

SUBSURFACE GEOLOGY IN THE
EAST ST. LOUIS REGION *

BY

GEORGE E. EKBELAW AND L. E. WORKMAN

Illinois State Geological Survey, Urbana, Illinois

A study of available sets of sample cuttings from many of the deep wells in the vicinity of East St. Louis reveals some interesting problems.

The strata dip generally northerly and easterly, successively higher formations are encountered at the surface, and each outcropping formation increases in thickness away from the Ozark anticline. Pennsylvanian strata thicken rapidly in Illinois but occur only locally in Missouri. There is a marked unconformity at the base of the Pennsylvanian system. Chester strata, absent in Missouri but almost everywhere present in Illinois, thicken rapidly from west to east and from northwest to southeast, overlying the Ste. Genevieve formation unconformably. The St. Louis formation has a fairly uniform thickness, ranging from 250 to 300 feet. In Missouri it is thinner owing to surficial erosion but in Illinois it has its full thickness and is overlain conformably by the Ste. Genevieve formation whose thickness varies according to its location relative to the regional structure. It appears that to the west the St. Louis formation overlaps the older Salem and Warsaw formations, but the data are too scanty to assure the relations.

The Salem and Warsaw formations are fairly uniform but are slightly thinner to the north and east. The Keokuk-Burlington formations are also fairly uniform although they are appreciably thicker north and west than east of Mississippi River and south of East St. Louis. The Fern Glen formation is of uniform thickness in the East St. Louis region. It thins out and disappears to the west and is also lacking a short distance north and west of Alton, due probably to non-deposition. The Kinderhook series is thin everywhere and is sometimes absent in the East St. Louis region but it thickens appreciably to the north.

The combined Devonian and Silurian systems are absent in the west and their thickening to 500 feet in the east is a noteworthy feature. Most of this thickening is in the Silurian system which consists of a lower gray limestone, a middle "red rock", and an upper gray shaly limestone. These formations successively appear from west to east, showing that there is an important angular unconformity between the Devonian and Silurian systems. The Devonian system thickens from a few feet in the west to as much as fifty feet in the east. The Maquoketa formation is fairly uniform in thickness although it has some regular variations. It thins to the west, probably as a result of the same erosion that terminated the Silurian formations. The Kimmswick, Decatur, Platts, and Joachim formations may be considered as a single unit that thickens slightly to the east. The St. Peter formation is fairly uniform in thickness although irregularities would not be unexpected. The Prairie du Chien series, consisting of the Powell, Cotter, and Jefferson City formations, and the Roubidoux formation are encountered in several wells but show no marked variations. Formations below the Roubidoux have been encountered in but few wells.

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