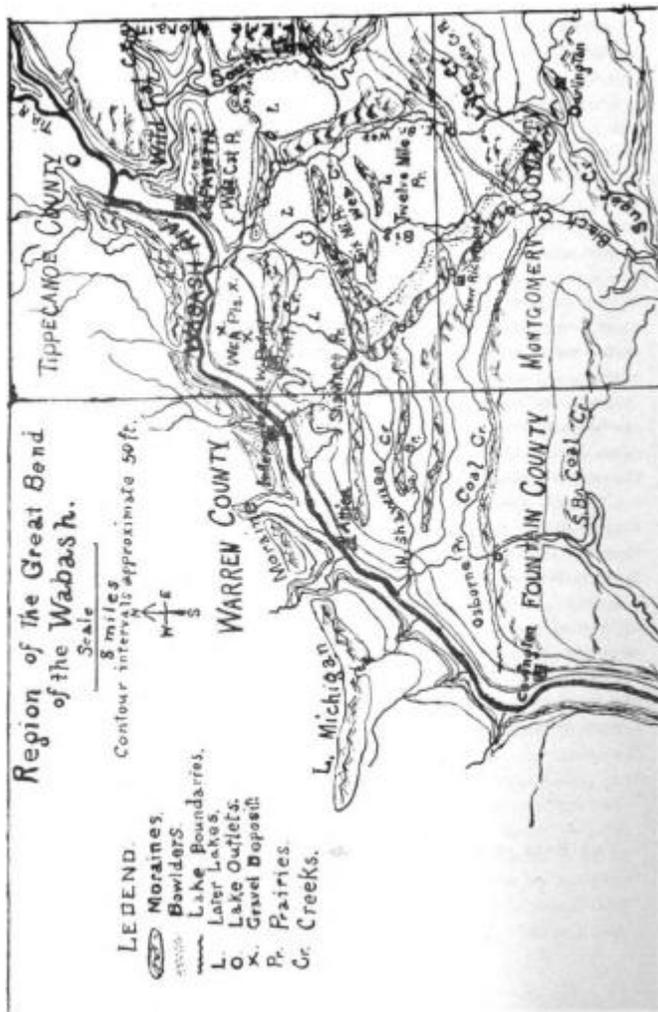


THE PHYSICAL GEOGRAPHY OF THE REGION OF THE GREAT BEND OF THE WABASH.

BY WILLIAM A. MCBETH.



The region here considered embraces most of the area of Tippecanoe, the north half of Fountain and Montgomery and the southeastern border of Warren counties, lying in that part of Indiana where the Wabash River, after traversing the State nearly its entire width, turns abruptly to the south, which direction it follows through the remainder of its course.

The area embraces some of the most beautiful and fertile country in the State. Much the greater part is prairie, not continuous but divided by gentle ridges, usually timbered, into smaller sections locally named as Osborne's Prairie in western Fountain County, Shawnee, Twelve Mile, Six Mile and Potato Creek prairies further east, and north of these Wea Plains and Wild Cat prairies.

The main water-shed has a northward slope from northern Montgomery County to the Wabash, the main drainage line of the region. The slope rises rapidly to the east from the eastern side of the South Fork of Wild Cat Creek, and the country becomes distinctly a timbered region

with clay soil. The southern divide is also a clay and naturally heavily timbered region, with a few narrow re-entrant strips of prairie. . The country is diversified by several ridges and a great number of small gravel hills or mounds. The country to the north of the Wabash to a distance of from two to six miles from the river is a clay country, much of it still heavily timbered and very much broken by the knobs and basins characteristic of moraine topography. The country bordering the region on the south has this characteristic topography but of a more subdued type. Subordinate to these are several ridges, the relation of which to the others is not in every case clearly apparent. One of these extends almost due east from the town of West Point, Tippecanoe County, a distance of twelve miles, where it bends southeast and extends to the southeast corner of Tippecanoe County. From this angle there also extends a broken chain of mounds northeast to near Dayton. Another well defined ridge, from the low crest of which rise many mounds, extends southeast from near Independence, on the Wabash, to Darlington, Montgomery County. Parallel with it on its eastern slope lies the belt of bowlders well known to Indiana geologists. Shorter and less conspicuous ridges extend east and west, at distances of about three miles apart, across the part of Tippecanoe County further south. Two or three such ridges traverse the northern part of Fountain County. Many mounds dot the region in no discernible relation to each other or to the chains and ridges. All these ridges and mounds of gravel have the regular stratification of water-laid deposits.

