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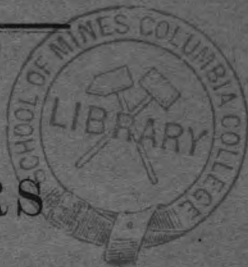
Instructions to deputy
surveyors of the United
States.

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*Presents by J. W. Commons.
Commiss. of L. O. U.S.*

INSTRUCTIONS
TO
DEPUTY SURVEYORS
OF THE
UNITED STATES,
FOR THE DISTRICT OF
ILLINOIS AND MISSOURI.



ST. LOUIS, MO.

1856.

U.S. - Land office.

Henry S. Abigny.

Mining Engineer.

Houghton. L.S. - April 1862

from Gen. Land Office -

ALBILLOS
UTERAVIUM
YRABU

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GENERAL INSTRUCTIONS.

TO

DEPUTY SURVEYORS,

FOR

SURVEYING PUBLIC LANDS

AND

PRIVATE CONFIRMED CLAIMS.



Office of the Surveyor General for the States of }
Illinois and Missouri. }

St. Louis, ----- 185

To ----- Esq.,

Deputy Surveyor.

SIR :

In the execution of Surveys under the authority of this office, the following General Instructions have been prepared for the government of the Deputy Surveyors, and must be strictly adhered to in all cases not otherwise provided for by special instructions, which may be rendered necessary on account of peculiar circumstances.

[1.]

RULES TO BE OBSERVED IN SURVEYING GENERALLY.

You will provide yourself with a compass of excellent quality and approved construction, having a *nonious division*, and movable sights ; also, with two two-pole chains, of 50 links each. One of said chains must be adjusted to the standard in this office, and by it you will compare and adjust that which is used, at least once in every two days, and note their difference, if any, in your Field Book ; and, if there is no difference, state the fact of your having compared and found them to agree. You must likewise be provided with a full set of tally rods, of iron or steel, or pointed therewith, and allow none others to be used but the precise number you shall have selected for that purpose.

Moral Integrity of hands.

Your chain-men, axe-men, and flag-men, must be men of strict moral integrity; none must be employed, in whom *implicit* confidence cannot be reposed.

[3.]

Field Books and Hands.

Each of your Field Books will commence with a list of your chain-men, axe-men and flag-men, then in your service, and intended to be employed in performing the surveys you are about to execute. The first book under your contract will contain an attested record of their oaths; and whenever you may employ any others, you will insert their names, together with their oaths, in your Field Book, before they are permitted to commence work. You will also, when a chain-man, axe-man or flag-man is dismissed, or quits work from any cause *whatever*, note it, together with the cause of his dismissal, or the reason for which he quits work, and refer thereto by a note in the front part of your book.

[4.]

Form of Oath for Chain-men.

I, A. B., do solemnly swear in the presence of Almighty God, that I will faithfully and impartially execute and fulfill the duties of a Chain Carrier; that I will level the chain, and plumb the pins, so as to obtain the true horizontal distance; and that I will make a true report of the length of all the lines that I may assist in measuring, to the best of my abilities, so help me God.

A. B.

Sworn to and subscribed,
before the undersigned,
this—day of—185—

C. D. Justice of the peace for the township of—county of—State of—

[5.]

Form of Oath for Flag-men and Axe-men.

I, E. F., do solemnly swear in the presence of Almighty God, that I will faithfully and truly perform the duties of a flag-man (or axe-man, as the case may require,) to the best of my abilities, so help me God.

E. F.

Sworn to and subscribed,
before the undersigned,
this—day of—185—

C. D., Justice of the peace for the township of — county of — State of —

[6.]

Lines, Flag and Compass.

All lines must be run with the assistance of a flag or fore vane-man ; and Township boundary lines, with the compass adjusted to the true meridian, unless otherwise instructed by this office.

[7.]

Attraction.

If by reason of mineral attraction, or any other cause whatever, any line or lines cannot be accurately surveyed with the use of the needle, other means must be adopted, so as to ensure the correct execution of the work ; and the manner of operating must be carefully noted in the Field Book.

[8.]

Line Trees and Blazes.

All trees which your lines (except random lines) strike, must be noted in your Field Book, and have two notches cut on each side thereof in the direction of the line ; but no other spot or blaze, whatever, is to be made thereon.

THE FOLLOWING PARAGRAPHS, FROM NINE TO EIGHTY-SEVEN, ARE INTENDED MAINLY TO GOVERN THE EXECUTION OF WORK IN REGARD TO THE SURVEY OF PUBLIC LANDS ; YET, WHEREVER APPLICABLE, THEY MUST EQUALLY BE OBSERVED IN THE SURVEY OF PRIVATE CLAIMS.

[9.]

Running and blazing of lines, and establishment of Corners thereon.

All trees on each side of the lines, and near thereto, (except random lines) must be marked with a spot or blaze on each side, diagonally or quartering towards the line. Range lines (N. & S. Township boundary lines) will be run North, and corners for Sections and quarter Sections will be established thereon at every half mile, and mile, for the Sections and quarter Sections to the West, and not for those to the East of the line, except at Township corners. East and West standard lines will be run East or West, as the case may require, and corners established thereon for the quarter Sections, Sections, and Townships, North of the line, and not for those to the South of it. East and West fractional Township lines, which close to a boundary line of this Surveying District, or to an Indian or State boundary, will be run East or West, as may be required ; and quarter Section and Section corners will be established thereon for the quarter Sections and Sections to the North of the line, and not for those South of it.

[10.]

Random and true Township lines—S. boundary of Sec. 31.

All other E. & W. Township lines will be run west on randoms, and

corrected East from Township corner to Township corner; and the excess or deficiency must be added to, or deducted from, the South boundary of Section 31, West of the quarter Section corner.

[11.]

Adjustment of the Compass.

Sub-division lines of a Township will be run with the compass adjusted to the East boundary thereof; and the true variation of the needle will be determined so as to show the difference (if any) between the said true variation and the variation at which the surveys are executed.

[12.]

Manner of Establishing Corners.

Section, fractional Section, and Township corners, will be perpetuated by planting a post at the place of the corner, of the most durable wood that can be had in the vicinity thereof. The posts must be set in the earth by digging a hole to admit them two feet deep, and be very securely rammed in with earth, and also with stone, if convenient—the township corner posts must be at least 5, and the Section and fractional section corner posts 4 inches diameter; they must be neatly squared off at the top, and placed so that the corners will correspond with the cardinal points. The posts at the corners of Sections in the interior of a Township must indicate, by a number of notches on each of the four corners directed to the cardinal points, the number of miles that it stands from the outlines of the Township; the four sides of the post will be numbered to correspond to the number of the Section they respectively face. If, however, a tree is at the place of any corner, it will be notched as aforesaid, and answer for the corner in lieu of a post.

[13.]

Marking and Numbering of Corner Posts.

Section corner posts on Range and Township lines, will indicate, by a number of notches on two corners directed to the proper cardinal points, the number of miles it stands from the nearest Township corner; and two sides of said posts will be numbered to correspond to the number of the Section they face.

[14.]

Notching Post, &c.

Corner posts at Township corners will have 6 notches on each of the four corners, directed to the cardinal points, and each of the four sides thereof will be numbered to correspond to the number of the Section they face. All corner posts where mounds are not used must rise at least 3 feet above the surface of the ground.

[15.]

Corner Stones.

Or, in lieu of posts, you may, at *any* corner, insert endways into the ground, to the depth of 7 or eight inches, a stone, the number of cubic inches in which shall not be less than the number contained in a stone 14 inches long, 12 inches wide and 3 inches thick—the edges of which must be set North and South, on North and South lines; and East and West, on East and West lines—the dimensions of each stone to be given in the Field Notes at the time of establishing the corner.

[16.]

Marking Corner Stones.

Where stone Section corners are made on the Range and Township lines, as many notches will be distinctly cut with a pick or chisel on the two sides in the direction of the line as the corner is sections from the nearest Township corners. At Township corners, 6 notches will be cut on each edge or side towards the cardinal points; at Section corners in the interior of a Township as many notches will be cut on the South edge and East sides as the corner is sections distant from the South and East boundaries of the Township; and at the corners of subdivisional intersections with the North boundaries of the Townships, 6 notches on the South edge, and at the intersection with the West boundaries 6 notches on the East edge; and as many notches on the East or South sides, as the case may require, as the corner is sections distant from the Township corner. Quarter section corner stones will have 1-4 cut on the West side on North and South lines, and on the North side on East and West lines.

[17.]

Courses and Distances to Witness Trees—Marking the same.

You will ascertain and state in your Field Notes, the course and distance from the several Section and Township corner posts, trees or stones, to a tree in each section for which they stand as a corner; each of said trees you will mark with a notch and blaze facing the post, tree or stone; the notch to be at the lower end of the blaze; and on the blaze, which must be neatly made, you will mark, with a marking iron, in a plain, distinct and permanent manner, the letter S, with the number of the Section, and over it the letter T, with the number of Township; and above this the letter R, with the number of the Range. And in all cases where there is no tree in any section within a reasonable distance of a corner, on which to mark the number of Section, Township and Range, that fact must be stated in your Field Notes.

[18.]

Mound Corners.

Township corners in a prairie, or other situation, where bearing or

witness trees are not at hand, will be perpetuated by depositing in the ground, and at least 3 inches beneath the natural surface thereof, a portion of charcoal, (the quantity to be specified in your Field Notes,) not less than two quarts, at the place of such corners, over which you will erect a mound of *earth*, three feet high, five feet square at the base, and two feet square at the top; the sides whereof must be reveted or faced with *sods* laid horizontally and in successive layers on each other, each of said layers having an offset inwards, corresponding to the general slope of the face of the mound; and in the mound you will insert a post of the dimensions and marked as before directed, which post shall rise at least one foot above the top of the mound; or you may deposit at the place of the corner, three stones, not less than five inches square, by three inches thick, all of which you will particularly describe in your Field Notes—the top of the uppermost stone to be three inches below the natural surface of the ground, and the other two successively and immediately beneath the first—and over said stone you will erect a mound similar to that directed to be made over the deposite of charcoal; or, in lieu of charcoal or stone, to be deposited as before stated, you may perpetuate the corner by inserting endways into the ground, a stone, of the dimensions marked and set, in the manner before mentioned, over which no mound need be erected.

[19.]

Witness Mounds to Township Corners.

If a Township corner, where bearing or witness trees are not to be found within a reasonable distance therefrom, shall fall within a ravine or in any other situation where the nature of the ground or the circumstances of its locality shall be such as may prevent, or prove unfavorable to the erection of a mound, you will perpetuate such corner by selecting, in the immediate vicinity thereof, a suitable plot of ground as a site for a bearing or witness mound, and erect thereon a mound of earth in the same manner, and conditioned in every respect, with charcoal or stone deposited beneath, as before directed for a Township corner; and measure, and state in your Field Notes, the distance and course from the position of the true corner, of the bearing or witness mound so placed and erected.

[20.]

Witness Mounds to Section Corners.

Section corners in a prairie or other situation where bearing or witness trees cannot be had, will be perpetuated in the manner before directed for a township corner, except, that, where mounds are made they need be only two feet six inches high, by four feet square at the base, and two feet square at the top.

[21.]

The establishment of quarter Section Corners—Marking of Witness Trees—Mounds.

Quarter Section corners will be perpetuated by a post (of durable wood) 3 inches diameter, placed in the ground and marked 1-4 S., from which you will state in your Field Notes the course and distance to two of the most suitable trees in two different quarter Sections for which you are establishing the corner; which two trees you will mark with a blaze and notch facing the post; and on the blaze above the notch you will mark 1-4 S., with a marking iron. And where bearing or witness trees are not at hand, you will perpetuate quarter Section corners by erecting a mound, beneath which no deposite need be made—the mound to be of similar construction to those for Section and Township corners, except, that they may be only two feet high, three feet six inches square at the base, and one foot 6 inches square at top.

[22.]

Insuperable obstacles—Witness Points.

Whenever your course may be obstructed by insuperable obstacles, such as ponds, swamps, marshes, lakes, rivers, creeks, &c., you will prolong the line across such obstacles by taking the necessary right angle off-sets; or, if this is inconvenient, by a traverse or trigonometrical operation, until you regain the line on the opposite side. And in case a North and South, or a true East and West line is regained in advance of any obstacle, you will prolong and mark the line back to the obstacle so passed, and state all the particulars in relation thereto in your Field Notes; and at the intersection of lines, with both margins of impassable obstacles, you will establish a witness point (for the purpose of perpetuating the intersections therewith,) by setting a post, and giving in your Field Notes the course and distance therefrom to two trees on opposite sides of the line, each of which trees you will mark with a blaze and notch facing the post, except on the margins of navigable water courses or navigable lakes; in these cases you will mark the trees with the proper number of the fractional Section, Township and Range.

[23.]

Townships, sub-divisions thereof, and numbering the Sections.

The Townships are to be laid off as nearly six miles square as practicable, by lines running from South to North 6 miles, and the corresponding corners joined by lines running easterly and westerly; and they will be subdivided into 36 Sections, containing, as nearly as may be, 640 acres each. The Sections to be numbered by beginning with No. 1, in the North-East corner of the Township, and going West and East, alternately, through the Township, with progressive numbers, ending with 36, which will be in the South-East corner thereof.

[24.]

Navigable Streams, Lakes, &c.—Meandering.

The course of all navigable rivers which may bound or pass through your district must be accurately surveyed, and their width taken at those points where they may be intersected by Section or Township lines. Those navigable rivers which may pass through your district, must be surveyed on each side. You will also meander all lakes or ponds of sufficient magnitude to justify such expense. In meandering you will state particularly, in your Field Notes, at what corner you commence the meanders of each fractional Section, and also the corner to which you close. You will likewise state on which side of the river you are meandering, whether on the right or left bank, (going downwards,) and, also, whether on the *East, West, North, South, North-East, North-West, South-East, or South-West* side of the river, or other water course, through or adjoining your district.—[See Article 84.]

[25.]

Limits in Closing.

Any excess or deficiency in the length of any Township boundary line, or excess of error in the falling off from the corner to which any closing Township line shall be run, that may exceed five chains; or any excess or deficiency exceeding one chain in the length of any Section line, or excess of error in the falling off from the corner to which any Section line shall be run, that shall exceed one chain in closing the lines of a whole Section; and at the same rate for the Section lines, and at the same rate of one chain and fifty links per mile of the meanders, in closing the meanders of a navigable river or other water course with the line or lines of a fractional section, must be corrected by you and reduced within those limits, before leaving the ground, by re-surveying the line or lines which may have occasioned the excess or deficiency in the length of such Township or Section line, or excess of error in closing the lines of a Township, or of a whole or fractional Section.

[26.]

Corrections, Re-surveys and References.

All notes of corrections and re-surveys must be entered *as such* in the proper place of the Field Book, according to the order in which they may be executed; and the former and erroneous survey must be referred to in said entries. Also, in the margin of the pages containing erroneous surveys, that fact must be stated, and the page on which the notes of the re-survey or correction are entered, must also be referred to.

[27.]

Subdivision of Townships.

In subdividing Townships you will commence at the corner to Sections

35 and 36, on the South boundary, (one mile west of the South-East corner thereof,) and move on in continued progression from East to West, and from South to North, in order that the excess or deficiency of the Township, as to complete Sections, may be added to, or deducted from, the Northern and Western Ranges of quarter Sections.

[28.]

North and South Section Lines—How to be Surveyed.

Each North and South Section line must be made one mile in measure by the chain, except those which close to the North boundary of the Township, so that the excess or deficiency will be thrown in the Northern range of quarter Sections, viz:—In running North between Sections 1 and 2, at 40.00 chains establish the quarter Section corner, and note the distance at which you intersect the North boundary of the Township; and also, the distance you fall East or West of the corresponding Section corner for the Township to the North; and, at said intersection, establish a corner for the Sections between which you are surveying.

