

but on account of engineering difficulties, only one touches Old Vernon, and, by a long fill and double bridge 80 feet high, crosses the river at the forks. The population of North Vernon is 3,000; of Old Vernon, 650. The courthouse and jail seem to be the only reason for its existence, but its quaint and picturesque beauty give it a charm which no smart business town can possess.

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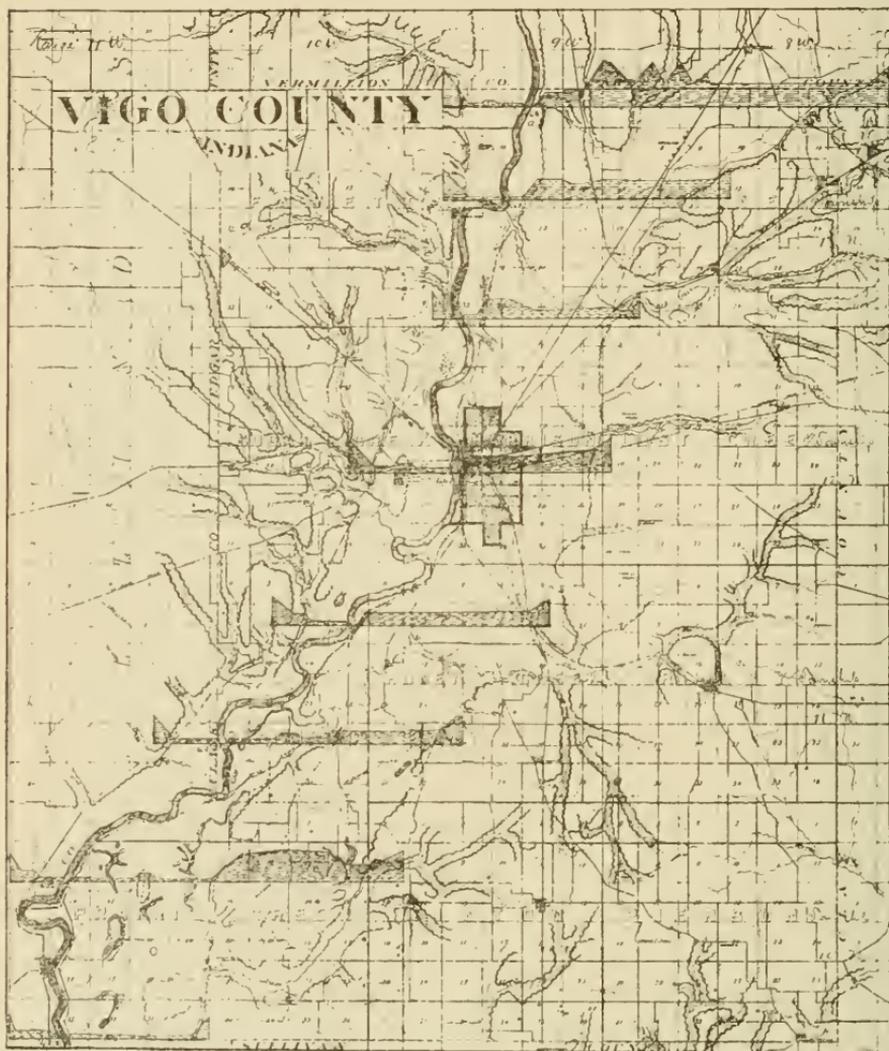
#### TERRACES OF THE LOWER WABASH. BY J. T. SCOVELL.

The valley of the Wabash, while much like many others, has some peculiarities. It was dug out through the sand and gravel that partially filled an ancient drainage channel. The old channel in Vigo County is from four to six miles wide, and at Terre Haute the bed of the present river is 100 feet above the rock bed of the old river. A long, narrow island whose southern extremity extends a mile or so into Vigo County divided the old river into two channels. The main channel, on the west of the island, now occupied by the Wabash, is about two miles wide. Near the county line it received a tributary channel about one-half mile wide, now occupied by Bronillet's Creek. The eastern channel is about a half mile wide, and is occupied by the lower course of Raccoon Creek. Near the county line this channel received the tributary channel of Old Raccoon Creek, about a half mile wide. Thus the old valley in Vigo County was formed by the union of four broad channels. The flood plains and the terraces of the present river rise to different elevations above low water, and vary considerably in width. Some of these variations are shown by cross sections of the valley made on different lines along its course.

