

NOTES ON AREAL GEOLOGY OF JASPER COUNTY,
INDIANA.

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In the course of Soil Survey work the field men "pick up" more or less information about the geology of their area, although it is now generally recognized that the formations may not determine soil types. However, the areal distribution of groups, associations or patterns of soil types may often be correlated with geologic units. Therefore a geologic map or recognition of geologic differences should help a soil man to locate soils, and conversely, a soil map may bring out geological features previously unrecorded or which have not been worked out in detail. Soil men seldom have the knowledge or time to study deeply such questions as fossils or age of formations, but generally observe land forms and dominant lithologic nature of the surface materials. Often some soil feature recorded on the map will gradually reveal a pattern which will explain the accumulation of the geologic materials.

Leverett's glacial map of Indiana is the most detailed work we have seen covering Jasper County, and several maps in the Handbook of Indiana Geology show the underlying rocks of the area.

Although the bed rock is too deeply covered by drift to be seen in the northern part of Jasper County, in the southern portion there are several places where it out-crops in the beds or valleys of streams, or comes within a few feet of the surface of the plains. The most noteworthy feature observed is a chain of knolls where fine-grained sandstone (presumably Knobstone) is found within two or three feet of the surface. This thinly glaciated remnant of a ridge extends along a line passing through Fountain Park and Pleasant Ridge. Our observations of dark shale in the southeastern corner of the county and limestone around Rensselaer simply checks the published maps. Leverett's map showing average depth of drift can be improved by showing rock at less than 25 feet along the Pinkamink, and probably a slightly greater depth along the Big Slough.

The surface in the northern third of the county consists chiefly of rather uniform sandy lacustrine deposits. This has been reworked by wind into dunes of uniform fine sand. The broad dune belts tend to parallel the Kankakee, with marshy flats between. The main axes of individual dunes generally point slightly east of north, with steep faces on the northeast, east and southeast of a crescent-shaped border, but with gently sloping, irregularly tongued edges on the west. Some dunes reach an estimated height of 50 feet. In places the plains are dotted with small distinct, oval sand mounds. There are no deep depressions or channels in this section, and no distinct beaches anywhere in the county comparable to those of Glacial Lake Chicago in northern Lake

County. Conditions in Milroy Township are much like those in the northern part of the county.

The terminal moraines north of Rensselaer were found as mapped by Leverett except for details. The northeastern extension becomes disjointed and indistinct as it nears the Pulaski County line.

The belt of ground moraine just north of the terminal moraines is mild in relief, but pitted with a myriad of tiny depressions and traversed by several distinct glacial drainage channels. While the till is composed largely of clays, it is evident that the surface has been influenced by sands drifting from the sandy marsh lands. Along this border the till seems to sink gradually below the lacustrine deposits which were carried by water which filled swales between low till knolls. The same sands even covered some of the higher till through the action of creeping dunes which in effect extended the laked area. In this same transitional zone are found the largest and most numerous muck areas representing extinct lakes or marshes which were artificially drained. The Newland Marsh occupies a comparatively deep basin which seems to have had two outlets through the moraine to the south. The eastern outlet may have discharged waters towards the Monon Creek in Pulaski County while the western gap is followed by the Pinkamink. There is also a distinct glacial channel along the Iroquois River like the one shown by Leverett along Curtis Creek.

A belt about four miles wide across the south end of Jasper County consists of smooth ground moraine composed of heavy, sand-free materials, but bounded on the north by a more or less continuous low sandy belt. This sand ridge was mapped as a beach, with lake clays north of it along the Newton County line and sandier lake deposits extending north to a ridge south of Rensselaer which is also mapped as a beach. The lake clays are not very accurately located on Leverett's map as the southeastern point is quite sandy, and the clays extend up to Iroquois Valley at least to Rensselaer, and are even found south of the moraine almost to Francesville. Throughout Leverett's "ground moraine" east of Rensselaer there are some boulders and "till-billow" topography, but there is much evidence of assortment and stratification, as well as topography suggesting lake beds. Some knolls of till or of thinly covered bed rock rise from the plain, as is the case at Pleasant Ridge. There are old abandoned channels to show where the Pinkamink and Iroquois have meandered over the face of this plain.

The "beach" ridge passing south of Rensselaer towards McCoysburg resembles an esker at least in its western development. Here several gravel pits show irregularly assorted and stratified gravels. There is also an esker-like chain of gravelly ridges along the glacial channel west of Aix. These include the only important gravel deposits observed in the county although ditches through low ground sometimes reveal gravel pockets.

In conclusion it may be noted that Leverett's description in Monograph LIII gives many details not shown on his map. The Soil Survey map of Jasper County should be helpful to anyone trying to solve the interesting geological problems found in this region.