TRANSACTIONS

OF THE

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WITH AN

ABSTRACT OF THE PROCEEDINGS

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is arrested by a sea wall erected by the State, to protect the canal which passes between the lake and the track of the railroad.

Seneca lake is thirty-nine miles in length, and about four miles wide, at its broadest point. The annexed sketch of the lake gives the position of the principal landing places, and the usual track of the steamboats is marked by the dotted line—the distance between each landing is as follows:

Geneva to Dresden,.....	14 miles.
Dresden to Baileytown or Ovid Landing,.....	5 do
Baileytown to Lodi Landing,.....	4 do
Lodi to Milo Landing,.....	5 do
Milo to Starkey and Dundee Landing,.....	3 do
Starkey to Big Stream Point,.....	4 do
Big Stream to Hector Falls,.....	8 do
Hector Falls to Jefferson Railroad Station,.....	3 do

The formation of the county does not admit the collection of waters on its surface in sufficient quantities to form rivers. Melting snows and the union of springs have caused waters to run for a season down the slopes of the elevated lands in the southern towns, forming precipices and ravines. The only perpetual stream in the county is the Seneca river—its waters are derived originally from the lake, and flowing in a direction about E. N. E., supply the various manufactories, mills, and machinery, with useful power at Waterloo; thence it flows on to Seneca Falls, where it is again applied to give force and motion to extensive machinery; from these falls it rolls on until it mingles with the waters of Cayuga lake, and running north, passes Montezuma; then stretching through the counties of Cayuga and Onondaga its waters join the Oswego river, falling into Lake Ontario at Oswego.

Big Creek is an unimportant stream, which receives a portion of the surface waters of Romulus, Varick, and Fayette, taking a northerly direction, parallel with the lakes, and about two miles east of Seneca lake, it falls into Seneca river at the farm of Mr. Jacob Kendig.

A rivulet of some importance and notoriety rises in the eastern part of Fayette, near the village of Canoga. The main supply issues from a pool, fifteen feet in diameter; the water is pure, leaving no sediment or deposit; pursuing its rapid course to Cayuga lake, giving power to several mills for grinding grain and sawing lumber. A curious feature of the pool is the quantity of nitrogen gas which escapes, at times giving to the water the appearance of ebullition. The spring is further noticed in the chapter on springs. This rivulet, and its locality obtains some notoriety from a tree, not far from its banks, under which the celebrated sachem Red

Jacket was born; a tree which he visited in his old age, with feelings alike honorable to his head and heart.

Lodi Creek is a stream fed from the high lands of the southern bounds of the county; when swollen with rains or melted snows, it sweeps down its shaly bed, bounding over the rapids until it reaches the farm and mills of Mr. Nicholl H. Wyckoff, where it pours over a precipice, falling into a basin about one hundred and sixty feet below. The steep and rocky sides of this glen are filled with objects of interest to the man of science, and to all who love a wild, rude scenery, clothed with verdure, ornamented with flowers of every tint, and checkered with light and shadow, as the sunbeams force their way through the dense and entangled foliage. Here and there, on the margin of this stream, are grist mills of admirable construction; their solid structure of stone, enough weather beaten to carry the marks of age, rising from groves of aged trees, might readily bring to mind the feeling of awe mingled with pleasure, which, in youthful days, would invest the lofty banks and frowning rocks with fairies, satyrs, and an elfin race: these twilight feelings, once so prevalent, are nearly blotted from the mind, by instruction and education; they have given place to thought, and reason, unceasingly occupied in objects of utility and the means of subsistence.

Cayuga lake, with its sparkling waters, washes gently the eastern shore of the county. This beautiful sheet of water is not so great in volume as Seneca lake, neither is the temperature of the water as high, which probably arises from a lesser depth of water, and the supply being derived from sources nearer to the surface of the earth than those which spring into the basin of the Seneca lake.

The annexed diagram exhibits the form of the Cayuga basin, in the direction of its length, with the depth of the water at the points indicated.

The depth of water off Springport is about twenty-five feet. At one mile south of this point, it is thirty-six feet deep; the water deepens rapidly, and between Aurora and the opposite western shore, the lead escaping the edge of the rock strata, sinks to a depth of near three hundred feet; the bluff edges of the rock frequently lead to error in sounding.

and the fact that they pass at depths beyond the heating power of the sun upon the surface, tends to make the water acquire the temperature of the rock through which it passes, which is at these depths the mean temperature of the country, and that is about 48°. This constant temperature of the fresh water passing into the lake has the effect of lowering its summer warmth, and preventing its freezing in winter.