The first section is along the north line of the county. The datum, low water in the river, is about 452 feet above tide. The flood plains on the west rise from 12 to 20 feet, a flood of 16 to 18 feet covering much the greater part with water. The second bottom rises about 30 feet above low water, and the bottoms of Brouillet's Creek are continuous with those of the river. The bluff on the west rises abruptly from Brouillet's Creek to an elevation of about 600 feet. On the east a rise of about 50 feet reaches the edge of a heavy gravel terrace, which rises gently toward the east, reaching an elevation of 520 feet at the foot of the island bluff one mile from the river. Thence across the island, whose higher points are about

600 feet above tide, to the terrace on the east at an elevation of 537 feet, about 85 feet above low water in the river. The next section, about three miles south, shows low bottoms on each side of the river, but no second bottoms. The big terrace near the river is perhaps a little higher than on the county line, but two broad valleys appear farther east which greatly reduce its volume. The third section, between three and four miles farther south, shows low bottoms, less than a mile wide, mainly east of the river. The terrace rises from the flood plain to an elevation of from 80 to 90 feet above low water, but soon descends to an elevation of only 45 to 50 feet above datum, in the valley of Otter Creek. Erosion by the creek may account for the great reduction in the volume of the terrace, as shown by this section. The section at Terre Haute,  $3\frac{1}{2}$  miles farther south, shows about one mile of low bottoms on the west, then a second bottom rising about 30 feet above low water, then low bottoms to the bluff. On the east a rise of 50 feet reaches the edge of the terrace, which rises gradually but irregularly to an elevation of about 70 feet at the bluff three miles from the river. Two low ridges and two shallow valleys occur on this section, but in general the surface of the terrace is more uniform than farther north. The next section, about four miles farther south, shows about one mile of flood plain on the west and a narrow terrace rising about 45 feet above low water in the river. On the east the terrace, nearly level, is about four miles wide, having an elevation of about 45 feet above low water. The ridges of the Terre Haute section show faintly, but the surface in general is uniform. The section three miles farther south, through the village of Prairieton, shows a little more than two miles of flood plain about equally divided by the river. The terrace about four miles wide has an average elevation of about 45 feet above low water. Honey Creek has cut a broad valley across the terrace, and a low ridge appears farther east. The next section,  $3\frac{1}{2}$  miles farther south, shows one mile of flood plain west of the river, and a narrow terrace. On the east the low bottoms are  $3\frac{1}{2}$  miles wide. A little island of gravel rising about 40 feet above low water, and a narrow sand ridge, are the sole representatives of the great terrace farther north. This section continued eastward shows that Johnson's Hill rises about 100 feet above low water in the river and that the valley of Prairie Creek, about one mile wide, has about the same elevation as the Prairieton terrace. It seems probable that Johnson's Hill was an island in the old river, and that the valley of Prairie Creek was the eastern channel of the ancient

stream. The sand and gravel of Prairie Creek valley, probably representing the terrace, as shown in the Prairieton section. The section on the south county line shows three miles of flood plain east of the river. This plain is low along Prairie Creek and is crossed by a low, rocky ridge near the bluffs. West of the river the terrace is about two miles wide, with an average elevation of about 35 feet above low water in the river.



A low, broad ridge is shown upon the terrace, but in general its surface is quite uniform. This terrace descends gently toward the south so that at York, six miles south, it has an elevation of scant 30 feet above low water, while at Hutsonville, five miles below York, it has an elevation of only about 25 feet, just about on a level with the high floods, and only about 80 rods wide. Just north of Hutsonville there is a great hill of sand and gravel that rises about 45 feet above low water, but the greater part of the terrace is low. Thus the gravel terrace, so massive, so prominent a feature in Vigo County, almost disappears within 40 miles. It seems probable that the old valley was once filled with sand and gravel, at least to the elevation of the higher points of the present time. The present features of the valley are apparently due to extensive erosion. Meander lines run in 1816 show that the present river has not eroded its gravel banks to any appreciable extent during the past 80 years. The work of erosion signifies much stronger currents than prevail in the present river, even when in flood.

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THE KANKAKEE VALLEY. BY H. T. MONTGOMERY, M. D.

One of the great waterways during the ice period seems to have been entirely overlooked by our local and State geologists. I refer to the great Kankakee Valley, whose stream had its origin at the foot of the Saginaw glacier, and received tributary streams from the Maumee and Michigan glaciers, and became in time the outlet for the waters flowing south from Lake Huron through Saginaw Bay before they secured an outlet through the Niagara River. This great valley served as a waterway for the waters during the withdrawal of the first ice sheet, from the fact that its channel was silted up like all other great stream valleys during the Champlain epoch or age of depression, and was never re-excavated to any extent, and remains to-day a filled valley. It probably conveyed the waters during the advance of the last ice sheet, but soon after the sheet began to withdraw the waters found an outlet into Lake Michigan, leaving the Kankakee Valley at the point where South Bend now lies, through the bed of its largest tributary, which will be described later on. The Kankakee Valley extends from a point in Illinois where the present Kankakee River and the Desplaines unite, taking a northeasterly course through Illinois, Indiana and Michigan, to the watershed between the streams