The drainage of the region is interesting and peculiar. The Wabash crosses Tippecanoe County through an immense deposit of gravel extending from the eastern to the western boundary of the county, having a width of from one to six miles and from two to three hundred feet deep. Between Warren and Fountain counties, from the western side of Tippecanoe to Portland, Fountain County, the stream runs on bedrock in a valley about a mile wide and one to two hundred feet deep. The smaller streams of Tippecanoe County, south of the Wabash, converge from the eastern and southern more elevated clay plains and the line on the southwest formed by the Darlington-Independence ridge. West of this the streams run west into the Wabash. The unusual course of the Wea Creek and of Coal Creek-should be noticed particularly, the course of the former, forming a great semicircle, the latter having a course with an abrupt bend in it strangely similar to that of the Wabash. It should be noted also that the streams just over the south and southwest divides of the Wea basin in several places have their sources very near those of this basin, and in all such places there is a sag or connecting valley across the divide. Notice, for examples, the heads of South Flint and North Shawnee, Little Wea and Big Shawnee, Big Wea and Coal creeks. Note also the nearness of the northward-flowing tributary, of Shawnee to the elbow in Coal Creek.

The foregoing statement of topographic facts is made in view of a possible solution of some problems that are suggested by them.

Mr. Chamberlain has called this a region of readjustment in glacial movement, and this statement seems to be the key to the solution of the problems that present themselves. When the last great North American ice sheet invaded Indiana it sent forward advance columns along the lines of low depression. Of these lines, the principal ones, a southward- moving lobe from the Lake Michigan depression, a southwestward-moving lobe from the Saginaw-Huron depression, and a west southwestward-moving lobe from the Erie depression, converged in northern Indiana, became confluent and moved southward to central Indiana. The climate then became warmer and

the ice sheet began its retreat in an order the inverse of its advance. It melted away on the divides first and persisted much later in the lines of depression. Immense quantities of water from the melting ice, the accumulated precipitation of countless ages set free from its long bondage by the Frost King gathered in lakes in the depressions of the vacated regions, or swelled to immense size the streams that ran from the ice front. A new topography was imposed upon the region of glacial action. It is as a detail in the general scheme that the region described finds its explanation.



VIEW OF PART OF SHAWNEE PRAIRIE, TIPPECANOK COUNTY, INDIANA. (BED OF AN ANCIENT LAKE).



SHAWNEE MOUND, SOUTH SLOPE, TIPPECANOK COUNTY, INDIANA.



COOK'S MOUND, TWO MILES SOUTHEAST OF NEW RICHMOND, MONTGOMERY COUNTY, INDIANA.

The converged lobes before mentioned moved down to the Shelbyville moraine extending from northern Vigo County northeast through Parke, east through Putnam and thence southeast. This moraine extends as a continuous plain, trenched by streams, bearing on its surface the weak dome-shaped swells that mark it as morainic in character to the northern part of Montgomery County, extending northwestward to and across the Wabash, which was one of its great terminal drainage lines, into which flowed Raccoon and Sugar creeks, mighty streams from the ice border further east. As the ice retreated to the present divide between Sugar and Coal creeks, the slope descending to the north was gradually uncovered, and a lake began to form along the southern border of the glacier, which overflowed south across the divide by Potato, Lye and Black creeks

