

AREAL GEOLOGY OF PART OF CENTRAL EASTERN ILLINOIS*

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Bedrock outcrops are scarce in central-eastern Illinois, which is covered by glacial drift. Samples from wells in this area show that rock formations of Silurian, Devonian, Mississippian, and Pennsylvanian age underlie the glacial drift. Except in a few limited areas, the wells are widely scattered. In order to map the areal distribution of the systems beneath the drift, it is necessary (1) to reconstruct the topography of the bedrock surface on which the drift was deposited and (2) to determine the geologic structure which controls the intercepts of the systems with the bedrock surface. Previous areal maps of this area (Weller, 1945) have shown the general structure of the area, but little consideration was given to the variations in bedrock topography.

The bedrock topography of Illinois was mapped by Horberg (1950). In central-eastern Illinois, present topography (fig. 1) shows little relation to the bedrock topography (fig. 2), which was mapped almost entirely on the basis of well data. The major feature of the bedrock surface is the preglacial Mahomet (Teays) bedrock valley. It crosses the area from the southeast corner of Iroquois county westward across southern Ford and northern Champaign counties, and then trends southwest to central Piatt county, thence to the present Illinois River valley in Mason

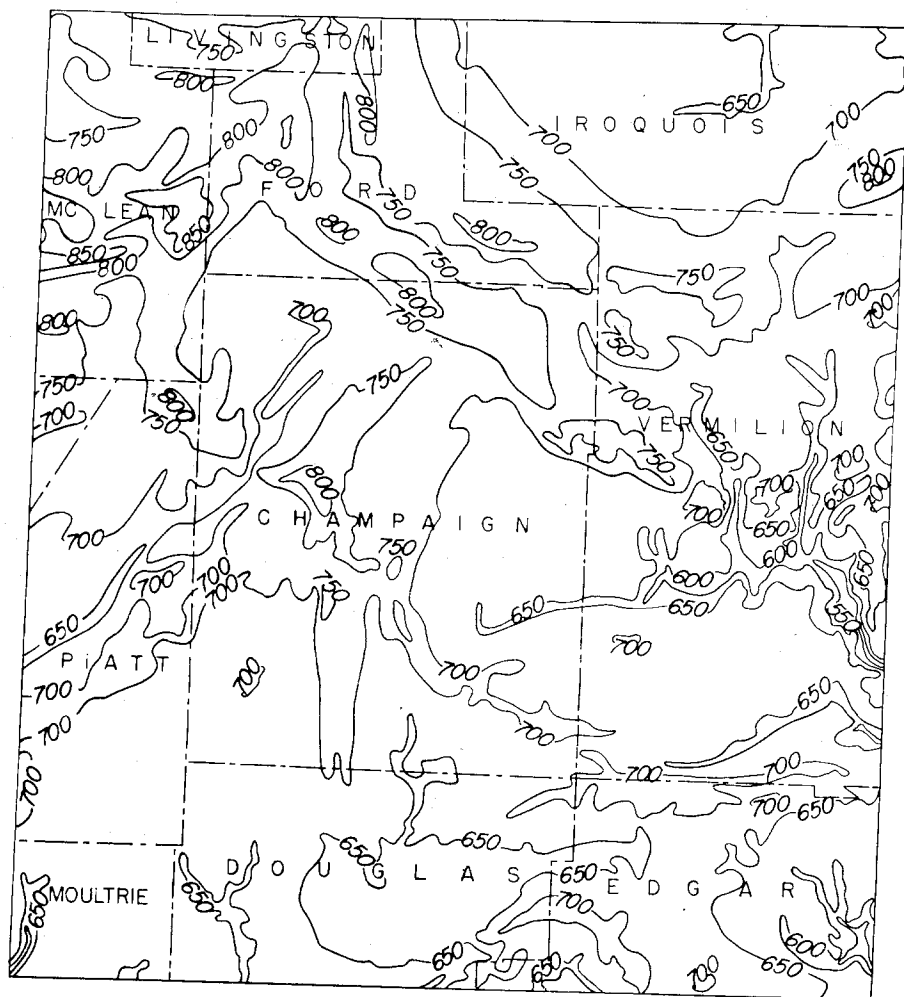
County. The Danville preglacial valley extends northward across Vermilion County to join the Mahomet valley. The Pesotum preglacial valley extends across Douglas and southern Champaign counties to join the Mahomet valley in Piatt County.

