

# Round Earth, Flat Paper

## by Betty L. Warren

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For hundreds of years, we have been trying to map out parcels and tracts of land to figure out how the land lies. And what a lie it is on flat paper! The curvature of the earth makes it nearly impossible to be very accurate and led to many survey overlaps, inaccurate discrepancies, and serious conflicts in the early years of our nation. Most of the eastern states and some others are surveyed by metes and bounds. That is the familiar system of using particular natural landmarks as corners and measuring between them, i.e. beginning at three sugar trees, thence north 78 degrees west 90 poles to the hickory and the ironwood on the hillside, thence down the hill to the willow on the bank of a branch, thence with the meanders of said branch, etc, etc to the beginning. One could feel a certain sense of job security in being a surveyor, a chain carrier or an attorney when the early states were being surveyed. A better system was needed.

Yet a survey was the most acceptable manner of determining what land belonged to someone else. Many immigrants came to the United States because there was so much land. They knew that there was none available to them in the old country and their dream was to own some property.

Thanks to Jared Mansfield, who was the surveyor general north west of the Ohio River, we have a survey system that straightens out many of the meanders of the old metes and bounds. He had been a mathematics professor and developed a survey system utilizing principal meridians and base lines, which are the reference points of the rectangular survey system, using the invisible latitude and longitude lines of a globe. Then the basics of linear and angular measurement involving geometry and trigonometry are put to use to determine the position of a tract of land. Hence, rectangles which appear to be rather square on flat paper. And you thought you would not have to remember any of that math stuff from high school! It is not really as difficult as it sounds.

Think of the rows of seats in an auditorium, and you must find your numbered seat in a particular row. Since the boundaries are fixed at the outer edges, it is quite easy to count the rows, read the labels, and find the assigned location. Or, use the numbers and letters printed along the edges of a road map to locate a specific town on the map based on the index information. That is as easy as playing Bingo!

Imagine a page of graph paper with all of those little boxes. Trace a vertical line to be the north/south meridian line; trace a horizontal line to be the

east/west base line. Unlike the graph paper, you have no fixed outer boundaries for a survey, so you must start from a center point as your reference and count out from the intersection of those two imaginary lines. In Indiana, the base line intersects the 2nd principal meridian in Orange County about six miles south of Paoli.

Since you have four compass directions, you can go all four ways from the intersection of the base line and the meridian. Instead of counting the lines out from the point, this survey system marks the imaginary lines and counts the rectangular boxes. All of the boxes north and south of the base line are numbered as townships. All of the boxes east and west of the principal meridian are numbered as ranges. There are eight townships south and thirty-eight north of the base line in Indiana. There are fifteen ranges west of the 2nd principal meridian and fifteen ranges east, along with four ranges west of the 1st principal meridian in Indiana. Because of the odd angles of the state lines, not all of the townships are complete six-mile squares.

In the Ordinance of 1785, the surveyors were instructed to divide the land into townships six miles square and subsequently by subdivision into thirty-six sections (six rows of six) of 640 acres; each to be numbered in an orderly fashion and plainly marked on the ground. The surveys in Ohio experimented with several different "orderly fashions" to number the thirty-six sections. Indiana's are numbered from the Northeast corner across to the left, then ribbon down back and forth to the Southeast corner.

Each of these thirty-six sections could be further subdivided so that no one had to purchase the entire square mile. Not everyone could afford all 640 acres. Each section was usually divided into quarters of 160 acres and named for compass points. Often, those quarters were quartered or halved into 40 or 80 acre tracts. Occasionally, you will find the fractional number  $\frac{1}{4}$  used instead of the word quarter, even though it does not always look like a number. And, they often abbreviated quarter as qtr or just q. Sometimes, parcels smaller than twenty acres were sold as "part of" the described sections.

The section lines and numbers do not change with subsequent deed purchases, nor do they change if the name of the township changed. Thus, a Johnson County farm purchased in 1828 near Leatherwood Creek would be generally described as being located in White River Township. The 1830 census or tax list would list it in Pleasant Township. And, by the 1850 census or tax list, it is in Clark Township. Did the farm move? No, the legal description is still the East half of the Southeast quarter of Section 4 Township 13 North Range 5 East. The boundaries of the named townships changed. Using the old legal descriptions of section number, township and range, you can find the location on a current map. Global Positioning Systems coordinate with these descriptions also, because the township and range lines run parallel to the latitude and longitude lines.

Not very many named townships in Indiana counties follow the lines of the numbered townships, although some do. Many county roads follow the section lines. Because of the curvature of the earth, there are some correctional lines marked in the survey every so often. This often accounts for the odd jog at regular intervals in the old roads.

There are two major exceptions to this survey system in Indiana. One is Clark's Grant in the Clark County area; the other being the Knox County area. Both of these early settlement areas had land sold prior to the establishment of the rectangular survey system and those property lines were not re-drawn.

So, you may find a tract book entry or an 1833 deed that describes the forty acres of property your ancestor purchased as the Southwest quarter of the Southeast quarter of Section 35 Township 12 North Range 4 East (abbreviated S35 T12N R4E). And, on the same day, the Northwest quarter of the Northeast quarter of Section 2 Township 11 North Range 4 East, also containing forty acres. Now, you might think those parcels are not very close together; however, by examining a county map, you will find that they are actually adjacent and share a quarter mile imaginary dividing line.

I have to wonder just how relieved that old Kentucky fellow must have been to know that those lines would not change like the metes and bounds did on the south side of the river. And that there could be no overlap of surveys, just correctable errors of recording SE instead of NE and so forth. But, he could not possibly have imagined that one day a hundred and fifty years later, his grandson's granddaughter would drive her car slowly along county road 300S, stop, and look at what had been his forty acres on both sides of that road.