

THE HEADWATERS OF THE TIPPECANOE RIVER.

BY J. T. SCOVELL.

The Wabash is the great river of Indiana. It rises in Ohio, flows westerly across Indiana, then southerly along the western boundary of the State into the Ohio River. The Tippecanoe River is the chief tributary of the Wabash from the north.

The Tippecanoe has its sources in two groups of lakes situated in the southwestern part of Noble County and in the northern part of Whitley County, Indiana.

Crane Lake and Crooked Lake, through short outlets, flow into Big or Tippecanoe Lake. Goose Lake, New Lake and Old Lake flow into Loon Lake. The outlet of Tippecanoe Lake flows westerly and northerly about two miles, where it joins the outlet of Loon Lake, forming Tippecanoe River. This stream flows northwesterly about five miles into Smalley Lake, and thence westerly $1\frac{1}{2}$ miles into Baughner Lake, thence south of west through marshes and ponds $1\frac{1}{2}$ miles into a mill-pond, called "the Dam;" thence northwesterly through Kaiser Lake, the Backwater and the Channel about $3\frac{1}{2}$ miles into Boydstone Lake, in the eastern part of Kosciusko County; thence westerly about two miles into Tippecanoe Lake, of Kosciusko County.

Through the greater part of this distance there is quite a distinct valley. It varies greatly in width and in the height and steepness of its bluffs. This valley, these lakes and ponds, the marshes and connecting streams are in or on a mass of glacial materials that was probably deposited from the Erie Lobe of the continental ice sheet. These materials help to form what Frank Leverett calls the Mississinewa Moraine. This moraine extends from White County northwesterly to Steuben County. It covers Noble County and large parts of Steuben, Lagrange, Dekalb, Whitley, Kosciusko, Fulton, Wabash, Miami, Cass and White counties. It includes the northern portion of Dr. C. R. Dryer's Mississinewa—Eel Moraine.

Dr. Dryer says "it is an irregular, variously undulating pile of clay, sand, gravel and boulders, with a total thickness of from 200 to 485 feet.

Its topography defies verbal description, but may be included under a few general types. The greater part of the area may be designated as *crumpled*. The ridges have no particular direction, their tops are broad and slopes gentle, yet there is very little level ground. This type passes by insensible gradations into the *corrugated*, in which the ridges are steeper, sharper and arranged in somewhat parallel lines. Similar features much exaggerated produce what may be called *gouged* or chasmed regions. The surface is entirely occupied by deep, irregular, elongated valleys with narrow, sharp, winding ridges between, all in indescribable confusion, and everywhere ponds and swamps, marshes and lakes." The greater part of the lakes of Indiana are in this moraine. The Pigeon, Fawn, and Elkhart rivers drain a large section of this moraine into the St. Joseph of Lake Michigan. Cedar Creek drains a small portion into the St. Joseph of Lake Erie; while the Eel and Tippecanoe rivers drain the balance into the Wabash.

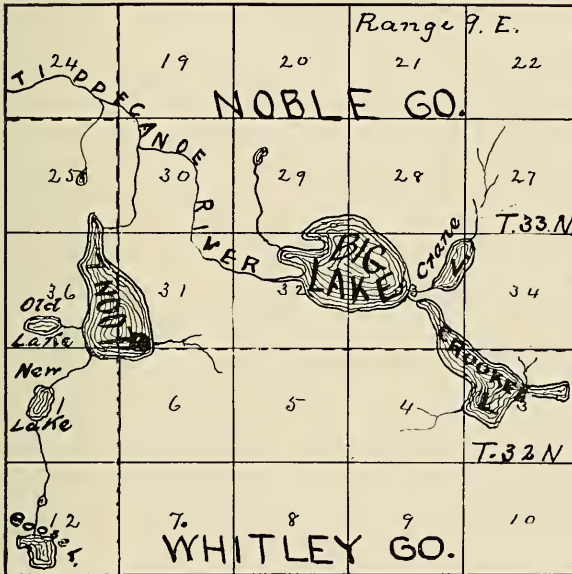
CRANE LAKE.

