the character of Osage sediments.

Slow general subsidence of the Eastern Interior basin, which extended an unknown distance toward the south, occurred during Mississippian time, and was perhaps somewhat accentuated in Chester time. Although first evidence of the LaSalle anticline may be indicated in early Mississippian strata, most of the structural features of the present basin were initiated at the close of the Mississippian and developed progressively throughout the Pennsylvanian period. These features include the DuQuoin axis, which is the structural boundary between the basin and the Ozark area, the major LaSalle anticlinal zone, and numerous smaller structures.

Strata deposited throughout the Paleozoic thicken generally southward so that no southern boundary of the depositional basin is indicated. The present southern boundary was produced by uplift, accompanied by faulting, in southern Illinois and western Kentucky at the close of the Paleozoic era. There is scant evidence of subsequent important structural movement in the basin.

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3. ELWOOD ATHERTON AND DAVID H. SWANN, Illinois Geological Survey, Urbana, Illinois, "Correlations of Chester Series in Illinois and Indiana."\*

The lower Chester formations are correlated in western Illinois, the subsurface of the southeastern Illinois basin, Hardin County, Illinois, and Indiana. The correlation of the western Illinois formations is based on unpublished work by Frank E. Tippie. The Paint Creek of southern and western Illinois is divided into three members: (1) an upper limestone and shale zone, named the Ridenhower member, and correlated with the "Paint Creek" of southeastern Illinois; (2) a middle sandstone and shale zone, correlated with the Bethel sandstone of southeastern Illinois; and (3) a lower "pink crinoidal limestone" correlated with the upper part of the "Renault" formation and called the Downes Bluff member in southeastern Illinois. The remainder of the "Renault" formation in southeastern Illinois is referred to as the Shetlerville member of the Renault formation. In its upper part it includes a sandstone which is correlated with the subsurface "Benoist sand" of the western part of the Illinois basin and possibly the Yankeetown of western Illinois. Sections prepared by Tippie show that the Aux Vases formation may be confined to western Illinois.

The "Aux Vases" and "Rosiclare" of the subsurface in southeastern Illinois are correlated respectively with the Rosiclare and Spar Mountain (sub-Rosiclare) of Hardin County, Illinois.

The correlations of lower Chester formations of Illinois with those of Indiana are shown.

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