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*OHIO SURVEYS.*

BY CHARLES WHITTLESY.

The agents, surveyors, and employes of the Connecticut Land Company, celebrated the 4th of July, 1796, at the mouth of Conneaut Creek; in all fifty-two (52) persons. Augustus Porter with Seth Pease, John Milton Holly, Amos Spafford, and Moses Warren, their chain men, ax-men, and pack horses, started from the lake shore on the 7th of July, and ran south along the Pennsylvania line, which was established in 1785 and 1786, by Andrew Ellicott, Thomas Hutchins, Alexander McLean, and John Ewing. A stone was set on what they determined to be the 42d parallel of north latitude. This is about two miles south of the shore, the northern boundary of Pennsylvania, and the Western Reserve being at  $42^{\circ} 2'$ , on a parallel two (2) miles and (24) twenty-four chains north of latitude  $42^{\circ}$ . This line came to the shore a short distance east of the northeast corner of New Connecticut, as the Reserve was then called, giving to Pennsylvania only a short distance on the lake, where there is no harbor. North of this the country belonged to New York, from which the State of Pennsylvania purchased a triangular tract, extending as far east as the meridian of the west end of Lake Ontario, including the harbor of Erie. The surveyors measured from the stone purporting to be on the 42d parallel south, along the Pennsylvania line, in order to determine the 41st parallel, which is the southern boundary of the Reserve. They could also compare their compasses with the true meridian, on which the Pennsylvania Commissioners had run. A part of the field notes and diaries of the surveyors are among the papers of the Western Reserve Historical Society. On the night of the 7th and 8th of July, Holly's compass varied  $53'$  east, Porter's the same, Spafford's  $43'$ . On the 23d of July they reached the vicinity of the 41st parallel, at a distance of (68) sixty-eight miles, the variation of Spafford's compass being  $1^{\circ} 21'$  east. The subject of variations and the discrepancies of their compasses will be found below. The best astronomical and mathematical talent

of the colonies was employed on the western boundary of Pennsylvania, which had long been contested by Virginia. It was fixed by a transit sighting from hill to hill, the timber cut away so that the instrument could be reversed, and thus cover three stations, often several miles apart. When the Ohio River was reached the Virginia Commissioners retired because that State had ceded the country north of the Ohio in 1784.

The report of the Commissioners of Pennsylvania has long been lost, but a portion of the diary of one Commissioner exists. As the monuments were nearly all of wood, there were a few of them visible, even in 1796. The vista cut through the woods on the summits of the hills gave an approximate line, but this nearly disappeared when the country was cleared. In 1880 a joint commission of three from each State was organized by Pennsylvania and Ohio, to correct the line where it is erroneous, and to put up durable monuments. Their final report is not yet published. Seth Pease in his diary states that he traversed the lake shore from the north line of Pennsylvania to the north end of her west line, but does not give the distance. He was the mathematician of the survey, and was provided with a small sextant for determining the forty-first parallel. All the positions of latitude were somewhat out of place, but it is to the credit of all concerned with their imperfect instruments and few observations, that the errors were so small. Only one day and night of clear weather was allowed for the forty-first parallel. The measured distance from the Pennsylvania stone did not leave the Land Company space enough by nearly a mile, yet the United States claimed that their line was nearly half a mile too far south.

Thomas Hutchins was the geographer to the Confederate States, performing duties now performed by the surveyors general of the public lands. The first surveys were made by him and ten assistant surveyors appointed from different States. The work was done upon a plan conceived of by him in 1764, when he was a Captain in the Sixtieth Royal Regiment, and engineer to the expedition under Colonel Henry Bouquet. His plan has been pursued substantially up to this day in the public surveys. He first ran a line west from the north bank of the Ohio, where the State line crosses it, at the southeast corner of Columbiana county, O., as a

base, for a distance of seven ranges of six miles each, or forty-two miles, protected against Indians by the military.