Crane Lake, 30 to 35 acres in extent, lies mainly in the N. E. $\frac{1}{4}$ of Section 33, Town 33 north, Range 9 east, Noble County, Ind. It is nearly a half mile long from N. E. to S. W. and about 40 rods wide. It is surrounded by marsh and swamp on all sides. Its chief tributary is a little stream about a mile long from the northeast, which drains the W. $\frac{1}{2}$ of Section 27. Its outlet is by a ditch across a swamp westerly about $\frac{1}{4}$ of a mile into Big Lake. The banks and surrounding regions are not more than ten feet above the water of the lake and before ditching they were probably not more than four feet above the water. The bottom is of soft mud and the slopes of the bed are rather abrupt, except in the southwest. Soundings at intervals of about 100 feet, commencing on the northeast, were as follows: 50 feet out, 15 feet deep; 150 feet out, 19 feet; then 15, 20, 24, 26, 32, 32, 30, 23, 26, 20, 19, 19, 19, 18, 17, 15, 10, 10, 10, 10, 10 feet, and 1 foot in the outlet ditch.

CROOKED LAKE.

The eastern extremity of Crooked Lake is in the southeast corner of the N. E. $\frac{1}{4}$ Section 3, T. 32 N., Whitley County, Ind. It extends northwesterly about $1\frac{1}{2}$ miles into the S. E. $\frac{1}{4}$ Section 33, Noble County, and has an area of about 300 acres. A ridge about $\frac{1}{4}$ mile wide and 18 feet high divides the east end of Crooked Lake from Cedar Lake which drains into Eel River. About the northern part of the lake there is considerable

low, swampy land, and the country back of the swamp rises scarcely ten feet above the lake. Farther south clay hills rise abruptly to an elevation of 25 or 30 feet on both sides of the lake. The road running N. and S. east of the lake crosses five massive clay ridges trending east and west within a mile, each rising 30 feet or more above the lakes. There are three small islands and considerable shallow water in the southwestern part of the lake and the northern



part is rather shallow, but fully one-half the area is covered with deep water. The area drained into the lake is very narrow. I saw only one inlet and that was short and small. Soundings, at intervals of about 80 feet, commencing on the east and following the axis of the lake, were as follows: 24, 30, 30, 30, 30, 36, 42, 36, 36, 30, 24, 21, 18, 9, 6, 4, 4, 6, 6, 18, 21, 27, 33, 39, 45, 45, 45, 45, 39, 42, 60, 75, 81, 81, 84, 87, 90, 95, 96, 102, 102, 102, 105, 106, 106, 105, 105, 106, 105, 105, 105, 105, 96, 93, 93, 96, 99, 93, 81, 81, 81, 96, 99, 100, 99, 96, 99, 84, 75, 54, 42, 21, 27, 30, 42, 45, 45, 48, 45, 42, 36, 30, 27, 27, 27, 30, 30, 27, 27, 21, 15, 12, 12, 12, and 4 feet among the lily pads near shore.

Going east on the county line, at intervals of 160 feet, I found water 66, 96, 96, and 66 feet deep.

The lake is well stocked with fish—bass, bluegills, perch, grass-pike, and others. Under much of the shallow water there is an abundance of workable marl.

TIPPECANOE LAKE, OR BIG LAKE, NOBLE COUNTY.

This lake occupies parts of sections 28, 29, 32 and 33, Town. 33 N., Range 9 east. It formerly had an area of about 400 acres, but a ditch has lowered the water about 7 feet and reduced the area to about 300 acres.

Before ditching, fully one-half the area was less than 10 feet deep. There is still considerable shallow water in the southeast and southwest portions of the lake, but much the greater part of the area is deep water. The bluffs are low, not more than 10 to 15 feet above the water. The ditching caused the destruction of a great mass of vegetation, and so changed the environment of another great body of plant life that it will be many years before the vegetation can adjust itself to the changed conditions and reach a stable equilibrium. At its present level the lake cannot support as much vegetation as formerly. The lake is famous for the quantities of fish found in its waters, but they are not as plentiful as formerly. On the southwest we found water 30, 35, 46, 47, and 36 feet deep, and going northwesterly along the axis of the lake at intervals of about 200 feet we found water 50, 65, 72, 65, 50 and 38 feet deep. Deeper water was claimed, but we could not find it. There is considerable marl in the lake bed, but it is not a workable deposit.

GOOSE LAKE.

This lake is in the southwest $\frac{1}{4}$, section 12, Town 32 N., Range 8 E., Troy Township, Whitley County. It has an area of about 150 acres. It is surrounded by considerable swamp and low land, in which are several small ponds. Back of these are several morainic hills rising from 30 to 50 feet above the surface of the lake. The slopes of the lake bed are rather steep and the water is in general quite deep. The lake has been lowered about 6 feet by a ditch. This drained adjacent swamps but lessened the area of the lake by only a few acres. Fishing is said to be fairly good. Commencing on the south and going northerly and westerly at intervals of about 100 feet we found the depth as follows: 100 feet out, 17, 20, 29, 30, 34, 34, 34, 37, 37, 41, 50, 54, 57, 62, 63, 62, and 61 feet; westerly,

53, 37, 37, 30, 31, 35, 38, 37, 36, 42, 50, 45, 37, 28 and 14 feet about 75 feet to shore. In the western part of the lake south of the line of soundings just given we found water 45, 57, 62, 54, 35, and 25 feet to south shore. The outlet ditch runs northerly from the northwest part of the lake, into Dollar Lake, thence into New Lake.