[29.]

Surveying of E. and W. Section Lines.

The East and West Section lines, except those in the West Range of Sections and those which cross navigable water courses, will be run from the proper Section corners, East on random lines, (without blazing,) for the corresponding Section corners. Temporary posts will be set at 40.00 chains, and the distance at which you intersect the Range or Section line, and your falling North or South of the corner run for, will be noted in your Field Book; from which corner you will correct the line West by means of off-sets from stakes, or some other marks set up or made on the random at convenient distances, and remove the temporary post, and place it and establish the quarter Section corner on the true line, equidistant, or at the average distance between the proper Section corners. If, however, you strike the corner run for, you have only to blaze the line back, and establish the quarter section corner at the intermediate distance.

[30.]

Surveying of East and West lines in the West Range of Sections.

The East and West lines, in the West Range of Sections, will be run West on true lines; the quarter section corner will be established at 40.00 chains; the corners for the proper sections will be established at the intersection with the Range line, and the distance which it intersects North or South of the corresponding Section corner West of the line will be noted in the Field Book.

[31.]

Legal Subdivisions of Sections.

When the closing lines to the North or West boundaries of the Town-

ships, either in subdivision or exterior work, exceed 100 chains in length, corners for the legal subdivisions of the Sections will be established at every 20 chains North or West of the quarter Section corner.

[32.]

East and West lines intersecting Navigable Streams—Correction of errors

Whenever an East and West Section line, other than those in the West Range of Sections, crosses a navigable river, or other water course, you will not run a random line and correct it as in ordinary cases where there is no obstruction of the kind, but you will run East and West on a true line, (at right angles to the adjacent North and South lines,) from the proper section corners, to the said river or navigable water, and make an accurate connection between the corners established on the opposite banks thereof; and if the error, neither in the length of the line, nor in the falling North or South of each other of the fractional corners on the opposite banks, exceeds the limits before specified in these instructions for the closing of a whole Section, you will proceed with your operations. If, however, the error exceeds those limits, you will state the amount thereof in your Field Notes, and proceed forthwith to ascertain which line or lines may have occasioned the excess of error, and reduce it within the proper bounds by re-surveying or correcting the line or lines so ascertained to be erroneous, and note in your Field Book the whole of your operations in determining what line was erroneous, and the correction thereof.

[33.]

East and West lines intersecting Rivers in bends thereof.

If, by reason of bends in a river, or other navigable water course, the whole of any East and West Section line would not be surveyed, if the parts which are run East or West respectively were to terminate at their first intersection with the said river or other navigable water course, that part of the line, which, by being prolonged, would give the survey the best form, must be continued to its last intersection with the said river or other navigable water; and from said last intersection of the line so continued, you will make the connection with the corresponding corner on the opposite bank, and if it is found that the error exceeds the limits before specified for the closing of a whole Section, you will make the required correction in the manner before pointed out in these instructions.

[34.]

Water Courses, Stone Quarries, &c., &c., to be noted on lines.

All rivers, creeks, springs and smaller streams of water, with their width and the course they run in crossing the lines of surveys, and whether navigable, rapid or otherwise; also, all swamps, ponds, stone quarries, coal beds, peat or turf grounds, mounds, precipices, caves, rapids, cascades or falls of water, minerals, ores, salt springs, salt licks, and fossils,

prairies, hills and mountains, towns, villages and settlements, forges, factories and cotton gins; also, all uncommon, natural or artificial productions, which may come to your knowledge, are to be particularly regarded and noted in your Field Book. You will likewise note when the lines enter and when they leave creek or river bottom.

[35.]

Land, Timber and Undergrowth—Inundated bottoms—Names of Station and Line Trees, to be written in full.

At the end of every mile, in running Section or Township lines, and at the end of the meanders of each fractional Section, you will give a particular description of the face of the country; whether level, hilly or mountainous; of the quality or rate of the soil, and whether the bottom land is liable to inundation or not; and if so, state, also, to what depth, so far as that circumstance may come to your knowledge, whether from observation of the water marks upon the trees, or any other source of information; and note the kinds and quality of timber and undergrowth, naming the different sorts in the order in which they predominate. The description of each mile must be full and complete in itself, and not refer to any previous description. The names of all bearing or witness trees, and station or line trees, must be written out in full, and not abbreviated; nor must any word which relates to the course or length of a line, or any object noted thereon, or in the establishment of a corner, be abbreviated, except in stating the courses to the witness trees from the corners, the course of meanders, and the bearing or direction of small streams, mountains, &c., when they are not to the cardinal points; in these cases, the capital letters N., S., E. and W., plainly and distinctly made, will be used.

[36.]

Sketches returned to exhibit all objects noted, such as Water Courses, Roads, &c., &c.

The plots or sketches which you are to return, will exhibit, as accurately as practicable, from careful ocular observations (in addition to the measurements on the line,) to be made by you, and noted in your Field Book, the true situation of all objects noted, including the courses and connection of all rivers and other water courses, and travelled roads or tracks, denoting the principal places to which they lead, and the enchainment and direction of remarkable hills or mountains.

[37.]

Field Books and entries therein.

Your Field Books for your original notes will be of such a size as you may deem most convenient; they will be of the best quality of paper; and the original Field Notes, which are to be returned to this office, together with a fair and correct copy thereof, must be kept in a plain and intelligible manner, in the form hereafter prescribed in these instructions.

Every entry must be so specific as not to admit of a doubt as to what is intended thereby, or a possibility of a misconstruction of your meaning. The said notes must be entered in the same order, from day to day, as the work is executed on the ground, including all re-surveys and corrections, and the date must follow each day's work.—[See Article 81.]

[38.]

Chains of two and four Poles.

Although your lines are to be measured with a chain of two poles, you are to keep your reckonings in chains of four poles, or one hundred links each; and all entries in your Field Books, and all plans and calculations, are to be made according to the decimal measure of a chain.

[39.]

Courses and Distances.

The courses and distances on your lines must be placed in the margin of your Field Book, on the left hand, (for which purpose it should be large,) and your remarks on the right.

[39.] B.

Copies of Field Notes—Form prescribed by the office.

The books in which you copy your Field Notes will be according to a form prescribed by this office.

[39.] C.

Horizontal Measurement.

In all measurements, the level or horizontal length is to be taken, and not that which arises from measuring over the surface of the ground, when it happens to be uneven or hilly.

[40.]

Form for keeping Field Notes of exterior Boundary Lines of Townships, viz :

Suppose the line to be surveyed is the East boundary of Township 21 North, Range 6 East of the 4th principal meridian, and that the corner to Sections 1, 6, 31 and 36, of Townships 20 and 21 North, Range 6 and 7 East, had been established by another surveyor, and that you were furnished with a description thereof from this office. You will commence your Field Note as follows, viz :—

If first book, oaths of chain-men, axe-men and flag-men.

A. B., *hind chain-man,*

C. D., *fore chain-man,*

E. F., *flag-man,*

G. H., *axe-man.*

Measuring chain compared with the standard chain, and found to be of the right length.

Took the variation of the needle last night, (27th of September, 1832,) about five chains South-West of the corner to Townships 20 and 21 North, Ranges 6 and 7 East of the 4th principal meridian, and found it to be 8° and 20 min. East. I therefore adjust my compass to that variation, and commence at the corner to Sections 1, 6, 31 and 36, of Townships 20 and 21 North, of Ranges 6 and 7 East of the 4th principal meridian, which agrees with the description furnished me by the Surveyor's Office, viz :—A post, from which a white oak, 6 inches diameter, bears S. 67° East, 372 links ; a hickory, 14 inches diameter, bears North 25° East, 13 links ; and a white oak, 13 inches diameter, (stated to be 11 in the description furnished me) bears North 62° West, 135 links. The other witness tree (an ash, 16 inches diameter) has fallen down ; I therefore mark, with the proper number of Section, Township and range, a black walnut, 24 inches diameter, which bears South 83° West, 127 links distant, and run from said Township corner.

[41.]

East Boundaries of Townships.

| | |
|---------------------|---|
| <i>North Chains</i> | Along the East boundary of Section 36, Township 21, North of the base line, Range 6 East of the 4th principal meridian. |
| 14.70 | A brook, 25 links wide, with a rapid current, runs southwesterly about 10 chains, then turns to the N. W. |
| 27.60 | Left the creek bottom, and entered hills. |
| 29.40 | A white oak, 15 inches diameter, |
| 33.70 | A hickory, 24 inches diameter. |
| 40.00 | Set a quarter Section corner post on the top of a ridge, bearing northeasterly and south-westerly ; from which post, a white oak, 24 inches diameter, bears S. 28° W. 197 links, and a poplar, 18 inches diameter, bears N. 56° W., 14 links distant. |
| 49.07 | A white oak, 8 inches diameter. |
| 64.08 | A walnut, 36 inches diameter. |
| 80.00 | Set a post, corner to Sections 25 and 36, from which a hickory, 17 inches diameter, bears South 57° West, 127 links ; and a white oak, 13 inches diameter, bears North 23° West, 72 links distant. |
| | Land, too hilly and broken for cultivation, although the soil is rich ; timber, hickory, white oak and walnut ; undergrowth, pawpaw and spice. |

[42.]

| | |
|---------------------|---|
| <i>North Chains</i> | Along the East boundary of Section 25, Township 21 North, Range 6 East of the 4th principal meridian. |
| 13.80 | Left the hills, and entered river bottom. |
| 14.90 | A burr oak, 36 inches diameter. |
| 40.00 | Set a quarter Section corner post, from which an elm, 13 inches |

diameter, bears north 85° West, 18 links, and a pin oak, 12 inches diameter, bears South 74° West, 39 links distant.

49.50 An impassable swamp. Set a post, from which a hickory, 12 inches diameter, bears South 76° West, 18 links; and a white oak, 13 inches diameter, bears South 85° East, 14 links. This swamp lies mostly West of the line; it extends in a south-westerly direction about 25.00 chains. Offset around said swamp, as follows, viz:

East 4.50 chains,
 North 7.60 chains,
 East 6.70 chains,
 North 8.50 chains,
 West 7.50 chains,
 North 3.20 chains,
 West 3.70 chains—

regained the line on the East boundary of Section 25, Township 21 North, Range 6 East, in advance of the swamp; I therefore run South 3.72 chains and intersected the North-west margin of the swamp, where set a post, from which an ash, 12 inches diameter, bears North 17° West, 18 links, and an elm, 13 inches diameter, bears North 12° East, 45 links distant. Thence continued the line North along the East boundary of Section 25, Township 21, North, Range 6 East; counting the distances from the corner of Sections 25 and 36, the distance across the swamp, on the line, being 15.58 chains.

72.54
 80.00

A white oak, 18 inches diameter.

Set a post, corner to sections 24 and 25, from which a white oak, 18 inches diameter, bears South 18° West, 32 links; and a gum, 24 inches diameter, bears North 27° West, 34 links distant. The land is low, wet bottom, unfit for cultivation; generally subject to overflow from 7 to 10 feet, as appears by the water marks on the trees, and as I am informed by H—J—, who lives in the vicinity thereof. Timber, gum, swamp maple and pine oak; undergrowth, spice, vines and green briars.

September 28, 1832.

Proceed in a similar manner along the East boundary of Sections 24, 13 and 12; then along the East boundary of Section 1, as follows, viz:

[43.]

*North
 Chains*
 17.52

Along the East boundary of Section 1, Township 21, North Range 6 East of the 4th principal meridian.

A road between Holmin's Ferry to the South-west, and Princeton to the North-east.

18.76
 19.75

A white oak, 16 inches diameter.

A creek, generally called White Water, but by some Crooked Creek, 200 links wide. runs North-east—gentle current, not

- navigable. This creek is crossed by the road noted above, at about 5 chains to the South-west.
- 32.50 A hickory, 15 inches diameter.
- 33.00 Left the timber and entered prairie—bears South-east and North-west.
- 40.00 Raised a mound, in which set a post for quarter section corner.
- 59.32 Left the prairie and entered timber—bears North-east and South-west.
- 63.73 A white walnut, 16 inches diameter.
- 80.00 Set a post, corner to Sections 1, 6, 31 and 36, of Townships 21 and 22 North, Ranges 6 and 7 East of the 4th principal meridian, from which a hickory, 17 inches diameter, bears South 56° East, 18 links; a white oak, 24 inches diameter, bears North 77° East, 36 links; a white oak 14 inches diameter, bears North 27½° West, 35 links and a black Walnut, 24 inches diameter, bears South 75° west, 137 links distant. Land moderately rolling; soil good and fit for cultivation; timber, white oak, black oak, hickory and walnut; undergrowth, sassafras and hazel.

September 29, 1832.

[44.]

Random Township Lines.

- Suppose that the corner to Townships 21 and 22 North, of Range 5 and 6 East, had been established, you would then proceed as follows:—Measuring chain compared with the standard Chain and found to be correct.
- West Chains* On a random line along the south boundary of Section 36, Township 22 North, Range 6 East of the 4th principal meridian.
- 40.00 Set a temporary quarter Section corner post.
- 80.00 Set a post for temporary corner to Section 35 and 36.—[See Article 74 and 78.]
- West Chains* On a random line, along the south boundary of Section 35, Township 22 North, Range 6 East of the 4th principal meridian.
- 21.00 A remarkable fine spring, about 30 links to the North, runs North-easterly.
- 40.00 Set a temporary quarter Section corner post.
- 69.00 A quarry of excellent lime stone.
- 80.00 Set a post for temporary corner to Sections 34 and 35.
- September 30, 1832.

[45.]

- Continue in this manner along the South boundary of Sections 34, 33 and 32, and then run
On a random line, along the South boundary of Section 31,

| | |
|------------------------|---|
| <i>West Chains</i> | Township 22 North, Range 6 East of the 4th principal meridian. |
| 00.57 | The South east bank of a navigable lake, which lies mostly to the North of the line, it being about two miles in a North-eastern direction to the northern end thereof; I therefore off-set around the South end, as follows, viz : South 10.00 chains, West 15.00 chains, South 11.00 chains, West 12.00 chains, North 21.00 chains, regained the random line along the South boundary of Section 31, in advance of the lake, and continue West, counting the distances from the temporary corner post to Sections 31 and 32. |
| 40.00 | Set a temporary quarter Section corner post. |
| 64.00 | A coal bed, in the West bank of Bear Grass creek, which is 40 links wide and runs South. |
| 82.75 | Intersected the Range line 326 links South of the corner to Sections 1, 6, 31 and 36, of Townships 21 and 22 North, Ranges 5 and 6 East. |

[46.]

True Lines of Townships.

| | |
|------------------------|---|
| <i>East Chains</i> | Then, from said Township corner, run |
| 00.32 | On a true line along the South boundary of Section 31, Township 22 North, Range 6 East of the 4th principal meridian. |
| 17.50 | A branch, 7 links wide, runs South-east. |
| 18.00 | A white oak, 18 inches diameter. |
| 33.75 | Bear Grass creek runs South. |
| 42.75 | A hickory, 12 inches diameter. |
| 57.60 | Set a quarter Section corner post, from which a persimmon, 12 inches diameter, bears N. 26° W., 163 links, and a white oak, 24 inches diameter, bears N. 42° E., 18 links distant.— [See Article 75.] |
| | Intersected the North-west bank of the navigable lake, (noted on the random line,) where set a post, corner to fractional Sections 6 and 31, of Townships 21 and 22 North, Range 6 East, from which post a hackberry, 18 inches diameter, bears N. 23° W., 18 links; and a white oak, 15 inches diameter, bears S. 65° W., 8 links. |
| | Thence offset around the lake as follows, viz : West 4.00 chains with the marked line on the South boundary of Section 31. South 16.00 East 28.00—parallel to the South boundary— North 16.00 chains, regained the true line on the South boundary of Section 31, 25 links East of the South-east margin of the lake; I therefore blazed the line back, West 25 links |

to the South east bank of the lake, where set a post for corner to fractional Sections 6 and 31, Townships 21 and 22 North, Range 6 East, 81.35 chains East of the corner to Townships 21 and 22 North, Ranges 5 and 6 East. From said post, a hickory 12 inches diameter, bears north 23° E., 13 links; and an elm, 14 inches diameter, bears South 27° East 54 links distant. Then continue the line East along the South boundary of Section 31, counting the distances from the Township corner.