This is known as the "geographers' line," terminating on the Nimishillen, near the common boundary of Carroll, Stark and Tuscarawas counties. From each six-mile post lines were run south as town meridians, to the Ohio and north to the 41st parallel. Every six miles north and south, east and west, formed the boundary of each township, which was designated by double numbers; reckoning from the Ohio northwards, and the Pennsylvania line westward as ranges. Each town was then, as now, subdivided into (36) thirty-six sections of one square mile each. This simplest of all known modes of survey had not been thought of until Captain Hutchins invented in the wilds of Ohio in 1764. It formed a part of his plan of military colonies north of the Ohio as a protection against Indians.

Hutchins died at Pittsburgh in 1788, where his remains now lie unnoticed, in the cemetery of the First Presbyterian Church. The government surveys were purposely left open at the North on account of the unsettled position of the forty-first parallel. The late Dr. Jared P. Kirkland has stated that in 1810, the government employed Andrew Ellicott, and provided the instruments to settle that question. The party traveled with mules and horses. Near Enon Valley the pack-mule carrying the instruments ran away, and damaged them so much that Ellicott was obliged to return. In 1806 Seth Pease was again placed upon the forty-first parallel, west of the Tuscarawas, but this time by the United States Government. The Connecticut Land Company had its surveyors at work west of Cuyahoga, under the general charge of Joshua Stow and Abram Tappan. The south line of the Reserve east of the Tuscarawas being run by the magnetic needle with different compasses that did not agree by several minutes, was of necessity crooked, but it was finally agreed by the Government that it should not be disturbed, and the public surveys of the Congress lands were closed upon it. The townships on the Reserve were five miles square. Only the first four ranges or twenty miles of the base line were run in 1796. Pease states that his compass and Holly's agreed, but Spafford's stood to the west of them (10') ten minutes, and that the variation was determined with difficulty.

He admits that there probably errors of (20') twenty minutes. Holly ran the first meridian, which is reputed to be on the lake shore ( $\frac{1}{2}$ ) orro-half mile west of the true meridian. The second was run by Spafford and Stoddard, the third by Warren, and the fourth by Pease and Porter. Professor Jared Mansfield, when he was Surveyor General for the territory northwest of the Ohio, examined the line run in 1796 and 1797, intended to be on the forty-first parallel. He found various errors, but reported that, considering the imperfection of the instruments, and the dense and distant wilderness where the work was done, he thought was creditable to the surveyors and ought to be accepted. accepted.

When the southeast corner was established Porter, with a party and a troupe of pack-horses, went to the mouth of the Beaver River for provisions. Warren exhausted his supplies while he was fifteen miles from the shore end of his line. All the parties met on the beach, and reached Conneaut Creek the same day. Porter immediately commenced the traverse of the lake shore westerly, which he continued to Sandusky Bay. The object of this traverse was to determine provisionally the quantity of land included by a meridian (120) one hundred and twenty miles west of the Pennsylvania line. To their chagrin it was discovered, that when 500,000 acres should be taken from the west end for the sufferers by fire and other causes during the revolutionary war, there was not 3,000,000 of acres left. The "Excess Company," who expected 500,000 acres between the above grants, were dismayed to find they had nothing. West of the Cuyahoga the Land Company had not acquired the Indian title, but Porter took the risk, and finished his traverse without interruption. Every one must admire the resolution as well as the endurance of all the members of the surveying parties. The qualifications of that class of men were such that they generally became prominent in civil and military affairs throughout the United States. On the 15th of August four parties arranged themselves on the first meridian to run four parallels westward. At the thirtieth mile post, between towns 5 and 6, Moses Warren; at the 35th, Pease; 40th, Spafford and Stoddard; and at the 45th, Holly. They first ran east to the Pennsylvania line, and established the corners of Kinsman, Williamsburg,

