

NOTES ON THE AREAL GEOLOGY OF MIAMI COUNTY,  
INDIANA.

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A soil survey of Miami County during the summer of 1926 afforded opportunity for some observations on the areal geology of that interesting region.

The southern three-fourths is, for the most part, a till plain of the "sag and swell" type, so common throughout north central Indiana. The local relief, except in the immediate vicinity of streams, does not usually exceed 15 or 20 feet. Occasional low mounds and flattish ridges stand out more prominently, but there are many square miles where the undulations are so gentle that the plain approaches flatness.

Throughout the northern quarter of the county the relief is more pronounced. In its larger aspects it is structural, the elevations and depressions being disposed in that irregular manner which marks the difference between the work of ice and that of water.

The observing traveler will also note that the landscape in this last named region has many features characteristic of northern Indiana. There yet remain a few small lakes, areas of muck are of common occurrence, here and there big boulders dot the hillsides, and in many localities wind-drifted sand mantles the clayey drift in that exceedingly erratic fashion which makes the mapping of the soils a well nigh impossible task.

The valley of the Eel River is the boundary between these two divers sections of the county. A glance at the map suggests the Wabash, only a few miles to the south, as the dividing line, but this is not the case. The Wabash Valley is essentially a trench, cut almost straight across the county from east to west, its bluff-like sides rising 60 to 70 feet above the valley floor. They are very abrupt in most places, and from their crests the upland plain immediately sets in. Along the Eel, the slopes are more gradual, and much of this valley is a series of uneven, sandy terraces. No doubt the basal materials in the Eel Valley would prove, on more thorough exploration, to be similar to those in the Wabash trough, but the surface features are quite different.

The largest of the Wabash terraces within the territory under consideration is the one whose upper end affords such fine residential sites within the city of Peru. Its southern margin is a steep, stony slope, 20 or 30 feet high, while its northern border is not quite as well defined, and overlooks a wide muck bed extending to the foot of the hills on the north. Remnants of this same terrace occur further up the valley, ranging from gravelly mounds of a few acres to two benches of several hundred acres each. On all these larger terraces, leaching and

oxidation have extended to a depth of three or four feet, and a silty soil has developed.

An interesting feature of the two small terraces just mentioned is a narrow rim of sand, occupying part of the extreme northern margin of each. It is 8 or 10 feet high—where best developed—and only a few rods wide at the base. That they are local dunes can hardly be doubted, but at what period in the valley's history were they formed? The surrounding alluvium, both that of recent origin and that which has begun to show the effect of atmospheric agencies, is very silty and generally deficient in sand. Are these valley dunes related to those of the uplands? Do they all represent a period when climatic conditions were different from those of the present?

South of the Wabash Valley and also on the uplands between the Wabash and Eel rivers, the superficial member of the glacial deposits is a heavy, silty clay, light colored, dense and highly calcareous. There are few boulders, and the rather sparse glacial rubble that has accumulated on eroded slopes represents the coarse residue from a very considerable mass of material. The total proportion of constituents coarser than sand seems to be very small. The weathered surface, the "solum" of the soil surveyors, is commonly less than 40 inches on the smoother areas and rarely exceeds 50 or 60 inches on slopes.

North of the Eel Valley the till seems to carry a slightly higher percentage of coarse material, but the more vigorous denudation in this region must be considered in this connection.

Since all the present stream valleys were originally lines of glacial discharge with consequent accumulations of sand and gravel, these materials are almost everywhere found beneath a thin covering of recent alluvium. Some of the gravel pits along Pike Creek are 40 feet deep with but little or no inter-bedded clay. In places, however, on this and other small streams thin layers of stiff, heavy calcareous clay, evidently water laid, have been reported. These pits have all yielded more or less forest debris in the shape of lignitized logs and masses of well preserved leaves.

On Deer Creek, both above and below State Road 31, there is a gravelly layer, underlying several feet of recent alluvium, and resting upon blue clay. This gravel stratum is rich in vegetable remains, some of which are nuts from walnut and white walnut trees, small thin-shelled hickories, and many unidentified fruit pods. The abundance and variety of leaves from deciduous trees would no doubt afford many interesting results if the paleo-botanist should give them his attention.

In the museum in the Court House at Peru may be seen a number of bones of a very large mastodon from a peat deposit in Perry Township. The same locality also yielded the skull of a musk ox, and a number of mammalian bones and horns have been taken from the gravel pits and stream beds in other parts of the county.