81.90
82.75

A burr-oak, 48 inches diameter.

Set a post for corner to Sections 31 and 32, from which a sycamore, 18 inches diameter, bears north 25° East, 32 links; and a white oak, 18 inches diameter, bears North 28° West, 13 links distant. Land, level and wet; soil, poor, not fit for cultivation; timber, white oak, burr-oak and sycamore.

September 31, 1832.

[47.]

East
Chains
14.50

Continue in this manner along the south boundaries of Sections 32, 33, 34 and 35, and then run

20.17

On a true line along the South boundary of Section 36, Township 22 North, Range 6 East of the 4th principal meridian.

Entered a field of about 40 acres, bearing North-east and South-West; it lies mostly south of the line.

A spring branch runs South-East, and empties into a creek in about 10 chains.

30.00

The spring is about 5 chains in the North-western direction, and is outside the field.

33.09

Left the field, bearing North-East and South-West.

40.00

A white oak, 28 inches diameter.

Chains
42.10

Set a post for quarter Section corner, from which a hickory, 17 inches diameter, bears North 18° West, 14 links and a white oak, 15 inches diameter, bears North 27° East, 42 links distant.

A creek, 50 links wide, runs North 80° East; the current is rapid. About 5 chains up stream, in a South-westerly direction, is a mill seat, there being rock on both banks, and a fall of about 50 feet in 20.00 chains.

47.20

Diggings for lead, called New Design.

59.60

5.82

A smelting furnace, owned by J — H —

80.00

A wagon road, leading from Kingston and Holmes' Ferry to Galena, bears North-west and South-east.

The corner to Townships 21 and 22 North, Ranges 6 and 7 East.

Land, rolling; soil good, and fit for cultivation; timber hickory, walnut and white oak; undergrowth, briars and hazel.

October 1, 1832.

[48.]

Subdivision Lines.

Form of Field Notes in sub-dividing a Township (say Township 21 North, Range 6 East of the principal meridian,) after the outlines shall have been surveyed.

A. B., Hind chain-man.

C. D., Fore chain-man.

E. F., Flag or fore vane-man.

G. H., Axe-man.

Measuring chain compared with the standard chain, and adjusted thereto, it having been found 1-4 of an inch too long. Last night (14th of April, 1845) about 20.00 chains North-west of the corner to Townships 20 and 21 North, Ranges 6 and 7 East, I ascertained the variation of the needle, by polar observations, to be $8^{\circ} 35$ min. E; I therefore adjust my compass at that variation; and, to determine the course of the East boundary of the township, commence at the corner of Townships 20 and 21 North, Ranges 6 and 7 East, and run—Thence North on a blank line; at 40.04 chains, fell 15 links West of the quarter Section corner; at 79.96 chains, fell 36 links West of the corner to Sections 25 and 36, Township 21 North, Range 6 East; then from said corner to Sections 25 and 36, run North (on the blank line,) 39.97 chains, fell 18 links West of the quarter Section corner; 80.05 chains fell 37 links West of the corners to Sections 24 and 25,—therefore, to run parallel to said East boundary of Township 21 North, Range 6 East, I adjust my compass to a variation of $8^{\circ} 20$ min. East; which is 15 minutes less than the true variation, and commence at the corner to Sections 35 and 36, on the South boundary of the Township, and run—Thence

[49.]

North
Chains
17.62
27.60

40.00

40.32

47.50

Between Sections 35 and 36, Township 21 North, Range 6 East of the 4th principal meridian.

A sugar maple, 18 inches diameter.

A creek, called White Oak creek, 40 links wide, gentle current, runs North-west.

Set a post for quarter Section corner, from which a Walnut, 20 inches diameter, bears South 16° East, 18 links; and a white oak, 18 inches diameter, bears North 23° West, 184 links.—

[See Article 76.]

Entered river bottom; bears E. and W.

The right bank of White river, a navigable stream, at an Eastern bend thereof, runs North. Set a post, corner to fractional sections 35 and 36, from which a white oak, 18 inches diameter, bears South 25° W., 18 links; and a hickory, 17 inches diameter, bears South 15° East, 39 links distant. The line will run down the river, and leave it again on the

right side, without crossing over to the left; I, therefore, meander down stream on the right bank of said river, along fractional Section 36, from the before described corner of fractional Sections 35 and 36, as follows, viz:

N. 27° E. 16.00 chains,

N. 14° E. 4.00 chains,

N. 3° W. 2.00 chains,

N. 39° W. 12.93 chains,—regained the line be-

tween Sections 35 and 36, on the right bank of White river, where set a post, corner of fractional Sections 35 and 36, of Township 21 North, Range 6 East of the 4th principal meridian, from which a burr oak, 10 inches diameter, bears South 85° East, 27 links, and a hickory, 18 inches diameter, bears North 27° West, 134 links distant. This corner is 77.79 chains North of the corner to Sections 35 and 36, on the South boundary of the Township. The river here runs north-westerly. I continue the line North between Sections 35 and 36, counting the distances from the corner on the South boundary of the Township.

80.00

Set a post, corner to Sections 25, 26, 35 and 36, from which a white oak, 14 inches diameter, bears North 17° East, 18 links; a white oak, 12 inches diameter, bears South 25° West, 13 links, and a walnut, 14 inches diameter, bears South 58° East, 32 links distant. There is no tree within a reasonable distance in Section 26.

*East
Chains*

[50.]

40.00

On a random line, between Sections 25 and 36, Township 21 North, Range 6 East of the 4th principal meridian.

80.18

Set a temporary quarter Section corner post.

*West
Chains*

17.60

Intersected the East boundary of the Township 37 links South of the corner to Sections 25 and 36, from which corner I run.

20.40

On a true line between Sections 25 and 36*, Township 21 North, Range 6 East of the 4th principal meridian.

40.09

A white oak, 15 inches diameter.

A branch, 26 links wide, runs South-west.

40.15

Set a quarter section corner post, from which a pine, 17 inches diameter, bears South 32° East, 49 links; and a pine, 27 inches diameter, bears North 42° West, 132 links distant.—

[See Article 77 and 78.]

65.17

Left hills and entered bottom; bears North-west and South-east.

80.18

A walnut, 36 inches diameter.

The corner to Sections 25, 26, 35 and 36.

April 15, 1833.

* When the Notes of a TRUE East and West SUBDIVISION line follow IMMEDIATELY AFTER those of the random line, between the same Sections, as in the above case of the line between Sections 25 and 36, you MAY leave out the Township, Range and Meridian, in the Notes of the TRUE LINE, and instead of which, write after the words, "from which corner I run."

[51.]

West

On a true line between said Sections 25 and 36.

*North
Chains
27.62
29.34*

[52.]

Between Sections 25 and 26, Township 21 North, Range 6 East of the 4th principal meridian.

A white oak, 12 inches diameter.

Intersected the right and Southerly bank of White river, a navigable stream; runs Easterly. Set a post, corner of fractional Sections 25 and 26, from which a burr oak, 17 inches diameter, bears South 17° East, 39 links, and a black oak, 13 inches diameter, bears South 25° West, 142 links distant. Sent my flag-man over the river, and caused the flag to be set on the left bank thereof, on the line between Sections 25 and 26; I then offset from the before described corner to fractional sections 25 and 26 West, 5.00 chains, to a point from which the flag, set as before said, on the left bank of the river, and on the line between Sections 25 and 26, bears North 24° East, making the distance across the river 11.23 chains; therefore, at (29.34 more 11.23) equal to.

40.57

Set a post on the left and North bank of White river, for corner to fractional Sections 25 and 26, from which a hickory 13 inches diameter, bears North 65° East, 125 links; and a white oak, 17 inches diameter, bears North 72 degrees West, 19 links distant. The place of the quarter Section corner is in the river; it cannot therefore be established.

74.39

A black oak, 14 inches diameter.

79.16

A black oak, 14 inches diameter.

80.00

Set a post, corner of Sections 23, 24, 25 and 26, from which a white oak, 17 inches diameter, bears North 23° West, 27 links; a black oak, 14 inches diameter, bears North 62° East, 113 links; and a black oak 14 inches diameter, bears South 36° East, 39 links. There is no tree within a reasonable distance in Section 26.

[53.]

*East
Chains
21.32*

On a random line, between Sections 24 and 25, Township 21 North, Range 6 East of the 4th principal meridian.

Intersected the left bank of White river, a navigable water course; runs north-easterly; set a post corner of fractional Sections 24 and 25, from which a hickory, 17 inches diameter, bears South 39° West, 18 links; and a white oak, 18 inches diameter, bears North 85° West, 132 links distant.

Not knowing that this line would intersect a navigable stream, when I commenced the survey thereof, I run it on a random line; I therefore, from this fractional Section corner, run and blazed.

[54.]

*West
Chains*
4.06
21.32

On a true line between Sections 24 and 25, Township 21 N., Range 6 East.

A black oak, 13 inches diameter.

The corner of Sections 23, 24, 25 and 26.

April 16, 1833.

[55.]

Measuring chain compared with the standard chain and found to be 1 inch too long ; made it of the proper length, and commenced at the corner of Sections 24 and 25, on the East boundary of the Township, and run—Thence

*West
Chains*
17.60
32.40
40.00

On a true line, between said Sections 24 and 25, Township 21 North, Range 6 East of the 4th principal meridian.

A white oak, 8 inches diameter.

A brook, 15 links wide, runs South-west.

Set a post for quarter Section corner, from which a white oak, 13 inches diameter, bears North 32° West, 18 links ; and a black oak, 15 inches diameter, bears South 35° East, 14 links distant.

45.38

Intersected the right and South-easterly bank of White river, which runs North-easterly ; set a post, corner to fractional Sections 24 and 25, from which a white oak, 14 inches diameter, bears North 80° East, 17 links ; and an elm, 14 inches diameter, bears South 17° East, 45 links distant. The post, corner to fractional Sections 24 and 25, established on the left bank of White river, at 21.32 chains East of the corner to Sections 23, 24, 25 and 26, [See Article 53 of this book,] bears South 87 1-4° West ; I then run South 65 links to a point from which the aforesaid post, corner to fractional Sections 24 and 25, on the left Bank of White river, bears West. Section 25, therefore, closes within the limits specified in my instructions.

[56.]

*North
Chains*
0.62
3.20
40.00
62.00
80.00

Between Sections 23 and 24, Township 21 North, Range 6 East of the 4th principal meridian.

Left bottom and entered upland.

Entered prairie, bears N. E. and S. W.

Raised a mound, in which set a quarter Section corner post.

A branch 6 links wide, runs East.

Deposited 2 quarts of charcoal, 3 inches below the natural surface of the earth, and over said charcoal erected a mound, in which set a post, corner to sections 13, 14, 23 and 24.

[57.]

East

On a true line, between Sections 13 and 24, Township 21

Chains North, Range 6 East of the 4th principal meridian.
7.00 Left the prairie and entered timbered land.
29.35 Intersected the left bank of White river, (runs northeasterly ;) set a post, corner of fractional Sections 13 and 24, from which a white oak, 18 inches diameter, bears South 17° West, 183 links; and a hickory, 18 inches diameter, bears North 74° West, 14 links distant.
 I then commence at the corner of Sections 13 24, on the East boundary of the Township, and run thence.

[58.]

West Chains On a true line between said Sections 13 and 24, Township 21 North, Range 6 East of the 4th principal meridian.
17.84 Intersected the left bank of White river; runs South-east. Set a post, corner to fractional Sections 13 and 24, from which an elm, 8 inches diameter, bears South 42° East, 18 links; and a gum, 13 inches diameter, bears North 46° 15 min. East, 73 links. Determined the distance across the river by causing my flag to be set on the opposite or right bank thereof, due west from this corner, on the line between Sections 13 and 24, and runs South 3.78 chains to a point under the bank of the river; from which the flag, set as aforesaid on the opposite, bank, bears North 73 1-2° West, which gives 12.76 chains the distance across the river West from the post, corner of fractional Sections 13 and 24, on the left bank, 17.84 chains West of the corner on the East, boundary of the Township; therefore, at 17.84 more 12.76 chains, equal to
30.60 West of the aforesaid corner to Sections 13 and 24, on the East boundary of the Township, set a post, corner to fractional Sections 13 and 24, Township 21 North, Range 6 East, on the right bank of White river, from which a white oak, 16 inches diameter, bears North 57° West, 19 links; and a hickory 15 inches diameter, bears South 69° West, 13 links. Inter-
37.54 sected the right bank of White river, runs North-east, where set a post, corner to fractional Sections 13 and 24, from which a red elm, 18 inches diameter, bears South 16° East, 79 links; a pin-oak, 15 inches diameter, bears North 87° East, 19 links. From this corner, the corner to fractional Sections 13 and 24, on the left bank of white river, 29.35 chains East of the corner to Sections 13, 14, 23 and 24, bears South 87° West—I run thence South 72 links to a point from which the aforesaid corner of fractional Sections 13 and 24, on the left bank of the river, bears West. Section 24, therefore, closes within the prescribed limits.

[59.]

North Chains Between Sections 13 and 14, Township 21 North, Range 6 East of the 4th principal meridian.

- 00.16 Entered prairie.
 40.00 Raised a mound, in which set a post for quarter Section corner.
 80.00 Placed three lime stones in the ground, the top of the uppermost one 4 inches below the natural surface thereof; and the other two, successively, and immediately below it. The upper stone is 8 inches long, 6 inches wide at one end, 5 inches wide at the other end, and 3 1-4 inches thick; the stone next below it, is 5 inches square and 4 thick; and the lowermost stone is 6 inches square and 3 inches thick; over said stones raised a mound, in which set a post corner to Sections 11, 12, 13 and 14.

April 17, 1833.

A. B., Hind chain man.

C. D. Fore chain-man.

[60]

A. B. quits work on account of sickness—I have supplied his place with C. D., my former fore chain-man, and employed J. K. as fore chain-man.

[J. K.'s oath to be entered here.]

[61.]

*North
Chains*
40.00

Proceeded in this manner between Sections 12 and 13, 11 and 12, and 1 and 12;—Then run Between Sections 1 and 2, Township 21 North, Range 6 East of the 4th principal meridian.

49.50
62.00

Raised mound, in which set a post for quarter Section corner. Left prairie and entered timber.

80.79

A creek 50 links wide, not navigable, runs North-east; rapid current.

Intersected the South boundary of township 22 North, Range 6 East, 37 links West of the corner to Sections 35 and 36; and at said intersection set a post, corner to sections 1 and 2, Township 21 North, Range 6 East, from which a white oak, 14 inches diameter, bears South 26° East, 14 links, and a hickory, 13 inches diameter, bears South 42° West, 18 links distant.

April 18, 1833.

[62.]

*North
Chains*
40.00

Between Sections 34 and 35, Township 21 North, Range 6 East of the 4th principal meridian.

80.00

Raised a mound, in which set a post for quarter Section corner.

Set a lime stone, which is 16 inches long, 14 inches wide at one end, 12 inches wide at the other end, and 4 inches thick,

with the widest end 10 inches in the ground, for corner to Sections 26, 27, 34 and 35.

[63.]

*East
Chains*
40.00

On a true line between Sections 26 and 35, of Township 21 North, Range 6 East of the 4th principal meridian.

46.17
60.32

Raised a mound, in which set a post for quarter Section corner.

