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A Recent Visit to Lake Itasca

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From whatever point we consider these structures, they are highly curious and interesting and at some time when more information is available, a more definite theory of their origin may be possible. At present they remain something of a mystery in spite of their close relation to things about which we think we have knowledge.

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[*Paper HH.*]

A RECENT VISIT TO LAKE ITASCA.—*By Warren Upham.*

Far in the northern forest of Minnesota, about a hundred and ninety miles north-northwest from Minneapolis and St. Paul, there lies a little lake which probably has become known, at least by name, to as many people throughout all civilized lands, as any lake of the whole world. Its pre-eminence comes from its being the head of the great river Mississippi, which first flows out from it fourteen miles northward, more nearly thirty miles by the meandering course of the river, and thence flows to the east through a succession of small and large lakes, and afterward to the south through the central part of this state and along its southeast boundary and onward thousands of miles to the Gulf. In size, Itasca belongs to the middle class of the ten thousand lakes and lakelets of Minnesota, its length from south to north being a little more than three miles, with a branch extending from its center about two miles to the east and southeast. It thus consists of three parts, which are called its Southwest, Southeast and North arms; and the width of each of these varies from about a quarter to a half of a mile. Its water is deep and clear, having a maximum depth, according to soundings by Mr. J. V. Brower, of about eighty feet in the Southeast arm, while the main lake, consisting of the Southwest and North arms, is found by him to be shallow at each end, thence gradually deepening to a maximum of about forty feet between Schoolcraft island and Bear point, which projects into the lake from the north at the junction of the Southeast arm. Its shores are mainly well wooded, and rise steeply from the water's edge, excepting small tracts of bog or tamarack swamps, through which most of the tributaries of Itasca enter the lake.

The first expedition seeking to reach the head of the Mississippi was that of General Cass in 1820, penetrating the northern

forest to Cass lake, which seems to have been regarded for some years afterward as the principal source of the river. A few years later, in 1823, Beltrami traversed the country between the Red River valley and the upper Mississippi, crossing Red lake and entering the Mississippi basin above Cass lake by way of the Turtle lake and river, which, from his sentimental and interesting narrative published as letters to a lady named Julia, are called the Julian sources of the Mississippi. But another stream, somewhat larger than the Turtle river, was known to come from the west and southwest, and in 1832 Schoolcraft, under instructions from the government, conducted an expedition up that stream, which has ever since been rightly considered the main Mississippi, to the lake at its head, which the Indians called Omushkos, that is, Elk lake, but which Schoolcraft then named Itasca, from the Latin words *veritas*, truth, and *caput*, head, the name being made by writing the words together and cutting off, like Procrustes, the first and last syllables. Four years later, in 1836, Nicollet more fully explored this lake, and claimed that its largest tributary, the creek or brook flowing into the extremity of its Southwest arm, is "truly the infant Mississippi."

Here the question rested until Glazier in 1881, six years after the Government sectional survey of that area, made his expedition to Itasca and to the lake in Section 22, Town 143, Range 36, called by the Government survey plats Elk lake, lying close southeast of the Southwest arm of Itasca, and thence voyaged in a birch canoe to the mouth of the Mississippi. His ridiculous re-naming of Elk lake in his subsequently published book and maps has anew directed the attention of geographers to the determination of the source of the Mississippi. In October, 1886, Mr. Hopewell Clarke of Minneapolis, for Ivison, Blakeman, Taylor & Co., publishers, New York, made a reconnoissance of lake Itasca and its basin, occupying five days. His report, which appeared in Science for December 24, 1886, fully sustains the work and conclusion of Nicollet, whose admirable map of the Northwest, comprising Minnesota and adjacent states, published about fifty years ago, when the first settlement at Saint Paul was beginning to be made, cannot receive too high praise. A far more detailed examination of the Itasca basin has since been made by Mr. J. V. Brower, for the Minnesota Historical Society, chiefly during last autumn and spring. and his report, illustrated by maps and photographs, will soon be pub-

lished by that society. He also agrees with Nicollet and would apply the name Mississippi river to the largest tributary of lake Itasca, which Mr. Clarke calls Nicollet's creek. My own preference, and I think also that of the people of Park Rapids and the whole Itascan region, is for the latter name, leaving lake Itasca to be regarded as the true head of the Mississippi, in accordance with the etymology of its name.