NEW LAKE.

New Lake, having an area of about 60 acres, is situated near the center section 1, Troy Township, about $1\frac{1}{2}$ miles north of Goose Lake. It is surrounded by low, gently sloping hills, and is bordered on the east by broad areas of *Scirpus americana* and *Scirpus lacustris*. Commencing at the southeast and going northerly at intervals of about 100 feet, we found soundings as follows: 15, 12, 20, 39, 30, 29, 30, 31, 38, 43, 38, 34, 26, 23, 21, 22, 23, 26, 36, 37, 34, 31, 21, and 6 feet among the lily pads near shore. The outlet is by a ditch northeasterly about half a mile into Loon Lake.

OLD LAKE.

Old Lake, about the same size as New Lake, is situated about a half mile north of New Lake in the S. W. $\frac{1}{4}$, Sec. 36, Town. 33 north, Range 8 east, Etna Township, Whitley County. The shores are low and swampy or marshy. Considerable areas of swamp land to the west drain into Old Lake. The outlet is easterly a half mile or so into Loon Lake. Soundings at intervals of about 100 feet, going easterly, as follows: 25 feet out, 12, 30, 31, 31, 31, 27, 27, 32, 40, 42, 45, 45, 43, 37, 34, 30, 28, 25, 21, and 15 feet 100 feet to shore.

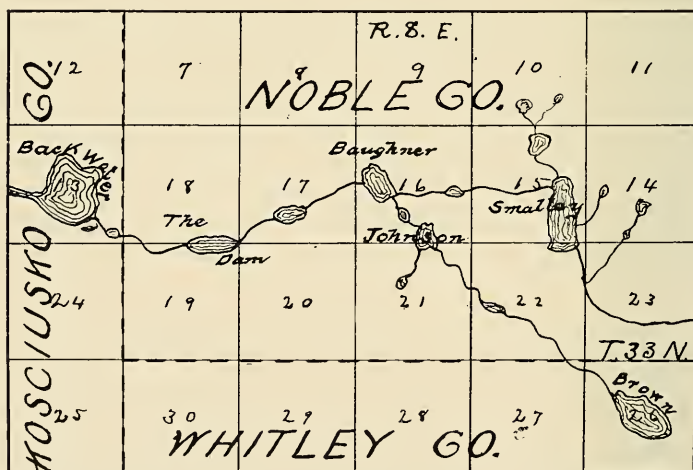
LOON LAKE.

Loon Lake lies mainly in the east half of Sec. 36, Etna Township, Whitley County, and in the west half of Sec. 31, Noble Township, Noble County. It has an area of about 240 acres. A drainage ditch lowered the level of the lake about 7 feet, greatly lessening the area, and reducing the proportion of shallow water. Lowering the lake uncovered large areas of muck, marl and sand. Some of the muck is well covered with vegetation, but the sand and marl are still quite barren after six years of exposure. There is considerable marsh land and swamp in the west, but on the south, east and north there are low bluffs rising 10 to 15 feet above the lake. To the northwest of the lake there are some hills that rise fifty feet above the lake. Commencing at the south and working northerly along the axis of the lake at intervals of about 136 feet we found depths as follows:

136 feet out, 18, 42, 39, 24, 39, 48, 57, 66, 66, 81, 75, 63, 51, 36, 33, 54, 36, 30, 21, 18, 21, 33, 36, 39, 36, 36, 33, 24, 27, 39, 42, 48, 48, 36, 27, 27, 33, 33, 18, and 2 feet among the lily pads. Going north from island about 40 rods east of the above line we found, 150 feet out, 15 feet, and at intervals of 136 feet, 36, 48, 54, 54, 33, 57, 63, 60, 60, 57, 39, 27, 24, 27, 33, 36, 51, 54, 45, 33, 33, and 18 feet 136 feet to shore. Going westerly from the island, at intervals of about 136 feet, as follows: 21, 24, 27, 39, and 57 feet, near station 7 on first line, 60, 93, 93, 93, 93, 81, and 48 feet, the water shoaling rapidly to the west.