Left the prairie and upland, and entered timbered bottom land. Intersected the left bank of White river, which runs North-west, where set a post for corner to fractional Sections 26 and 35, from which a hickory, 17 inches diameter, bears South 65° West, 13 links; and a black walnut, 16 inches diameter, bears North 72° West, 142 links distant.

[64.]

*West
Chains*
5.61

Then commence at the corner to Sections 25, 26, 35 and 36° and run

On a true line, between Sections 26 and 35, Township 21 North, Range 6 East of the 4th principal meridian.

Intersected the right and easterly bank of White river, at said intersection set a post, corner to fractional Sections 26 and 35, from which an elm, 18 inches diameter, bears South 85° East, 13 links; and a white oak, 14 inches diameter, bears North 27° East, 14 links distant. Search for the corner of fractional Sections 26 and 35, on the opposite bank of the river, and find it to be at least 5 chains further South than the before described corner to the fractions of said Sections 26 and 35 on the right bank. Section 35 does not close within the limits specified in my instructions. I therefore proceed forthwith to ascertain in what line or lines the error was committed, and to make the required correction: As the line between Sections 25 and 36 closed within the proper limits, the presumption is, that the error is in the line between Sections 34 and 35. I commence at the corner to said Sections, on the South boundary of the Township, and run—Thence.

[65.]

*North
Chains*

40.13

With the line already surveyed between Sections 34 and 35, Township 21 North, Range 6 East of the 4th principal meridian, [See Article 62 of this book.]

The quarter section corner. There is no error, therefore, in this half mile, the 13 links being not more than a reasonable difference in measurement; so I continue the line north, and count the distance from the corner on the South boundary of the Township, adopting 40.00 chains as the length of that part of the line which lies South of the quarter Section corner.

74.65
80.00

The corner established by me for sections 26, 27, 34 and 35. I therefore remove the stone, corner to said Sections, and at Set it for the corner to Sections 26, 27, 34 and 35, said stone being as described in Art. 62, viz: 16 inches long, 14 inches wide at one end, 12 inches wide at the other end, and 4 inches thick, and is set with the widest end 10 inches in the ground.

[66.]

East
Chains
40.00

Then run
On a true line between Sections 26 and 35, Township 21 North, Range 6 East of the 4th principal meridian.
Raised a mound, in which set a post for quarter Section corner; then go to the quarter Section corner established by me on the line erroneously surveyed between Sections 26 and 35, and described on page 21 of this book, and destroy it by leveling the mound and removing the post, and return to the above described quarter Section corner, and continue the line East between Sections 26 and 35, counting the distances from the corner to Sections 26, 27, 34 and 35.
Entered timber.

49.57
61.17

Intersected the left and westerly bank of White river, (*establish the corner and make the connection with the opposite corner.*)—Then destroy the corner to fractional Sections 26 and 35, established by me on the left bank of White river, at the intersection therewith of the erroneous line between said Sections 26 and 35 described on page 21 of this book, by removing the post and defacing the marks on the witness trees.

[67.]

North
Chains
40.00
80.00

Between Sections 26 and 27, Township 21 North, Range 6 East of the 4th principal meridian.
Raised a mound, in which set a post for quarter Section corner.
The middle of a ravine, which runs South-west. I therefore select the most suitable plot of ground in the vicinity, and deposit three quarts of charcoal, 4 inches below the natural surface of the ground, and over it erect a mound, in which set a post as a witness point to the corner of Sections 22, 23, 26 and 27; said witness point bears North 26° West, 144 links from the true place of said corner to said Sections.
April 19, 1833.

[68.]

West
Chains

Continue in this manner until you get to the Western range of Sections, and after having established the corner to Sections 29, 30, 31 and 32, run
On a true line between Sections 30 and 31, Township 21 North, Range 6 East of the 4th principal meridian.

72.00 Raised a mound, in which set a post for quarter Section corner.
 80.42 Entered timber—bears North-east and South-west.
 Intersected the East boundary of Township 21 North, Range 5 East, 62 links South of the corner to Sections 25 and 36, and at said intersection set a post, corner to Sections 30 and 31, Township 21 North, Range 6 East, from which a burr oak, 17 inches diameter, bears South 25° East, 18 links, and a white oak, 17 inches diameter, bears North 27° East, 184 links distant.

April 27, 1833.

[69.]

In running East and West RANDOM LINES, in the INTERIOR of a Township, where there are no navigable streams, or other obstructions :—Supposing for example the line between Sections 27 and 34—your notes will be kept as follows :

East
 Chains
 40.00
 79.92

On a random line between Sections 27 and 34, Township 21 North, Range 6 East of the 4th principal meridian.
 Set a temporary post.
 To a point 32 links North of the corner to Sections 26, 27, 34 and 35, from which corner I run, &c.

[70.]

[*Form of keeping Field Notes of the meanders of a navigable river, or other water course.*]

Commence at the corner to fractional Sections 25 and 26, Township 21 North of the base line, Range 6 East of the 4th principal meridian, on the right and south-easterly bank of White river, and run thence down stream, with the meanders of the right bank of said river, along fractional section 25, Township 21 North, Range 6 East, as follows :

Chains

N. 36° E., 14.00—Thence

N. 25° E., 17.20 to the mouth of a spring branch, 6 links wide, comes from the South-east—Thence

N. 40° E., 30.00—Thence

N. 18° E., 00.40—To the corner of fractional Sections 24 and 25, on the right bank of White river.

Land, high, rich bottom, fit for cultivation ; timber, walnut, cherry and white oak ; undergrowth, spicewood and vines.

Thence from said corner to fractional sections 24 and 25, down stream with the meanders of the right and south-easterly bank of White river, along fractional Section 24, Township 21 North, Range 6 East of the 4th principal meridian, as follows :

Chains.

N. 13° E., 5.00 ; Thence

N. 3° E., 48.00 ; Thence

N. 9° E., 27.53 ; To the corner of fractional Sections 13 and

24, on the right bank of White river, and 37.54 chains West of the corner on the East boundary of the Township.

Land, high, rich bottom, fit for cultivation ; timber, walnut, cherry and white oak ; undergrowths spicewood and vines.

In all cases where there are two or more fractional corners of like denomination on the same bank of a river, distinguish them in your meandering notes, by stating their course and distance from the proper Section corner.

Your Field Book, containing your original notes, will be signed by each of your chain-men, axe-men, and flag-men, and they, and the copies thereof, will be certified by yourself, the certificate to be in conformity with the requirements of your contract, which will be according to the following form, or to so many of the facts therein stated as may be applicable.

[71.]

[*Form of certificate for your original Field Notes.*]

I certify, that the foregoing notes on pages 1 to 362, inclusive, are the original Field Notes of the survey of [*here state the surveys described on said pages*] as executed by me in the months of ———184—, under my contract with, and instructions from——, Surveyor of Public Lands in Illinois and Missouri, bearing date the — day of ———184—. And I do further certify, that the marks, descriptions, courses, and distances, specified in said notes, are correct, and also that the said notes were all set down at the time when, and in the order in which, the work was performed on the ground ; that each of the witness trees to Township and Section corners was marked with a blaze and notch facing the corner post ; that the notch on each tree was at the lower end of the blaze ; that the blaze was neatly made ; and that there was marked, in a plain, distinct and permanent manner, with a marking iron, on the blaze of each witness tree, and above the notch, the letter S, with the number of the Section ; and over it the letter T, with the number of the Township ; and over this the letter R., with the number of the Range, in which the said trees respectively stand ; that each Section and Township corner post was inserted two feet in a hole dug in the ground, and that they were securely rammed in with earth, and also with stone, when convenient ; that the said posts were of the most durable wood that could be had in the vicinity ; that the Township corner posts were 5, and the Section corner posts 4 inches diameter ; that they were neatly squared at the top, and placed with the corners to the cardinal points, and that the several sides were marked with the number of the Section which they faced ; also, that the corners of Township corner posts were marked with 6 notches each ; that two of the corners of Section corner posts on Township boundary lines, were marked with as many notches, facing the proper cardinal points, as said posts are miles from the nearest Township corners ; and that the corners of the Section posts, in the interior of a Township, were marked with as many notches as the posts stand miles from the Township boundaries ; that the witness trees to quarter Section corners were marked with a

blaze and notch facing the post ; and that 1-4 S. was marked on the blaze above the notch ; and also, that 1-4 S. was marked on each corner post, and that the posts were at least three inches diameter, and placed firmly in the ground. That the mounds were reveted or faced with sod, laid horizontally and in successive layers on each other, each layer having an offset inwards, corresponding to the general slope of the face of the mound ; and that the mounds at Township corners were 5 feet square at the base, 2 feet square at the top, and 3 feet high ; that the mounds, at Section corners were 4 feet square at the base, 2 feet square at the top, and 2 feet 6 inches high ; and that the mounds at quarter Section corners, were 3 feet 6 inches square at the base, 1 foot 6 inches square at the top, and 2 feet high. That where stones were used for corners, they were, in all cases, inserted endways in the ground, to the depth of 7 or 8 inches, with their edges North and South, on the North and South lines ; and East and West, on East and West lines. That the said stones were marked in a plain and distinct manner, with a pick (or chisel) as follows : Township corner stones, each with 6 notches on each side and edge ; Section corner stones on Range and Township lines, with as many notches on the edges as they stand Sections distant from the nearest Township corners, Section corner stones in the interior of a Township, with as many notches on South edges and East sides, as they stand Sections distant from the South and East boundaries of the Township. Stones at the corners of subdivisional intersections with the North boundary of a Township, with 6 notches on the South edge. At the subdivisional intersections with the West boundary of a Township, with 6 notches on the East edge. The side stones at the aforesaid intersections, with both the North and West boundaries, were also marked with as many notches on the East or South sides as they stand Sections from the N. E. or South W. corners of the Township. That each of the quarter Section corner stones were marked "1-4" on the West side, on North and South lines, and on the North side on East and West lines.

And if there are any exceptions on account of re-surveys, or corrections, or any other cause whatever, they must be intelligibly and accurately specified in the proper place of the certificate.

The certificate to the copy will be similar to that to the original, with the necessary variations ; such as, I certify, that the foregoing notes on page 1 to 375 inclusive, are correctly transcribed from the original Field Notes, &c.

[72.]

The foregoing instructions are (with the exception of the numbering of, and the captions to, the several Articles) copied from the "General Instructions to Deputy Surveyors," issued by the Surveyor General of Illinois and Missouri, in the year 1841. The following are in addition thereto, and may be adopted hereafter as the form of keeping Field Notes of surveys, executed under the authority of this office, whenever found convenient.

At the head of each page of your Field Book you will enter the number

of the Township and range in which the surveys are made, and also the number of the Meridian, in the following manner :—

[73.]

East boundary of Township 21, North of the base line of Range 6 East of the 4th principal meridian.

| | |
|-------------------------|---|
| <i>North Chains</i> | Along the East boundary of Section 36, At a variation of 7° 35 East. |
| 14.70 | A branch 25 links wide, rapid current, runs south-westerly for about 10.00 chains, then turns to the North-west. |
| 27.80 | Leave the creek bottom and ascend a rocky bluff ; bears North-east and South 25° West. |
| 29.40 | A white oak, 15 inches diameter. |
| 33.70 | A hickory, 24 inches diameter, on the top of the bluff. |
| 35.45 | An Indian mound, about 50 links long, 30 links wide, and 25 links in height, with large trees growing over it. |
| 40.00 | Set a post for quarter Section corner. |
| | Bearings { A white oak, 24 in. di. bears S. 28° W. 197 links. { A poplar, 18 in. di. bears N. 56° W. 14 links. |
| 49.07 | A white oak, 8 inches diameter. |
| 64.08 | A black walnut, 36 inches diameter. |
| 80.00 | Set a post for corner to Sections 25 and 36. |

Bearings { A hickory, 17 in. di. bears S. 57° W. 127 links.
 { A white oak, 13 in. di. bears N. 23° W. 72 links.

Here describe the land, timber and undergrowth, in the same manner as in Article 41.

Then continue along the East boundaries of Sections 25, 24, 13, 12, and 1, and establish the corner to Townships 21 and 22 North, Ranges 6 and 7 East, in the usual way.

[74.]

The South boundary of Township 22 North, Range 6 East of 4th principal meridian.

| | |
|------------------------|--|
| <i>West Chains</i> | On a random line, along the South boundary of Section 36— At a variation of 7° 35 min. East. |
| 40.00 | Set a post for temporary quarter Section corner. |
| 80.00 | Set a post for temporary corner to Sections 35 and 36. Then continue the random line in the same manner pointed out in Article 44 and 45, except that the water courses, ponds, and swamps, &c., &c. (see Article 34) are to be noted only on |

the true line. The land, timber and undergrowth is to be described at the end of each mile of the *true* line.

After connecting the random line along the South boundary of Section 31 with the Township corner, you will calculate the true bearing of the South boundary of the Township, and adjust your compass thereto, and commence at said Township corner, and run—Thence

[75.]

*East
Chains*

On a true line, along the South boundary of Section 31,
At a variation of $7^{\circ} 12$ min. East.—[See Article 46.]

10.50

A pond, about 3.00 chains diameter, cross about the middle.

28.25

A coal bed in the West bank of a creek, 40 links wide, runs South.

36.20

Leave bottom and ascend a steep hill; bears North and South.

42.75

Set a post for quarter Section corner.

Bearings { A black oak, 15 in. di. bears N. 27° W. 62 links.
A hickory, 18 in. di. bears N. 40° E. 53 links

50.20

A hackberry, 24 inches diameter.

61.80

A branch, 10 links wide, runs south-east.

82.75

Set a post for corner to Sections 31 and 32.

Bearings { A burr oak, 36 in. di. bears N. 47° W. 22 links.
An ash, 14 in. di. bears N. 17° E. 43 links.

Land, 36.50 chains West, part level rich bottom, some parts rather wet, not subject to inundation, and the most of it fit for cultivation.

Timber, burr oak, black walnut and pin oak.

Undergrowth, spice, prickly ash and vines.

Upland, rolling and broken, too poor for cultivation.

Timber, post oak, black jack and hickory; no undergrowth.

Then continue the true line along the South boundary of Sections 32, 33, 34, 35 and 36, establishing quarter Section and Section corners at every 40.00 chains.

[76.]

Subdivision of Townships.

Township 21 north of the base line, Range 6 East of the 4th principal meridan.

*North
17.62*

Between Sections 35 and 36—at a variation of $7^{\circ} 35$ East.
A sugar maple, 28 inches diameter.

27.60 White Oak creek, 40 links wide, gentle current, runs Northwest.

40.00 Set a post for quarter Section corner.

Bearings { Black walnut, 20 in. di. bears S. 16° E. 18 links.
Honey locust, 16 in. di. bears N. 23° W. 184 links.

55.30 A white walnut, 14 inches diameter.

80.00 Set a post, corner to Sections 25, 26, 35 and 36.

Bearings, { A sugar maple, 26 in. di. bears S. 40° E. 27 links.
A hickory, 12 in. di. bears N. 27° E. 41 links.
A black oak, 20 in. di. bears N. 62° W. 110 lks.
A black walnut 16 in. di. bears S. 53° W. 81 lks.

[See Article 49.]

[Here describe the land, timber and undergrowth.]

[77.]

*East
Chains*

On a random line, between Sections 25 and 36.

At a variation of 7° 35 min. East.

Then proceeded as directed in Article 50, except that in describing the quarter Section corner (if in timber) you will describe the bearing or witness trees, as follows :

Bearings { A pine, 17 inches di. bears S. 32° E. 40 links.
A pine, 27 inches di. bears N. 42° W. 132 links

And after closing the true line to the Section corner, you will describe the land, timber and undergrowth.

[78.]

Field Notes of Township lines.