With Mr. George M. Carson, of Osage in northeastern Becker county, a nephew of the famous guide and scout, Kit Carson, the friend and companion of Fremont, I started at sunrise Wednesday morning, September 18, 1889, to visit lake Itasca and the northwardly flowing portion of the Mississippi to Section 28, Town 146, Range 35, where the river begins to take a generally eastward course. The purpose of my journey was to observe the character of the drift deposits of that area, and, learning that the nearest farmers are about twenty miles distant from Itasca, I availed myself of the opportunity to accompany Mr. Carson, who was going with his team and lumber wagon to carry goods to an Indian trading-post in the Section 28 mentioned, and to bring back a load of Seneca snake-root, which is dug in great quantities by the Indians. We were provided with provisions and blankets for camping out; and two days were occupied in going, one day for resting our horses at the trading-post, and two days in returning.

Our route from Osage to Itasca passed west and north of Straight lake, and through the north edge of Two Inlet lake to avoid crossing its principal inlet, the head stream of the Fish Hook river. This road is joined by that leading from Park Rapids to Itasca at a distance of about three miles northeast of Two Inlet lake, between the two fording-places of Dinner creek, which is the eastern one of the two inlets. About two miles farther north and a mile east of the Itasca road, this creek has its source in Little Man Trap lake, about two miles long, so named because its many peninsulas and tamarack swamps at the head of its bays baffle the hunter, or the "cruiser" in search of pine lands, who attempts to pass around it. A dozen miles east-southeast from this is a larger Man Trap lake, much more beset with these difficulties. From either Osage or Park Rapids, which lies ten miles farther east and is the county seat of Hubbard county, the distance by road to lake Itasca is about thirty miles; but the distance from the middle point of the road between Osage and Park Rapids, where it crosses

the line of Becker and Hubbard counties, due north to the extremity of the Southeast arm of Itasca is only nineteen miles.

Besides the generally crooked course of the road, detours from it must be made in many places to pass around large fallen trees, some of which were lordly white pines that rose to a height of one hundred feet and had withstood the storms of a century. Stumps and boulders, the latter occasionally very abundant, projecting six to eighteen inches in the wheel ruts, jounce and jolt the wagon merrily; frequent sideling places threaten to tip it over; and here and there the horses struggle through quagmires in approaching the bridges or fording-places of streams, which however at the fords have a hard and safe gravelly bed. A shaky bridge, the uppermost on the Mississippi, built of tamarack poles, carried us safely over Craig's crossing at the southeast corner of Section 26, Town 145, Range 36, seven miles due north of the mouth of Itasca, the stream there being about twenty feet wide and twelve to eighteen inches deep. It is becoming to say a good parting word for this bridge and indeed for the whole road; they shall be long remembered for their help to me in this journey, which had no mishap nor noteworthy adventure, and was blessed with the finest of sunshiny, clear and calm autumn weather.

Two or more railway surveys have crossed the Mississippi, selecting routes from the Red River valley to Duluth, at rapids of the river about two miles and five miles northeast of Craig's crossing. One of these railways is now in process of construction from Duluth to Grand Rapids on the Mississippi eighty miles east of Itasca, and its western extension will probably be built in the near future. It is also very probable that a railway will be built from the south to Park Rapids and the vicinity of Itasca. A large inducement toward these enterprises is the valuable pine timber, which occurs sparingly or in groves, sometimes covering several sections, throughout nearly the whole district of the upper Mississippi, the Clearwater river, and the basin of Red lake. When such means of travel are supplied, the beautiful lake Itasca, and probably also Cass, Winnebagoshish and Leech lakes, will be counted among our most attractive resorts for summer rest or in autumn for the capture of game and fish.

The Mississippi river at the crossing of the Saint Paul, Minneapolis & Manitoba railway survey in Section 8, Town 145, Range 35, about eleven miles distant in a direct line a little to the east of

north from the mouth of Itasca, is 1,373 feet above the sea. Between the lake and this point the river probably falls about seventy-five feet, from which estimate the elevation of lake Itasca is shown to be 1,450 feet approximately. On the east, south, and west the land rises within a distance of one to three miles from the lake to heights 100 to 250 feet above it, as determined barometrically by Mr. Clarke, or 1,550 to 1,700 feet above the sea; and the highest lakes that probably drain underground to lake Itasca, in Sections 3 and 4, Town 142, Range 36, three to four miles south of its Southwest arm, have a height of 101 feet above Itasca, as determined by levelling under Mr. Brower's direction. The highest hills enclosing the Itascan basin on the south and west have thus nearly the same altitude above the sea as the tops of the Leaf hills in southern Otter Tail county; but they lack about 300 feet from reaching the height of the Coteau des Prairies in southwestern Minnesota, and 500 or 600 feet from the highest parts of the Mesabi range and other hills in the northeast part of this state between lake Superior and the international boundary. A line drawn from Minneapolis to Winnipeg ascends gradually in the southern half of its extent from 830 feet above the sea here to about 1,600 feet at the height of land three miles south of lake Itasca, the average ascent being very nearly four feet per mile; and thence an equal rate of gradual descent falls to 757 feet above the sea at Winnipeg and 710 feet at the level of lake Winnipeg.

