

## ICE FORMATION LAKE WAWASEE. BY J. P. DOLAN.

In the season of 1895-6 there were two periods of ice formation, one beginning December 3 and terminating December 20; the other commencing December 31, 1895, and ending March 29, 1896. The first was fully described by Mr. D. C. Ridgley in his excellent report last year on the formation of ice, its effects on the shore line, and other kindred subjects relating to it, so that there is but little left to be said on these subjects in this paper.

From December 31 the ice continued to thicken till March 13, when the maximum thickness of fourteen (14) inches was attained, although there were brief periods of slight diminution, and, besides, the last three inches were additions rather than regular growth, being made up of partly melted snows.

After the 13th the disintegration was rapid. The rate of decrease from day to day, as well as the increase, is shown in the accompanying tables.

South and southwest winds prevailed from 24th to 29th, which, together with temperature ranging from 33° to 62°, swept the lake clear of all ice just four days later than the previous year.

March 8, 1896, the effects of the expansion of the ice were seen at their maximum. Ice along the shore at Pickwick, Kale Island, Epert's Vawter Park, Sharp's Bay and Wawasee a prominent ridge was pushed up, reaching in many places a height of six feet.

The force was most noticeable along the shore at Epert's, where for two hundred feet riprapping had been done to protect the low sandy and gravelly embankments. This was all pushed back several feet and many of the largest boulders lifted clear over the top of the five-foot ridge.

Across the entrance to the Gordonierre the effects were also marked, and again at Kale Island, though in less degree.

Photographs of these places were secured at the time.

Prior to 1895 the largest ice cracks observed were not more than three and one-half inches wide.

On January 18, 1896, a well marked, clean cut crevice ten inches wide and three hundred feet long was seen west of Blk. Stump Pt. The same day another four and one-half inches wide and five hundred and fifty feet long was observed northwest of the ten-inch crack just mentioned.

There was no suggestion of conformity to shore line in either of them; neither was there any similarity in their trends.

The only instance in which the cracks bore any seeming relation to the shore line was on lower Wawasee or Syracuse Lake, where a series of six wavy cracks

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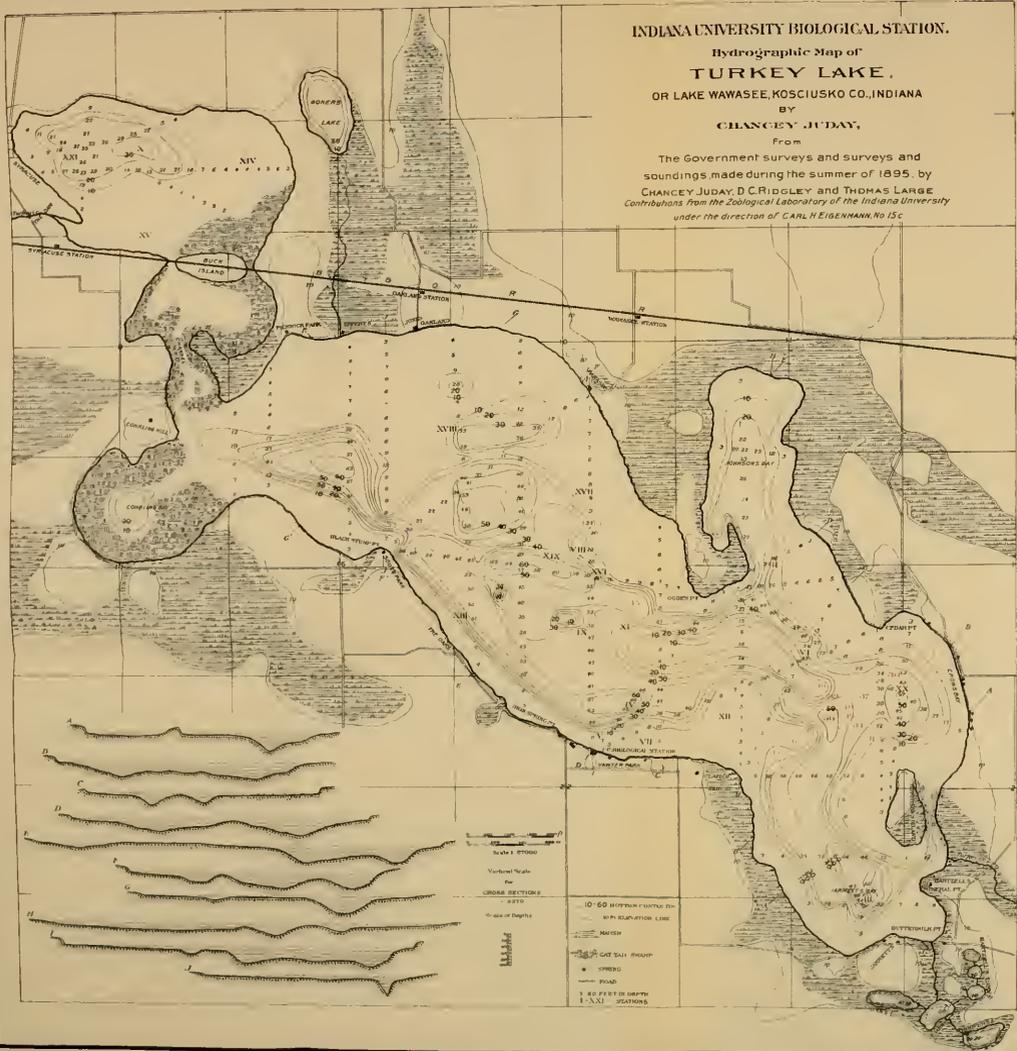
Hydrographic Map of  
**TURKEY LAKE.**