On East and West Township lines, and on East and West subdivision lines, the distances to water courses, the points at which you enter or leave timber or prairie, swamps, ponds, or other objects which are required to be noted in your Field Book, are to be noted *only* on the true lines ; you will, however, in running the random line, give the distances to the temporary Section and quarter Section posts—the length of each line, and falling from the corner run for.

[79.]

At the top of each page of your Field Book of Township boundaries you will describe the line which you are surveying, or about to run, as in Articles 73 and 74 ; after which the Township, Range, and meridian, need not be repeated on that page, unless the Township corner which you run from, or close on, are to be particularly described.

[80.]

Field Notes of Subdivision Lines.

In your Field Notes of subdivisions, you will give the Township, Range, and meridian, at the top of the page, as in Article 76, after which they need not be repeated on that page.

[81.]

Copies of Field Notes.

If your original Field Notes are plainly written, according to the printed form, not too much disfigured by blots, interlineations, &c., and your work shall be in every other respect unobjectionable, no copy will be required.—[See Articles 37 and 39.—B.]

[82.]

Original Field Notes, Ink, Paper, &c.

The original Field Notes of your surveys are to be written with good, durable black ink; and the paper in your Field Books, must be of a good quality, of uniform size, and put together so as to form one or more volumes, which are to be paged accordingly.

[83.]

Blank Pages for oaths.

At the end of the Field Notes of each Township, or fractional Township, you will leave one or two blank pages for the oath, required by the 2d Section of the Act of Congress of the 8th of August, 1846, for which see the 3d page of the triplicate contract, to be retained by you. The oath is to be according to a form which will be furnished to you by this office.

[84.]

Impassable Lakes, Swamps, or Ponds, to be meandered.

In all cases, where your township boundaries, or subdivision lines, intersect impassable lakes, swamps or ponds, which may have to be meandered, you will at each intersection establish a fractional Section corner, and meander the banks or margins of such lakes, &c., so far as they may lie in any Township you may subdivide, or so far as they may be impassable. The lines of meanders are to be connected with the fractional Section corners in the same manner as the meanders of a navigable stream. It is, however, not to be understood, that you are to meander a lake,

swamp, or pond, *merely* because it should be impassable at a particular place where you happen to intersect it, but might be easily passed in other places.—[*See Section 24.*]

[85.]

Survey of Islands in Rivers, Lakes, or Swamps.

Islands are to be surveyed in the following manner, viz: Ascertain first the corner of the surveys on the main shore which is nearest to the Island; then prolong the line which that corner closes, across the arm of water to the edge of the Island, where establish a Township or Section corner, (as the case may be,) thence extend the line across the island to the opposite edge of the same, where set a corner, establishing on the line Township, Section, or quarter Section corners, (as the case may be) on the Island in the same position that they would occupy were there no river, lake or swamp in the way. And then meander around the Island, noting carefully the corners as you pass them.

[86.]

If the Island is so situated that no Section or Township line will run through it, you will connect the most convenient point on the edge of the Island nearest to the main shore, with the nearest corner on the said shore; at that point on the Island establish a meander corner, and then meander around the Island until you reach this corner again. In the same way you may connect a small Island in the vicinity, with another Island on which regular corners for Sections or Townships have been established. Also a group of small Islands may likewise be surveyed by connecting one Island with another by means of meander corners.

[87.]

No Payment will be made until the Work is Completed.

No payment will be made for the surveying of a Township until it is completed, so far as the lakes, swamps or ponds will admit of.

[90.]

Your attention is also directed to the following Act of Congress, entitled, "An Act to protect the Surveyors of the Public Lands of the United States, and to punish persons guilty of interrupting and hindering, by force, Surveyors in the discharge of their duty."

Be it enacted by the Senate and House of Representative of the United States of America, in Congress assembled, That any person who shall

hereafter, in any manner, by threats or force, interrupt, hinder, or prevent, the Surveying of the Public Lands of the United States, or of any private land claim, which has, or may be confirmed by the United States, or the authority thereof, by the persons authorized to survey the same, in conformity with the instructions of the Commissioner of the General Land Office, or the principal Surveyors in any of the districts in any State or Territory, shall be considered and adjudged to be guilty of a misdemeanor, and upon conviction in any District or Circuit Court of the United States, in any State or Territory having jurisdiction of the same, shall be fined a sum not less than fifty dollars, nor more than three thousand dollars, and be imprisoned for a period of time not less than one, nor more than three years.

SEC. 2. *And be it further enacted*, That whenever the President of the United States shall be satisfied that forcible opposition has been offered, or will likely be offered, to any Surveyor or Deputy Surveyor, or Assistant Surveyor, in the discharge of his or their duties, in surveying the Public Lands of the United States, it shall and may be lawful for the President to order the Marshal of the State or District, by himself or deputy, to attend such Surveyor, deputy, or assistant Surveyor, with sufficient force to protect such officer in the execution of his duty as Surveyor, and to remove force, should any be offered.

Approved, May 29, 1830.

[91.]

Your attention is also directed to the following Section of an Act of Congress, approved August 8th, 1846, entitled, "An Act to equalize the compensation of the Surveyors General of the Public Lands of the United States, and for other purposes."

SEC. 2. *And be it further enacted*, That the Surveyors General of the Public Lands of the United States, in addition to the oath now authorized by law to be administered to deputies on their appointment to office, shall require each of their deputies, on the return of his surveys, to take and subscribe an oath or affirmation, that those surveys have been faithfully and correctly executed according to law and the instructions of the Surveyor General; and on satisfactory evidence being presented to any Court of competent jurisdiction, that such surveys, or any part thereof, had not been thus executed, the deputy making such false oath or affirmation, shall be deemed guilty of perjury, and suffer all the pains and penalties attached to that offense; and the District Attorney of the United State for the time being, in whose district any false, erroneous, or fraudulent surveys have been executed, shall, upon the application of the proper Surveyor General, immediately institute suit upon the bond of such deputy; and the institution of such suit shall act as a lien upon any property owned or held by such deputy or his sureties, at the time such suit was instituted.

Approved, August 8th, 1846.

INSTRUCTIONS,

ESPECIALLY FOR

SURVEYING PRIVATE CONFIRMED CLAIMS.

In the execution of the surveys of private confirmed claims, you will, in all respects, be governed by the foregoing instructions, wherever they are applicable, and in addition thereto, will observe the following instructions :

All trees on each side of the lines, and near thereto, except on random lines, and those trees hereafter excepted, must be marked with two spots, or blazes, diagonally, or quartering towards the line.

Trees which have thereon plain marks of an old line which you are running anew, must not be re-blazed ; but on lines of this description, only such trees will be blazed as have not good evidence of having been marked of old ; and when any old corner trees, or witness trees to old corners, are cut into for the purpose of identifying the corner, all the particulars relating thereto must be entered in the field notes.

All corners where witness trees are convenient, will be perpetuated in the following manner :

1st. When a tree is at the exact place of any corner, it will be marked with three notches, in the direction of each line which runs therefrom.

2nd. When there is no tree at the exact place of a corner, you will plant a post, of the most durable wood that can be had in the vicinity, the said posts must not be sharpened, and driven into the earth as stakes, but must be cut off square or nearly so at the bottom, and be set in the ground, by digging a hole to admit them two feet deep, and be very securely rammed in with earth, and also with stone, when convenient ; they must be at least five inches diameter, and must be neatly squared off at top, or faced otherwise, as the case may require, and placed at the corners of private surveys, so that the corners of the posts will correspond to the lines which run therefrom ; and at the fractional sectional corners, so that the corners of the posts will correspond with the cardinal points ; and the letters P S will be marked on the several sides of the posts fronting private surveys ; and the letter S, with the proper number of section, on a side fronting each fractional section.

3rd. Or, when there is no tree at the exact place of a corner, you may, instead of a post, insert endways into the ground, to the depth of seven or eight inches, a stone which shall not be less than 12 inches wide, 14 inches long, and 3 inches thick, which stone will be marked with a cross, thus—X ; and you will particularly describe in your field

notes the kind of stone used, together with its shape and dimensions, and the manner and depth it is set in the ground, and the mark put thereon.

You will ascertain and state in your field notes, the course and distance from the several corner posts, trees, and stones, to a tree in each private survey and fractional section for which they stand as a corner; each of said trees you will mark with a notch and blaze, facing the corner post, tree, or stone; the notch to be at the lower end of the blaze; and on the blaze, which must be neatly made, you will mark, with a marking iron, in a plain, distinct and permanent manner, on each witness tree within a private survey, the letters P S; and each witness tree on the public land, the letter S, with the number of the section, and over it the letter T, with the number of the township; and above this the letter R, with the number of the range in which they respectively stand. And in all cases where there is no tree in any private survey or fractional section, within a reasonable distance of a corner on which to mark the number of section, township, or range, or the letters P S, that fact must be stated in your field notes.

Corners in a prairie, or other situation, where bearing or witness trees are not at hand, will be perpetuated by depositing in the ground, and at least 6 inches beneath the natural surface thereof, a portion of charcoal, (the quantity to be specified in your field notes,) not less than 2 quarts, at the place of such corners, which you will cover with 3 inches of dirt; and on this you will set a post around which you will erect a mound of earth three feet high, five feet square at the base, and two feet square at the top; the sides whereof must be reveted or faced with sods, laid horizontally, and in successive layers, on each other; each of said layers having an offset inwards, corresponding to the general slope of the face of the mound. The posts will be of the dimensions and marked, as directed, at the corners where witness trees are convenient; all of which will be noted in the description of the corner. Or, in lieu of charcoal or stone, (to be deposited as before stated,) you may perpetuate the corner by inserting endways into the ground, and to the depth of seven or eight inches, a stone, which you will mark on the top with a cross, thus—X, and which stone shall not be less than 12 inches wide, 14 inches long, and 3 inches thick, over which no mound need be erected; but the kind of stone used, together with its shape and dimensions, and the manner in which it is set, and the mark put thereon, must be particularly described in your field notes.

The corner posts, where mounds are not made, must rise at least three feet above the surface of the ground; and where corner posts are placed in mounds, they must rise at least one foot above the top of the mound.

If a corner, where bearing or witness trees are not to be found within a reasonable distance therefrom, shall fall within a ravine, or in any other situation, where the nature of the ground or the circumstances of its locality shall be such as may prevent or prove unfavorable to the erection of a mound, you will perpetuate such corner by selecting, in the immediate vicinity thereof, a suitable plat of ground as a site for a

bearing or witness mound, and erect thereon a mound of earth in the same manner, and conditioned in every respect with charcoal deposited beneath, as before described, for a corner; and determine and state in your field notes the distance and course of the bearing or witness mound, so placed and erected, from the place of the corner.

If the claimants of any surveys wish their corners more permanently established than is herein required, and will furnish the additional materials and labor, you will establish the said corners in the manner they may request, and with the materials they may furnish:—their consent, however, will not authorize you to establish a corner of a less permanent character than is required in these instructions.

At the intersections of the several lines of private surveys with the lines of the public surveys, corners must be established for the proper fractional sections, (in the manner heretofore directed for establishing corners,) and the course and distance therefrom to the nearest corner on the line of the public survey, and outside of the private survey, must be determined and entered in the field book.

Also, when one private survey corners on a line of another private survey, or intersects it and continues across into the survey of which the line so intersected is a boundary, and the adjoining land is public, the course and distance therefrom to the nearest corner on the line of the private survey upon which you are cornering, and outside the survey you are executing, must be determined and entered in the field book.

When a line of one private survey continues across, or into another confirmed private survey, or block of surveys, the points of intersection with the several lines thereof, when there is no public land adjoining, will be perpetuated in the manner of establishing corners, except that each witness tree will be marked with only a blaze, and notch facing the post or stone set to perpetuate the aforesaid point of intersection; and the relative position of the points of intersection thus perpetuated, and of the corners on the lines intersected, must be determined and entered in the field book.

And when public land adjoins the point of intersection, the said point will be perpetuated as a fractional section corner, by marking a tree on the public land, as before directed, for marking witness trees to fractional section corners, and by marking one other witness tree on the private land, with a blaze and notch, facing the corner tree, post, or stone.

Whenever the terms "*public surveys*" and "*public land*," or terms of similar import are used in these instructions, you are to understand that they comprehend all land surveyed as public land, which has not been included in the survey of private claims subsequently executed, and all lines run as public lines, notwithstanding the United States may have parted with the land by public or private sale.

The survey of claims which are confirmed unconditionally according to a former survey, will conform thereto, regardless of any excess or deficiency in quantity, provided, the old lines and corners can be found,

and properly identified; in which event, the old corners will be run to, and the true courses and lengths of the several lines according to your operations will be correctly stated in the field notes; and if the old lines and corners cannot all be found, you will conform to the old survey as near as practicable, by running the courses and distances called for, or to the intersection of the proper lines as may be required, making the necessary allowance for the difference in the variation of the needle.

The re-surveys of claims which are confirmed according to an old survey, but are restrictive in quantity, will be surveyed as above directed for those not restricted, except that if there is any excess or deficiency, it will be thrown off or taken in by a line parallel to that old line of the survey which the claimant may direct; or if he fails, or declines, to give directions, throw off the excess, or take in the deficient quantity on the side which you may think will best promote his interest; being careful to note all the particulars relating thereto, in your field book, and give the position of the old lines and corners which may be abandoned, because of the excess or deficiency in quantity. Claims which are confirmed according to the concession, and have been legally surveyed in conformity therewith, except as to exactness in quantity, will be re-surveyed as the class of cases last above mentioned.

If the survey heretofore executed of a claim which is confirmed according to a concession, whether the concession is or is not special as to the locality, but is special as to the direction of the lines, the proportional length of the different sides, or the figure of the survey to be made in virtue thereof, does not conform to these requirements of the concession, the said survey will be altogether disregarded, except so far as it may be useful in cases where the concession is not special as to locality, in identifying the situation of the land intended to be confirmed, unless the survey was executed and approved by the proper Spanish officer prior to the transfer of the country to the United States, in which event the survey will be considered as evidence of the changed intention of the authority making the concession, and will be taken as a part and parcel thereof.

Claims which are confirmed according to special concessions, and which have not been surveyed, you will survey in strict accordance with the terms of the concessions; always bearing in mind that where there are no special requirements in the concession, it was the general practice under the government with which the claims originated, to run them either in squares, or in right angled parallelograms of 1-5.10, or some intermediate or greater number of arpents, by 40 or 80, according to the size of the tract, or double as long as wide, unless some other survey or grant intervened, and rendered a departure from this rule unavoidable, in which case the rule was only so far departed from as was necessary to get rid of the interference with the prior surveys.

Settlement claims which were legally surveyed before the confirmation, and sanctioned by the surveyor general, will be re-surveyed as nearly conformable to the old survey as practicable, departing therefrom only so far as may be necessary to include the exact quantity confirmed, unless the old survey of a newly confirmed tract interferes with a legal-

ly executed and approved survey of an old confirmation, in which event, the survey under the new confirmation, must be so made as to avoid all such interference by taking in such of the adjoining public lands as will make the survey in as compact and regular form as practicable.

Settlement claims which were not surveyed and sanctioned by the surveyor general before the confirmation, will be surveyed as near in squares as may be, so as to include the improvements, and not interfere with prior claims. You will allow the claimant, or his authorized agent, in these cases, to designate the land to be taken in, by conforming, as near as practicable, to the section lines, and the divisional lines of sections: that is, you will not make a division of more than one quarter section by a line not recognized by law as creating a legal subdivision. If, however, the improvement, in virtue of which a settlement claim is confirmed, is within a survey of an old confirmed claim, the survey of said settlement right must interfere with said old survey, so much as may be necessary to include the improvement upon which it is founded.

Information given to you by a claimant, or his agent, relating to the situation of a claim, will govern your operations; provided, you believe, from all the circumstances which come to your knowledge, that such information is correct; and provided, also, that it does not contradict the papers with which you may be furnished.

