

THE SUBSURFACE STRATIGRAPHY OF THE  
DECATUR REGION

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Decatur is situated above probably the deepest part of the syncline west of the LaSalle Anticline. Although no wells have reached the St. Peter sandstone in the immediate vicinity, it is estimated on good data that the top of that formation lies at a depth of about 3,100 feet. On less reliable data it is further estimated that at least an additional 3,100 feet of sedimentary rocks underlie this to a total depth of 6,200 feet to the pre-Cambrian granite. The sediments below the St. Peter consist in the lower half of coarse sandstone, and in the upper mostly of dolomites, but with some shale and sandstone formations. They represent all of the Upper Cambrian and the Prairie du Chien series of the lower Ordovician period.

The St. Peter sandstone is well known for its clean, white, medium grained sand. Above the St. Peter are the Platteville, Decorah, and Galena limestone formations in the order given, a total thickness of about 500 feet. The first is a mottled brown and gray, very fine grained limestone or dolomite, the second a shaly limestone, and the third a light brown coarsely crystalline limestone or dolomite. It is in this general region of Decatur that these formations change from being dominantly dolomite to the north and dominantly limestone to the south. The Maquoketa shale formation completes the Ordovician succession. It consists of a lower third of brown shale, a middle third of coarse grained limestone with interbedded brown and gray shale, and an upper third of green shale with limestone lenses.

The Silurian formations are similar to the St. Genevieve section of southeastern Missouri rather than to the Chicago section, having the brown cherty Edgewood limestone at the base, the pink, green and white speckled limestone of the Brassfield above, and red, gray and greenish, shaly dolomitic limestones similar to the Bainbridge above that. Studies of the Silurian in the region of Tuscola and southeastward into the oil fields show that at least 200 feet of Silurian is absent from the upper part of the section in the Decatur region where the total thickness is about 450 feet.

The Devonian system varies from 7 to 57 feet in thickness in sets of samples from the Decatur region. The brownish sandy and lithographic limestone with associated dolomite suggest the Wapsipinicon and Cedar Valley formations of the Rock Island region. There is much dense gray chert in the rocks which is distinctly different from the chert of the underlying Silurian beds.

The Sweetland Creek brown, *Sporangites* shale is 150 feet thick and has at its base a thin sandstone made up of reworked sand grains from the Devonian limestone. The upper layers of shale grade to black and dark gray. The question of the Devonian and Mississippian classification of the Sweetland Creek formation has been much discussed.

Of the Mississippian formations the Fern Glen red and green shales and cherty limestones are near the base, being about 100 feet thick. They are regarded as Osage and are followed in the same series by 140 feet of typical, very cherty, white to light gray Burlington and Keokuk limestones. East of the LaSalle anticline the Osage consists of sandy shales and sandstones quite unlike these formations. The Warsaw formation consists of a lower half of dark silty shale, and an upper half of shaly sandstones, sandy limestones, and sandy shales. The total thickness increases from 100 feet near St. Louis

to 300 feet at Decatur. A limestone less than 30 feet thick and typical of the granular *Endothyra*-bearing Salem lies on top of the Warsaw sandstone. The St. Louis limestone is 100 to 200 feet thick at Decatur. It has suffered an erosion of 100 or more feet previous to the deposition of the Chester series.

The Chester series is represented by the Aux Vases, Renault, Yankeetown, Paint Creek, Cypress, and lowest beds of the Golconda formations, having a total thickness of 300 feet.

The Pennsylvanian sediments, 800 feet thick, consist mostly of shales and limestones. There are some sandstones and coals. The coal mined at Decatur is known as the No. 5 seam, reached at a depth of 560 feet in the shaft in the southern part of the city and 650 feet in the oil-test wells northwest of the city. A prominent red bed is encountered at about 350 feet and the Shoal Creek limestone at about 200 feet in these wells.

The bedrock in Macon County is everywhere covered by 100 to 200 feet of glacial drift.