The soundings show a large area of deep water and a very uneven bed. Fishing is fairly good but not as good as before the lake was drained.

The outlet flows from near the north end of the lake easterly a few rods, then north a half mile or so, where it joins the outlet of Tippecanoe Lake, forming Tippecanoe River, which flows westerly into Smalley Lake, draining on the way considerable areas of marsh and swamp.



DOLLAR LAKE.

This lake, having an area of 12 to 15 acres, is situated near the center of Sec. 25, a little northwest of Loon Lake. Hills rise abruptly from the shore of this lake to an elevation of about 50 feet. A narrow zone of marsh surrounds the lake. The slopes of the lake bed are steep. The

soundings were 26, 30, 37, 44, and 51 feet. The water was reported much deeper, but we found only 51 feet. The outlet is northerly into the river in the S. E. $\frac{1}{4}$ Sec. 24.

SMALLEY LAKE.

Smalley Lake, having an area of about 80 acres, lies mainly in the S. E. $\frac{1}{4}$ Sec. 15, extending a little way into the N. E. $\frac{1}{4}$ Sec. 22, Washington Township, Noble County. There is considerable low land on the south and east, with low bluffs 12 to 20 feet on the west and northwest. A little stream drains three small ponds and some marsh land into the northern part of the lake and two ponds with some low land on the east are drained into the lake or the river just south of the lake. Commencing at the inlet and going northwesterly we found at intervals of about 100 feet water as follows: In mouth of inlet, 1 foot; 100 feet out, 8, 16, 28, 35, 37, 37, 38, 38, 39, 39, 39, 40, 40, 39, 39, 38, 38, 38, 39, 40, 42, 38, 32, 21, 25, 25, 20, and 12 feet; 3 feet near the head of the outlet, water in the outlet about 8 inches deep and 10 feet wide. From Smalley Lake near the center of Sec. 15 the river flows westerly about $1\frac{1}{2}$ miles into Baughner Lake, draining on the way a wide tract of low swamp land and Gallup's pond or lake, having an area of about three acres, near the center of Sec. 16. It is reported to be shallow.

BAUGHNER LAKE.

This lake is located just west of the center of Sec. 16 and has an area of about 30 acres. We did not make any soundings in this lake. It is reported as rather shallow, not more than 20 to 25 feet. Baughner Lake receives considerable water from the southeast through Johnson Lake and its tributaries.

BROWN LAKE.

Brown Lake is in the center of section 26, Town. 33 N., Range 8 E. It has an area of about 30 acres. It is somewhat elliptical in form, being longer from southeast to northwest. Commencing on the southeast, at intervals of about 100 feet, we found water as follows: 100 feet out, 21, 29, 39, 47, 48, 44, 46, 46, 46, 42, 37, 31, 29, 26, and 21 feet, and 6 feet in the lily pads about 20 feet from shore. There is some swamp land to the southeast and considerable marsh land on the north, but the zone of wet land is narrow on the south. The slopes are gentle on all sides, the highlands rising to 20 to 30 feet above the lake. The slopes of the lake bed seemed to be abrupt on all sides. The lake is drained northwesterly by

a ditch into McDonald Lake or pond, in the western central part of Sec. 22, thence northwesterly into Johnson Lake, on the north line of Sec. 21, which has an area of about 10 acres. Water is reported deep, 30 to 35 feet. Baker Lake or pond, a little northwest of the center of Sec. 21, drains into Johnson Lake. The outlet of this lake flows northwesterly through a pond and surrounding marsh into Baughner Lake. The outlet of Brown Lake drains a wide area of land, but there is considerable wet land along this valley that the present ditch does not drain. Two other ponds in Sec. 16 are drained into Baughner Lake. From this lake the river runs a little south of west about $1\frac{1}{2}$ miles into "the Dam," a pond on the line between sections 18 and 19, so that it is in the S. E. $\frac{1}{4}$ Sec. 18 and N. E. $\frac{1}{4}$ Sec. 19. It has an area of about 15 acres and was formed by a dam about 10 feet high. It is shallow and abounds with vegetation. From "the Dam" the river flows westerly and northwesterly through Keiser Lake, small and shallow, into the Backwater, a shallow body of water occupying a large part of the south half of Sec. 13, Town. 33 N., Range 7 W., Kosciusko County; thence northwesterly through "the channel" into Boydstone or Webster Lake, in sections 10, 11, 12, 14 and 15, Tippecanoe Township, Kosciusko County, Ind.