The topography has an areal relief of about 300 feet. It is drained by the Sangamon, Embarrass, and Vermilion rivers. The drainage pattern is not related to the bedrock topography, which has about 400 feet of relief and is rougher than the present surface.

Because the top of the Devonian limestone is one of the most persistent subsurface horizons easily identified in samples from wells drilled in the area, it is used as the horizon for mapping the structure (fig. 3). The LaSalle anticlinal belt crosses central-eastern Illinois from north to south. It has a structural relief of at least 2,400 feet. The dip on the west side of the LaSalle anticlinal belt, is relatively steep toward Illinois basin whereas it is more gentle on the eastern side. The doming of the anticlinal belt brings to the bedrock surface formations that range in age from Silurian to Mississippian. To the east, the Oakland anticlinal belt lies almost parallel to the LaSalle anticlinal belt beyond which is the Marshall-Sidell syncline.

In constructing the geologic map, well records were considered the primary data. The structure and bed-

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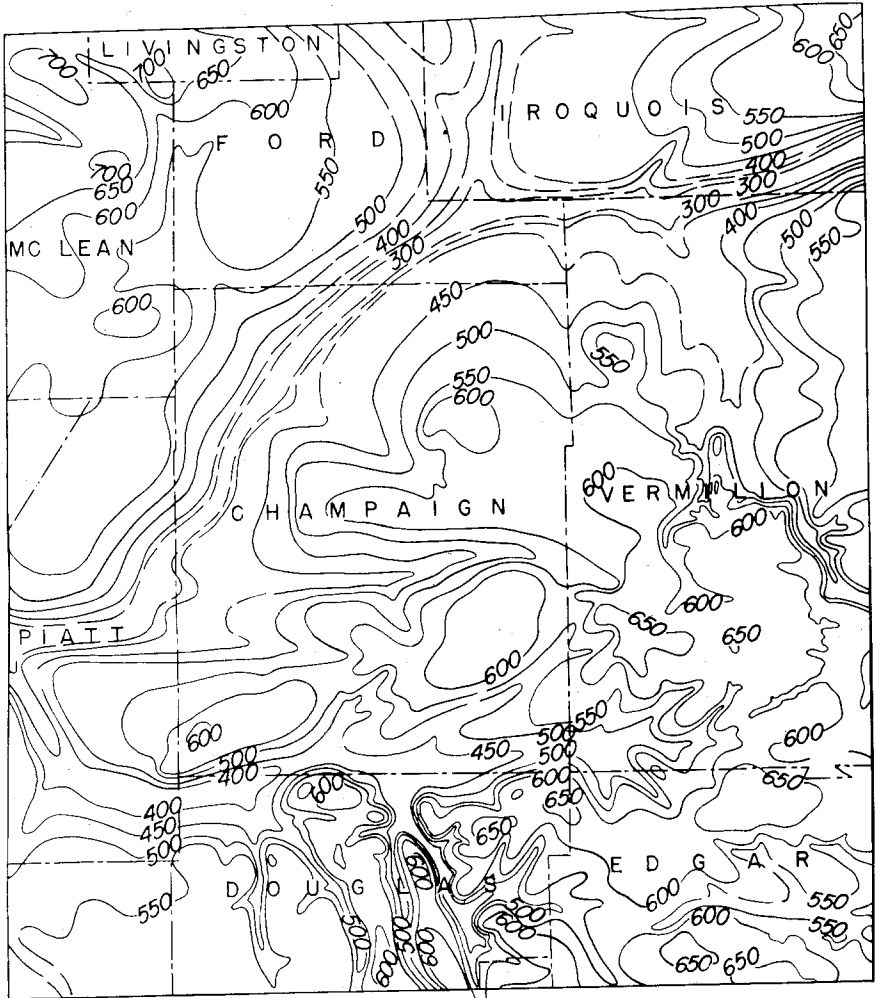
TOPOGRAPHY of PART of CENTRAL EASTERN ILLINOIS
 Contour interval 50 feet; datum sea-level

FIG. 1

rock topography maps were used to control the trends of the boundaries and the distance which they were projected along the bedrock valleys.

The influence of the Mahomet (Teays) bedrock valley is indicated on the areal geology map (fig. 4) by the northeastern and southwestern elongation of the Silurian and De-

vonian systems exposed on the bedrock surface of the Gibson City dome in northern Champaign and southern Ford counties. A tongue of Devonian and Mississippian rocks is also projected into the southeastern corner of Iroquois County where the Mahomet valley extends from Illinois into Indiana.