All the country about lake Itasca consists of the glacial and modified drift, the nearest outcrops of the bed-rocks being eastward on the Little Boy river and southward near Motley. The thickness of the drift there may be estimated between 100 and 200 feet, from comparison with the similarly drift-covered areas of the Red River valley and all western and southwestern Minnesota, including the Coteau des Prairies, where the depth to the bed-rocks is ascertained by wells. Over the preglacial surface, as it had been sculptured into hills, ridges, and valleys by stream-erosion before the Ice age, the drift is found to be spread with a somewhat uniform thickness, but it is generally increased 50 to 75 or 100 feet in its depth upon belts of specially hilly and knolly deposits, with abundant boulders, which are called terminal moraines.

One of the most distinct morainic belts of this state, denominated the Itasca moraine, extends with a width of five to ten miles from the south side of Pokegama and Leech lakes westward to

Little Man Trap lake and the southern arms of Itasca. Thence, following the height of land, it bends to the northwest and north between Itasca and the source of the Red river, and continues northward between the Upper and Lower Rice lakes to Clearwater lake, from which it passes westward along the south side of the Clearwater and Lost rivers, entering the area of the glacial lake Agassiz between Maple lake and Red lake. This is the tenth in the series of moraines in Iowa, Minnesota, and South and North Dakota, formed by the last ice-sheet that overspread this region, marking its boundaries in its maximum area, when it reached south to Des Moines, and in successive stages of halt or slight re-advance interrupting its recession.

The southern border of the Itasca moraine, where it is crossed by our road to Itasca, is called Stony Ridge. It consists of small ridges of till, trending from southeast to northwest, with very plentiful boulders, all Archæan from the northeast and north, chiefly granite and gneiss. No limestone boulders were observed by me in this journey; but in the vicinity of the White Earth Agency and about Red lake they form a considerable proportion of the drift, having been brought by glacial currents from the region of lakes Winnipeg and Manitoba. Very irregularly grouped morainic hills 50 to 100 feet high rise on each side of our road, which winds and climbs and descends over them, along a distance of about eight miles, from Stony Ridge to Mr. Peter Turnbull's claim cabin on the Southeast or Turnbull's arm of Itasca.

Many empty hollows twenty to forty feet deep are seen beside our road, being kettle holes, as they are called, well known as characteristic of morainic drift deposits. Several similar hollows, but of larger area and greater depth, contain a series of picturesque little lakes, lying east of our road, in descending order from south to north, the lowest having an outlet to lake Itasca by Mary creek. These small lakes fill depressions of the drift, and lake Itasca doubtless owes its existence to greater thickness of the drift in the valley at the mouth of the lake and for several miles down the Mississippi, rather than to greater prominence of the underlying rock there. But the great valley 100 to 200 feet deep and two to four miles wide, in which lie lake Itasca and the Mississippi northward to Craig's crossing and to its rapids over boulders in Section 8, Town 145, Range 35, also the similar but smaller valleys of the La Salle, Hennepin and Schoolcraft rivers, successively tributary

to the Mississippi from the south between lakes Itasca and Pemidji, existed as grand topographic features of the country before the glacial period, and were then occupied by streams flowing in the same northward direction as now. It is improbable, however, that Minnesota or any part of the northern states then had any considerable number of lakes, their condition in this respect having been like that now found in the southern states beyond the limit of the glacial drift.

Three species of pines occur plentifully about Itasca. Red pine, commonly but erroneously called Norway pine, constitutes perhaps three-fourths of the timber available for manufacturing lumber. This species grows seventy-five to one hundred feet in height and one and a half to two feet in diameter. In its most dense groves it is almost unmingled with other species of trees, and its reddish brown straight trunks rise forty to sixty feet to the first limbs and are so thickly set that their canopy of boughs almost excludes the sunshine. These groves have little or no underbrush, and seem prepared by nature for picnic grounds. The white pine attains a height of ninety to a hundred and twenty-five feet and a diameter of two to three or four feet. It is about a third as plentiful as the red pine, and grows on more clayey soil, either scattered or in groves, through whose tops every wind plays inimitable music. The jack pine (Pinus Banksiana, Lambert) occupies sandy and gravelly land, and is very abundant on such tracts in the Itascan district and far eastward and northward. It has a small but straight and tall trunk, sixty to eighty feet high and nine to eighteen inches in diameter at the base. This species is used for fuel; and the Indians split and prepare its long, pliant roots, called *watab*, for sewing together the strips of birch bark of their canoes.