The position of any point or place called for in a concession, and also of the settlement or improvement in virtue of which a settlement claim is confirmed, must be determined in the field notes.

Whenever the line of a survey is intended to conform to the legal subdivision line of a section, either in part, or to its whole extent, said subdivision line must be run in conformity with the principles established by law for surveying and laying off the public lands of the United States.

And when the line of a survey runs with the legal subdivision line of a section, with a section line, or with the line of another private survey, you will call in your field notes for running with said line, and call for all old corners which you may pass, and state distinctly their position, condition and general appearance, and whether the evidence thereof found upon the ground agrees with the description of it furnished you from this office; and if the evidence so found, should not agree with the description, state at large in your field notes how you determined its position, and what induced you to believe it to be the place of a corner, the description of which as furnished you did not agree with the evidence found upon the ground, in order that this office may be enabled to decide upon the sufficiency of your reasons for adopting it as the true position of a corner.

If the description of corners furnished by this office shall be insufficient for properly connecting with a claim with the adjoining surveys, or shall be in any way whatever defective, you will give immediate notice thereof, and cease operations on all lines that may be affected thereby, until you are furnished with a proper description; and you are to distinctly understand that no omission or oversight of this office in furnishing in the first instance papers of this kind, will be considered a

sufficient excuse for defective and improper connections with the adjoining or interfering surveys, public or private; this may frequently happen, because the very indefinite calls of many confirmations renders it extremely uncertain what ground the survey will cover, and consequently what corners may be wanted to connect with; you must therefore, in all such cases, after ascertaining what additional descriptions will probably be wanted, apply therefor, and wait until they shall be furnished.

Old corners of the public or private lands in the United States surveys on which you close or measure to, or that become corners of a survey you are executing, and which have been destroyed, may be renewed by you without further instructions from this office; provided, the necessary contiguous corners can be found and properly identified. The position of said destroyed corners will be determined in the following manner:

1st. When at the intersection of two lines, by ascertaining the precise intersection of said lines.

2d. When at the average distance between two other corners, by determining said average distance.

3d. When at a legal subdivisional distance from a section corner, and a given fractional distance from some other corner, re-establish it at the like proportional distance from each of said corners, according to your operations.

4th. When between two fractional corners, and at a given fractional distance from each, re-establish the corner at the place from which your measure to one of said fractional corners will have the same ratio to your measure to the other fractional corner, that the former measures had one to the other.

If in tracing an old line, the corners at each extremity thereof can be found, and the line is blazed evenly between the said corners, the old blazes will be followed throughout; if, however, the blazed way from one corner to another varies from a straight line, it will not be followed in its windings, but new marks will be made on a direct line from corner to corner; unless some other survey or surveys on the opposite side of the line to your operations, corners on the said blazed way out of a direct line between the corners of the survey you are executing, in which event you will run straight between the several corners you may find on the blazed way, and report the true length and course of each division into which the boundary may be cut by reason of the said intervening corners.

When a corner cannot be found, and properly identified, and the contiguous corners cannot be found to establish it in one of the four ways above authorized, the surveyor may at his own risk of having the work approved, adopt such measures as to him may seem best, from all the circumstances within his knowledge, to re-establish the corner, and report everything relating thereto to this office, to enable a proper decision to be made upon his plan of operations; or he may report all the facts connected with the case, and await further instructions.

You must always recollect that the relations of a deputy surveyor to

this office are of a highly confidential character ; that to his discretion, as well as to his fidelity, and skill, much is necessarily entrusted ; for it is evident that no instructions, however elaborate and detailed, can possibly anticipate and provide for every emergency which may occur upon the ground ; and that the deputy surveyor, when there, is the only representative of the public interest ; he should therefore act to the best of his understanding, and constantly bear in mind that the instructions issued by this office, are designed, and have no other aim than to fully accomplish the objects of the law, the most important of which are to perform the work accurately on the ground, to establish the lines and corners in the most permanent and durable manner, and to describe the whole operations in the field book, plainly, fully, and distinctly in such a way that the meaning cannot possibly be mistaken or misunderstood.

The following is a comparative statement heretofore adopted by this office, of the land measures of the United States, and the French measures, formerly used in the late province of Louisiana, and will be considered in all surveys as the true proportion between said measures :

| LINEAR MEASURE. | | | | SUPERFICIAL MEASURE. | | |
|--------------------------|--------------|-------------|--|--------------------------|--------------|------------|
| French Feet. | | U. S. Feet. | | Arpents. | | Acres. |
| 72 | are equal to | 77 | | 288 | are equal to | 245 |
| Perches. | | Poles. | | 1 | | 0 85 07 |
| 6 | | 7 | | 2 | | 1 70 14 |
| | CHIAINS. | LINKS. | | 3 | | 2 55 21 |
| 1 | 0 | 29 166 | | 4 | | 3 40 28 |
| 2 | 0 | 58 333 | | 5 | | 4 25 35 |
| 3 | 0 | 87 5 | | 6 | | 5 10 42 |
| 4 | 1 | 16 661 | | 7 | | 5 95 49 |
| 5 | 1 | 45 833 | | 8 | | 6 80 56 |
| 6 | 1 | 75 | | 9 | | 7 65 625 |
| 7 | 2 | 04 166 | | 10 | | 8 50 69 |
| 8 | 2 | 33 333 | | 100 | | 85 06 94 |
| 9 | 2 | 62 5 | | 1000 | | 850 69 44 |
| 10 or 1 arpent | | | | 10000 | | 8506 94 44 |
| lineal, | 2 | 91 666 | | Arpents. | Perches. | Acres. |
| | 2 | 5 83 333 | | 1 | 17 551 | 1 |
| | 3 | 8 75 | | 2 | 35 102 | 2 |
| | 4 | 11 66 666 | | 3 | 52 653 | 3 |
| | 5 | 14 58 333 | | 4 | 70 204 | 4 |
| | 6 | 17 50 | | 5 | 87 755 | 6 |
| | 7 | 20 41 666 | | 7 | 05 306 | 6 |
| | 8 | 23 33 333 | | 8 | 22 857 | 7 |
| | 9 | 26 25 | | 9 | 40 804 | 8 |
| | 10 | 29 16 666 | | 10 | 57 959 | 9 |
| | 100 | 291 66 666 | | 11 | 75 510 | 10 |
| | 1000 | 2916 66 666 | | 117 | 55 102 | 100 |
| | 12 | 35 | | 1175 | 51 020 | 1000 |
| | | | | 11755 | 10 204 | 10000 |
| Side of a league square. | | | | A league square contains | | |
| 84 | | 245 | | Arpents. | Acres. | |
| Side of a mile square. | | | | 7056 | 6002 50 | |
| Arpents. | Perches. | | | A mile square contains | | |
| 27 | 4 2-7 | 80 | | Arpents. | Perches. | |
| | | | | 725 | 32 64 | 640 |

Form of keeping Field Notes.

If first book, or if there are any new hands employed, their oaths will become foremost.

A. B., hind chain-man.

C. D., fore chain-man.

E. F., flag-man.

G. H., Axe-man.

Measuring chain compared with the standard and found correct.

Compass adjusted to the line between sections 25 and 26, township 89 north, range 72 west, of the 5th principal meridian—variation 8° and 30' east.

Survey a tract of 800 arpents equal to $680\frac{5}{16}\frac{9}{7}$ acres of land, granted to J. K. on the 20th day of March, 1803, by Carlos Dehault Delassus, Lieutenant Governor of Upper Louisiana; surveyed by Antoine Souldard, Surveyor General of the same province, on the 3d of July, 1801; recommended for confirmation according to the concession by the late board of commissioners on the 17th of August, 1834, decision No.—, and confirmed according to the said decision of the commissioners by an act of Congress, approved 4th of July, 1836.

Begin at the old south-western corner, a black oak 36 inches diameter, with old marks thereon, and which I mark with three notches in the direction of each line of this survey which runs therefrom; from said black oak a hickory 16 inches diameter, marked P. S., bears N. 20° E. 45 links, and a white oak marked R. 72 W., T. 89 N—see 26 bears S. 33, W. 14 links.

| | |
|-----------|---|
| Thence | |
| S. 82° E. | With the old marked line. |
| Chains | |
| 14.52 | A walnut 17 inches diameter. |
| 19.36 | A road leading to J. K.'s mill bears N. W. |
| 46.30 | Enter a field bears N. W. and S. E. |
| 72.80 | Intersect the line between sections 25 and 26, township 89 north, range 72 west, where set a post in the field for corner to fractional sections 25 and 26, from which a poplar 18 inches diameter bears S. 61° E., 13 links and a hickory 24 inches diameter bears S. 45°, W. 43 links; measured south 3 chains and 24 links to the quarter section corner on said line. |
| 75.00 | Leave the field bears N. E. and S. W. |
| 79.00 | A creek 50 links wide runs north. |
| 90.00 | Leave timber and enter prairie bears N. W. and S. E. |
| 116.67 | Deposit two quarts of charcoal 6 inches beneath the natural surface of the earth, covered the charcoal with three inches of dirt, and set thereon a post 8 inches diameter, and 4½ feet long, around which I erect a mound of earth 3 feet high, 5 feet square at the base, and 2 feet square at the top, the sides whereof are reveted, or faced with sods laid hori- |

| | |
|--|--|
| | zontally, and in successive layers on each other, each layer having an offset inwards, corresponding to the general slope of the face of the mound, for corner of the survey and fractional section 25. |
| | Land rolling, good soil, timber, hickory and white oak, no undergrowth. |
| Thence N. 8° E. Chains 13.40 | Intersect the line between sections 24 and 25, township 89 north, range 72 west, where for corner to fractional sections 24 and 25, set a lime stone 22 inches long, 14 inches wide, and 4 inches thick endways into the ground to the depth of 8 inches; marked said stone distinctly with a cross, thus X, on the east side, the wide way facing east. |
| | Measured east on the line between sections 24 and 25, 30 chains and 32 links to the corner of sections 24 and 25 on the range line. |
| 58.33 | Set a post in the prairie for corner to this survey and fractional section 24, from which a lone white oak 16 inches diameter bears N. 17° E. 35 links—no other tree convenient. |
| | September 17, 1836. |
| Thence N. 82° W Chains 16.00 17.48 | Enter timber bears N. E. and S. W. A white oak 28 inches diameter corner to P. Y.'s survey, No. 29582 for 160 acres. |
| 38.00 | Another corner of said survey No. 29582, one of the old witness trees, a black oak 17 inches diameter, bears No. 20 E., 17 links distant—the other witness tree has fallen down, I therefore mark in fractional sections 24, a walnut 18 inches diameter, which bears N. 47° W. 82 links distant. |
| 52.80 | Intersect the line between sections 23 and 24, 17 chains and 93 links south of the quarter section corner, set a post for corner to fractional sections 23 and 24, from which a white oak 16 inches diameter bears N. 25° E. 18 links, and a white oak 88 inches diameter bears N. 32° W. 18 links. |
| 60.15 | A hickory 18 inches diameter. |
| 72.13 | Enter bottom land of river Ohaha, bears N. E. and S. W. |
| 95.14 | Intersected the right and east bank of Ohaha river, runs northeasterly, set a post for corner to fractional section 23, from which a hickory 15 inches diameter bears N. 26° E. 14 links, and a birch 24 inches diameter bears S. 72° E. 72 links. |
| 101.00 | The left and west bank of Ohaha river set a post corner to fractional section 23, from which an elm 18 inches diameter bears N. 18° W. 13 links and a white oak 15 inches diameter, bears S. 62° W. 13 links distant, here enter hills. |
| 116.66 | Set a limestone 16 inches long, 14 inches wide, and 4 inches thick, endways into the ground, to the depth of 8 inches, |

marked said stone distinctly with a cross, thus X, on the S. E. side, the wide way facing S. 82° E., and from said stone a hickory 18 inches diameter, bears N. 27, W. 32 links, and a black Walnut 20 inches diameter, bears S. 24° E. 13 links.

Thence
S. 8° W.

On a random and closing line.

Chains

14.28

The left and northerly bank of Ohaha river runs easterly.

21.00

The right bank of the river.

58.25

Intersect the southern boundary of the survey, 27 links S. 82° E. of the beginning corner tree, from which beginning corner tree I correct the line.

N. 8 ½ E.

Chains

14.32

Enter river bottom bears E. and W.

23.00

Intersect the line between sections 23 and 26, 11 chains and 17 links east of the corner to sections 22.23. 26 and 27 set a post, &c., [*here describe the corner.*]

37.25

The right bank of Ohaha river, set a post &c., [*here describe the corner.*]

43.47

The left bank of the river, where set a post, &c., [*here describe the corner,*] enter hills here.

58.25

The north-western corner of the survey.

Then to meander the Ohaha river through J. K's survey, and through the adjoining fractional section, I begin at the corner to fractional section 22 and 23, township 89 north, range 72 west, on the right bank of the Ohaha river, and meander down the right bank of said river through said fractional section 23, as follows :

N. 82° E. 7.20 chains, at 2 chains the mouth of a branch 8 links wide comes from the S. E.

N. 74½° E. 6.80 chains, to the corner at the intersection of the western boundary of J. K.'s survey with the right bank of the Ohaha river.

Thence with the meander of the said right bank of the Ohaha river, through J. K.'s survey, as follows :

N. 70° E. 10.00 chains—at 4 chains a ferry landing.

N. 63° E. 12.45 chains—at 7.50 chains, the mouth of J. K.'s mill creek 150 links wide, comes from the S. E.

The mill is on the left side of the creek, and about 25 chains in south-easterly direction.

N. 22° E. 9.70 chains—to the corner at the intersection of the northern boundary of J. K.'s survey, with the right bank of the Ohaha river.

Thence down the right bank of the Ohaha river through fractional section 23, township 89 north, range 72 west, as follows:

| | <i>Chains.</i> |
|---------------|---|
| N. 25° E..... | 25.50 |
| N. 50° E..... | 2.00 |
| N. 14° E..... | 30.00, to the corner to fractional sections 4 and 23. |

[Then meander the left bank of the river; and your field work for this survey, and its connections with the public surveys, will be completed.]

Separate instructions will be furnished for making the plat and description of the survey.

APPENDIX.

[1.]

Numerous and repeated applications having been made to the Surveyor General, by county and United States deputy Surveyors and others interested in the Public Surveys within the District of Illinois and Missouri, for information and directions as to the proper method of making re-surveys, renewing missing corners formerly established, and subdividing Sections, regular, anomalous, and fractional, the answers to which would occupy much time and delay other public business, it is deemed advisable to publish, for the information of those concerned, a brief statement of the system adopted by the General Land Office for the surveys of the public lands, together with such other information as the records show to be most needed by those engaged in the re-tracing of old surveys, ordi-viding the public lands according to the sales made thereof by the officers of the United States; and more especially necessary since it is known that a large portion of the early surveys, both in Illinois and Missouri, were carelessly, and, in some cases, erroneously executed.

In the incorrect surveys above alluded to, the Township lines are not always straight, the measure frequently being more or less erroneous, and it is impossible to frame instructions so minute in detail as to meet every case, and enable a deputy or county Surveyor to do equal and exact justice to all parties concerned. After all that might or could be said, much will depend upon the judgment and experience of the Surveyor on the ground.

It is not intended, by what is here recommended for renewing missing corners or subdividing Sections, to give any *positive directions* to county Surveyors. This office has no control over them whatever, but it is believed that the information here given will enable the Surveyor in most cases to do justice to the parties interested, without any further correspondence with the Surveyor General on the subject.

[2.]

System of Surveys.

Under the provisions of the several Acts of Congress in relation thereto, the Public Lands of the United States are surveyed into rectangular tracts, bounded by North and South, East and West lines, all having reference to some established East and West Base Line and North and South Meridian, and are designatad by numbers accordingly.