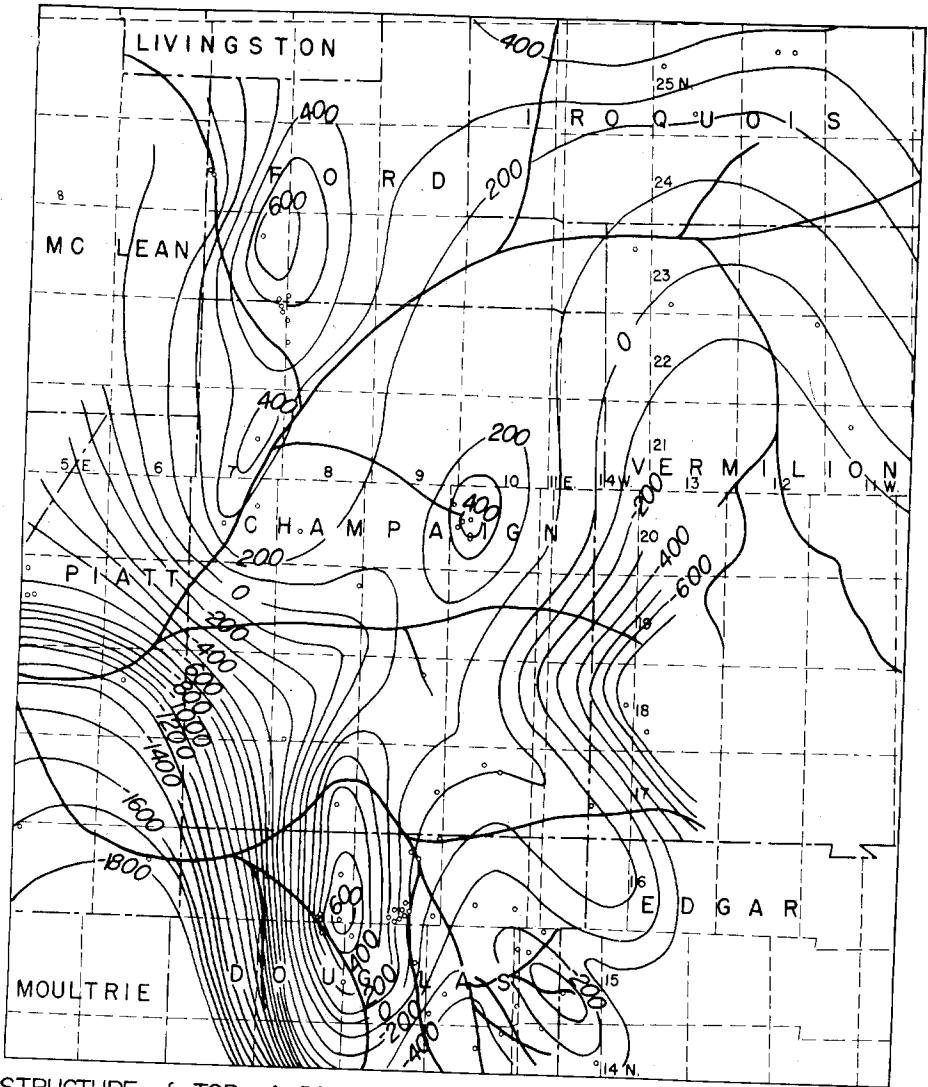
BEDROCK TOPOGRAPHY of PART of CENTRAL EASTERN ILLINOIS
(after Horberg)

Contour interval 50 feet; datum sea-level

FIG. 2

On the more steeply dipping west side of the LaSalle anticlinal belt—on the Tuscola dome in southern Champaign and northern Douglas counties—data from studies of wells indicate that Pennsylvanian strata overlapped the Mississippian formations to rest directly on Devonian

strata; therefore no Mississippian formations are mapped at the bedrock surface exposed on the west side of the Tuscola dome. A similar overlap seems to exist for the Devonian exposures on the Gibson City dome in northern Champaign and southern Ford counties; hence Pennsyl-