OR LAKE WAWASEE, KOSCIUSKO CO., INDIANA

BY  
CHANCEY JUDAY,

From

The Government surveys and surveys and soundings made during the summer of 1895, by  
CHANCEY JUDAY, D. C. RIDGLEY, and THOMAS LARGE,  
Contributors from the Zoological Laboratory of the Indiana University  
under the direction of CARL H. EIGENMANN, No. 15 C.



three-eighths of an inch wide, about twelve inches apart and one hundred feet long, were formed west of Weaver's Point.

In some instances the cracks seemed to be formed by an impact at right angles to the field as if some subaqueous cyclops had hurled a thunderbolt against the frozen mass and sent fractures in all directions from this point as center.

Off the Pickwick shore covering a large area the cracks were so numerous as to suggest a fine intricate mosaic. This will to some extent explain the readiness with which ice eight inches thick was removed by the wind and made to resemble slush in a few hours after it begins to move.

January 27, 1896, there occurred an unusual cracking of the ice, lasting all day and far into the night. A constant bursting, crashing and booming pervaded the whole lake. The noises suggested the crunching of heavy falling timbers and the hoarse roar of distant cannonading. The day was clear, sun shining most of the time, with temperature 26 to 34 degrees. The next day, with temperature 30 to 32, and cloudy, the lake was as silent as a cemetery.

After several days' moderately high temperature, during the last week of February the ice was well honeycombed. March 1st the temperature lowered to 26, accompanied by a high north wind and snow. The drifting snow was driven into the cells of the ice, making the whole field resemble a fine piece of *öolite*.

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#### THE PLANKTON OF TURKEY LAKE.\* BY CHANCEY JUDAY.

The data for this preliminary report were collected during July and August, 1896, at Indiana University Biological Station. To Dr. C. H. Eigenmann, Director of the Biological Station, I am indebted for the plan of the net and for many helpful suggestions.

Hensen, who is the author of the term "plankton," applied this term to all plants and animals which are found floating free and which are carried about involuntarily by winds, waves, tides or currents. Haeckel extended the application so as to include all swimming and floating organisms. At present, however, those organisms that are not subject to the above-named physical forces are not considered plankton, and they shall not be dealt with as such in this report.

It has been demonstrated that a part of the plankton, the crustacea, furnishes nearly all the food of our most important fishes at a very critical period of their lives, that is, while they are very young fry (Forbes, 1889). This makes plankton a very important factor in the environment of these fishes. Its scarcity or abundance and the relative amount of crustacea will have much influence upon the

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