[3.]

Base and Standard, or Correction Lines.

The Surveyor General first establishes some known parallel of latitude as a Base Line; North and South of which, other lines running due East and West are surveyed by deputy Surveyors, to which, surveys of the Townships or larger tracts are afterwards connected. These last mentioned lines are usually run thirty miles apart, and in the District of Illinois and Missouri are designated *Standard Lines*; their object being the correction of the surveys as extended to them from the established Base Line. In other Surveying Districts, the Standard Lines are known as *Correction Lines*, and are numbered from the Base Line for that District. Standard or Correction Lines are run *East* or *West* from the Principal Meridian, and quarter Section and Section corners established at every 40.00 chains for the Sections *North* of said line, but not for the Sections on their *South* sides.

Standard or Correction Lines compensate the error arising from the convergency of the Meridians as they proceed northwardly, and arrest inaccuracies arising from incorrect measurement. They form the Base for the Townships on their North until the occurrence of the next Standard or Correction Line, which in its turn becomes a Base for the next tier of Townships; and for each Township this Base Line is extended sufficiently to meet the convergency for a given distance.

[4.]

Principal Meridians.

In like manner are selected and established certain Meridian Lines, East and West of which the surveys of Townships are numbered and referred.

The Base and Meridian Lines in this District were formerly run with a common compass, and in many instances are far from being correct, or following a parallel of latitude as intended, which will account for the many inaccuracies to be met with in the older surveys of Townships. These inaccuracies have led to the adoption by the General Land Office, wherever practicable, of the use of *Burt's Solar Compass*, an astronomical instrument, operating independently of the magnetic needle, admirably adapted to the purpose, and with which other surveys may also be made. In the surveys hereafter to be made in this District, the Surveyor General would recommend the use of this instrument in preference to the Theodolite or common Compass, in running Township and Range Lines; the Compass to be used only in the subdivisions of a Township into Sections.

[5.]

Meridians and Base Lines, in Illinois.

The Public Surveys in the State of Illinois are connected with, or extended from, the 2d, 3d and 4th Principal Meridians, the 1st *Principal Meridian* being in the State of Ohio.

The *2d Principal Meridian* is a line running due North from the mouth of little Blue river, in the State of Indiana.

The *3d Principal Meridian* is a line running due North from the mouth of the Ohio river, and is terminated at its intersection with the State line between Illinois and Wisconsin.

The *4th Principal Meridian* commences in the centre of the channel and at the mouth of the Illinois river, but immediately crosses to the East shore, and passes up on that side to a point in the channel in the river, 72 miles from its mouth. Here the *Base Line* for this Meridian commences and extends due *West* to the Mississippi river. The 4th Meridian is then continued North to a curve in the Mississippi, where it crosses and passes up on the West side of that river fifty-three miles, re-crosses into Illinois and passes through the town of Galena to the North boundary of the State. It then continues through the State of Wisconsin, and terminates at a point on the Southern shore of Lake Superior, about 10.00 chains West of the mouth of Montreal river. That part of this Meridian lying on the West side of the Mississippi river is considered as a blank line only.

The *Base Line* for both the 2d and 3d Meridians commences at Diamond Island, in the Ohio river, and runs due West to the Mississippi river.

[6.]

Meridian and Base Line, in Missouri.

The Public Surveys in the State of Missouri are connected with, or extended from, the *5th Principal Meridian*.

This line commences at the mouth of the Arkansas river, in the State of Arkansas, and runs due North, crossing the Mississippi river in Township 53 North, near Clarksville. Thence continuing up the East side of the river, in the State of Illinois, about one hundred and forty miles; it then re-crosses the Mississippi into Iowa, in T. 77 N., and is continued through that State, terminating on the right bank of said river, in T. 91 N. The surveys in the State of Iowa are connected with this Meridian. The *Base Line* to this Meridian commences in the mouth of the St. Francis river, and runs due West across the State of Arkansas. That part of this Meridian lying on the East side of the Mississippi river is considered as a blank line only.

[7.]

Division of Public Lands.

The United States Lands are surveyed by deputy Surveyors, appointed and commissioned by the Surveyors General. These deputy Surveyors divide the lands into tracts called *Townships*, each of which is six miles square, except when they are anomalous or fractional, as hereinafter explained. They subdivide each of these Townships into thirty-six equal squares, called *Sections*. The Township and Section lines being all run and marked, and the corners of all the tracts being established on the ground, as hereinafter explained.

[8.]

Description of Public Lands.

Tiers of Townships lying *East* and *West* of each other are known as being in parallels of latitude *North* or *South* of the established Base Line, according to their numbers; and tiers of Townships lying *North* and *South* of each other are known as being in Meridian Ranges *East* or *West* of the established Principal Meridian, according to their numbers, and are named as in Townships and Ranges accordingly, for the purpose of facilitating the descriptions of their localities, as by a combination of these numbers any part of a Township may be described and known by reference to the particular Range, Township, Section, quarter Section and Lot, or part of quarter Section in which it lies, as for instance "The South half of the North-East quarter of Section 3, in Township number 1 North of the Base Line, and in Range number 1 East of the 3d Principal Meridian, being Lot number 1, containing 80 acres of land," may be designated as in Diagram No. 3, as follows :—

S. 1-2 of N. E. 1-4 Sec. 3, T. 1 N., R. 1 E. of the 3d P. M. No. 1, 80 a.

[9.]

RANGES.

Ranges of Townships are numbered, as the case may be, *East* or *West* from the established Principal Meridian of the Surveying District in which they lie. Range Lines are run *North* or *South* from the Base Line, and corners for Sections and quarter Sections are established thereon at every mile and half mile or 80 and 40 chains, for the Sections and quarter Sections, on the *West* side of the line, but not for those on the *East* side.

[10.]

TOWNSHIPS.

Townships, when regularly surveyed, contain areas of six miles square and are numbered as the case may be, *North* or *South* from the established Base Line for the surveys of the District in which they lie. Township lines are run *East* or *West* on a random line, and corrected back towards the *West* or *East*, as the case may be, and in establishing this corrected line, the Section and quarter Section corners are established on the *true line*, at every 80 and 40 chains, for the Sections and quarter Sections on the *North* side of the line, but not for those on the *South* side. The excess of all East and West Township lines over 5 miles and 40.00 chains is always thrown into the South boundary of Section 31 *West* of the quarter section corner.

[11.]

ANOMALOUS TOWNSHIPS AND SECTIONS.

When the surveys of Townships have been connected with Standard

Lines or other surveys, and the surveys of Sections connected with the Northern and Western boundaries of the Township, thus giving to such Townships or Sections areas greater than the regular legal quantities, they are then called *Anomalous Townships or Sections* as the case may be.

[12.]

FRACTIONAL TOWNSHIPS AND SECTIONS.

When in like manner the surveys of Townships or Sections are connected with, or when the surveys of such tracts are limited or intersected by, a navigable stream or lake, the shores of which require to be meandered, thus giving to a Township or Section less than the legal areas as established by law, they are called *Fractional Townships or Sections*, as the case may be.

[13.]

SECTIONS.

Sections, when not anomalous, or fractional, contain 640 acres each, and are numbered from East to West, and from West to East, progressively, commencing with the North-East corner Section, or No. 1, and ending with the South-East or No. 36, as is shown in the Diagram No. 1, representing the subdivision of a Township into Sections.

[14.]

PLATS OF SURVEYS.

After the surveys are made by the Deputy Surveyor, and their Field Notes properly sworn to and returned to the Surveyor General, proper Plats of each Township are made out in triplicate, one of which is recorded in the office of the Surveyor General, subject to the examination of the public; another is sent to the Register of the Land Office in whose District the land may be, and is there filed subject to examination; and upon which plat the sales are made; the third is forwarded to the Commissioner of the General Land Office for the archives of the Government. Subdivision plats of parts of the Townships as may be required, are made out and returned to the Registers and Commissioner of all those quarter Sections within the Northern and Western tiers of Sections bordering upon the Northern and Western boundaries of the Township, and of those lying along the margin of a navigable lake, or bank of a navigable river; and also, those adjoining an Indian or State Boundary Line, or the boundary lines of any private survey or confirmed land claim.

[15.]

TOWNSHIP PLAT,

Not bounded by a navigable Lake or River.

The following Diagram, No. 1, is an example to show how a Township is subdivided, either regular, anomalous, or fractional, so long as the

Township contains the 36 Sections, either in whole or in part, and is not bounded by a navigable stream or lake. It also gives the names of the several boundary lines of the Township selected, with the designations of the surrounding Townships, showing how they lie North and South of the Base Line, and East and West of the 3d Principal Meridian in Illinois:—

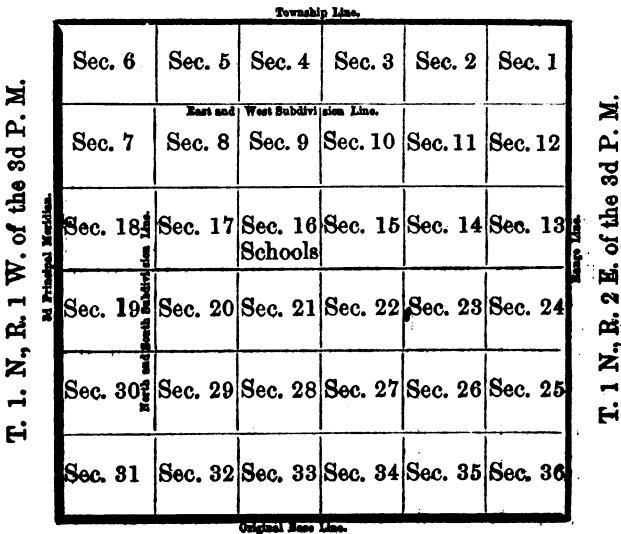
[16.]

DIAGRAM No. 1.

ILLINOIS TOWNSHIP PLAT,

Of Township 1 North of the Base Line, Range 1 East of the 3d Principal Meridian.

T. 2. N., R. 1 E. of the 3d P. M.



T. 1 S., R. 1 E. of the 3d P. M.

[17.]

Fractional Township Plat

Diagram No. 2 is an example selected to show a fractional Township, made so by a navigable river, and contains only parts of two Sections North of the Missouri river, giving the names of the boundary lines, and

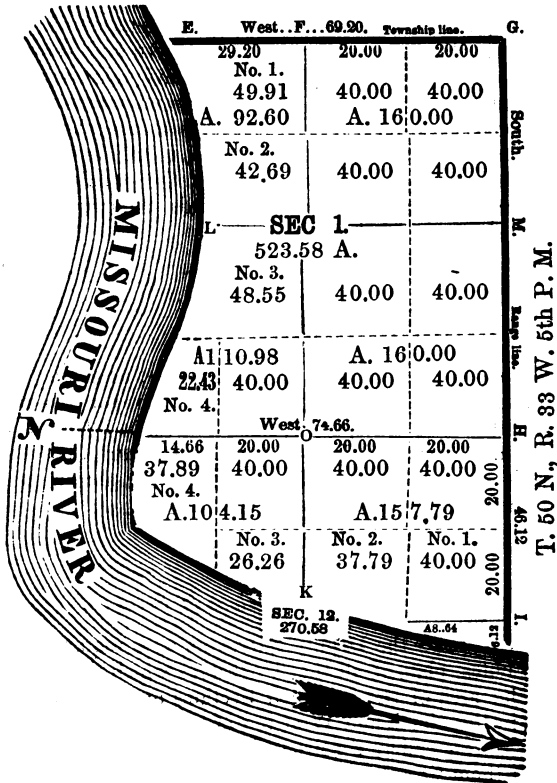
the designation of the surrounding Townships on the North side of the river, showing how they lie North of the Base Line and West of the 5th Principal Meridian in Missouri.

[18.]

DIAGRAM No. 2.

MISSOURI FRACTIONAL TOWNSHIP PLAT,

Of Fractional Township 50 North of the Base Line, Range 34 West of the 5th Principal Meridian.



[19.]

Subdivision of Sectional Areas.

When Sections are neither anomalous or fractional, the Registers of the Land office may, to suit the applicants for the purchase of the Public Lands, subdivide the quarter Sections into halves or quarters, or 80 or 40 acre Lots. In the calculations of the areas of interior Sections they are always taken to contain 640 acres, and the subdivisions designated as containing 160, 80 and 40 acres, respectively, whether the same be more or less, except where the northern or southern boundary lines of the Sections are 150 links greater or less than 80 chains, in which case the areas of the divisions are calculated and returned to the Registers as containing the quantities of land respectively so determined. But all those tiers of quarter Sections adjoining the Northern and Western boundaries of a Township, or lying on the shores of a navigable river or lake, and all the North and west tiers of Sections within an anomalous Township, or such fractional Sections as exceed 60 acres in area, should be subdivided according to the circumstances of the case, to the best advantage by the Surveyor General, and a certified plat of the subdivisions sent to the Register previous to any sale of such lands being made. These subdivisions are shown in Diagram N. 4.

[20.]

Merged Areas.

Tracts smaller than 60 acres in extent, may, according to the circumstances of the case, and the judgment of the Surveyor General, be reported to the Register with a separate area, or may be attached by him to an adjoining tract for sale, and its area merged into that of the tract to which it is attached, which should always be shown on the plat by peculiar marks drawn across the division lines.

[21.]

Former Subdivisions of Sections.

Previous to 1828 the Deputy Surveyors were required to return, with their field notes, plats of all the Townships which they surveyed, and to calculate the area of the fractional Sections on the navigable rivers and lakes, and in the North and West tier of quarter Sections in a Township. These plats were rudely constructed, and, in many cases, the areas put down upon them were erroneous. When this fact was ascertained before the land was sold, a recalculation was made in the Surveyor General's Office, and the Register of the Land office, in whose district the land laid, was furnished with a correct plat thereof, as a substitute to the one formerly sent to him.

In making the calculations of the area of the North and West tier of quarter Sections in a Township, some of the deputies considered the

quarter Section corners on the Township and Range lines as common to the Sections on both sides of the line, whilst others adopted the method now in use and particularly explained in Diagrams Nos. 4 and 5.

At one time, some of the Deputy Surveyors, in subdividing a Township through which a navigable stream passed, ran a random line *East* between the proper Sections, and corrected it *West*, making the corner to the Fractional Sections on both banks of the river and on the true line; others pursued the method as now required.

[22.]

The areas in many quarter Sections appear to have been put down without any calculation whatever, and it is therefore impossible to adopt any rule which will apply in all cases.

The experienced Surveyor will generally be able to determine which of the foregoing methods was used in making the calculation of the area of a quarter Section, and he should make subdivisions accordingly in retracing lines formerly run by Deputy Surveyors of the United States.

[23.]

Present Subdivision of Sections.

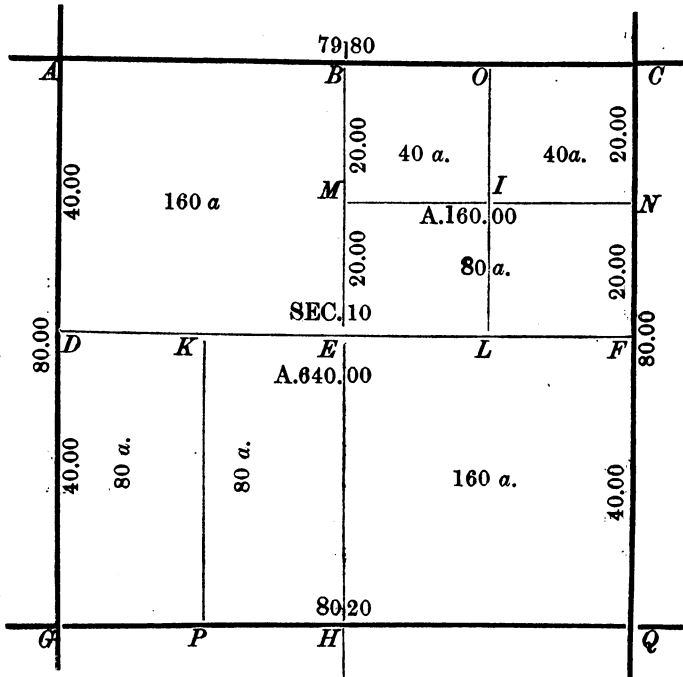
None of the Acts of Congress, in relation to the Public Lands, make any special provision in respect to the manner in which the subdivisions of Sections should be made by Deputy Surveyors.