Andover, and Richmond townships. Holly found the space between the first meridian and the State line to be nearly one-fourth of a mile too great or 19 chs. 50 l. The next township to the north was still greater. The four parties returned to the meridian and started west across the other three meridians which completed the boundaries of sixteen townships. Beyond this they carried on their parallels until they reached the Chagrin River on the 23d. All of them believed this to be the Cuyahoga, which they were directed not to pass. Holly being on the most northerly parallel, between Kirtland and Mentor, commenced a traverse of the stream expecting to meet General Cleveland at the mouth. The Chagrin River was not on their maps. Anticipating this trouble, Porter, with a party, came from the Cuyahoga by boats to the Chagrin, with provisions and directions to go up the river and inform the surveyors. Holly met this party not far from the lake, where he greeted his friend and future brother-in-law, Porter, who returned to Cleveland the same night. Pease and Stoddard's line between towns 7 and 8, of Newburg and Cleveland, intersected the east line of the Cleveland out-lots at the corner of Wilson avenue and Cedar streets. As these were fractional towns, the subdivisions were made as one tract; the lots numbered from 268 to 486. Holly turned back and ran east on the eleventh parallel to the State line at the northeast corner of Richmond, Ashtabula County. The range and town lines north of the sixth parallel were nearly all surveyed in 1796. Some lot lines were run for purchasers in Mentor, and the fifth parallel was extended west from range eight to the Cuyahoga on the 6th of September. This was done by Pease in order to examine the town of Bedford, which was regarded as particularly valuable. With this exception all the space south of the sixth parallel and east of the Cuyahoga was untouched in 1796. The ten-acre lots around the city of Cleveland were not surveyed until 1797. Having finished the city plats and the 100-acre lots in Newburg and Cleveland on the 17th of October, the Cleveland parties joyfully took boats for home at 3:17 o'clock in the afternoon, having accomplished much less than the directors and stockholders expected of them. In 1786 the State of Connecticut had her title to the Reserve so well assured, that she resolved to sell that portion east of the Cuyahoga River at

three shillings an acre. In 1788 a land company was formed to make purchases of the State, of which General Samuel H. Parsons, of Middletown, as the leader and manager. He had served with credit through the Revolutionary War, and under the ordinance of 1787 had been appointed one of Judges of the Territory. Captain Jonathan Heart, of Berlin, Conn., afterwards Major in the First United States Infantry, also a tried soldier, commanded a company stationed at Venango, Pa., in Colonel Harmar's battalion, United States troops. Captain Heart explored the country east of the Cuyahoga, and enabled General Parsons to locate 24,000 acres at the Salt Springs, on the Meander, two miles south of Niles, in Mahoning County. He also located a tract of land where Cleveland was laid out in 1796, embracing a quarter of a township; but no surveys were made of any part of the Parsons patent. In November, 1789, Judge Parsons was drowned at the falls of the Big Beaver, and his papers lost. He had just parted with Heart at the Salt Springs, who followed the trail west to the Cuyahoga, thence to its, the site of his future town, and down the lake to Erie. The death of the organizer of this company led to the abandonment of everything except the Salt Springs tract. Only two years later Major Heart was killed in the unfortunate battle under General St. Clair.

In its forest condition this region was very prolific in snakes. The notes of the survey contain frequent mention of them, particularly the great yellow rattle snake. In times of drouth they seek streams and moist places, and were frequently seen with their brilliant black and orange spots crossing the lake beach to find water. Joshua Stow, the commissary of the survey, had a positive liking for snake meat. Holly could endure it when provisions were short. General Cleveland was disgusted with snakes, living or cooked, and with those who cooked them. They were more numerous because the Indians had an affection or a superstitious reverence for them, and did not kill them. Having finished the first four meridians the four inland parties arranged themselves on the first meridian to run the parallels west, after having run east to the Pennsylvania line and established the township corners, as above noted. Spafford and Stoddard ran the 8th parallel, which came to the east line of Cleveland, along what is now Cedar ave-