It is a known fact that springs do exist and rise with force in the lake, but for the most part they have only been ascertained to exist at the margin. A search for springs at great depths, and a knowledge of the comparative height of the lake waters, with the fall of rain the previous season, will bring conviction to any doubting mind.

The well known spring at Canoga owes its coldness to the course above described. Its waters have travelled down the slope of the Onondaga group southward, until they reached a fissure or fault in the Seneca limestone, up which it rushes to escape on the surface. Coming from a great depth, it has the mean temperature of the country.

This most interesting spring is on the farm of Mr. Daniel Greenleaf, in lot 34, of the Cayuga reservation in the town of Fayette, and a short distance west from the hotel, in the pleasant village of Canoga. The water from this spring and a smaller one in its vicinity, turns the machinery of the Canoga flouring mills, saw mills, and other works and passes into Cayuga lake.

The spring bed covers a space, about fourteen feet in diameter, is shallow and covered with loose pebbles; the water which rises with great rapidity, is clear, tasteless, and inodorous, and leaves no deposit on the bottom or sides of its basin. The bubbles of gas which rise with velocity and in large quantity are pure nitrogen.

On examination they do not afford any trace of oxygen. No ready means were applicable for ascertaining the quantity of gas given off, but is incredibly great, as the surface presents the appearance of ebullition, and on stirring the bottom with a stick, the supply is so much increased, that a large test bottle may be filled in a few seconds. The temperature of the water in June, was 45°, the air at the same time was 82°.

These waters as has been stated, escape from a fissure in the Seneca limestone, which is every where broken by a series of faults produced as Mr. Hall believes it probable by the soft gypseous rocks below. In the State survey, Mr. Hall alludes to this spring as the only one in the State found in this geological position; others being near the junction of transition with primitive or metamorphic rocks; and refers to Daubeny's hypothesis, that the production of nitrogen is due to the proximity of melted or highly heat-

ed materials, as a probable proof that the faults have arisen from igneous or subterranean action.

This last position is hardly tenable, as in the immediate proximity, there are no evidences of upheaval, except the bending of the shales and Tully limestone, visible on the banks of the lakes; but as the cause which has produced the latter, has long since ceased, it can have little connection with the phenomena at Canoga.

It is probable that the hollow and loose character of the gypseous rock, underlying the limestone, has more to do with the production of the spring and the evolution of the gas than is generally supposed. It is a well known fact, wherever any of these shales are exposed to the air, crystals of sulphate of lime will form, owing to the pyrites of the iron becoming decomposed; its sulphur taking oxygen from the air to form the sulphuric acid, and the iron taking oxygen to replace the sulphur; the acid when formed uniting with the lime in the stone and crystalizing as gypsum. The oxygen being taken from the air leaves its other element nitrogen uncombined and it escapes freely; but if this were carried on in confined positions, as in cavities in the solid rock, the nitrogen could not escape except through such fissures as might accidentally exist. Wherever the rock contains pyrites, there much gypsum will be formed, and it is possible that the large masses of gypsum have been so formed; if so, the quantity of air necessary to supply the needful oxygen must have been great indeed, and the quantity of nitrogen correspondingly great, and sufficient to produce larger evolutions of gas than occurs at Canoga. The water of the spring is possibly supplied by the soakage of the waters on the gypseous ground north of Seneca Falls, which passing along the slope of the strata southward enters those caverns in the rocks, where remaining for some short time, it acquires the steady temperature of that underground position, approaching very near the mean temperature of the year, which in this latitude would be about fifty feet below the surface: passing through the cavities where these chemical changes have been going on, it forces its way through the fissures carrying with it mechanically the free nitrogen, arising from the decomposed atmosphere; the water is placed in the condition of a fluid in a syphon, the long leg being the sloping stratum, and the short leg the fissure, hence it is delivered upward with such force. The water does not contain more mineral matter than sixteen grains to the pint, which consists of sulphate of lime and chlorides of calcium and sodium.

There are no springs in the county of Seneca, which can be traced to volcanic action. The springs which contain sulphuretted hydrogen are those which have traveled through beds of rock containing iron pyrites; this