The following plan may, however, be safely adopted in respect to all Sections, excepting those adjoining the North and West boundaries of a Township, where the same is to be re-surveyed.

Subdivision of interior Sections.

DIAGRAM No. 3.

REGULAR SECTION.



[25.]

The Surveyor should have descriptions of all the established corners of the Section to be subdivided, in order to identify them, and find the place where each corner post, stone or mound, had been set. Then begin at a quarter Section corner, on a North and South line, say at D, from which run east on a random line, set a temporary post at 40.00 chains, note the distance to the point where said line intersects the East boundary of the Section, and the distance it falls North or South of the quarter Section corner at F. Then, by means of offsets from the random, run a true line from the corner at F to that at D, and at equidistance between them establish the corner E. Then, by first running randoms as aforesaid, make a straight line from E. to B, and from E to H, and you have the Section divided into quarters. But should it be necessary to subdivide any of the quarters, say, for example, the N. E. quarter, into four 40 acre lots, and the S. W. quarter into two equal parts, then, in running the random line East from D to F, temporary posts should be set at 20 and 60 chains, to mark the points lettered K and L, and the corners should be established on the true *true* line, from F. to D, so as to place the corner L at average distance between F and E, and the corner K at average distance between E and D. In like manner the corner at M should be equi-distant between E B; O equi-distant between B C; N equi-distant between C F, and I equi-distant between M. N, and straight lines run from I to O, and I to L. The corner at P. should be equi-distant between G. H, and a straight line run between P and K.

[26.]

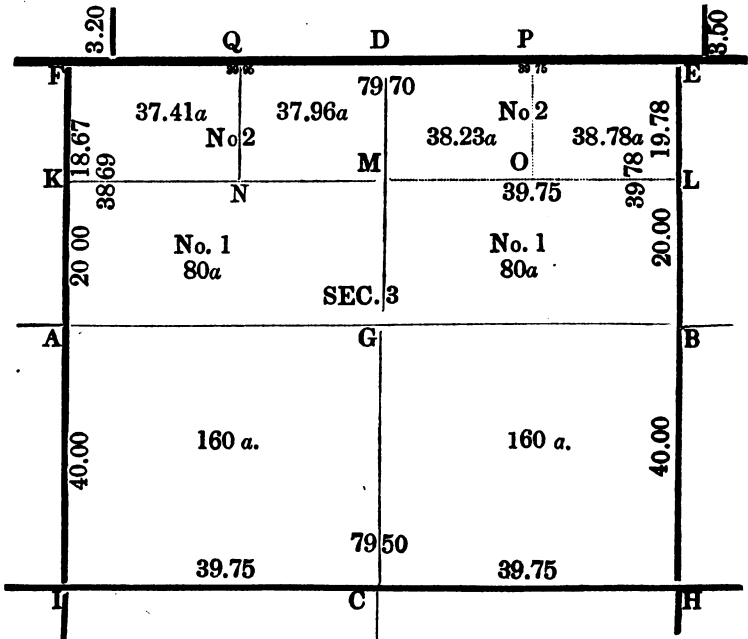
This method of first running a line from D to F is considered preferable to basing the work on the North and South line H to B, for the reason that the corners at D and F are on the North and South lines, all of which, except those intersecting the North boundary of a Township, are 80.00 chains in length, and have the quarter section corners thereon precisely at 40.00 chains; whereas, what are called East and West lines, excepting those in the West tier of Sections, are never *due* East and West, at the variation assumed, unless a random line, which has to be first run, happens to strike the corner run for.

[27.]

Subdivision of Sections adjoining the North boundary of a Township.

DIAGRAM No. 4.

FRACTIONAL SECTIONS.



[28.]

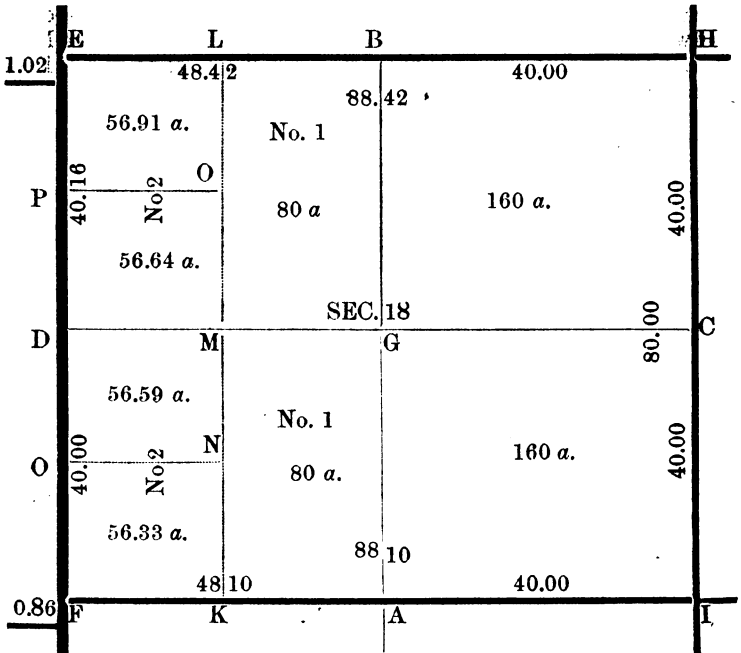
In this case there can but one rule for the subdivision to make it agree with the manner in which the several areas are calculated. You will observe that the line I H is 79.50 chains, and that the one half of it, 39.75, is assumed as the distance from E to D, which last distance, 39.75, is deducted from 79.70, the length of the line E F, leaving 39.95 chains between the points F. D; consequently, the line C D must be *exactly* parallel to the line H E, without paying any respect to the quarter Section corner near D, which belongs entirely to Section 34, of the Township on the North. Run the line A B in the same manner as that of D F, on Diagram No. 3, except, that the corner G is to be established at the point where the line A. B intersects the line C D. After surveying thus far, if the S. E. and S. W. quarters are to be subdivided, it can be done in the same manner as in Section 10, Diagram 3. In this case, to subdivide the N. E. and N. W. quarters, the line

K L must be parallel to A B; the two lines *ought* to be 20 chains apart, the corner M made where K L is intersected by C D. But as two surveyors seldom agree *exactly* as to distances, there might be found an excess, or deficiency in the contents of the N. E. and N. W. quarters; if so, the line K L should be just so far from A B as to apportion the excess or deficiency between the lots 1 and 2, not equally, but in proportion to the quantities sold in each. If the Lots numbered 2 are divided on the Township plat by North and South lines, then, that of the North-west quarter must have its South end equi-distant between K M, and its north end equi-distant between F D. The North-east quarter will be subdivided by a line parallel to M D, and L E, and exactly half way between them.

Subdivision of Sections adjoining the West boundary of a Township.

DIAGRAM No. 5.

ANOMALOUS SECTION.



These Sections, like those adjoining the North boundary of a Township, must be subdivided in a particular manner to suit the calculations of their several areas. Their East boundaries, except that of Section 6, are all 80 chains long, with the quarter Section corner at half that distance. Their North and South boundaries are all run due West; quarter Section corners are established thereon at 40 chains, and Section corners established where they intersect the Range line on the West. The lengths of the West boundaries are found by the distances, the North and South boundaries fall from the corners on the Range line previously run. The West boundaries of the S. W. quarters are always taken for 40.00 chains. For example, the West boundary of Section 18, Diagram No. 5, is according to the fallings of its north and south boundaries 80.16 chains in length. '40.00,' is therefore set down

as the distance along the South-west quarter, and "40.16" along the North-west quarter. Therefore, the subdivision must be made by making the line C D exactly parallel to F I, paying no attention to the quarter Section corner near D, which belongs only to Section 13 of the Township on the West. Run a straight line from A to B, and, at the point where it intersects C D, make the corner G. The North-east and South-east quarters are always considered as 160 acres, and are to be subdivided as mentioned in relation to Section 10.—See Diagram No. 3. The North-west and South-west quarters are subdivided in the same manner, as mentioned in respect to Section 3, Diagram No. 4, except, that in the one case the 80 acre Lots are laid off by East and West lines, with the northern Lot divided when necessary by a North and South line; whilst, in this case, the 80 acre Lots are laid off by North and South lines, with the western Lots divided by East and West lines.

[31.]

When the lines of a Section are found to be badly surveyed, and the corners are somewhat out of their proper places, the corners must nevertheless govern, if they can be identified; and the Surveyor who subdivides such a Section must, in some instances, have to exercise his own judgment, unless the matter can be compromised by the parties interested.

[32.]

For some years past, Deputy Surveyors have been instructed to make corners for the legal subdivision of Sections on all lines intersecting the North and West boundaries of a Township, where their lengths exceed 100 chains, which corners are at every 20 chains North, or West, as the case may be, of the quarter Section corners. These subdivision corners must govern, without regard to quantity. For example, if Section 18, Diagram No. 5, be an *anomalous* or *long* Section, and corners were established at K and L at 20 chains West of A and B, then there should be a straight line between the corners at K and L, and a corner made at M, as before mentioned.

[33.]

Subdivision of fractional Sections on Rivers and Lakes.

No rules can be given for the subdivision of fractional Sections along the margin of a navigable lake, or the bank of a navigable river, for the reason that the subdivisions are made by the Surveyor General in such a manner as to give the fractional parts of the Section the most convenient shape; and the Surveyor must establish the *lines* representing the subdivision according to the official plat of the Township by which the sales were made. The general plan of such subdivisions may, however, be seen by reference to Diagram No. 2, of a fractional Township in Missouri, which shows the manner of subdividing the Sections.

into tracts or lots suitable to the circumstances of the case. These lots are usually numbered in a series for each Section or quarter Section, and any one of them may be composed of several smaller subdivisions joined, or having their areas merged, as herein before described, on account of the peculiar shape of the smaller tracts, the value of the ground, or other circumstances of the case.

[34.]

For instance, the South-east quarter of Section 12, being a narrow strip lying stretched along the bank of the river in front of Lots numbered 1 and 2, of the North-east quarter of the same Section, and being liable to abrasion from the waters of the river, has been joined to Lots 1 and 2, above mentioned, and the areas calculated and represented on the Diagram as above given. The fact of these small tracts being merged into the areas of the Lots adjoining them on the North, is shown on the Diagram by the two *marks* drawn across the dividing *quarter Section line*, I K between them, which mark is generally adopted on the plats to show that the areas of the adjoining lands have been calculated and reported together as one tract.

[35.]

Establishing Corners.

In surveying the Public Lands, the United States' Deputy Surveyors are required to mark *only* the true lines, and establish on the ground the corners to *Townships* and *Sections*, and *quarter Section corners* on the *Range*, *Township* and *Sectional* lines.

There are, no doubt, many cases where the corners are not in the right place, more particularly on *East* and *West* Sectional lines, which, no doubt, is owing to the fact that some Deputy Surveyors did not always run the *random* lines the whole distance and close to the Section corner, correct the line back and establish the quarter Section corner on the true line, and at average distance between the proper Section corners; but only ran *East* or *West* (from the proper Section corner) 40.00 chains, and there establish the quarter Section corner.

In all cases where the land has been sold, and the corners can be found and properly identified according to the original approved Field Notes of the survey, this office has no authority to remove them.

[36.]

When a tree does not happen to occupy the place for a corner, a *stone*, which must be particularly described in the Field Notes, and must not be less than a stone 14 inches long, 12 inches wide, and 3 inches thick, may be used for *any* corner, either in timber or prairie. In all other cases, corners are to be established by setting a post, which must be properly marked, (according to instructions given), in the

ground, at the point for corner; and if in a situation where bearing or witness trees can be had within a reasonable distance, and the corner is a Township corner common to 4 Townships, or a Section corner in the interior of a Township common to 4 Sections, four bearing or witness trees are taken, (one in each Township or Section). Each of these trees is to be particularly described, and blazed on the side facing the corner stone, tree or post, with letters and figures indicating the particular corner; the bearing and distance taken, and every thing in relation to the establishment of the corner must be entered in the Field Book.

In all cases, except those provided for above, only two witness trees are taken, which are to be described, marked, bearings and distances taken and entered in the Field book.

Township and *Section* corners in a prairie or other situations where witness trees cannot be had within a reasonable distance, are established by setting a post, (which must be properly marked) in the ground, and depositing around the post, 3 inches below the natural surface of the earth, a quantity (which must be specified in the Field Notes, and must not be less than 2 quarts,) of charcoal, stones, gravel, scoria, cinders, or other durable material, and then erecting a mound of sod or earth around the post. Quarter Section corners are established in the same manner as Section corners, only that no deposit is required to be made in the mound.

[37.]

Re-establishing Lost Corners.

Where old Section or Township corners have been completely destroyed, the places where they are to be re-established may be found in timber, where the old blazes are tolerably plain, by the intersections of the East and West with the North and South lines; if in prairie, in the following manner:—See Diagram No. 1. This example is often given. Suppose the corner to Sections 25, 26, 35 and 36, to be missing, and that the quarter Section corner on the line between Sections 35 and 36 to be found. Begin at the said quarter Section corner and run North on a *random line* to the first corner which can be identified, which we will suppose to be that of Sections 23, 24, 25 and 26. At the end of the first 40 chains, set a temporary post, corner to Sections 25, 26, 35 and 36; at 80 chains, set a temporary quarter Section corner post; and suppose, also, that 121.20 chains would be at a point due East or West of said corner to Sections 23, 24, 25 and 26, note the falling or distance from the corner run for and the distance run. Thence from said corner run South on a true line, dividing the surplus, 1.20 chains, equally between the three half miles, viz:—At 40.40 chains, establish a quarter Section corner; at 80.80 chains, establish the corner to Sections 25 and 26, 35 and 36. Thence, to the quarter Section corner on the line between Sections 35 and 36, would be 40.40 chains. The last mentioned Section corner being established, East or West random or true lines can be now run therefrom, as the case may require.

[38.]

This method will, in most cases, enable the Surveyor to renew missing corners by re-establishing them in the right place. But it may happen, that, after having established the North and South line, as in the above case, the corner to Sections 26, 27, 34 and 35, can be found; also, the quarter Section corner on the line between Sections 26 and 35. In this case, it might be better to extend the line from the corner to Sections 26, 27, 34 and 35, to said quarter Section corner *straight* to its intersection with the North and South line already established, and there establish the corner to Sections 25, 26, 35 and 36. If this point should differ much from the point where you would place the corner by the first method laid down, it might be well to examine the line between Sections 25 and 36.

[39.]

Previous to the year 1828, only two bearing trees to any corner were described, although at Township and interior Section corners four trees were marked as witness trees. The mounds erected before that time were smaller than those now used, having no deposits in them of any substance whatever, for any kind of corner; indeed, they were sometimes scarcely erected at all, having often been only small collections of sods surrounding a temporary stake set for the corner.

[40.]

But, since 1828, Deputy Surveyors have been required to describe in their Field Notes four bearing trees to Township and interior Section corners, only two being so described for all other corners; and they were directed to increase the size of the mounds erected around corner posts, placing charcoal or other durable material as a witness under the stake placed for the corners of Townships and Sections, but not under the corners returned for quarter Sections. Since that time a general uniform practice has prevailed, with some few exceptions, in the establishment of corners and the marking of lines of the public surveys.