nue. Holly returned to the 9th parallel at the west side of range 8, and there ran north to the lake. Between Concord and Painesville he turned east on the 10th parallel, or fifty miles from the base, and ran to the Pennsylvania line at the north boundary of Pierrepont. Thus they proceeded vigorously with their work, frequently measuring and marking twelve miles a day, until all the territory north of the 6th parallel west to the Cuyahoga had been surveyed into townships, fixing the corners where the lines crossed each other. Holly mentions one case where his line fell 20 chains 78 links south of the post set by Warren. On the 6th of September Pease was on the sixth parallel and eighth meridian, where he ran south one town and then west to the Cuyahoga, between Northfield and Independence. The subdivision of the city of Cleveland into lots was begun on the 21st of September, and completed in October.

In the meantime, as parties could be spared, the one hundred acre lots that surrounded the ten (10) acre lots at Cleveland were surveyed, and the mouth of the Cuyahoga abandoned on the 17th of October. South of the sixth parallel and west of the fourth meridian was untouched; except the three towns which Pease and Warren had partly surveyed. The employes did not regard their wages as a sufficient compensation for their labor and exposures, in wading swamps and streams, battling with mosquitoes, and at times somewhat empty at the stomach. A strike occurred at Cleveland in September, which was arranged on the 29th by a compact under which the township of Euclid was disposed of to them. Neither Moses Cleveland, the general agent, Joshua Stow, the commissary, Augustus Porter, the chief surveyor, or John Milton Holly, returned to the surveys in 1797.

Seth Pease was then surveyor-in-chief, with Moses Warren, Warham Shepherd, Amos Spafford, Amzi Atwater, and Nathan Redfield surveyors. The city of Cleveland was allotted in 1796, and the fractional towns of Newburg and Cleveland. In 1797 the ten-acre out-lots of Cleveland with three leading roads through them were surveyed, and the townships of Northfield, in Summit county; Bedford and Warrensville in Cuyahoga; and Perry, in Lake county, were subdivided in tracts of 100 acres each. The parallels south of No. 6 were run to the Pennsylvania line, and the meridi-



ans from range 4 to the Cuyahoga. Beyond this river they would be in Indian territory. It was a season of much sickness, and of great hardships compared with 1799, William Andrews, Andrew Bicknell, and Pete Washburn died of malarial fever. Joseph Tinker and Daniel Eldridge were drowned. Before the season's work was done, a boat-load of fourteen weak, sick, and dispirited men left Cleveland for their Connecticut homes. In the bound volume of early manuscript maps at the historical rooms, there is a skeleton plat of the Reserve east of the Cuyahoga, on which the variation of the magnetic needle is written for nearly every township. There are signs attached to nearly all of them showing whose compass was used, such as Pease's, Porter's, and Stoddard's; and there are besides, in the field notes of the surveyors, frequent memoranda of the observed variations in 1796 and 1797. In the abstracts here given I do not give each observation nor the precise date, but where there is more than one in a township, give the mean. They were obliged frequently to run several days on an assumed variation. Holly's compass, on the first meridian carried nearly half a mile too far west. He ran parallels 10, 11, and 12 at  $1^{\circ} 10'$ ,  $1^{\circ} 15''$ , and  $1^{\circ} 20'$ , where other compasses show  $1^{\circ} 20'$ ,  $1^{\circ} 26'$ , and  $1^{\circ} 30'$ . An error of 15 minutes, or  $\frac{1}{4}$  of a degree, would cause a departure of 40 links in a mile, and in 5 miles two (2) chains. Seth Pease, in his diary of July, 1797, referring to the workings of compass, says: "From observations made on the various compasses I find I cannot reduce them to a common standard, being differently affected at different places. Of two on the Cuyahoga River, twenty miles south of the lake, one was to the left (west) of the other ten (10) minutes. At Cleveland the one which was to the left stood fifteen minutes to the right, although they were not compared at precisely the same hour of the day."