STRUCTURE of TOP of DEVONIAN LIMESTONE and DRAINAGE PATTERN of the BEDROCK SURFACE


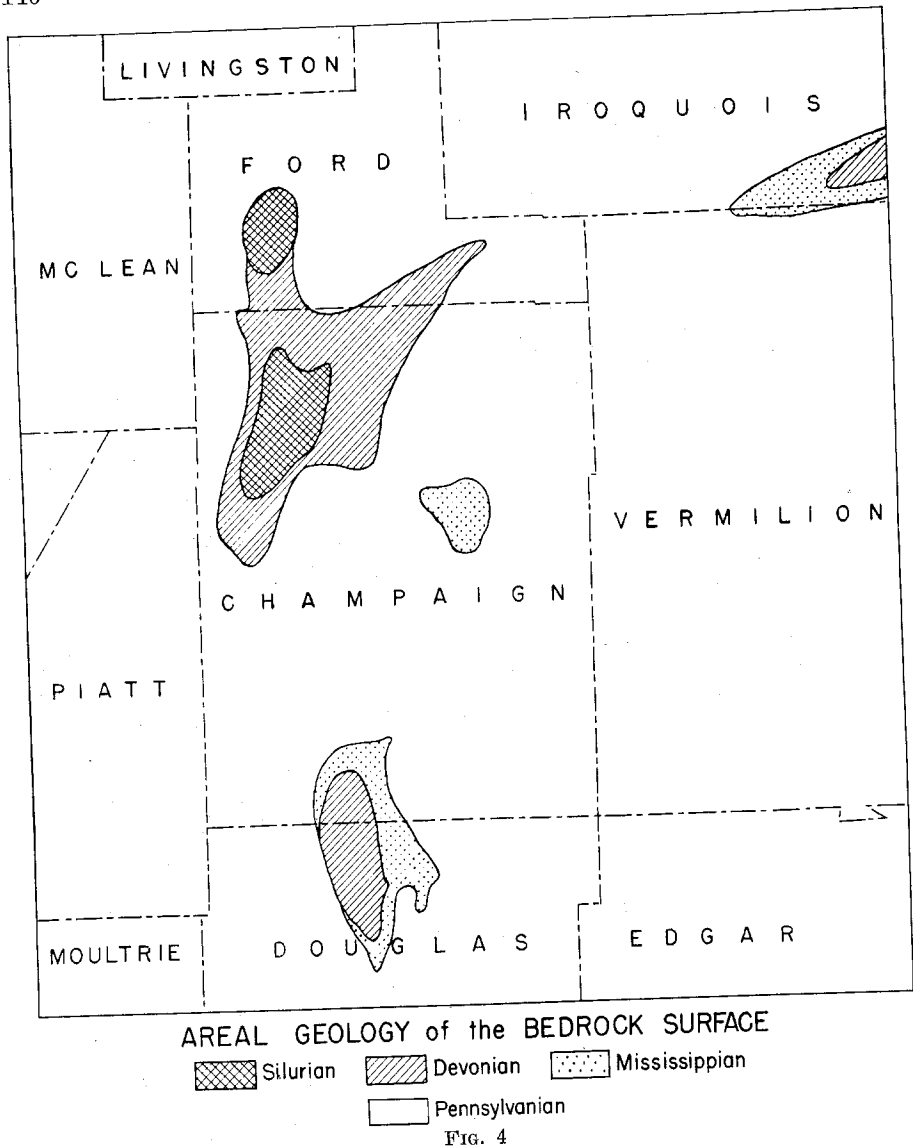
• Wells to bedrock  Drainage lines - Contour interval 100 feet; datum sea-level

FIG. 3

vanian strata are mapped as lying directly on the Devonian in this area. The Sellers dome on the Oakland anticlinal belt, in central Champaign County, slightly east of the main axis

of the LaSalle anticlinal belt, brings Mississippian strata to the bedrock surface.

The New Albany shale is included in the Devonian system in drawing



the areal geologic map of the area. The areal pattern (fig. 4) shows the limits of the Silurian, Devonian, and Mississippian systems, none of which crop out at the surface of the de-

scribed region. Pennsylvanian strata cover the rest of the area of the bedrock surface, and they crop out in southern Vermilion and northern Edgar counties.

REFERENCES

HORBERG, LELAND, *Bedrock topography of Illinois*: Illinois Geol. Survey Bull. 73, 1950.

WELLER, J. M., *Geologic map of Illinois*: Illinois Geol. Survey, 1945.