It may prove a matter of interest to some, in another generation, to have this line traced with even this much definiteness, although, of course, it has not been given with the entire accuracy of a surveyor's field notes; for the drying up of water courses and the drainage by means of large ditches have already almost consigned to oblivion the names and the winding beds of some of the small streams that were well known to the Illinois and Indiana pioneers.

Some Notice of Streams, Springs, Wells and Sand Ridges in Lake County, Indiana. By T. H. Ball.

Some of the natural features of Lake County, Indiana, are rather peculiar, and are quite surely of interest to students of physical geography.

Bounded on the north by Lake Michigan, on the west by Illinois, on the south by the Kankakee River, if the waters of Lake Michigan ever passed southward into the Mississippi and the Mexican Gulf, as some suppose, the outflow was quite surely over a part of what is now Lake County.

Of the two most southern points of the Lake Michigan basin, as stated in a former paper, one is in Lake County, eighteen miles south of Lake Michigan, and the other is distant about fifteen miles, almost exactly west, not far from the Illinois line.

North of the water shed the beds of the streams have an easterly and westerly direction mainly, or northwesterly and northeasterly, while south of this line the streams flow mainly southward. The Calumet, the largest northern stream, is quite peculiar in this respect, that it flows across the county nearly twice, one stream known as the Little, the other as the Grand Calumet. The windings of the bed of Deep River, the second in size, are quite remarkable, and this stream, for some two miles of its course, flows due north.

While not a region of brooks, there are, nevertheless, in this county, some interesting and remarkable springs, about twenty in number, that are quite well known. Three of these are near Crown Point, and in the Deep River Valley. One has excellent, healthful, mineral properties, and one will furnish water sufficient, so its owner believed, to supply the wants of a thousand head of cattle each day. A fourth of these springs is near Creston, in the Cedar Creek Valley, affording a large amount of water, and covering several square yards of surface. A fifth one, furnishing quite a flow of water, is on the west side of Red Cedar Lake, north of Paisley, at the base of the low bluff. The sixth is on the east side

of the lake, south of the Sigler hotel, some rods out from the bluff, and once covered with the lake water, and the seventh is still covered by the lake water, in the northeast part of the lake, its existence ascertained by bathers, or divers, on account of the change in temperature of the water. Others like it doubtless feed the lake. The eighth to be mentioned here is in the east part of the town of Lowell, in the Cedar Creek Valley, the feeder of a beautiful little fish pond. The ninth, and last, to be specially mentioned, and surely not the least, was known in the early settlement of the county as the Mound Spring, or Springs. These springs, forming quite a stream called Spring Run, are in the prairie, two miles east of the Lowell mill pond, and a mile east of Pleasant Grove. From these springs water was hauled in barrels for three or four years to supply many families of early settlers.

Other fine springs are in Cedar Creek and Eagle Creek townships and along the West Creek Valley, nearly all being lowland springs and furnishing excellent water.

At LeRoy, near the water-shed, there is a well called artesian, sixty-two feet in depth, which is an artificial spring. The water is excellent. There is another like it a mile east of Crown Point in the Deep River Valley, near the river bed, eighty-five feet in depth.

At Hammond, in the Grand Calumet lowland, are three true artesian wells eighteen hundred feet in depth. An effort was made to obtain one on the public square at Crown Point, but after going through 16 feet of earth and clay, 100 of quicksand, 25 of blue clay, 112 of slate and shale, 667 of blue limestone streaked with pure white sand rock, brown sand rock and fine gravel of different colors, and into so-called Trenton rock, in all 3,100 feet, the effort was abandoned. No rising water found.

The sand layers and ridges of the county form an interesting study. The shore of Lake Michigan is all sand, and this sand, generally in ridges, some massive, some low, running about parallel with the shore line, with marshes and swales intervening and some swamps extend to the Little Calumet, with an average width of seven miles. Some of this sand is quite white, some yellowish. South of the Calumet a ridge of sand extends across the county passing out into Illinois for several miles at Lansing, and leaving the county on the east near Hobart. This ridge varies in width, being twenty rods and then less and then more.

The crest is in some places thirty or more feet high. Its direction is nearly east and west. South of it, on the west side of the county, is yet another ridge with a base about as broad and a crest as high, commencing at Dyer on the State

line fifteen miles south of the Illinois and Indiana corner-stone, and passing eastward five miles and three-quarters, then turning northward, taking in the town of Griffith and becoming much broader, it bears northeast and connects with the other ridge near Ross, half way across the county. This ridge seems to have been once washed by Lake Michigan's "proud waves." South of these main ridges and large sand barriers are four special sand banks or small ridges that are worth inspection. One is three miles west of the north end of Red Cedar Lake, a large bank on the West Creek Bluff out of which a few years ago a number of human skeletons were taken. The second is on the northeast shore of that lake, where, also, human skeletons, some twenty in number, were taken out in 1880, and where is now a known, undisturbed Indian burial ground. The third is one mile and a half west of Crown Point, near one of the head branches of Deep River. It is known as the Beaver Dam and is near a large marsh. The fourth is three miles and a half east of Crown Point, near one branch of Deep River. In the north part of Crown Point sand comes within a few feet of the surface, but some prairie soil now lies over it.

The immense bed of sand over the Kankakee marsh region, some five miles in width, is covered by several feet of muck. Unlike the deep white and yellowish sand of Lake Michigan, this marsh sand makes excellent roadbeds, five, north and south, marsh roads having been made with it.

No time now remains for noticing what these few facts indicate in regard to the physical conditions here somewhere back in the mighty past.

Account of a Morainal Stone Quarry of Upper Silurian Limestone near Richmond.

That bowlders, or rock fragments in some form are to be found in the track of a glacier, is one of the most familiar of phenomena. From Maine to Minnesota, and beyond, these fragments are in a direction southerly, with greater or less deviation, from the rock masses to which they previously belonged. Lines of boulders, pebbles, sand and rock-paste are strung along or spread in the course of the ice sheet; granite from granite quarries, gneiss from gneiss beds, quartz from quartz veins, conglomerate from conglomerates, copper from copper deposits, and so on from wherever they were formed in place.

But that an acre, more or less, of stratified rock should be grasped, *en masse* in the great ice palm and dragged or shoved for miles is not so common.