Among the other principal forest trees and shrubs of Itasca are the common poplar or aspen, very plentiful, the large-toothed poplar, the balsam poplar, cottonwood, canoe birch, black and burr oaks, white elm, white and black ash, red and sugar maple, basswood, wild plum, bird or pin cherry, high bush cranberry, common and beaked hazel, prickly ash, moosewood, willow, and alder. In the swamps, and frequently on higher land, tamarack, black spruce and balsam fir grow in abundance, often festooned with moss.

Last June a great fire ran through the woods northeast of lake Itasca and northward to Craig's crossing, almost wholly burn-

ing up the dense young poplar growth upon thousands of acres where the ground beneath was thickly strown with the trunks of a former generation of poplars that had fallen years ago after being killed by fire. Many scattered trees and groves of red and white pines were also overrun by this fire, which was carried by the gale up the pitchy trunks and fanned into masses of flame enveloping the branching tops like hugh torches. Now these trees, scorched and blackened, with all that remains of their foliage withered, stand dead, awaiting the slow decay of many years and the ravages of wood-eating worms and insects, to lay them low. Large tracts of forest composed of many species were killed, and through their leafless branches the sun shines down on the rank young shoots and seedlings which during the past summer have sprung up to replenish the loss.

The first frost of this fall in the vicinity of Itasca was two nights before I left Osage on this trip, and on the morning when we started ice was frozen an eighth of an inch thick. Looking for the effect of these frosts on the rankly grown and still green leaves of the young oaks, basswood, and other species, I saw no immediate harm produced, except in the case of the ash shoots, whose foliage was withered, seeming to be nearly as tender to the frost as the dahlias of our gardens. Ten days later all the deciduous trees were in their brightest autumn coloring of red, yellow and russet brown.

Tall game is occasionally found in these woods. Hundreds of moose are killed every year, mostly by the Indians, but their numbers are said to be increasing and to exceed the deer, which are also plentiful. But the elk, which supplied the aboriginal name of Itasca, have retreated to the northwestern edge of Minnesota where a few are said to survive in the neighborhood of Roseau lake and river. The caribou ranges southwestward to the Rainy river, but probably not to Itasca. Among the fur-bearing animals are the black bear, lynx, wolf, mink, muskrat, skunk and otter. Beavers, which were formerly plentiful, are now wholly driven away or very rare.

This article may well close with a notice of the relationship of Itasca and Elk lakes, which has supplied the aboriginal name of the latter. Rev. J. B. Gilfillan, of White Earth, tells us that the Indians call Elk lake *Gabukegumag*, meaning "water which juts off to one side." And so this lake is outlined on Nicollet's

original map, appearing as a bay connected with Itasca by a narrow strait. During recent years the level of Itasca has fluctuated only a few inches, varying from thirteen to eight inches below Elk lake; but fifty-three years ago, when Nicollet was there, his map indicates that lake Itasca stood at least two or three feet higher than now, being raised so high that Elk lake became a part of Itasca. The method of Nicollet's exploration of Itasca was probably by a canoe trip around its entire shore, for he mapped every noteworthy tributary; and therefore his testimony of the relationship of these lakes in 1836 seems decisive. This date was only ten years after the highest known flood of the Red river, when its water rose five feet above the surface where Winnipeg is now built; and it was two years before the highest known stage of the great Laurentian lakes in 1838, when lake Erie stood six feet above its lowest recorded level, which was in the winter of 1819-20. It is also interesting to note in comparison with these high stages of the Red river, Itasca and the Laurentian lakes, that Devil's lake, in North Dakota, which has no outlet, shows evidences of having attained, about the year 1830, a level eighteen feet higher than now, reaching then to the line that limits the large and dense timber of its bordering groves. Below that line are only smaller and scattered trees, of which Captain E. E. Heerman informs me that the largest found by him had fifty-seven rings of annual growth. Within the twenty-two years since the building of Fort Totten, Devil's lake has fallen nine or ten feet; and it has fluctuated five feet under the influence of the changes in the average annual precipitation of rain and snow during the past ten years. Itasca, affected by similar changes in the average rainfall and snowfall, but having an outlet, has varied in level not more than six or eight inches since 1880.

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