to Sugar Creek. Later, Coal Creek took its way west along the ice border and finding an outlet stream running south, or a southward bend in the ice front, it turned south at the elbow. This being lower than the outlets further east caused their abandonment, the water flowing through the wigs in the Independence-Darlington Kaine Moraine. This moraine is a weak frontal moraine of the Erie lobe and it was laid down in the lake and perhaps afterwards much dissected by wave action. The ice sheet halted for a long time at the West Point, or what is better known as the High Gap Ridge, the drainage then being by Flint Creek along its front across the divide to Shawnee, thence west into the Wabash, the terminal drainage stream of the Michigan lobe, the Wea-Coal Creek outlet being probably still maintained. The High Gap Ridge is thought to be a moraine of the Michigan lobe. Later the ice retreated to the great moraine north of The Wabash, which river then extended itself from the great bend northeast along the border of the Michigan lobe in its present course. The lake held in the Wea basin then formed an outlet stream to the north and Wea Creek and its tributaries came into existence, the main stream following the moraine on the east and north sides where the deepest part of the lake had been. The retreat continuing, the region east of Lafayette as far as Dayton, held a lake which flowed out where the moraine running east from West Point bends to the southeast at a low sag locally known as Dismal Swamp. Later an outlet opened into the Wea at the west end of the lake, the bed of which is now known as Wild Cat Prairie. Later still an outlet was formed at the east end of this lake by the South Fork of Wild Cat Creek extending headward from its junction with Middle Fork along the western border of the Erie lobe.

The Michigan and Erie lobes were now becoming differentiated again. The heavy moraine north of the Wabash is a terminal moraine of the Michigan lobe, the rapidly rising till plain east of the junction of Wild Cat Creek is the main frontal moraine of the Erie lobe. Tippecanoe River in its lower course is a former outlet of an interlobate lake which existed for a long time before being finally drained westward by the retreat of the Michigan lobe. The great gravel deposit is probably the filling of a lake produced by the melting of a thick bed of ice which had filled a pre-glacial valley. The present Wabash Valley is the trench cut out by the sand-laden stream which for thousands of years carried the water from the still retreating Erie lobe.

Different layers of boulder clay with beds of gravel interposed point to minor advances and retreats of the edge of the ice sheet over all the region.

The facts here set forth are derived from an intimate knowledge of much of the region and considerable field work in the portions not so familiar and the conclusions are set forth as a working hypothesis subject to revision upon the basis of further examinations. The hypothesis postulates the presence of the Michigan and Erie lobes in the region at the same time, which is a view not agreed upon by all who have studied the glacial phenomena of North America.

On the lawn in *trout* of the residence of Thomas B. Miller, one-half mile north of New Richmond, Montgomery County, Indiana, stands the very interesting boulder, a cut of which is given herewith. It is nearly five feet in length, and from two to three feet in diameter. It is roughly cylindrical in shape, and so white as to give most people who see it the impression that it has recently received a copious coating of whitewash. A closer examination shows a curious and beautiful structure, which may be compared to that of an immense stick of white taffy, strands of which had been drawn out into small ropes, braided, twisted and then doubled or folded, given a final pull and allowed to cool.

A small fragment analyzed at the chemical laboratory of Rose Polytechnic Institute, Terre Haute, Indiana, by Mr. J. W. Shepherd, was pronounced foliated serpentine. It was found in excavating the cellar of the residence, in front of which it stands. A smaller boulder of the same material, and no doubt a fragment of the larger one, was found near it in the excavation.

The location is on the ridge of the Darlington-Independence Kame Moraine and near the parallel boulder train mentioned in the article on the Physical Geography of the Great Bend of the Wabash. Its presence, in the region where found, may be explained in the same way that the presence of the thousands of others may be explained, but its composition and structure mark it as so uncommon that its source would throw much light upon the direction and distance of movement of the drift in the region where it was found. It is hoped that this description may meet the eye of some person who can give information as to its probable source.



BOWL.DEB OK FOLIATKD SKRPENTIXK, NEW RICHMOND, INDIANA.